¬ Z »

G-9 ©çA EÑ

zY`_RGOS11.[(X)B X Ww X X

† ÍÎ yV

cUV_XOMNZ ijHàÌ

copyright © 2018 i H à Ì

‘ + Î † C Î Ò ¢ %² ä Ó ïož

Ì ± ñ i H à Ì 0 µ • U k ` ~ % y y K ± Y ` ~ • ” ê ¥ ” + Î † B ã Ä ê ¶ B g Ö òo• d £o• Õ ao• “
wo• n no• ì è ¿ U § ˆo• 1 ¿ ¶ B ê B ã 9 Œ (ož

Y ® i H à Ì Œ öož

Î † U C ¿ U ñ Ä Œ ö ê h Æ Œ ö k _ ñ Ä K (Äož

Ó ñ Æ 1 D }o• Æ ê Ô Å ˆ • I Œ ` c y Ú . ³ Ø k Î † T ¶ B ê B ã D }o• Æ ê Ô Å U ¨ Ó Æ
1 ê … 8 $ Äož ” ³ ` c P Ä ³ k i H à Ì + Î † Ä Ÿ ` ~ ¢ P ê ó P Ò ¢ ê ‘ šož

9 D } Í Î ´ ê ¿ U = œ k Î † Ä k Ê g ¾ •ož i H à Ì ‘ ¨ Z Ä ` ~ * = ê ñ U P Õ Ñ + † Ä
g “ w Ó ïož

Î ô Æ N • … 6 -ož i H à Ì ¨ Ú Ê Î ô Æ ž] @ ‘ š ¿ Ä Õ G U ´ k x w G ‘ ô Æ Ä ¶ Z Ä j ¨ ê 4 ¥ k
Î ô Æ ñ Ä ’ Î - ã è ` ~ ¢ P ê ¹ P ‘ož

Î0 ` çKtƒ¯

àÌWid

ÐPzKt

àÌ’òt

iHàÌ •à{y

Î ô Æ †ª¢ B ã € M • º c Ž U … k Ž q • ¬ } 7 Á _ D } ñ u 4 € M • º g F åož

Î ô Æ B ã † ª P ’ Î U m Ä ¿ D } © ç Ä g ò D } º Zo • T ˆ Ћ k À } ª P ’ Î ¬ Y Ž … — Õ ’ Î Õož

Î ô Æ „ C è ˜ C è ˜ D } £ ö k W n 4 % ² " Þ # è ˜ k Y C g 4 è # ‘ C A E Ñož

Ú ` Ÿ4¡2Ï4³G!5B Q ¸ –5×,Ì G Y • È Ù À ¹ ß0´8V Ö

1. Q ¸> + M6
2. Î. G!5B1u)Ú
3. LINE
4. File System
5. SYS
6. TIME RANGE
7. HTTP
8. 2Ï4³ ¹ «
9. CWMP
10. CA-MONITOR
11. ZAM
12. õ +&Á ¦ ¨
13. 1u)Ú S k -
14. POE 1u)Ú
15. PKG_MGMT

1 w W 6 Ù „

1.1 alias

F å%² Ú x X ð dož
alias mode command-alias original-command

í ” # x X ð d k + 9 ¨ ó • ð d x X k U Ê Ö Þ . F åož
no alias mode [command-alias]

+ 9 ¨ ó • ð d x X k U Y * default Ê Ö Þ . F åož
default alias mode [command-alias]

o¬ @ ƒ ª ¢o-

@ ƒ	T
mode	ð d ñ W n x X ñ Ô x X % ”ož
command-alias	x X ð dož
original-command	ð d ñ W n Ž x X § což

o¬ Þ . F åo- ¨ ¯ * ê Ô Ó ï % ” k B ã x X ¨ ó • ð dož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¯ * ê Ô Ó ï % ” ó • x X ð d ho•po•so•uo•un Ž x d ã ð helpo• ping o•show o•undebug o• undebug ož
ó • x X ð d * no alias exec x X í ”ož
* F å x X ð d k U Y %² % Ÿ Û W Á%² Ú x Xož † ò k ë •%² ð d Û W n%² Ú x X ù%² B ã k À e U Y Ð Ò ÿ µ e µ B ãož
ð d ñ W n x X ñ Ô x X % ” © ¢ ù © Ï ¨ x X % ” k ¨ ¶ B F å % ” kÿ µ alias ? U Y ç ß ¢ ù U Y F å ð d ¶ B x X % ” y

```
5XLMLH FRQILJ DOLDV "
DDD JV $$$ VHUYHU JURXS PRGH
DFO DFO FRQILJXUH PRGH
FRQILJ JOREOH FRQILJXUH PRGH
```

x X ð d u 4 n ’ Î k ¨ ð d ù µ k ª P%² ¤ Z g* ƒk w k Y ” ª P y

```
FRPPDQG DOLDV RULJLQDO FRPPDQG
```

† ò k ¨ EXEC % ” k ó • x X ð d”s” n P”show ” ¼ p ož é ÿ µ”s?” U Y B H’s’ • ã ¼ p y ð d

n ’ Î y

```
5 X L M L H  V "
 V  V K R Z   V K R Z   V W D U W  F K D W   V W D U W  W H U P L Q D O  V H U Y L F H
```

ò ç ð d ñ W n x X 2%² % Ÿ k é k … – Z 1 x X , Ü Ûož † ò k ¨ EXEC % ” F å ð d”sv” W

Á x X show version k é y

```
5 X L M L H  V "
 V  V K R Z   VWKYR”Z  Y H UWWKLRZQ”  V W D U W  F K D W
```

œ _ _ Þ Ù = œ g † ò Ä á ˆ Ћ • ð d â Â ž k é k ß ë Y U P ’ Î y
$ G G L Q J F R P P D Q G D O L D V I D L O

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.2 privilege

F å%² Ú x X ü g Ó ’ I 5%² x X ´ ðož
privilege mode [all] {level level | reset} command-string

Ê Ö Þ . F åož
no privilege mode [all] [level level] command-string

o¬ @ ƒ ª ¢o-

@ ƒ	T
mode	} I Ó x X ñ K CLI x X % ”
all	1 6 x X ñ Ä ÿ x X Ó ’ k J , c Ó ’ ´ ð
level level	6 x X ê ÿ x X g Ó ’ ´ ð k ´ ð 8 0-15
reset	1 x X ü g Ó ’ Ê Ö ó • ´ ð
command-string	} I Ó x X …

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- n ª P%² B ã ¨ privilege x X U g I Ó CLI x X % ” ¼ p k c — Õ k U I Ó x X % ” ƒ O
U k G ÿ J k ¨ ¶ B F å % ” k U Y … privilege ? ç ß ¢ ù ñ Ä U I Ó CLI x X % ”ož

o¬ F å †o- 1 y — å CLI ´ ð 1 M X ”test” k w — å ü g reload x X Ó ’ k U Y Ö y — Õož

5 X L M L H F R Q I L J S U L Y L O H J H H [H F O H Y H O U H O R D G

4 ž k … ´ ð 1 µ CLI µ k G ë U Y … reload x X y

5 X L M L H ! U H O R D G "

/ , 1 (5 H D V R Q I R U U H O R D G

F U !

ò ç } 1 reload ¶ B ÿ x X C I Ó x X ´ y/

```
H[HF PRGH DOLDV
K                KHOS
S                SLQJ
V                VKRZ
X                XQGHEXJ
XQ                XQGHEXJ
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2 Á ´ a Â

2.1 <1-99>

Ê Ö] Æ • y Telnet Client k ¢ Nož

<1-99>

o¬ @ ƒ ª ¢o-	@ ƒ	T

-

H *ƒ* U P * ’Î F å

no banner exec

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
c	U P * ’Î ã œ … k U P * ’Î Ä • ª • ß ë • œ …ož
message	F å U P * ’Î Ä ož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y F å U P * ’Î k ò ç p µ È Ø ã œ … e Q À ÿ µ … k é ? … 1 t © Ï ’ož
¢ ï £ — Õ ž k MOTD gbanner motd h Ù ¯ ª P k À e 1 ª P LOGIN U P ’ Î gbanner login hk
ï è £ — Õ Y e k1 ÿ G N • º ß ë EXECgbanner exec h U P ’ Î ê incomingg

c	F g Telnet N U P ’ Î ã œ … k U P ’ Î Ä • ª • ß ë • œ …ož
message	F å F g Telnet N U P ’ Î Ä ož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y F å F g Telnet N U P ’ Î k ò ç p µ È Ø ã œ … e Q À ÿ µ … ké ? … 1 t © Ï ’ož
¢ ï £ — Õ k MOTD gbanner motd h Ù ¯ ª P k À e 1 ª P LOGIN U P ’ Î gbanner login h k ï è £ — Õ Y e k 1 ÿ G N • º ß ë EXEC gbanner exec h U P ’ Î ê incoming gbanner incoming h U P ’ Îož ò ç © F g Telnet é ß ë incoming U P ’ Î k ¿ U N é ß ë EXEC U P ’ Îož

o¬ F å †o- 1 y µ P † g F g Telnet N ’ Î — å y
5 X L M L H F R Q I L J E D Q Q H U L Q F R P L Q J * … ¡ H — Õ

o¬ à • co- F å e k F g Telnet N ï £ line ¿ è µ ¯ * ï % ” k U ª P ñ F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.4 banner login

F å £ ö Ê ’ Î
banner login c message c

H ƒ £ ö Ê ’ Î F å
no banner login

o¬ @ ƒ ª ¢o-	@ ƒ	T
	c	U P ’ Îoš

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y F å £ ö Ê ’ Î k ò ç p µ È Ø ã œ … e Q À ÿ µ … k é ? … 1 t © Ï ’ož
¢ ï £ è ˜ k MOTD gbanner motd h Ù ¯ ª P k À e 1 ª P LOGIN U P ’ Î gbanner login hk
ï è £ — Õ Y e k1 ÿ G N • º ß ë EXECgbanner exec h U P ’ Î ê incominggbanner incoming h
U P ’ Îož ò ç © F g Telnet é ß ë incoming U P ’ Î k ¿ U N é ß ë EXEC U P ’ Îož

o¬ F å †o- 1 y µ P † g £ ö Ê ’ Î — å y
5 X L M L H F R Q I L J E D Q Q H U O R J L Q H Q W H U \ R X U S D V V Z R U G

o¬ à • co- F å e k ï £ © Ï k U ª P ñ F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.5 banner motd

F å ? ™ * = ’ Î MOTD g message of the day h
banner [motd] c message c

H *ƒ* ? ™ * = F å ’ Î
no banner [motd]

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
c	? ™ * = ’ Î ã œ … k ? ™ * = ’ Î Ä • ª • ß ë • œ …ož
message	F å ? ™ * = ’ Î Ä ož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y F å ? ™ * = ’ Î k ò ç p µ È Ø ã œ … e Q À ÿ µ … k é ? … 1 t © Ï ’ož

¢ ï £ — Õ ž k MOTD gbanner motd h Ù ¯ ª P k À e 1 ª P LOGIN U P ’ Î g

5 X L M L H F R Q I L J E D Q Q H U H [H F £ • š Ý ž

o¬ à • co- F å e k ï £ line ¿ è x g £ • š k U ª P ñ F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.7 banner slip-ppp

ò SLIP/PPP ¿ è N U P ’ Î
banner slip-ppp c message c

H ƒ SLIP/PPP ¿ è N U P ’ Î
no banner slip-pp

o¬ @ ƒ ª ¢o-

@ ƒ	T
c	U P ’ Î ã œ … k U P ’ Î Ä • ª • ß ë • œ …ož
message	F å U P ’ Î Ä ož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y F å U P * ’ Î k ò ç p µ È Ø ã œ … e Q À ÿ µ … k é ? … 1 t © Ï ’ož
* SLIP/PPP ¿ è N g † ò è ˜ * Z N h ž k + • Ä € k ª P slip-ppp U P ’ Î gbanner slip-ppp bž

o¬ F å †o- 1 y µ P † g SLIP/PPP

o¬ u V ª ¢o- -

2.8 boot config

“ w o Ñ F å ‘ è ¬ y † ^ d
boot config { flash: filename }

Ê Ö ó • F å ‘ è ¬ y † ^ d
no boot config

o¬ @ ƒ ª ¢o-	@ ƒ	T
	flash	o Ñ F å † ^ ‘ ¨ ý J FLASH ¢

o¬ Þ . F åo- Þ . o Ñ F å † ^ ‘ è ¬ y † ^ d flash:/config.text

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y “ w o Ñ F å ‘ è ¬ y † ^ dož

s o " 3 Ñ ` ¡ » Ü 7 ’/’ — ³ H " ! flash:/ruijie.text d

s o " 3 Ñ ` ¶ » ¾ ¾ E ä 3 Ñ ` ì ¾ ¾ E ¡ É } î • û write a — l É " V ž G H " !
flash:/ruijie/ruijie.text c / flash:/ruijie 3 Ñ £ ¡ É } } V ¶ , B / ‘ N • • ¾ E [‘ É } d

o¬ F å †o- 1 y µ P † “ w o Ñ F å † ^ ‘ è ¬ flash:/ruijie.text y
5 X L M L H F R Q I L J E R R W F R Q I L J I O D V K U X L M L H W H [W

o¬ à • co- … show boot config x X U Y ò 0 o Ñ F å ‘ è ¬ y † ^ d ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.9 configure

µ ¶ B F å % ”ož

configure [terminal]

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ ¶ B F å % ”

```
5 X L M L H  F R Q I L J X U H
5 X L M L H  F R Q I L J
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.10 disable

‘ z ¢ ù ï ñ ¨ ´ ðož

disable [privilege-level]

o¬ @ ƒ ª ¢o-

@ ƒ	T
privilege-level	Ó ’ ^ ´

o¬ Þ . F åo- -

o¬ x X % ”o- ¯ * ï % ”

o¬ Þ . ´ ðo- 0

o¬ … 6 -o- … ¥ x X R Ô Ó ï % ” ñ ¯ * ï % ”ožò ç Ó ’ ˆ ´ ké 1 ¢ ù Ó ’ ˆ ´ ‘ z ñ 6 Ó ’ ˆ ´ož

disable a — K N U ã « ‰ ¡ Ì ò • ã « ‰ d

o¬ F å †o- 1 y ò P † F å — Õ 1 ¢ ù Ó ’ ˆ ´ ‘ z ñ † 10 ´ y

5 X L M L H G L V D E O H

o¬ à • co- * show privilege x X ò 0 ¢ ù ï ñ ¨ ´ ð

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.11 disconnect

• • 5 Ü Telnet Client Nož

disconnect session-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
session-id	5 Ü Telnet Client N k ¢ Z

o¬ Þ . F åo- -

o¬ x X % ”o- ¯ * ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- * ÿ µ 6 Telnet Client N k ¢ Z k • • 6 Telnet Client Nož

o¬ F å †o- 1 y ÿ µ 6 Telnet Client N k ¢ Z k • • 6 Telnet Client Nož

5 X L M L H G L V F R Q Q H F W

o¬ à • co- 1 y … show sessions x X k U Y ò 0 6 Telnet Client N © k] Æ t • •ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.12 enable

µ Ô Ó ï % ”ož

enable [privilege-level]

o¬ @ ƒ ª ¢o-

@ ƒ	T
privilege-level	Ó ’ ^ ´

o¬ Þ . F åo- -

o¬ x X % ”o- ¯ * ï % ”

o¬ Þ . ´ ðo- 0

o¬ … 6 -o- … ¥ x X R ¯ * ï % ” µ ñ Ô Ó ï % ”ož ò ç Ó ’ ^ ´ k é 1 ¢ ù Ó ’ ^ ´ U ñ 6 Ó ’ ^ ´ož

o¬ F å †o- 1 y ò P † F å — Õ 1 ¢ ù Ó ’ ^ ´ ‘ z ñ † 14 ´ y

```
5 X L M L H !  H Q D E O H

3 D V V Z R U G
```

o¬ à • co- * show privilege x X ò 0 ¢ ù ï ñ ¨ ´ ð

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.13 enable password

F å c Ó ’ ´ ð M Xož

enable password [level level] { [0] password | 7 encrypted-password }

í ” 6 ´ ð M Xož

no enable password [level level]

o¬ @ ƒ ª ¢o-

@ ƒ	T
level	ï Ó ’ ´ ð
0	g U # h 6 ¢ † M X …
password	ï µ Ô Ó EXEC F å C M X ¢ † k … x † 8 y1~126
7 encrypted-password	n P ÿ µ M X … % † …

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- * o — À ÿ µ % • ºož%² " Õ Ñ k Q Ä ¢ Ö ò w ¡ É — Õ % M X ž k õ ¬ } ÿ µ % • ºož
Ä | M X # ò y
· À m 1 ñ 26 Ý 4 Ê > y ƒ …ož
M X ù µ U Y Ä ù - q k x t ¿ ož • C È A q é • M X %² B ãož

" ´ G t ¦ A + ø ö Û & ¢ ¨ \ 3 Ç — • â Ÿ 7 í) & ‹ ã EXEC f ´ d â Ÿ K É º ¥
¦ A ¸ I ž Ç — È Ÿ 7 í " • • Ç — d

o¬ F å †o- 1 y µ P † — å M X pw10 y
5 X L M L H F R Q I L J H Q D E O H S D V V Z R U G S Z

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.14 enable secret

> yx Up]Đc@L `8••t WP€ Hf0@

o¬ @ ƒ ª ¢o-

@ ƒ	T
level	ï ´ ð
0	g U # h 6 ¢ † M X …
password	ï µ Ô Ó EXEC F å C M X ¢ † k … x † 8 y1~126
5 encrypted-password	9 6] Æ MD5

snmp-agent	ø • ¼ { Snmp Agent k ¥ x X c ž ø • IPv4 y IPv6 Æ ož

o¬ Þ . F åo- ó • telnet-servero•snmp-agent y web-server © ø • k ssh-server © ¼ { ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X 9 ø • ¼ { 6 Æ ož … no enable service x X ¼ { 6 Æ ož

enable service web-server a — K 3 Q ¶ * ‘ Ï “ [http | https | all] d " ´ û a — ¨ K â U
å ‘ Ï “ g U all ‘ Ï “ • ¶ µ ½ ¨ Õ — http û ` ä https û ` " " ´ U

o¬ F å †o- 1 y µ P † x X end ß ñ Ô Ó % ” y

```
5XLMLH FRQ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ OLQH YW\
5XLMLH FRQILJ OLQH HQG
 0D\ 6<6 &21),*B, &RQILJXUHG IURP FRQVROH E\ FRQVROH
5XLMLH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.17 exec-banner

¨ 6 line ¿ è M • ¬ t ª P EXEC U P ’ Î
exec-banner

W 2 ¨ 6 line ¿ è ª P EXEC U P ’ Î
no exec-banner

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ñ Ä ¿ è ¬ t EXEC U P ’ Î

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- F å 4 banner exec y banner motd k é ó • Õ Ñ k 1 ¨ ñ Ä line ¿ è ª P EXEC y MOTD U P ’ Îož ò ç Ý ¨ î Ú À } line ¿ è ¼ { EXEC y MOTD U P ’ Î kU Y … ¥ x X no ¥ ” ¨ 6 ¿ è ¼ { EXEC y MOTD U P ’ Îož

a line banner info prompt

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.19 execute

ü g%² Ô ò † ^ x Xož
execute { [flash:] filename }

o¬ @ ƒ ª ¢o-

@ ƒ	T
filename	¬ } ü g † ^ è ¬ož

o¬ Þ . F åo- ³ F å x X

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- R † ^ & g ¯ H … ü gož

o¬ F å †o- 1 y µ P † n P … execute x X F å 6 N M ip † ÿ y

```
5XLMLH H[HFXWH IODVK P\ELQ FRQILJ WH[W
H[HFXWLQJ VFULSW ILOH P\ELQ FRQILJ WH[W
H[HFXWLQJ GRQH
5XLMLH FRQILJ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW LS DGGUHVV
5XLMLH FRQILJ LI *LJDELW(WKHUQHW HQG
 6HS 6<6 &21),*B, &RQILJXUHG IURP FRQVROH E\ FRQVROH
5XLMLH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.20 exit

R F å % ” ß ñ ´ % ” ê ñ R Ô Ó % ” ß CLI µ
exit

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 0

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † x X exit ß ñ ´ % ” y

```
5XLMLH FRQ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ OLQH YW\
5XLMLH FRQILJ OLQH HQG
 0D\ 6<6 &21),*B, &RQILJXUHG IURP FRQVROH E\ FRQVROH
5XLMLH FRQ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ OLQH YW\
5XLMLH FRQILJ OLQH H[LW
5XLMLH FRQILJ H[LW
 0D\ 6<6 &21),*B, &RQILJXUHG IURP FRQVROH E\ FRQVROH
5XLMLH H[LW

3UHVV 5(7851 WR JHW VWDUWHG
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.21 help

ò 0 n ©Ï %² ? • } ’ Îož
help

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- `~ F å % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- … ¥ x X U Y ò 0 n ©Ï %² ? • } ª ¢ k ¨ À } F å i k U Y *”?” Û ò 0 ¢ ù F å % ” ñ Ä x
X ê î x X e ñ æ @ ƒ • ºož

o¬ F å †o- 1 y µ P † Q ª P%² ? n ©Ï • } ’ Î y

```
5XLMLH KHOS
+HOS PD\ EH UHTXHVWHG DW DQ\ SRLQW LQ D FRPPDQG E\ HQWHULQJ
D TXHVWLRQ PDUN "  ,I QRWKLQJ PDWFKHV  WKH KHOS OLVW ZLOO
EH HPSW\ DQG \RX PXVW EDFNXS XQWLO HQWHULQJ D "  VKRZV WKH
DYDLODEOH RSWLRQV
7ZR VW\OHV RI KHOS DUH SURYLGHG
  )XOO KHOS LV DYDLODEOH ZKHQ \RX DUH UHDG\ WR HQWHU D
  FRPPDQG DUJXPHQW  H J  VKRZ "  DQG GHVFULEHV HDFK SRVVLEOH
  DUJXPHQW
  3DUWLDO KHOS LV SURYLGHG ZKHQ DQ DEEUHYLDWHG DUJXPHQW LV K
  DQG \RX ZDQW WR NQRZ ZKDW DUJXPHQWV PDWFK WKH LQSXW
   H J  VKRZ SU"
```

2 y µ P † ª P N M F å % ” g ñ Ä x X y

```
5XLMLH FRQILJ LI *LJDELW(WKHUQHW     "
,QWHUIDFH FRQILJXUDWLRQ FRPPDQGV
  DUS           $53 LQWHUIDFH VXEFRPPDQGV
  EDQGZLGWK      6HW EDQGZLGWK LQIRUPDWLRQDO SDUDPHWHU
  FDUULHU GHOD\   6SHFLI\ GHOD\ IRU LQWHUIDFH WUDQVLWLRQV
  GDPSHQLQJ      (QDEOH HYHQW GDPSHQLQJ
  GHIDXOW        6HW D FRPPDQG WR LWV GHIDXOWV
  GHVFULSWLRQ     ,QWHUIDFH VSHFLILF GHVFULSWLRQ
```

```
GOGS          ([HF GDWD OLQN GHWHFWLRQ FRPPDQG
GXSOH[         &RQILJXUH GXSOH[ RSHUDWLRQ
HIP           &RQILJ HIP IRU DQ LQWHUIDFH
HQG            ([LW IURP LQWHUIDFH FRQILJXUDWLRQ PRGH
H[LW           ([LW IURP LQWHUIDFH FRQILJXUDWLRQ PRGH
H[SHUW          ([SHUW H[WHQGHG $&/
IORZFRQWURO      6HW WKH IORZ FRQWURO YDOXH IRU DQ LQWHUIDFH
IXOO GXSOH[     )RUFH IXOO GXSOH[ RSHUDWLRQ
JOREDO          *OREDO $&/
JYUS           *953 FRQILJXUH FRPPDQG
KDOI GXSOH[     )RUFH KDOI GXSOH[ RSHUDWLRQ
KHOS           'HVFULSWLRQ RI WKH LQWHUDFWLYH KHOS V\VWHP
LS            ,QWHUIDFH ,QWHUQHW 3URWRFRO FRQILJ FRPPDQGV
LSY            ,QWHUQHW 3URWRFRO 9HUVLRQ
LVLV           ,QWHUPHGLDWH 6\VWHP  ,QWHUPHGLDWH 6\VWHP  ,6 ,6
O             &RQILJ /  DWWULEXWH
ODEHO VZLWFKLQJ  (QDEOH LQWHUIDFH SURFHVV PSOV SDFNHW
ODFS           /$&3 LQWHUIDFH VXEFRPPDQGV
OOGS           /LQN /D\HU 'LVFRYHU\ 3URWRFRO
ORDG LQWHUYDO    6SHFLI\ LQWHUYDO IRU ORDG FDOFXODWLRQ IRU D
PDF           0DF H[WHQGHG $&/
PDF DGGUHVV      6HW PDF DGGUHVV
PSOV           0XOWL 3URWRFRO /DEHO 6ZLWFKLQJ
PWX            6HW WKH LQWHUIDFH 0D[LPXP 7UDQVPLVVLRQ 8QLW  078
QR            1HJDWH D FRPPDQG RU VHW LWV GHIDXOWV
QWS            &RQILJXUH 173
SRUW JURXS       $JJUHJDWHSRUW SRUW EXQGOLQJ FRQILJXUDWLRQ
UHGLUHFW         5HGLUHFW SDFNHWV
UPRQ           5PRQ FRPPDQG
VHFXULW\         &RQILJXUH WKH 6HFXULW\
VKRZ           6KRZ UXQQLQJ V\VWHP LQIRUPDWLRQ
VKXWGRZQ         6KXWGRZQ WKH VHOHFWHG LQWHUIDFH
VQPS           0RGLI\ 6103 LQWHUIDFH SDUDPHWHUV
VSHHG           &RQILJXUH VSHHG RSHUDWLRQ
VZLWFKSRUW       6HW VZLWFKLQJ PRGH FKDUDFWHULVWLFV
YUI            0XOWL DI 931 5RXWLQJ )RUZDUGLQJ SDUDPHWHUV RQ WK
YUUS           9553 LQWHUIDFH VXEFRPPDQGV
[FRQQHFW         ;FRQQHFW FRPPDQGV
```

¢ù 29 ©çÍÎ u4 mpls,isis,VRF kFå †N• @ðk ŽFå¬YÀ}—ÕFå Õož3 y µ
P†ªPxXeµñæ @ƒ•ºy

```
5XLMLH FRQILJ  DFFHVV OLVW  SHUPLW "
```

```
$ % & ' 6RXUFH DGGUHVV
DQ\ $Q\ VRXUFH KRVW
KRVW $ VLQJOH VRXUFH KRVW
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.22 hostname

6 ê “ w — Õ Ñ dož
hostname name

o¬ @ ƒ ª ¢o-

2.23 ip telnet source-interface

6 N M IP ª - • Telnet N › ª -ož
ip telnet source-interface interface-name

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	6 ¥ N M F å IP ª - • Telnet N › ª - k N M • º , AP Mo•Gi Mo•Loopback Mo•null Mo•Tunnel Mo•VLAN Mož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X 9 6 N M IP ª - • ¶ B Telnet N › ª -ož ¨ … telnet Telnet
˜N o”˜M eò ç ZªÄ• ª E

ox]Fkàd BdPl

o¬ Þ . F åo- -

o¬ x X % ”o- ¯ * ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- ï * — å ž M X • ” k ¨ ‘ 4 N k ¢ c ž k g { Ä € µ Y … 2 ˜ | ož * Y 5 â g { Ä € µ y

† %² µ y ÿ µ lock x X k © Ï k U P ÿ µ M X z

† 8 µ y ÿ µ M X k U Y © ` Þ … ož ÿ µ e k © Ï k U P G • ÿ µ M X k À e k © Ï k Ž ” I s k

w ª P Locked ’ Î z

} Ý M • µ Ä € k ¬ } ÿ µ — å ž M Xož

} ¨ Ä € … g { Ä € k , ¬ } * ¨ line F å % ” ü g lockable x X k ¨ , • line ø • u 4 g { Ä € Ô Åož

o¬ F å †o- 1 y µ P † g {%² Ä € µ y

5 X L M L H F R Q I L J O L Q H O R F N D E O H

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Ä € ¨ Þ . Õ Ñ u 4 lock x Xož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- ¥ x X 9 ¨ , • ¿ è u 4 g { Ä € Ô Å k } g { Ä € U Y * ¨ EXEC % ” ü g lock x Xož
ò ç ï } ü g lock x X Û g { ¢ ù ¿ è N Ä € k < · À ¯ … x X lockable — å ¢ ù ¿ è ª • ï g
{ ¢ ù ¿ è N Ä €ož

o¬ F å †o- 1 y µ P † ¨ O ò V M ø • g { Ä € k w g { O ò V y

```
5XLMLH FRQILJ OLQH FRQVROH
5XLMLH FRQILJ OLQH ORFNDEOH
5XLMLH FRQILJ OLQH HQG
5XLMLH ORFN
3DVVZRUG SDVVZRUG!
$JDLQ SDVVZRUG!
/RFNHG
3DVVZRUG SDVVZRUG!
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.26 login

¨ AAA ¼ { Õ Ñ k ¨ LINE ¿ è F å • % £ M X û àož
login

H ƒ £ M X û àož
no login

o¬ @ ƒ ª ¢o-

@ ƒ	T

-	-

o¬ Þ . F åo- O ò V ó • ¼ { login k AUXo•TTY y VTY Ä € ó • ø • login ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç Z Ä o AAA š š | $p2@ @ ˜ ò Ï Ä • [illegible] alqlO0 ¬Îª¬@V™Ã 0 ù ‘#6f"•FúÀW€E€Â ÷@vf"e o¬ x X

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç o AAA ¶ Æ c ž k ¨ LINE ¿ è Ý J ³ AAA • š • ” k é ¬ } F å ¥ x X k ¥ + ñ Ä Ä € C Ä |ož

o¬ F å †o- 1 y µ P † ¦ P ¨ ø • AAA ¶ Æ ž ˜ k ¨ VTY — å Î ª ï • šož

```
5XLMLH FRQILJ ORJ DFFHVV QRQ DDD
5XLMLH FRQILJ DDD QHZ PRGHO
5XLMLH FRQILJ OLQH YW\
5XLMLH FRQILJ OLQH ORJLQ ORFDO
5XLMLH FRQILJ OLQH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.28 login authentication

¨ AAA ø • Õ Ñ k ¨ LINE ¿ è F å AAA £ • š • c ç nož

login authentication { default | list-name }

í ” £ • š • c ç nož

no login authentication { default | list-name }

o¬ @ ƒ ª ¢o-

@ ƒ	T
default	ó • • š • c ç n d
list-name	U # • c ç n d

o¬ Þ . F åo- AAA ø • Õ Ñ k ó • … default • š • což

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † ¦ P ¨ VTY ¼ û • c ç n w radius g £ • šož

```
5 X L M L H  F R Q I L J  D D D  Q H Z  P R G H O
5 X L M L H  F R Q I L J  D D D  D X W K H Q W L F D W L R Q  O R J L Q  G H I D X O W  J U R X S  U D G L X
5 X L M L H  F R Q I L J  O L Q H  Y W \
5 X L M L H  F R Q I L J  O L Q H  O R J L Q  D X W K H Q W L F D W L R Q  G H I D X O W
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.29 login local

¨ AAA ¼ { Õ Ñ k ¨ LINE ¿ è F å Î ª ï • šož

login local

H ƒ £ Î ª ï • šož

no login local

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç Z Ä o AAA ¶ Æ k é ¥ x X 9 F å LINE ¿ è £ • š ž Ú Î ª ï • šož L Î ª ï © 6

* username x X F å ï ’ Îož

o¬ F å †o- 1 y µ P † ¦ P ¨ VTY — å £ Î ª • šož

```
5 X L M L H  F R Q I L J  Q R  D D D  Q H Z  P R G H O
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.30 login privilege log

¨ Ä € ï Ó ’ ´ ð U ž ˜ k ÿ ß , • ™ º ’ Îož
login privilege log

H *f* ¨ ï Ó ’ ´ ð U ž ˜ ÿ ß U P ’ Îož
no login privilege log

o¬ @ *f* ª ¢o-

@ *f*	T
-	-

o¬ Þ . F åo- ó • ¼ { ¥ ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ¬ } ! O Ä € ï Ó ’ ´ ð U k } F å k ¥ + ñ Ä Ä € C Ä | ož

o¬ F å †o- 1 y µ P † ¦ P ø • ï Ó ’ ´ ð U U P ož

```
5XLMLH FRQILJ  ORJLQ SULYLOHJH ORJ
```

2 y µ P † ¦ P ø • ¥ e k ï g Ó ’ ˆ ´ U â w ž k ñ U P ™ º ’ Îož

```
5XLMLH!HQDEOH

3DVVZRUG
3DVVZRUG
3DVVZRUG

 $FFHVV GHQLHG
5XLMLH!
 6HS          6<6  35,9B$87+B)$,/ $XWKHQWLFDWLRQ WR SULYLOHJH
```

3 y µ P † ¦ P ø • ¥ e k ï g Ó ’ ˆ ´ U â w ž k ñ U P ™ º ’ Îož

```
5XLMLH!HQDEOH

3DVVZRUG
5XLMLH
 6HS              6<6   35,9B$87+B68&&(66 $XWKHQWLFDWLRQ WR SULYLOHJ
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.31 motd-banner

¨ 6 line ¿ è M • ¬ t ª P MOTD U P ’ Î
motd-banner

W 2 ¨ 6 line ¿ è ª P MOTD U P ’ Î
no motd-banner

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ñ Ä ¿ è ¬ t MOTD U P ’ Îož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- F å 4 banner exec y banner motd k é ó • Õ Ñ k 1 ¨ ñ Ä line ¿ è ª P EXEC y MOTD U P ’ Îož
ò ç Ý ¨ î Ú À } line ¿ è ¼ { EXEC y MOTD U P ’ Î ‰ U Y … ¥ x X no ¥ ” ¨ 6 ¿ è ¼ {
EXEC y MOTD U P ’ Îož

a — s banner incoming â o ´ ‡ " ´ " t banner incoming • } æ æ ¬ ¾ ± ¿ Telnet U
/ ¡ µ incoming ” µ ð o M ¥ } G ¬ ¾ h ‘ ž incoming ” µ ð o d

o¬ F å †o- 1 y µ P † g + Vty1 ¿ è W 2 U P MOTD ’Î ª P y

```
5 X L M L H F R Q I L J O L Q H Y W \
5 X L M L H F R Q I L J O L Q H Q R P R W G E D Q Q H U
```

o¬ à • co- F å e k ï £ © Ï k ª P ñ F å ’Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.32 password

F å line ¿ è £ M Xož
password { [0] password | 7 encrypted-password }

í ” line £ M Xož
no password

o¬ @ ƒ ª ¢o-

@ ƒ	T
0	g U # h 6 ¢ † M X …
password	6 i ï line ¿ è M X ¢ † k … x † 8 y1~25
7 encrypted-password	n P ÿ µ M X … % † …

o¬ Þ . F åo- -

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † 6 line £ M X red y

```
5 X L M L H F R Q I L J O L Q H Y W \
5 X L M L H F R Q I L J O L Q H S D V V Z R U G U H G
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.33 prompt

F å ï x X N M gCLI h U Pož
prompt string

H ƒ ï x X N M gCLI h U P … F åož
no prompt

o¬ @ ƒ ª ¢o-

2.34 secret

F å line ¿ è £ MD5 U " % M Xož
secret { [0] password | 5 encrypted-secret }

í ” line ¿ è £ MD5 U " % M Xož
no secret

o¬ @ ƒ ª ¢o-

0	g U # h 6 ¢ † M X † Î k F å e 1 g MD5 U " %
password	6 i ï line ¿ è M X ¢ † k … x † y1~25
5 encrypted-secret	9 6] Æ MD5 U " % M X † Î k F å e 1 • % e M X g ‘

o¬ Þ . F åo- -

o¬ x X % ”o- line F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X 9 F å + i ï ¡ £ £ line ¿ è g • š MD5 U " % M Xož

" ´ G ¦ A + ø 5 • Û & æ ¥ A 3) g ¡ 24 É ¯ Ç — 3 ‡ 1 c 3 c 8 Q “ ø ¡ ¾ ”$” “ ø d

¹ (M G ¦ A + ø 5 d ¢ N Æ ã • ò % É ´ ¬ ¸ < ¦ A ¶ Ç — ¨ ì ‘ G ¦ A + ø 5 d

line • ¶ » ½ ¨ " password ä secret Ç — ò , Ä h " t password ä secret f 5 Ç — ¨ Ã ¨ Û & Ç — V • $ secret Ç — / secret Ç — $ ž G ¨ V Ÿ # $ password Ç — ò f 5 Ç — [$ ž G Æ ã • Ã ž G d

o¬ F å †o- µ P † 6 line £ MD5 U " % M X vty0 y

```
5 X L M L H F R Q I L J O L Q H Y W \
5 X L M L H F R Q I L J O L Q H V H F U H W Y W \
```

F å 4 M X $ e kvty0 1 g MD5 U " % kshow ß Û | ç ò ñ P y

```
V H F U H W ; Z Y [ \ X $ ' V Y ] '
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.35 session

¨ VSU Ú Ñ g " ” — Õ h ê Ë µ k * session N ñ ¿ — Õož
session { master | device device-number }

o¬ @ ƒ ª ¢o-

master	6 R Ñ N Ñ ê ñ R ’ ò á N ñ ’ ò á
device device-number	6 — Õ Z

o¬ Þ . F åo- -

o¬ x X % ”o- ¯ * ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † ¨ VSU ê Ë k 6 R Ñ N ñ Ñ y

```
5 X L M L H  V H V V L R Q  P D V W H U
```

2 y µ P † ¨ VSU Ú Ñ ê Ë g " ” — Õ h ksession N ñ — Õ 1 y

```
5 X L M L H  V H V V L R Q  G H Y L F H
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.36 session-timeout

F å ¢ ù LINE] Æ • y ñ i Ä € k ¢ Ý ž ž •ož
session-timeout minutes [output]

H ƒ LINE ñ i Ä € k ¢ Ý ž ž • k k ¢ K Ý žož
no session-timeout

o¬ @ ƒ ª ¢o-

minutes	6 Ý ž ž • ã U ƒ
output	© k 1 ÿ ß ƒ G - • ÿ µ k Û î • © k Ý ž

o¬ Þ . F åo- Þ . Ý ž ž • 0 min k W n K Ý žož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ¨ 6 ž • Ä k R ¢ ù LINE] Æ • y ñ i Ä € k ¢ k Z Ä ` ~ ÿ µ ÿ ß ’ Î k 1 • 4 N k
w Ê Ö 4 LINE q ~ U Ù Áož

o¬ F å †o- 1 Ly <07360 (uFd ~ 0 9 Ç @ p ¿ E 0 3 Td <0B4 6 ò 9E508288 Tc90.08 55f 0 33Tf 4.135.06.36 0.24 15.6 re f 560.6FA1.04 124.02

-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † © ü g show boot config x X %² P † y

```
5XLMLH VKRZ ERRW FRQILJ
%RRW FRQILJ ILOH >IODVK UXLMLH WH[W@
```

< † K y

<	ª ¢
flash:/ruijie.text	o Ñ F å † ^ ‘ è ¬ y † ^ d

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.38 show debugging

ª P ¢ ù — Õ ² ¡ • ¼ ø • ’ Îož

show debugging

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † © ü g show debugging x X %² P † y

```
5XLMLH VKRZ GHEXJJLQJ

GHEXJ IZ JURXS GHWHFW LQWI VWDWH
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.39 show line

ò 0 ¿ è F å ’ Îož

show line { console line-num | vty line-num | line-num }

o¬ @ ƒ ª ¢o-

@ ƒ	T
console	ò 0 O ò V ¿ è F å ’ Îož
vty	ò 0 Z Ä € ¿ è F å ’ Îož
line-num	ò 0 line ¿ èož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- -

o¬ F å †o- 1 y ò 0 console M F å ’ Îož

```
5XLMLH  VKRZ OLQH FRQVROH
&21    7\SH   VSHHG   2YHUUXQV
       &21
/LQH   /RFDWLRQ     7\SH   YW
/HQJWK    OLQHV :LGWK    FROXPQV
6SHFLDO &KDUV (VFDSH 'LVFRQQHFW $FWLYDWLRQ
           AA[    QRQH      A0
7LPHRXWV      ,GOH (;(&   ,GOH 6HVVLRQ
           QHYHU      QHYHU
+LVWRU\ LV HQDEOHG KLVWRU\ VL]H LV
7RWDO LQSXW      E\WHV
7RWDO RXWSXW       E\WHV
'DWD RYHUIORZ      E\WHV
VWRS U[ LQWHUUXSW    WLPHV
```

Line 0	Ä € ¿ è Ú Zož
Location: ""	¿ è location — åož
Type: "vt100"	¿ è Ã Ä € ö Õož
Special Chars	Ä € Ô : … k , Escape …o•Disconnect … y Activation …ož
Timeouts	Ä € Ý ž ž • knever n P K Ý žož
History	7 W x X “ £ • ¼ Y C Â Ý Ú) ƒož
Total input	R Ü N v ƒ G O Ï ‹ ›ož
Total output	G ñ Ü ƒ G O Ï ‹ ›ož
Data overflow	N v œ ß ƒ G O Ï ‹ ›ož
stop rx interrupt	Ü RX • ƒ O Ï ‹ ›ož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.40 show reload

ò 0 © Ï M • o — åož

show reload

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o-

o¬ F å †o- 1 y µ P † ò 0 © Ï M • o — å y

5 X L M L H V K R Z U H O R D G

6 \ V W H P U H O R D G V W D W H : D U P

< † K y

<	ª ¢

2.41 show running-config

ò 0 ¢ ù — Õ © Ï 3 ¨ g F å ’ Î ê î N M F å ’ Îož
show running-config [interface interface]

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- -

o¬ F å †o- -

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.42 show service

ò 0 ¢ ù Æ • o ê ¼ { Õ Ñož
show service

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 1

o¬ ... 6 -o- -

o¬ F å †o- 1 y ò 0 ¢ ù Æ • o ê ¼ { Õ Ñož

```
5XLMLH VKRZ VHUYLFH
ZHE VHUYHU GLVDEOHG
ZHE VHUYHU KWWSV GLVDEOHG
```

```
VQPS DJHQW        HQDEOHG
VVK VHUYHU        HQDEOHG
WHOQHW VHUYHU     GLVDEOHG
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.43 show sessions

ª P] Æ • y Telnet Client † ? † ’ Îož

show sessions

o¬ @ ƒ ª ¢o-	@ ƒ	T
	-	-

o¬ x X % ”o- ¯ * ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- ª P] Æ • y Telnet Client † ? † ’ Î k , y N ñ) VTY Zo• Æ ˜ ª -ož

o¬ F å †o- 1 y ª P] • y Telnet Client k ¢ N ’ Îož

```
5XLMLH VKRZ VHVVLRQV
&RQQ $GGUHVV
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.44 show startup-config

ò 0 ¥ ¨ NVRAM g ³ £ â Å š Ñ H ¥ ˜ h — Õ F åož

show startup-config

o¬ @ ƒ ª ¢o-	@ ƒ	T

-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ ¨ NVRAM g ³ £ â Å š Ñ H ¥ ˜ h — Õ F å / startup-config — Õ o ž ü g F åož

¨ i H — Õ kstartup-config 6 © ‘ 9 — Õ Ä å Flash ó • F å † ^ /config.text F å ’ Îož

o¬ F å †o- -

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.45 show this

ò 0 © Ï ¢ ù % ” ÿ | F å ’ Îož

show this

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ñ Ä F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¨ range % ” U Y ª P ¢ ù % ” F åož , y

1. * line first-line last-line x X 6 F å%² 8 ¿ è k w µ LINE F å % ” z
2. * vlan range x X 6 F å Ú VLAN k w µ vlan range F å % ” z
3. * interface range x X 6 F å Ú P [illegible]

```
5XLMLH  FRQILJ LI )DVW(WKHUQHW     VKRZ WKLV
%XLOGLQJ FRQILJXUDWLRQ

 VSDQQLQJ WUHH OLQN W\SH SRLQW WR SRLQW
 VSDQQLQJ WUHH PVW  SRUW SULRULW\

HQG
5XLMLH  FRQILJ LI )DVW(WKHUQHW
```

2 y µ P † ò 0 interface range vlan 1-3 ÿ | F å ' Î

```
5XLMLH FRQILJ LI UDQJH  VKRZ WKLV

%XLOGLQJ FRQILJXUDWLRQ
```

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ï U Y ÿ G ¬ } Û — å ‘ 5 ¿ è f Ô äož x X speed 1 c ž — å ‘ 5 ¿ è N v , ä Y C G , äož

o¬ F å †o- 1: µ P † 1 M , ä — å 57600 bps y

5 X L M L H F R Q I L J O L Q H F R Q V R O H
5 X L M L H F R Q I L J O L Q H V S H H G

o¬ à • co- * show line x X ò 0 LINE ¿ è ñ F å , äož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -2.47 telÆet ˜ ežñ{Telnet Host X:X:X:X:X [/source interface interface-name }]

¢o-

@ ƒ	T
host Telnet Æ ˜	IPV4 ª -o• IPV6 ª - ê ñ Ñ d
port Telnet Æ ˜	TCP € M Z k ó • › 23
/source	6 Telnet ï € … ‘•‰° IPê ñ › N M
ip6 B.C.D Telnet ï € … ‘•‰° IPV4 ª -	
ipv6 X:X:X:X::X 6 Telnet ï € … ‘•‰° IPV6 ª -	
interface interface-name	6 Telnet ï € … ‘•‰°tàTÐ

o¬ Þ’à´`žVúÐ -

o¬ x X % ”o- ¯ * nð,Pi@

o¬ Þ’à›@O úÐ 1

o¬ … s`bÖúÐ -

o¬ F å †o-

1 y µ † ÿ ktelnet) — Õ IPV6 ª - 2AAA:BBBB::CCCC

5 X L M L H W H O Q H W $ $ $ % % % % & & & &

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.48 username

F å Î ª ï Ã Z Y C U # I Ó ’ Îož

username name [login mode { aux | console | ssh | telnet }] [online amount number] [permission oper-mode path] [privilege privilege-level] [reject remote-login] [web-auth] [pwd-modify] [nopassword | password [0 | 7] text-string | secret [0 | 5] text-string]

í ” Î ª ïož

no username name

o¬ @ ƒ ª ¢o-

@ ƒ	T
name	ï d
login mode	F å Ã Z £ • ” ’ òož
aux	’ ò Ã Z £ • ” auxož
console	’ ò Ã Z £ • ” consoleož
ssh	’ ò Ã Z £ • ” sshož
telnet	’ ò Ã Z £ • ” telnetož
online amount number	F å Ã Z c ž ¨ ¿ ƒ Oož
permission oper-mode path	F å Ã Z + 6 † ^ q • Ó ’ k op-mode n P q • % ” k path n P • † ^ ê ñ) £ è ¬ož
privilege privilege-level	F å Ã Z Ó ’ ´ ð k H › 8 0 ñ 15ož
reject remote-login	’ ò … ¥ Ã Z g i £ož
web-auth	4 Ã Z Q 9 web • šož
pwd-modify	ª • … ¥ Ã Z web • š ï “ w % A k ¥ # ¾ Q Ä ¨ F å 4 web-auth $ e õ U ož
nopassword	¥ Ã Z F å % Aož
password [0 | 7] text-string	F å Ã Z % A k0 n P ÿ µ ¢ † % A k7 n P ÿ µ % † % A k ó • ÿ µ

	¢ † % Aož
secret [0 | 5] text-string	F å Ã Z % A, ¥ x X @ ƒ F å % A 1 Y U" % • ” ÿ è % A % † ¥ k 0 n P ÿ µ ¢ † % A k 5 n P ÿ µ % † % A k ó • ÿ µ ¢ † % Aož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- ¥ x X 9 • y Î ª ï ƒ G € k ^ • š … ož

"´ G¦A + ø 7 • Û & æ ¥ A 3) g ¡ Ý ô d

¹ (M G¦A + ø 7 d ¢ N Æ ã • ò % É ´ ¬ ¸ < ¦ A ¶ Ç — ¨ ì ‘ G¦A + ø
7 d

o¬ F å †o- 1 y µ P † F å%² ï d y M X k w Ç ï´ ð 15 ´ y

```
5XLMLH FRQILJ XVHUQDPH WHVW SULYLOHJH SDVVZRUG SZ
```

2 y µ P † F å Ë web • š ï d y M X y

```
5XLMLH FRQILJ XVHUQDPH XVHU ZHE DXWK SDVVZRUG SZ
```

3 y µ P † F å ï test À Ä ñ Ä † ^ y) £ ¯ Ê Ó ’ y

```
5XLMLH FRQILJ XVHUQDPH WHVW SHUPLVVLRQ UZ
```

4 y µ P † F å ï test ” 4 config.text † ^ k ¿ † ^ y) £ À Ä ¯ o • Êo • ü g Ó ’ y

```
5XLMLH FRQILJ XVHUQDPH WHVW SHUPLVVLRQ Q FRQILJ WH[W
5XLMLH FRQILJ XVHUQDPH WHVW SHUPLVVLRQ UZ[
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.49 username export

ï ’ Î - ß ñ † ^ož

username export filename

o¬ @ ƒ ª ¢o-

@ ƒ	T
filename	† ^ d

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- ¥ x X 9 ï ’ Î - ß ñ † ^ož

o¬ F å †o- 1 y µ P † F å - µ ï ’ Î:

```
5XLMLH XVHUQDPH H[SRUW XVHU FVY
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.50 username import

R † ^ - µ ï ’ Îož

username import filename

o¬ @ ƒ ª ¢o-

@ ƒ	T
filename	† ^ d

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- ¥ x X 9 R Ù B - µ ï ’ Îož

o¬ F å †o- 1 y µ P † F å - µ ï ’ Î:

```
5XLMLH  XVHUQDPH LPSRUW XVHU FVY
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.51 write

1 © Ï F å grunning-config h ‘ ñ 6 y åož
write [memory | terminal]

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
memory	1 © Ï F å Ê µ NVRAM k ˆ c 9 copy running-config startup-config ož
terminal	ª P © Ï F å k ˆ c 9 show running-configož

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X] À Ä Á W x X k x 9 ¿ z d … y t Ý • U k ñ Y ‰ À ‘ Û • Ž ï … ož
ò ç ¥ † ^ ñ Ô — Õ ¨ k © Ï 1 ë • 6 † ^ w Ê µ © Ï F å z ò ç ¥ † ^ ñ Ô — Õ ¨ g U
Õ Ñ y o F å † ^ t 6 ¨ U g ¥ — Õ k ò ¨ ü g write [memory] x X ž ¥ — Õ 9 Ì t ú h k
é © Ï 1 ¤ | © k } 1 ¢ ù F å ‘ 9 ó • o F å † ^ /config.text k w ÿ G ï › ‹ ü g , • q
•ož

o¬ F å †o- 1 y Y P 8 ò ~ ¨ — Õ ‘ © Ï F å y

```
5XLMLH  ZULWH
%XLOGLQJ FRQILJXUDWLRQ
>2.@
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.52 zcm

© F å • o
zcm enable

© F å % ” ¼ {
zcm disable

o¬ @ ƒ ª ¢o-

@ ƒ	T
enable	© F å • o
disable	© F å % ” ¼ {

o¬ Þ . F åo- Þ . Õ Ñ k © F å © ¼ {

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y • o y ¼ { © F å ož

Œ " _ Ÿ Á ACS º # c P º # â Á d

Œ " º # â Á V ¶ , B Á æ o , B d

â â • • ¾ î [MGMT Ç Œ " º # o [— s • • « 2 Q (Ç ä N › Ç DHCP Snooping Trust _ Ÿ d

Œ " — s ä ‘ ž [V W , • • s o " 3 Ñ » ƒ ˆ Ÿ • • ü o 7 s d

o¬ F å †o- 1 y Y P 8 • o © F å y

```
5XLMLH ]FP HQDEOH
  :DUQLQJ $IWHU VZLWFKLQJ PRGH WKH GHYLFH ZLOO DXWRPDWLFDOO
 'R \RX ZDQW WR VZLWFK WR ]HUR FRQILJXUDWLRQ PRGH" >\HV QR@ \
6HS =&0 02'(B6:,7&+ 7KH GHYLFH LV UHORDGLQJ GXH WR ]HU
PRGH VZLWFK
```

o¬ à • co- -

o¬ U P ’ Îo- -

3 LINE

3.1 absolute-timeout

— å ¿ è Í + Ý ž ž •ož
absolute-timeout minutes

Ê Ö © Ï ó • — åož
no absolute-timeout

o¬ @ ƒ ª ¢o-

@ ƒ	T
minutes	¢ ù ¿ è Í + Ý ž ã U ƒ k H › 8 <0~60>ož

o¬ Þ . F åo- — Í + Ý ž • • òož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- — å ¿ è Í + Ý ž ž • k Q } ž •%² ñ k ’ ï © k ¨ q • Ä € k ¿ è C k • •ož ¿ è • • ù k U P Ä €
/ 1 ß þ • ž • y

```
7HUPLQDO ZLOO EH ORJLQ RXW DIWHU VHFRQG
```

o¬ F å †o- 1 y ¨ O ò V M + • ¿ è k — å ¿ Í + Ý ž ž • 2 ã Uož

```
5XLMLH FRQILJ OLQH FRQVROH
5XLMLH FRQILJ OLQH DEVROXWH WLPHRXW
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.2 access-class

* ACL ¡ gIPv4 h O ò Ä € £ož

access-class { access-list-number | access-list-name } { in | out }

H ƒ ACL ¡ gIPV4 h O ò Ä € £ož

no access-class { access-list-number | access-list-name } { in | out }

o¬ @ ƒ ª ¢o-

@ ƒ	T
access-list-number	ACL Ú Z kU F 8 y IP ö Õ ACL(1-99 k1300-1999) dP ý J ACL(100-199 k 2000-2699)ož
access-list-name	ACL d fož
in	¡ Û Nož
out	¡ Ù ß Nož

o¬ Þ . F åo- -

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å + Ú Z 8 0-5 VTY Û N g Ú Z 20 ACL ¡ož

```
5 X L M L H F R Q I L J O L Q H Y W \
5 X L M L H F R Q I L J O L Q H D F F H V V F O D V V L Q
```

2 y F å + Ú Z 8 6-7 VTY ß > N g ACL d f test ACL ¡ož

```
5 X L M L H F R Q I L J O L Q H Y W \
5 X L M L H F R Q I L J O L Q H D F F H V V F O D V V W H V W R X W
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.3 accounting commands

• o line ¿ è x X t “ Ã ož
accounting commands level { default | list-name }

H ƒ x X t “ Ã ož
no accounting commands level

o¬ @ ƒ ª ¢o-

accounting exec { default | list-name }

H *f*

ascii-value	¬ t Ä € k ¢ ½ p … + • ASCII › k H › 8 <0~127> ož

o¬ Þ . F åo- Ä € k ¢ ¬ t … › ñ(CR kASCII › 0x0D)ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ¢ ù ¿ è — å 4 # +(autoselect) k + • ¬ t Ä € k ¢ ½ p … · À H © Ï Þ . › õ Ä |ož

o¬ F å †o- 1 y — å O ò V M + • Ä € ¬ t … Á ` p Ctrl+Yož

```
5XLMLH FRQILJ OLQH FRQVROH
5XLMLH FRQILJ OLQH DFWLYDWLRQ FKDUDFWHU
5XLMLH FRQILJ OLQH HQG
5XLMLH H[LW

3UHVV &75/ \ WR JHW VWDUWHG

5XLMLH!
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.6 authorization commands

• o ¿ è x X I Ó ož

authorization commands level { default | list-name }

H *f* x X I Ó ož

no authorization commands level

o¬ @ *f* ª ¢o-

@ *f*	T
level	} g I Ó x X ´ ð k 8 0~15 k Ð „ ´ ð x X ¬ } I Ó * e õ ü gož
default	ó • • š • c ç n dož
list-name	U # • c ç n dož

o¬ Þ . F åo- ¼ { x X I Ó ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- AAA • š È ` ... k ¯ F å AAA x X I Ó • c e k Ç • ¨ ¬ } g x X I Ó Ä € ¿ è ož

o¬ F å †o- 1 y + Vty 1 ¿ è ï ü g 15 ´ x X g I Óož

```
5XLMLH FRQILJ DDD QHZ PRGHO
5XLMLH FRQILJ DDD DXWKRUL]DWLRQ FRPPDQGV GHIDXOW JURXS WD
5XLMLH FRQILJ OLQH YW\
5XLMLH FRQILJ OLQH DXWKRUL]DWLRQ FRPPDQGV GHIDXOW
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.7 authorization exec

• o ¿ è Exec I Ó ož

authorization exec { default | list-name }

H ƒ Exec I Ó ož

no authorization exec

o¬ @ ƒ ª ¢o-

@ ƒ	T
default	ó • • š • c ç n dož
list-name	U # • c ç n dož

o¬ Þ . F åo- ¼ { Exec I Ó ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- AAA • š È ` … k ¯ F å AAA Exc I Ó • c e k Ç • ¨ ¬ } g Exec I Ó Ä € ¿ è ož

o¬ F å †o- 1 y + Vty 1 ¿ è g Exec I Óož

o¬ à • co- -

o¬ U P ’ Îo- -

-

tabits bit 53.193 0.06 T199 g6026680453 -.733

o¬U P ’ Îo¥ Pfð uPwE0l]`š•œð•à’à©pžVùà<tS M *

3.11 disconnect-character

— å • • Ä € Æ N ½ pož
disconnect-character ascii-value

Ê Ö ó • Þ . — åož
no disconnect-character

o¬ @ ƒ ª ¢o-

@ ƒ	T
ascii-value	• • Ä € Æ N ½ p ASCII A + • ò › k H › 8 0-255ož

o¬ Þ . F åo- Þ . Õ Ñ k © Ï — å Ä € Æ N • • ½ p Ctrl+D k - < © 0x04 + • Á ` pož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Î x X — å © Ä € Æ N • • ½ p k ï U Y ÿ G ¬ } — å • • Ä € Æ N ½ pož Ä € Æ N •
• ½ p © o ASCII A(ò a ~ z k A ~ Z Y C 0 ~ 9 ˆ ˆ) k k é 1 - Ä € Æ
3 o * ’ož

o¬ F å †o- 1 y — å ¨ Vty0-5 • • Ä € Æ N ½ p Ctrl+E(¿ ASCII › 0x05)ož

```
5 X L M L H F R Q I L J O L Q H Y W \
5 X L M L H F R Q I L J O L Q H G L V F R Q Q H F W F K D U D F W H U
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.12 escape-character

— å ¿ è ß …ož
escape-character escape-value

Ê Ö © Ï Þ . — åož
no escape-character

o¬ @ ƒ ª ¢o-

@ ƒ	T
escape-value	ï # ß … ASCII A + • ò › k H › 8 0-255ož

o¬ Þ . F åo- Þ . Õ Ñ k¿ è] Æ — å ß … w ¿ escape-value › 30 k- < © Ctrl+^(Á ` p Ctrl+Shift+6)ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç — å 4 escape-character escape-value x X k ï < U Y … escape-value + • Á ` p À e ¬ N 5 p
µ x k < U Y • ¢ ù k ¢ › ñ ë • ¥ k ¢ = ÷ k ¢ >ož

o¬ F å †o- 1 y — å Vty 0 ¿ è ß … 23(+ • Á ` p (Ctrl+w))ož

```
5 X L M L H F R Q I L J O L Q H Y W \
5 X L M L H F R Q I L J O L Q H H V F D S H F K D U D F W H U
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.13 exec

ª • line ¿ è µ x X g µož
exec

’ ò line ¿ è µ x X g µož
no exec

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ª • ¿ è µ x X g µož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 3 ª • line ¿ è µ x X g µ kU Y F å no exec ké ï £ ž * ñ F å ¿ è µ x X g µ k ò © * ¿ U Ì ’ ò ¿ è µ x X g µož

o¬ F å †o- 1 y ’ ò 1 ¿ è µ x X g µož

```
5XLMLH FRQILJ  OLQH YW\
5XLMLH FRQILJ OLQH  QR H[HF
5XLMLH  VKRZ XVHUV
/LQH          8VHU       +RVW V          ,GOH      /RFDWLRQ

    FRQ                 LGOH
    YW\                 LGOH
    YW\                 LGOH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.14 exec-character-bits

— å ‘ 5 ¿ è x X g Ô ò(EXEC) … Ú A • ”ož
exec-character-bits { 7 | 8 }

Ê Ö © Ï Þ . — åož
no exec-character-bits

o¬ @ ƒ ª ¢o-

@ ƒ	T
7	# + 7 y … ¤ ` • x X g Ô ò … ¤ `ož
8	# + ¶ 8 y … ¤ ` • x X g Ô ò … ¤ `ož

o¬ Þ . F åo- © Ï # + ¶ 8 y … ¤ ` • x X g Ô ò … ¤ `ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç } ¨ x X g ÿ µ N ê ñ ª P N o• £ ¥ ê ñ ¿ ¢ Ž … k · À G ‘ — å exec-character-bits 8

flowcontrol) k - f $ F v O k ... F ^ Û gož + 9 ÷ v O k © Ï Þ . Ä 2 o ... ã ð © Ctrl+S(XOFF k ASCII › 19) y Ctrl+Q(XON k ASCII › 17) k © Ï - U ˆ x X stop-character o• start-character Û — å [ož

o¬ F å †o- 1 y ¨ O ò V M + • ‘ 5 ¿ è k — å ¿ v O % ” ÷ v Oož

```
5XLMLH FRQILJ OLQH FRQVROH
5XLMLH FRQILJ OLQH IORZFRQWURO VRIWZDUH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.16 history

• o line ¿ è 7 W x X “ £ k ê ñ F å line ¿ è 7 W x X “ £ Ú) ƒož
history [size size]

H ƒ line ¿ è 7 W x X “ £ ož
no history

Ê Ö line ¿ è 7 W x X “ £ Ú) ƒ
no history size

o¬ @ ƒ ª ¢o-

@ ƒ	T
size size	Ú) ƒ k H › 8 y0~256ož

o¬ Þ . F åo- Þ . Õ Ñ • o 7 W x X “ £ k Â Ý 7 W x X “ £ Ú) ƒ 10

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- -

o¬ F å †o- 1 y F å 0-5 line ¿ è 7 W “ £ Ú) ƒ 20ož

```
5XLMLH FRQILJ OLQH YW\
```

5 X L M L H F R Q I L J O L Q H K L V W R U \ V L] H

2 y ¼ { 0-5 line ¿ è 7 W “ £ ož

5 X L M L H F R Q I L J O L Q H Y W \

5 X L M L H F R Q I L J O L Q H Q R K L V W R U \

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.17 ipv6 access-class

* ACL ¡ gIPv6 h O ò Ä € £ož

ipv6 access-class access-list-name { in | out }

H ƒ * ACL ¡ gIPv6 h O ò Ä € ¢ (£)ož T391 T6TJ /T6T/T6T.5 T6T-/T6TlaT6T4 0 Td [(acc)-8(e)1(s1 Tf 0/C2_02.1-l]TJ /T

9.5 0.C2_0 1 Tf -7.407 0980091606A36F9E Td <88088

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.18 length

— å 6 ¿ è Ä € % I Â Ý g ƒož
length screen-length

Ê Ö Þ . — åož
no length

o¬ @ ƒ ª ¢o-

@ ƒ	T
screen-ength	g ä › k H › 8 0-512ož

o¬ Þ . F åo- Þ . Õ Ñ k % I Â Ý g ƒ 24 gož

o¬ x X % "o- LINE F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å 6 ¿ è % I Â Ý g ƒ 10 gož

```
5XLMLH FRQILJ OLQH OHQJWK
```

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.19 line

µ ñ 6 LINE % ”ož

line [console | vty] first-line [last-line]

o¬ @ ƒ ª ¢o-

@ ƒ	T
console	O ò V Mož
vty	Z Ä € ¿ è k 9 Telnet ê SSH Nož
first-line	} µ first-line Ú Zož
last-line	} µ last-line Ú Zož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ ñ LINE VTY 1 ñ 3 4468 % ”ož

5 X L M L H F R Q I L J O L Q H Y W \

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.20 line vty

Í ¢ ù U Y … VTY N ƒ)ož

line vty line-number

× 5 ¢ ù U Y … VTY N ƒ)ož

no line vty line-number

o¬ @ ƒ ª ¢o-

@ ƒ	T
line-number	VTY N ƒ) k 8 y0~35 ož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y 1 U VTY N ƒ) Í ñ 20 k U VTY Ú Z 8 0-19ož

5 X L M L H F R Q I L J O L Q H Y W \

2 y 1 U VTY N ƒ) × 5 ñ 10 k U VTY Ú Z 8 0-9ož

5 X L M L H F R Q I L J Q R O L Q H Y W \

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.21 location

— å 6 ¿ è y å T ož

location location

Ê Ö © Ï Þ . — åož

no location

o¬ @ ƒ ª ¢o-

@ ƒ	T
location	¢ ù ¿ è y å T ož

o¬ Þ . F åo- -

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å 6 ¿ è y å T Swtich’s Line Vty 0ož

5 X L M L H F R Q I L J O L Q H Y W \

5 X L M L H F R Q I L J O L Q H O V R F D W H R Q W \ 6 Z W L F K’

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.23 parity

— å ‘ 5 ¿ è û à yož
parity { even | none | odd }

Ê Ö © Ï Þ . — åož
no parity

o¬ @ ƒ ª ¢o-	@ ƒ	T
	even	¢ û àož

od	Zè û î	

3.24 privilege level

F å line ¿ è £ ´ ðož
privilege level level

Ê Ö line ¿ è £ ´ ðož
no privilege level

o¬ @ ƒ ª ¢o-	@ ƒ	T

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- ª P ¢ ù line ¿ è “ £ 7 W x Xož

```
5XLMLH VKRZ KLVWRU\
H[HF
VK SULYLOHJH
VK UXQ
VKRZ XVHU
VK XVHU DOO
VKRZ KLVWRU\
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.26 show line

ò 0 ¿ è F å ’ Îož

show line { console line-num | vty line-num | line-num }

o¬ @ ƒ ª ¢o-

@ ƒ	T
console	ò 0 O ò V ¿ è F å ’ Îož
vty	ò 0 Z Ä € ¿ è F å ’ Îož
line-num	ò 0 line ¿ èož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 console M F å ’ Îož

```
5XLMLH  VKRZ OLQH FRQVROH
&21    7\SH   VSHHG   2YHUUXQV
       &21
/LQH   /RFDWLRQ     7\SH   YW
/HQJWK    OLQHV  :LGWK    FROXPQV
6SHFLDO &KDUV  (VFDSH  'LVFRQQHFW  $FWLYDWLRQ
            AA[    QRQH      A0
7LPHRXWV      ,GOH (;(&   ,GOH 6HVVLRQ
            QHYHU      QHYHU
+LVWRU\ LV HQDEOHG  KLVWRU\ VL]H LV
7RWDO LQSXW      E\WHV
7RWDO RXWSXW       E\WHV
'DWD RYHUIORZ      E\WHV
VWRS U[ LQWHUUXSW    WLPHV
```

< † K y

<	ª ¢
CON	Ä € • º kCON n P O ò Vož0 n P Ä € ¿ è Ú Z k Ú Z ù µ * Z n P ¢ ù 3 ¨ … Ä €ož
Type	Ä € • º k , CONo•AUXo•TTYo•VTY ˆož
speed	‘ 5 , äož
Overruns	Ü N v overrun j ¨ ƒ O Ï ‹ ›ož
Line 0	Ä € ¿ è Ú Zož
Location: ""	¿ è location — åož
Type: "vt100"	¿ è Ã Ä € ö Õož
Special Chars	Ä € Ô : … k , Escape …o•Disconnect … y Activation …ož
Timeouts	Ä € Ý ž ž • knever n P K Ý žož
History	7 W x X “ £ • ¼ Y C Â Ý Ú) ƒož
Total input	R Ü N v ƒ G O Ï ‹ ›ož
Total output	G ñ Ü ƒ G O Ï ‹ ›ož
Data overflow	N v œ ß ƒ G O Ï ‹ ›ož
stop rx interrupt	Ü RX • ƒ O Ï ‹ ›ož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3.27 show privilege

ª P ¢ ù line ¿ è Ó ’ ´ ðož

show privilege

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- ª P ¢ ù line ¿ è Ó ’ ´ ðož

5 X L M L H V K R Z S U L Y L O H J H

& X U U Io•bU U @ €…P RU R%WFUp € x"UCd5 ô ÎÑq(Œt 3Ü o¬ … 6 -o-

```
    Y W \                    L G O H
```

2 y ª P ñ Ä ¿ è ï ' Îož

```
5 X L M L H  F R Q I L J   V K R Z  X V H U V  D O O
/ L Q H          8 V H U        + R V W  V            , G O H       / R F D W L R Q

    F R Q                    L G O H
    Y W \                    L G O H
    Y W \                    L G O H
    Y W \
    Y W \
    Y W \
    Y W \
```

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

3.29 speed

— å 6 ¿ è Ä € f Ô äož
speed baudrate

Ê Ö Þ . — åož
no speed

o¬ @ ƒ ª ¢o-

@ ƒ	T
baudrate	f Ô ä › k H › 8 9600-115200ož

o¬ Þ . F åo- Þ . Õ Ñ k f Ô ä 9600ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å 6 ¿ è f Ô ä 115200ož

```
5 X L M L H  F R Q I L J  O L Q H   V S H H G
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.30 start-character

— å ‘ 5 ¿ è ÷ v O o …ož
start-character ascii-value

Ê Ö © Ï Þ . — åož
no start-character

o¬ @ ƒ ª ¢o-

@ ƒ	T
ascii-value	‘ 5 ¿ è ÷ v O o … + • ASCII › k H › 8 <0~255> ož

o¬ Þ . F åo- ‘ 5 ¿ è ÷ v O o … Ctrl+Q(ASCII › 17)ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ ‘ 5 ¿ è v O % ” ÷ v O ž k ÷ v O o … ö º 5 ƒ G n ÿ • ÷ož

o¬ F å †o- 1 y ¨ O ò V M + • ‘ 5 ¿ è k — å ¿ ÷ v O o … Ctrl+Y(ASCII › 25)ož

```
5XLMLH FRQILJ OLQH FRQVROH
5XLMLH FRQILJ OLQH VWDUW FKDUDFWHU
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.31 stopbits

— å ¨ ‘ 5 ¿ è n ÿ ? - 2 y ƒož
stopbits { 1 | 2 }

Ê Ö © Ï Þ . — åož
no stopbits

o¬ @ ƒ ª ¢o-

@ ƒ	T
1	1 2 yož
2	2 2 yož

o¬ Þ . F åo- ‘ 5 ¿ è 2 y — å 2

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ‘ 5 ¿ è , ‘ 5 — Õ(ò n Ï+ Ä €o• ² ò † ² ˜ Modem ˆ) * ’ o o ¬ } — å * ’ 2 yož

o¬ F å †o- 1 y ¨ O ò V M + • ‘ 5 ¿ è k — å ¿ 2 y 1ož

```
5XLMLH FRQILJ OLQH FRQVROH
5XLMLH FRQILJ OLQH VWRSELWV
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.32 stop-character

— å ‘ 5 ¿ è ÷ v O Ä 2 …ož
stop-character ascii-value

Ê Ö © Ï Þ . — åož

no stop-character

o¬ @ ƒ ª ¢o-

@ ƒ	T
ascii-value	‘ 5 ¿ è ÷ v O Ä 2 … + • ASCII › k H › 8 <0~255> ož

o¬ Þ . F åo- ‘ 5 ¿ è ÷ v O Ä 2 … Ctrl+S(ASCII › 19)ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ ‘ 5 ¿ è v O % ” ÷ v O ž k ÷ v O Ä 2 … ö º 5 ƒ G n ÿ È Øož

o¬ F å †o- 1 y ¨ O ò V M + • ‘ 5 ¿ è k — å ¿ ÷ v O Ä 2 … Ctrl+Z(ASCII › 26)ož

```
5XLMLH FRQILJ OLQH FRQVROH
5XLMLH FRQILJ OLQH VWRS FKDUDFWHU
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.33 terminal databits

— å ¢ ù Ä € ¨ v * ’ % ” ? … ƒ G y ƒ Oož
terminal databits bit

Ê Ö © Ï Þ . — åož
terminal no databits

o¬ @ ƒ ª ¢o-

@ ƒ	T
bit	? … ƒ G y k H › 8 <5~8>ož

o¬ Þ . F åo- © Ï — å ‘ 5 ¿ è v * ’ % ” ƒ G y 8ož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ ¢ ù Ä € — å ¿ v * ’ % ” ƒ G y 7ož

5 X L M L H W H U P L Q D O G D W D E L W V

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.34 terminal escape-character

— å ¢ ù Ä € ß …ož

terminal escape-character escape-value

Ê Ö ¢ ù Ä € © Ï Þ . — åož

terminal no escape-character

o¬ @ ƒ ª ¢o-

@ ƒ	T
escape-value	ï # ß … ASCII A + • ò › k H › 8 0-255ož - 6 re 0 Tc 2.55

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.35 terminal exec-character-bits

— å ¢ ù Ä € x X g Ô ò(EXEC) … Ú A • ”ož
terminal exec-character-bits { 7 | 8 }

Ê Ö © Ï Þ . — åož
terminal no exec-character-bits

o¬ @ ƒ ª ¢o-

@ ƒ	T
7	# + 7 y … ¤ ` • x X g Ô ò … ¤ `ož
8	# + ¶ 8 y … ¤ ` • x X g Ô ò … ¤ `ož

o¬ Þ . F åo- © Ï # + ¶ 8 y … ¤ ` • x X g Ô ò … ¤ `ož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç } ¨ x X g ÿ µ N ê ñ ª P N o • £ ¥ ê ñ ¿ ¢ Ž … k · À G ‘ — återminal exec-character-bits 8ož

o¬ F å †o- 1 y ¨ ¢ ù Ä € — å ¿ x X g Ô ò … Ú A • ” 7bitož
5 X L M L H W H U P L Q D O H [H F F K D U D F W H U E L W V

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.36 terminal flowcontrol

— å ¢ ù Ä € v O % ”ož
terminal flowcontrol { hardware | none | software }

Ê Ö © Ï Þ . — åož
terminal no flowcontrol { hardware | none | software }

o¬ @ ƒ ª ¢o-

@ ƒ	T
hardware	v O % ” F v Oož
none	v O % ” — v Oož
software	v O % ” ÷ v Oož

o¬ Þ . F åo- ‘ 5 ¿ è v O % ” — v Oož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ ¢ ù Ä € — å ¿ v O % ” ÷ v Oož
5 X L M L H W H U P L Q D O I O R Z F R Q W U R O V R I W Z D U H

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.37 terminal history

¨ ¢ ù Ä € • o line ¿ è 7 W x X “ £ k ê ñ F å line ¿ è 7 W x X “ £ Ú) ƒož
terminal history [size size

terminal no history

¨ ¢ ù Ä € Ê Ö line ¿ è 7 W x X “ £ Ú) ƒ
terminal no history size

o¬ @ ƒ ª ¢o-

@ ƒ	T
size size	Ú) ƒ k H › 8 y0~256ož

o¬ Þ . F åo- Þ . Õ Ñ • o 7 W x X “ £ k Â Ý 7 W x X “ £ Ú) ƒ 10

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å ¢ ù Ä € line ¿ è 7 W “ £ Ú) ƒ 20ož
5 X L M L H W H U P L Q D O K L V W R U \ V L] H

2 y ¼ { ¢ ù Ä € line ¿ è 7 W “ £ ož
5 X L M L H W H U P L Q D O Q R K L V W R U \

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.38 terminal length

— å ¢ ù Ä € % I Â Ý g ƒož
terminal length screen-length

Ê Ö ¢ ù Ä € Þ . — åož
terminal no length

o¬ @ ƒ ª ¢o-

@ ƒ	T
screen-ength	g ä › k H › 8 0-512ož

o¬ Þ . F åo- Þ . Õ Ñ k % I Â Ý g ƒ 24 gož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å ¢ ù Ä € % I Â Ý g ƒ 10 gož
5 X L M L H W H U P L Q D O O H Q J W K

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.39 terminal location

— å ¢ ù Ä € y å T ož
terminal location location

Ê Ö ¢ ù Ä € © Ï Þ . — åož
terminal no location

o¬ @ ƒ ª ¢o-

@ ƒ	T
location	¢ ù ¿ è y å T ož

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å ¢ ù Ä € y å T

5 X L M L H W H U P L Q D O O R F D W L R Q W \ 6 Z W L F K’

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.40 terminal parity

— å ¢ ù Ä € ‘ 5 ¿ è û à yož
terminal parity { even | none | odd }

Ê Ö © Ï Þ . — åož
terminal no parity

o¬ @ ƒ ª ¢o-

@ ƒ	T
even	¢ û àož
none	— û à
odd	è û à

o¬ Þ . F åo- ‘ 5 ¿ è Ô 9 — û à • ”ož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … î ? — Õ(ò ‘ 5 Mo• O ò V M ˆ) * ’ ž ˜ k o } L — å%² À } û à yož

o¬ F å †o- 1 y ¨ ¢ ù Ä € + • ‘ 5 ¿ è k — å ¿ ¢ û àož

5 X L M L H W H U P L Q D O S D U L W \ H Y H Q

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.41 terminal speed

— å ¢ ù Ä € f Ô äož
terminal speed baudrate

Ê Ö Þ . — åož
terminal no speed

o¬ @ ƒ ª ¢o-

@ ƒ	T
baudrate	f Ô ä › k H › 8 9600-115200ož

o¬ Þ . F åo- Þ . Õ Ñ k f Ô ä 9600ož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y1ð ÀÀ•@Ž@Aàož

terminal no start-character

o¬ @ ƒ ª ¢o-

@ ƒ	T
ascii-value	‘ 5 ¿ è ÷ v O o … + • ASCII › k H › 8 <0~255> ož

o¬ Þ . F åo- ‘ 5 ¿ è ÷ v O o … Ctrl+Q(ASCII › 17)ož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ ¢ ù Ä € — å ¿ ÷ v O o … Ctrl+Y(ASCII › 25)ož

5 X L M L H W H U P L Q D O V W D U W F K D U D F W H U

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.43 terminal stopbits

— å ¨ ¢ ù Ä € n ÿ ? - 2 y ƒož

terminal stopbits { 1 | 2 }

Ê Ö © Ï Þ . — åož

terminal no stopbits

o¬ @ ƒ ª ¢o-

@ ƒ	T
1	1 2 yož
2	2 2 yož

o¬ Þ . F åo- ‘ 5 ¿ è 2 y — å 2

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ ¢ ù Ä € — å ¿ 2 y 1ož
5 X L M L H W H U P L Q D O V W R S E L W V

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.44 terminal stop-character

— å ¢ ù Ä € ÷ v O Ä 2 …ož
terminal stop-character ascii-value

Ê Ö © Ï Þ . — åož
terminal no stop-character

o¬ @ ƒ ª ¢o-

@ ƒ	T
ascii-value	‘ 5 ¿ è ÷ v O Ä 2 … + • ASCII › k H › 8 <0~255> ož

o¬ Þ . F åo- ‘ 5 ¿ è ÷ v O Ä 2 … Ctrl+S(ASCII › 19)ož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ ¢ ù Ä € — å ¿ ÷ v O Ä 2 … Ctrl+Z(ASCII › 26)ož
5 X L M L H W H U P L Q D O V W R S F K D U D F W H U

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.45 terminal terminal-type

— å ¢ ù Ä € % ' Ä € • ºož
terminal terminal-type terminal-type-string

Ê Ö © Ï Þ . — åož
terminal no terminal-type

o¬ @ ƒ ª ¢o-

@ ƒ	T
terminal-type-string	Ä € • º T … k ò vt100 kansi ˆ ˆož

o¬ Þ . F åo- © Ï — å ¿ è % ' Ä € • º vt100ož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å ¢ ù Ä € % ' Ä € • º ansiož

5 X L M L H W H U P L Q D O W H U P L Q D O W \ S H D Q V L

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.46 terminal width

F å ¢ ù Ä € % g Â Ý ç ƒ k /%² g ! †ož

terminal width screen-width

Ê Ö ¢ ù Ä € g !ož
terminal no width

o¬ @ ƒ ª ¢o-

@ ƒ	T
screen-width	g ! › k H › 8 0-256ož

o¬ Þ . F åo- Þ . Õ Ñ k % g Â Ý ç ƒ 79 çož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å ¢ ù Ä € % g Â Ý ç ƒ 10 çož
5 X L M L H W H U P L Q D O Z L G W K

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.47 terminal-type

— å ‘ 5 ¿ è Ä € % ' Ä € • ºož
terminal-type terminal-type-string

Ê Ö © Ï Þ . — åož
no terminal-type

o¬ @ ƒ ª ¢o-

@ ƒ	T
terminal-type-string	Ä € • º T … k ò vt100 kansi ˆ ˆož

o¬ Þ . F åo- © Ï — å ¿ è % ' Ä € • º vt100ož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ï - U Y … x X terminal-type vt100 Û Ê Ö © Ï ó • ¿ è Ä € % ' Ä € • ºož ¨ g Telnet N ˆ
« ` k ï U Y ÿ G ¬ } … Î x X Û — å ¿ è Ä € % ' Ä € • ºož ¿ è g Telnet N ž ˜ k < k …
¥ Ä € • º Û g Ä € • º # Œ(Telnet # ¾ # Œ Z 0x18) k ¦ Â Ä U Y @ ð RFC 854ož

o¬ F å †o- 1 y — å O ò V M + • ‘ 5 ¿ è Ä € % ' Ä € • º ansiož
5 X L M L H F R Q I L J O L Q H F R Q V R O H
5 X L M L H F R Q I Û J À Ó ¹ L Ã Q H Ð ± P W L H U B L Q A D p Ñ G W Ç @ ¦ s = Â Q V ° L Hë • À À ` P ° M q(Œt 3Ü ´ e•l¦¥‹ • À À `

o¬ F å †o- F å 0-5 line Vty ¿ è £ • š Ý ž • 300 aož

5 X L M L H F R Q I L J O L Q H Y W \

5 X L M L H F R Q I L J O L Q H W L P H R X W O R J L Q U H V S R Q V H

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.49 transport input

6 line ¿ è U Y * ’ # ‘ož

transport input { all | ssh | telnet | none }

Ê Ö line ¿ è U Y * ’ # ‘ož

no transport input { all | ssh | telnet | none }

o¬ @ ƒ ª ¢o- @ ƒ

3.51 width

F å 6 ¿ è Ä € % g Â Ý ç ƒ k /%² g ! †ož
width screen-width

Ê Ö 6 ¿ è g !ož
no width

o¬ @ ƒ ª ¢o-

@ ƒ	T
screen-width	g ! › k H › 8 0-256ož

o¬ Þ . F åo- Þ . Õ Ñ k % g Â Ý ç ƒ 79 çož

o¬ x X % ”o- LINE F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å 6 ¿ è % g Â Ý ç ƒ 10 çož
5 X L M L H F R Q I L J O L Q H Z L G W K

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4 File System

4.1 cd

¾ w ¢ ù è ¬ ê ñ † ^ © Ïož

cd [filesystem:] [directory]

o¬ @ ƒ ª ¢o-

@ ƒ	T
filesystem:	† ^ © Ï url k e µ %² È Z k U † ^ © Ï , yflash: , , tmp: ož
directory	è ¬ d k ò ç © Y • ã k é n P Í + è ¬ k k é n P , + è ¬ož

o¬ Þ . F åo- ó • † ^ © Ï © flash: k ò ç è ¬ d Z Ä 6 k é n P ¥ † ^ © Ï ÿ è ¬ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- -

o¬ à • co- * cd y pwd x X Û w J y ò 0 ¢ ù W • è ¬ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.2 copy

¨ † ^ © Ï • / ¾ † ^ož

copy src-url dst-url

o¬ @ ƒ ª ¢o-

@ ƒ	T
src-url	/ ¾ • › † ^ URLož › † ^ U Y ¨ Î ª ê ñ ¨ iož

dst-url	/ ¾ •) † ^ URLož) † ^ U Y ¨ Î ª ê iož

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- ò ‘ ª } 3 Ñ } , ³ URL h ¸ < É } ¨ , ³ 3 Ñ , Ä … G " å ´ " q Đ " g þ * ” d

url U Y ò ” y

@ ƒ	T
running-config	¢ ù 3 ¨ ä F å † ^
startup-config	9 ì ÷ F å † ^
flash:	Î ª flash † ^ © Ï
tftp:	TFTP à Ì Æ ˜ URL k § c ò ñ P y tftp :[[//location]/directory]/filename

o¬ F å †o- 1 y / ¾ 192.168.64.2 — Õ † ^ netconfig ñ flash M & netconfig k Î ª netconfig] Æ ¨ y

```
5XLMLH FRS\ WIWS QHWFRQILJ IODVK QHWFRQILJ
'R \RX ZDQW WR RYHUZULWH > GDWD QHWFRQILJ@" >< 1@ \
3UHVV &WUO & WR TXLW

&RS\ VXFFHVV
```

o¬ à • co- * copy y dir x X Û / ¾ y ª P † ^ ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- ñ 6 / ¾ › † ^ ©) £ k) £ © — c / ¾ ož

o¬ u V ª ¢o- -

4.3 delete

í ”%² † ^ož

delete [filesystem :] file-url

o¬ @ ƒ ª ¢o-	@ ƒ	T

4.4 dir

ª P%² † ^ © Ï † ^ ç nož

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.5 erase

s ” Z Ä † ^ © Ï — Õ ê † ^ož

erase filesystem:

o¬ @ ƒ ª ¢o-

@ ƒ	T
filesystem:	† ^ © Ï d f k e µ æ%² È Z

o¬ Þ . F åo-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- -

o¬ à • co- erase $ e dir x X ò 0 † ^ ’ Î

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.6 file

ª P%² † ^ ’ Îož

file [filesystem:] file-url

o¬ @ ƒ ª ¢o-

@ ƒ	T
filesystem:	† ^ © Ï url k e µ %² È Z k U † ^ © Ï , yflash: , tmp: ož
file-url	k è ¬ † ^ d k ò ç © Y / • ã k é n P Í + è ¬ k k é n P , + è ¬ož

o¬ Þ . F åo- ó • † ^ © Ï © flash:ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P gcc U ü g † ^ ’ Î y

```
5XLMLH ILOH IODVK JFF
 XVU ELQ JFF (/) ELW /6% H[HFXWDEOH ,QWHO YHUVLRQ 6<6
VKDUHG OLEV IRU *18 /LQX[ VWULSSHG
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.7 file prompt

6 U P ´ ðož

file prompt [noisy | quiet]

o¬ @ ƒ ª ¢o-

@ ƒ	T
noisy	ñ Ä † ^ q • g G •
quiet	â 5 U P

o¬ Þ . F åo- noisy

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y “ w † ^ U P ´ ð noisy % ” y

```
5XLMLH ILOH SURPSW QRLV\
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.8 mkdir

ë •%² •) £ož

mkdir [filesystem:] directory

o¬ @ ƒ ª ¢o-

@ ƒ	T
filesystem:	† ^ © Ï url k e µ %² È Z k U † ^ © Ï , yflash , tmp: ož
directory	è ¬ d k ò ç © Y • ã k é n P Í + è ¬ k k é n P , + è ¬ož

o¬ Þ . F åo- ó • † ^ © Ï © flash: k ò ç è ¬ d Z Ä 6 k é n P ¥ † ^ © Ï ÿ è ¬ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y ë •%² d newdir) £ y

```
5XLMLH GLU
'LUHFWRU\ RI IODVK
    UZ          -DQ          IVWDE
    UZ          -DQ          UF G
    UZ          -DQ          USPGE
  ILOHV    GLUHFWRULHV
        E\WHV WRWDO          E\WHV IUHH
```

```
5XLMLH PNGLU QHZGLU
&UHDWHG GLU IODVK  QHZGLU
5XLMLH GLU
'LUHFWRU\ RI IODVK
    UZ            -DQ              IVWDE
    UZ            -DQ              UF G
    UZ            -DQ              USPGE
   GUZ             -DQ              QHZGLU
  ILOHV    GLUHFWRULHV
         E\WHV WRWDO          E\WHV IUHH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.9 more

ª P%² † ^ Ä ož

more [/ ascii | /binary] [filesystem:] file-url

o¬ @ ƒ ª ¢o-

@ ƒ	T
/ascii	Y ASCII ”ª P † ^ Ä
/binary	Y 16 ò/ † Î ”ª P † ^ Ä
filesystem:	† ^ © Ï url k e µ %² È Z k U † ^ © Ï , yflash, tmp: ož
file-url	è ¬ d k ò ç © Y • ã k é n P Í + è ¬ k k é n P , + è ¬ož

o¬ Þ . F åo- Þ . Y † ^ = Ä ”Û ª P

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P flash M & ÿ) £ netconfig † ^ Ä y

```
5XLMLH PRUH IODVK  QHWFRQILJ
```

```
7KH QHWZRUN FRQILJXUDWLRQ ILOH  7KLV ILOH LV FXUUHQWO\ RQO\ X
FRQMXQFWLRQ ZLWK WKH 7, 53& FRGH LQ WKH OLEWLUSF OLEUDU\

(QWULHV FRQVLVW RI

     QHWZRUNBLG! VHPDQWLFV! IODJV! SURWRIDPLO\! SURWRQDPH
          GHYLFH! QDPHWRDGGUBOLEV!

7KH GHYLFH! DQG QDPHWRDGGUBOLEV! ILHOGV DUH DOZD\V HPSW\ L
LPSOHPHQWDWLRQ

XGS      WSLBFOWV     Y    LQHW    XGS
WFS      WSLBFRWVBRUG  Y    LQHW    WFS
XGS      WSLBFOWV     Y    LQHW    XGS
WFS      WSLBFRWVBRUG  Y    LQHW    WFS
UDZLS     WSLBUDZ          LQHW
ORFDO     WSLBFRWVBRUG      ORRSEDFN
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.10 pwd

ª P ï ¢ ù W •) £ … è ¬ož
pwd

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- -

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.11 rename

g %² ë Ä † ^ ê † ^ æož
rename src-url dst-url

o¬ @ ƒ ª ¢o-

@ ƒ	T
src-url	- g è ¬ y † ^ d
dst-url	N v † ^ è ¬ y † ^ d

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y 1 flash M & ÿ) £ fstab † ^ M x d new-fstab y

```
5XLMLH GLU
'LUHFWRU\ RI IODVK
    UZ          -DQ          IVWDE
    UZ          -DQ          UF G
    UZ          -DQ          USPGE
```

```
5XLMLH GLU
'LUHFWRU\ RI IODVK
    UZ          -DQ          QHZ IVWDE
    UZ          -DQ          UF G
    UZ          -DQ          USPGE
 ILOHV   GLUHFWRULHV
        E\WHV WRWDO        E\WHV IUHH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.12 rmdir

í ”%² ë Ä q) £ož

rmdir [filesystem:] directory

o¬ @ ƒ ª ¢o-

@ ƒ	T
filesystem:	† ^ © Ï url k e µ %² È Z k U † ^ © Ï , yflash: , tmp: ož
directory	

o¬ Þ . F åo- ó • † ^ © Ï © flash: ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 yrmdir

o¬ u V ª ¢o- -

4.15 show mount

ª P © Ï 5 ú ’ Îož

show mount

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ï % ”o• Ô Ó % ”o• ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 1

52 g 277.26 572.64 278.16 15.6 re f BT 0.199 g /C2_0 T 0.( )2D (-)Tj 0.371 g /TT2 1 Tf 0.0006 Tc 13.98 0 0 13.98 56.Tc T*93 Td (52 g 277

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

4.16 tftp-client source

TFTP Client U Y Ç ï € › IP ê › N M ª - k … › N M IP ê 6 IP ª - Æ ˜ € IP ª - g * ’ož
tftp-client source {ip ip-address | ipv6 ipv6-address | interface}

H ƒ + ï € › IP ª - Ç ož
no tftp-client source {ip ip-address | ipv6 ipv6-address | interface}

Ê Ö Þ . F å. ož
default tftp-client source {ip ip-address | ipv6 ipv6-address | interface}

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	6 IPv4 › ª -
Ipv6-address	6 IPv6 › ª -
interface	6 › N M

o¬ Þ . F åo- Þ . Õ Ñ k ï € g Î ª › ª -/ › N M Ç k è g # +ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å TFTP Client Ç ï € › IP 192.168.23.236 ª -ož

```
5XLMLH FRQILJ WIWS FOLHQW VRXUFH LS
```

2 y F å TFTP Client Ç ï € › IP 2003:0:0:0::2 ª -ož

7 yTFTP Client Ê Ö Þ . F åož

```
5XLMLH FRQILJ GHIDXOW WIWS FOLHQW VRXUFH LS
```

o¬ à • co- 1 y … show run x X k U Y ò 0 tftp-client source ip192.168.23.236 F åož
2 y … show run x X k U Y ò 0 tftp-client source ipv6 2003:0:0:0::2 F åož
3 y … show run x X k U Y ò 0 tftp-client source gigabitEthernet 0/0 F åož

o¬ U P ’ Îo- 1 y ò ç F å ip ª - ê ñ N M © Î ª ª - k é k U P j ¨ z ò ç © k é F å è k k ß ë ` ~ U Pož
2 y%² F å è k k ß ë ` ~ U Pož

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.17 tree

ª P%² ë Ä) £ † ^ ùož

tree [filesystem:] [directory]

o¬ @ ƒ ª ¢o-

@ ƒ	T
filesystem:	† ^ © Ï url k e µ %² È Z k U † ^ © Ï , yflash, tmp: ož
directory	è ¬ d k ò ç © Y • ã k é n P Í + è ¬ k k é n P , + è ¬ož

o¬ Þ . F åo- ó • † ^ © Ï © flash: ož

o¬ x X % ”o- ï % ”o• Ô Ó % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P flash:/echo µ † ^ ù y

```
5XLMLH WUHH IODVK HFKR
    FOLHQWBPRGXOH
    FOLHQWBXVHUVSDFH
    HFKRBFOL F
    HFKRBFOLHQW F
    HFKRBFOLHQW K
    HFKRBFOLHQW R
```

```
   HFKRBFOL R
   HFKRBIODJ K
   HFKR K
   HFKR NR
   HFKRBVHUYHU K
   H[HFBVHWBHFKR K
   H[HFBVKRZBHFKR K
   0DNHILOH
   PRGXOH
¦     HFKR NR
¦     HFKR PRG F
¦     HFKR PRG R
¦     HFKRBPRGXOH F
¦     HFKRBPRGXOH R
¦     HFKR R
¦     HFKRBVHUYHU F
¦     HFKRBVHUYHU R
¦     HFKRBV\VIV F
¦     HFKRBV\VIV K
¦     HFKRBV\VIV R
¦     0DNHILOH
¦     PRGXOHV RUGHU
¦     0RGXOH V\PYHUV
¦     PVJBIG F
¦     PVJBIG R
   UHDGPH
   VHUYHUBPRGXOH
   VHUYHUBXVHUVSDFH
   V\VBUJRV NR
   XVHUBVSDFH
      HFKRBVHUYHU F
      HFKRBVHUYHU R
      0DNHILOH
      PVJBIG F
      PVJBIG R          E\WHV WRWDO          E\WHV IUHH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.18 verify

‹ ‘o• ª Po• û à † ^ md5 ’ Î

verify [/md5 md5-value] filesystem: [file-url]

o¬ @ ƒ ª ¢o-

o¬ u V ª ¢o- -

5 SYS

5.1 calendar set

— å © Ï F ^ ž •ož

calendar set { hour [:minute [:second]] } [month [day [year]]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
hour [:minute [:second]]	— å © Ï F ^ ž • kœð•N0 – 6¹U F°´Ð å 6 4œð °N0µPk a k . B ã … © Ï ¢ ù — å ›ož
month	— å Ã a k•H › 8 1~12ož
day	— å ™ Ê k•H › 8 1~31 k 3 ¢ Ã ¨ %² Þ °N•y•| F°VpVPu ™
year	— å v a k•H › 8 1970~2069

```
5XLMLH  FDOHQGDU VHW
        87& )UL  0DU
```

a — / hour õ ô ¾ ¡ * “ m " ´ õ ô M - W Û & 0 ò • Ì ¨ ¢ ! ¨ 2 ‡ ¶ " h H N
µ ! Û & ¨ 2 18 | Û & e Ú ä Y q 3 2 r d

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.2 clock read-calendar

— å © Ï ÿ G F ^ ž • c 5 ÷ ^ ž •ož
clock read-calendar

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- -

o¬ ... 6 -o- * ¥ x X k © Ï k ÿ G — Õ ž o• × X ž — å Õ Ñ k 1 ¢ ù F ^ © Ï ž • ÿ è , • ÷ ^ ž •ož

o¬ F å †o- 1 y F å © Ï ÿ G F ^ ž • c 5 ÷ ^ ž •ož

```
5XLMLH  FORFN UHDG FDOHQGDU
6HW WKH V\VWHP FORFN IURP WKH KDUGZDUH WLPH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.3 clock set

— å © Ï ÷ ^ ž •ož

clock set { hour [:minute [:second]] } [month [day [year]]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
hour [:minute [:second]]	— å © Ï ÷ ^ ž • k ž y ã y a k Q k M å 6 4 ž k ã U k a k . B ã … © Ï ¢ ù — å ›ož
month	— å Ã a k H › 8 1~12ož
day	— å ™ Ê k H › 8 1~31 k 3 ¢ Ã ¨ %² Þ k é ™ Ê k g e P ‘ož
year	— å v a k H › 8 1970~2069ož

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- 1. ž • @ ƒ · À } ÿ µ k À e 7 Á Ã a month k ™ Ê day k v year @ ƒ ¿ ~ k ÿ G ¬ } U . e µ @ ƒož t . @ ƒ k © Ï ¢ ù — å ›ož

&67)UL 0DU

a — / hour õô¾¡*“m "´ õôM -W Û&0ò•Ì¨¢! ¨2 ‡¶ "hHN
µ!Û&¨2 18 |Û&eÚä Yq 32rd

hours-offset	A ö Õ ž • U ù 4 ž ƒ ožH › 8 0~12ož ª • × X ž U ù ž • — å 00:00ož
minutes-offset	A ö Õ ž • U ù ã U ƒ ož H › 8 0~59ož 3 hours-offset] Æ — å 0 k é ª • minutes-offset - — å 0

o¬ Þ . F åo- -

o¬ x X % ”o- F å % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- -

o¬ F å †o- 1 y ò ç , D { ¨%² ª • k ž d f ABC k ö Õ ž • A UTC ž • ½ 8:15 k / GMT+08:15ož × X ž ž • < R 2 Ã †%² ¤ Ê ¹ ñ 5 Ã † ¤ Ê 1 k × X ž ž < A ö Õ ž • U ù 01:20ož é × X ž ž < ž • A UTC ž • ½ 09:35 k x ³ × X ž ž < ž • Q A UTC ž • ½ 08:15ož

```
5XLMLH FRQILJ  FORFN WLPH]RQH $%&
6HW WLPH ]RQH QDPH $%& *07
5XLMLH FRQILJ VKRZ FORFN
      $%& :HG )HE
5XLMLH FRQILJ VKRZ FDOHQGDU
      *07 :HG )HE

5XLMLH FRQILJ FORFN VXPPHU WLPH 7=$ VWDUW )HE VDW HQG 0D
 0D\          6<6 &/2&.83'$7( 6HW VXPPHU WLPH 7=$ IURP )HEUXDU\
72 0D\ WKH UG 0RQGD\ DW DKHDG KRXU PLQXWH
6HW VXPPHU WLPH 7=$ IURP )HEUXDU\ WKH VW 6DWXUGD\ DW 72 0D
 KRXU PLQXWH

5XLMLH VKRZ FORFN
      7=$ :HG )HE

 ò ç 1 ž • — å ³ × X ž Ê • k ž d f A ô E ›  $%&
5XLMLH FOR VHW
 -DQ          6<6 &/2&.83'$7( 6HW V\VWHP FORFN  $%& 6XQ -
6HW V\VWHP FORFN  $%& 6XQ -DQ
5XLMLH VKRZ FORFN
      $%& 6XQ -DQ
```

2 y J ó • × X ž ž < ž • A ö Õ ž • ½ 1 4 ž k U . ahead C ahead e µ @ ƒ ož † ò k — å × X ž R 4 Ã †%² ¤ Ê ™ Ö:n 2:00 Ü k 10 Ã Â e%² ¤ Ê ™ Ö:n 2:00 k A ö Õ ž • ½ 1 4 žož

```
5XLMLH FRQILJ  FOR VXPPHU WLPH 3'7 VWDUW $SULO  VXQGD\  HQG
 0D\  6<6  &/2&.83'$7( 6HW VXPPHU WLPH 3'7 IURP $SULO WKH V
WKH ODVW 6XQGD\ DW  DKHDG  KRXU
6HW VXPPHU WLPH 3'7 IURP $SULO WKH VW 6XQGD\ DW  72 2FWREHU
KRXU
```

3 y ¼ { × X žož

```
5XLMLH FRQILJ  QR FORFN VXPPHU WLPH
 -DQ  6<6  &/2&.83'$7( 6HW QR VXPPHU WLPH
6HW QR VXPPHU WLPH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.5 clock timezone

— å ž ož

clock timezone [name hours-offset [minutes-offset]]

¼ { ž — åož

no clock timezone

o¬ @ ƒ ª ¢o-

@ ƒ	T
name	ž d f k Q [A~Z][a~z] k Ý 4 Ê — ’ òož d x † 3~31ož
hours-offset	ž [4 ž ›ož n P F ^ ž • UTC ž • ½ ê ã hours-offset *k* H › 8 [-12, 12] k ¿ ƒ n P A F ^ ž • ã k 3 ƒ n P A F ^ ž • ½ož / ‘ UTC ¨ · • hours-offset õ ô • ‘ ¦ q - r d
minutes-offset	ž [ã U ›ož H › 8 0~59ož

o¬ Þ . F åo- -

o¬ x X % ”o- F å % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- * ¥ x X k © Ï k ÿ G — Õ ž o• × X ž — å Õ Ñ k 1 ¢ ù ÷ ^ © Ï ž • ÿ è , • F ^ ž •ož

o¬ F å †o- 1 y — å © Ï ÿ G ÷ ^ ž • c 5 F ^ ž •ož

```
5XLMLH  FORFN XSGDWH FDOHQGDU
6HW WKH KDUGZDUH WLPH IURP WKH V\VWHP FORFN
```

2 y — å F ^ ž • k ž — å GMT+5:10 k — × X ž — å k / F ^ ž • A ÷ ^ ž • ã 5:10ož

```
5XLMLH  VKRZ FORFN
        76= :HG )HE

5XLMLH  FORFN XSGDWH FDOHQGDU
6HW WKH KDUGZDUH WLPH IURP WKH V\VWHP FORFN

5XLMLH VKRZ FDOHQGDU
        87& :HG )HE
```

ª P y — å O ò þ È CPU … ä Â ä J ¿ k w • o ! Oož
cpu high-watermark set [[up up-value] [down down-value]]

¼ { CPU … ä ! Oož
no cpu high-watermark set

Ê Ö Þ . F åož
default cpu high-watermark set

o¬ @ ƒ ª ¢o-

@ ƒ	T
up up-value	— å CPU … ä J ¿ k H › 8 1~99ož
down down-value	— å CPU … ä ‘ J ¿ k H › 8 1~99ož

o¬ Þ . F åo- CPU J ¿ ó • › J ¿ 85% k ‘ J ¿ 75%ož

o¬ x X % ”o- F å % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- * — å CPU … ä Â ä J ¿ k w • o ! Oož ¢ © Ï ! y ñ CPU … ä Ý ß Â ä J ¿ ª • f 8 k 1 k ø - , • U P ’ Îož

o¬ F å †o- 1 y — å CPU J ¿ ó • › k 3 ! O ¼ { é • oož

```
5XLMLH FRQILJ GHIDXOW FSX KLJK ZDWHUPDUN VHW
5HVHW GHIDXOW FSX ZDWHUPDUN PRQLWRU
6HW V\VWHP FSX KLJK ZDWHUPDUN XS GRZQ
```

2 y ¼ { CPU J ¿ ! Oož

```
5XLMLH FRQILJ QR FSX KLJK ZDWHUPDUN VHW
&ORVH FSX ZDWHUPDUN PRQLWRU
```

3 y • o ! O k J ¿ › ‘ 4 ¼ { ù] — å ›ož

```
5XLMLH FRQILJ FSX KLJK ZDWHUPDUN VHW
2SHQ FSX ZDWHUPDUN PRQLWRU
6HW V\VWHP FSX KLJK ZDWHUPDUN XS GRZQ
```

4 y • o ! O k w — å J ¿ 90%o• ‘ J ¿ 70%ož

```
5XLMLH FRQILJ FSX KLJK ZDWHUPDUN VHW XS GRZQ
```

```
2SHQ FSX ZDWHUPDUN PRQLWRU
6HW V\VWHP FSX KLJK ZDWHUPDUN XS GRZQ
```

4 ž k — å 4 CPU … ä J ¿ 90%o• ‘ J ¿ 70%ož

o¬ à • co- -

o¬ U P ’ Îo- ò ç CPU … ä Â ä J ¿ ª • f 8 © 85%~91% k ¢ CPU … ä Ý Â ä J ¿ ’ › ž k k ø - ò Š ’ Î y

```
-DQ 5*B6<6021 &38B:$7(50$5.B+,*+ ZDUQLQJ V\VWHP FSX X
ZDWHUPDUN FXUUHQW FSX XVDJH
```

¢ CPU … ä z 9 Â ä J ¿ ’ › ž k k ø - ò † ” Š ’ Î y

```
-DQ 5*B6<6021 &38B:$7(50$5. ZLWKGUDZ ZDUQLQJ V\VWHP
ZDWHUPDUN FXUUHQW FSX XVDJH
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.8 memory history clear

Ž ” Ä … “ £ 7 W Ú)ož

memory history clear [one-forth | half | all]

o¬ @ ƒ ª ¢o-

@ ƒ	T
one-forth	Ž ” š ã $%² Ú)ož
half	Ž ”%² ! Ú)ož
all	Ž ” ¶ B Ú)ož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- -

o¬ F å †o- 1 y Ž ”%² ! Ä … “ £ 7 W Ú)ož

```
5XLMLH VKRZ PHPRU\ KLVWRU\
```

```
7LPH 7KX -DQ
8VHG N
0D[LQXP PHPRU\ XVHUV IRU WKLV SHULRG
3URFHVV 1DPH    +ROGLQJ
WFSLS HOI
FOL PHPRU\
UJBV\VORJG

7LPH 7KX -DQ
8VHG N
0D[LQXP PHPRU\ XVHUV IRU WKLV SHULRG
3URFHVV 1DPH    +ROGLQJ
WFSLS HOI
FOL PHPRU\
UJBV\VORJG

7LPH 7KX -DQ
8VHG N
0D[LQXP PHPRU\ XVHUV IRU WKLV SHULRG
3URFHVV 1DPH    +ROGLQJ
WFSLS HOI
FOL PHPRU\
UJBV\VORJG

5XLMLH FRQILJ  PHPRU\ KLVWRU\ FOHDU KDOI
  RXW RI  UHFRUGV LQ WKH KLVWRU\ WDEOH WR EH FOHDUHG
&OHDU GRQH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.9 memory low-watermark set

F å Ä ï ä J ¿ k w • o ! Oož

memory low-watermark set mem-rate

¼ { Ä ï ä y ož

no memory low-watermark set

Ê Ö Þ . F åož

default memory low-watermark set

o¬ @ ƒ ª ¢o-

@ ƒ	T
mem-rate	Ä ï ä J ¿ k H › 8 1~100 k % y %ož

o¬ Þ . F åo- Þ . Ä ï ä J ¿ 90%ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- • o Ä ï ä y k w — å Ä ï ä J ¿ož

o¬ F å †o- 1 y F å Ä ï ä J ¿ 80% k w • o y ož

5 X L M L H F R Q I L J P H P R U \ O R Z Z D W H U P D U N V H W

o¬ à • co- -

o¬ U P ’ Îo-

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.10 reload

M o — Õož

reload [at { hour [:minute [:second]] } [month [day [year]]]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
hour [:minute [:second]]	— å M o ž y ã y a k . B ã … © Ï ¢ ù — å ›
month	— å Ã a k H › 8 1~12ož
day	— å ™ Ê k H › 8 1~31 k 3 ¢ Ã ¨ %² Þ k é ™ Ê k g e P ‘
year	— å v a k H › 8 1970~2069

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- -

o¬ F å †o- 1 y M o — å

```
5XLMLH UHORDG
5HORDG V\VWHP" < 1 <
6HQGLQJ DOO SURFHVVHV WKH 7(50 VLJQDO >
6HQGLQJ DOO SURFHVVHV WKH .,// VLJQDO > 2
5HVWDUWLQJ V\VWHP
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.11 show calendar

ª P © Ï F ^ ž •ož

show calendar

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ” ê ¶ B % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P © Ï F ^ ž •ož

```
5XLMLH VKRZ FDOHQGDU
       *07 6XQ )HE
```

o¬ U P ’ Îo- -

o¬ x X % ”o- Ô Ó % ” ê ¶ B % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- ò ç © Ï ¨ Z ' þ k ¬ } ò 0 Z ' þ cpu ï ä ’ Î k @ • show processes cpu , ¼ x Xož

o¬ F å †o- 1 y ª P © Ï ` ¨ O ò þ y ³ Z ' þ ’ Îož

```
5XLMLH VKRZ FSX

&38 8VLQJ 5DWH ,QIRUPDWLRQ
&38 XWLOL]DWLRQ LQ ILYH VHFRQGV
&38 XWLOL]DWLRQ LQ RQH PLQXWH
&38 XWLOL]DWLRQ LQ ILYH PLQXWHV

 12       6HF      0LQ      0LQ 3URFHVV
                              LQLW
                              NWKUHDGG
                              NVRIWLUTG
                              HYHQWV
  0RUH
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

5.14 show memory

ª P Ä , ¼ ’ Îož

show memory [sorted total | history | low-watermark | process-id | process-name]

o¬ @ ƒ ª ¢o-

@ ƒ	T
sorted total	ÿ G Ä … O Û L ~
history	ª P Ä … Õ Ñ 7 W “ £
low-watermark	ª P © Ï Ä z J ¿ ›
process-id	ª P process-id 6 Ô ` Ä … O
process-name	ª P process-name 6 Ô ` Ä … O

o¬ x X % ”o- Ô Ó % ” ê ¶ B % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- show memory history

Process	` d

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

5.15 show pci-bus

ª P 5 ¨ PCI È ¿ — Õ , ¼ ’ Îož
show pci-bus

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ” ê ¶ B % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P 5 ¨ PCI È ¿ — Õ , ¼ ’ Îož

```
5 X L M L H   V K R Z  S F L  E X V
1 2
9 H Q W G R U  , '                [
'ðÀ ð P @ p ` 0 0 • p 0 0 P € A • p À € ` À 0  v R ( 0 V 0 0 Ð 0 0 ( ° @ € • @ 0
/ D W H Q F \                     [
I L U V W     E \ W H V  R I  F R Q I L J X U D W L R Q  D G G U H V S Ð 0 E [ F      #x$•  ð @ p €  ` À 0 0 0 0 0 0
```

```
&ODVV   5HYLVLRQ        [F
/DWHQF\                 [
)LUVW   E\WHV RI FRQILJXUDWLRQ DGGUHVV VSDFH
                                F
          I


             GF
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

5.16 show processes cpu

ª P © Ï ` ’ Îož

show processes cpu [history [table] | [5sec | 1min | 5min | 15min] [nonzero]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
5sec | 1min | 5min | 15min	7 Â 5 a U k1 ã U k5 ã U k 15 ã U ž • < Ä CPU ï ä ‘ ~ L ç ` ’ Î ç n
nonzero	ª P CPU ï ä © ` ’ Î
history	Y + • £ ¥ ” kã ð ª P ¨ > 60 ao•60 ã Uo•72 4 ž ž • < Ä k © Ï O ò þ cpu ï ä
table	Y n ¥ ” k ã ð ª P ¨ > 60 ao•60 ã Uo•72 4 ž ž • < Ä k © Ï O ò þ cpu ï ä

o¬ x X % ”o- Ô Ó % ” ê ¶ B % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- -

o¬ F å †o- 1 y 7 © Ï ñ Ä ` ID Z ~ L ç ` ’ Î

```
5XLMLH  VKRZ SURFHVVHV FSX
6\VWHP 8SWLPH
&38 XWLOL]DWLRQ IRU ILYH VHFRQGV      RQH PLQXWH      ILYH PLQXW
VHW V\VWHP FSX ZDWHUPDUN RSHQ  KLJK       a

7DVNV 6WDWLVWLFV     WRWDO    UXQQLQJ    VOHHSLQJ   VWRSSHG
  3LG 9VG 6  35, 3      6HF      0LQ      0LQ      0LQ 3URFHVV
```

6 L Q L W
6 N W K U H D G G
6 P L J U D W L R Q
6 N V R I W L U T G
6 P L J U D W L R Q

0 R U H

2 y 7 © Ï ñ Ä ` ID Z ~ L ç k ª P 15 ã U Ä CPU ï ä 0 ` ' Îož

5 X L M L H V K R Z S U R F H V V H V F S X Q R Q] H U R

¥ x X ª P • ã ª P ' Î T n y

<	ª ¢
System Uptime	— Õ È g ž • k ¤ G ñ a
CPU Utilization	Â 5 a U k 1 ã U k 5 ã U O ò þ È CPU ï ä
Virtual CPU usage	Z ' þ k Â 5 a U k 1 ã U k5 ã U O ò þ È CPU ï ä
Tasks Statistics	` Ï ‹ ' Î k Ï ‹ È ` ƒ y ` Ù Á
set system cpu watermark	O ò þ È cpu J ¿ — å › C Ù Á

© Ï ` g Ù Á Ä ò Ù _ y

` g Ù Á ‹	ª ¢
running	3 ¨ g `
sleeping	5 Ü `
stopped	¶ ` s0F/TT TT0 1 Tf -0.0023 Tc 9 0 00T TT01 T4F04F2022zombie 4F207FE06C80919

5 y Y + • £ • ” ª P © Ï O ò þ cpu ï ä k ¨ > 60 a U k 60 ã Uo• 72 4 ž Ä … Õ Ñ ' Îož
¿ k †%² £ n 300 a Ä k © Ï O ò þ cpu ï ä Õ Ñ k & ± ö ?%² 4 5 a k º ± ö ? 5% k
* n P Â î a ž cpu ï ä › k/ & ± ö Â ´ 0 †%² ö Â 5 a cpu ï ä › k% y % ož
† 8 £ n k Â 60 ã U Ä k © Ï O ò þ cpu ï ä › k % y % k & ± ö ?%² 4 1 ã Uož
† £ n k Â 72 4 ž Ä k © Ï O ò þ cpu ï ä › k % y % k & ± ö ?%² 4 1 4 žož
P † ò y

```
5XLMLH VKRZ SURFHVVHV FSX KLVWRU\

          V\VWHP FSX SHUFHQW XVDJH   >ODVW    VHFRQG@
    B
    _
    _
    _
    _
    _
    _
    _
    _
    _
    _
    _
    _
    _
    __________
    __________
    ___________
    ___________
    ___________
    ___________
    ___________
    __________________________
                        !
                        VHFRQG
       V\VWHP FSX SHUFHQW XVDJH   SHU  VHFRQG  ODVW    VHFRQG



          V\VWHP FSX SHUFHQW XVDJH   >ODVW   PLQXWH@
    B
    _
```

```
     –
     –
     –
     –
     –
     –
     –
     –
     –
     –
     –
     –
     –
     ––
     ––
     ––
     ––
     ––
     –––
          !
          PLQXWH
        V\VWHP FSX SHUFHQW XVDJH    SHU  PLQXWH  ODVW   PLQXWH
```

6 y Y n •”ªP©Ï cpu g0 þ h¨ > 60 a U k 60 ã Uo• 72 4 ž Ä … Õ Ñ ’ Îož
¿ k†%² Ý n 300 a Ä k©Ï cpu ï ä Õ Ñ k†%² ÿ Â 5 a cpu ï ä › k % y
% k ? 4 ÿ • œ 5 aož
†8 Ý n k Â 60 ã U cpu ï ä › k % y % k ? 4 ÿ • œ 1 ã Uož
† Ý n k Â 72 4 ž cpu ï ä › k % y % k ? 4 ÿ • œ 1 4 žož
P † ò

```
5XLMLH  VKRZ SURFHVVHV FSX KLVWRU\ WDEOH
           V\VWHP FSX SHUFHQW XVDJH   >ODVW    VHFRQG@

–       –     –     –     –     –     –     –     –     –     –     –

–       –     –     –     –     –     –     –     –     –     –     –

–       –     –     –     –     –     –     –     –     –     –     –
```

– – – – – – – – – – – –

– – – – – – – – – – – –

– – – – – – – – – – – –

q G`

– – – – – – – – – – – –

```
3URFHVV 3SLG

6WDWH          5 UXQQLQJ
2Q &38
3ULRULW\
$JH 7LPH
5XQ 7LPH
&SX 8VDJH
   /DVV   VHF       g    h
   /DVV   PLQ       g    h
   /DVV   PLQ       g    h
   /DVV   PLQ       g    h
7W\            "
```

Code Usage : 209.6KB. / G ``â ¢ •"•Nµ!

```
5XLMLH VKRZ SURFHVVHV FSX GHWDLOHG GHPR
GXSOLFDWH SURFHVV FKRRVH RQH E\ LG QRW QDPH
QDPH GHPR LG      VWDWH 6 VOHHSLQJ
QDPH GHPR LG      VWDWH 5 UXQQLQJ
SURFHVV QDPH PRQLWRUBSURFSV GR 127 H[LVW RU 127 RQO\ RQH
```

ªP'ÎT ny

<	ª¢
Process Id	` ID Z
Process Name	` df
Process Ppid	Ë i` ID Z
State	` gÙÁ
On CPU	` ñ g CPU
Priority	` i¯´
Age Time	` o ñë¨4Ò ž•
Run Time	` o ñë¨t²†üg ž•
Cpu Usage	` ¨ > 5 aUk1 ãUk5 ãUk15 ãUž•<Ä CPU … äož ¤,ZL ›©Ì"Y¢ù¥` ñ¨þ Èþƒ cpu ï äožòk demo ` ¢ù¨ 0 þ k0 þ©OòþkïÈ»Ä OòþkéªP 0.3% g0.6% hož
Tty	Tty Zož —ÕZk)—ÕZ kòç 0 ?
Code Usage	` WA<) Ý4

2yò06 ` ID ` 'Îož

```
5XLMLH VKRZ SURFHVV FSX GHWDLOHG
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

5.18 show reboot-reason

ª P — Õ M o = œož

show reboot-reason

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ï % ”o• Ô Ó % ”o• ¶ B % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- 1 y Q ª P Î — Õ M o = œož

```
5XLMLH VKRZ UHERRW UHDVRQ
WLPH
UHDVRQ UHORDG FPG
LQIR VELQ UJ V\VPRQ

5XLMLH
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

5.19 show version

ª P © Ï Í Î ’ Î

show version

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ” ê ¶ B % ”

o¬ Þ . ´ ðo- -

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P © Ï Í Î ’ Îož

```
5XLMLH  VKRZ YHUVLRQ
6\VWHP GHVFULSWLRQ          Ruijie Indoor AP320-I (802.11a/n and 802.11b/g/n) By Ruijie Networks
6\VWHP VWDUW WLPH
6\VWHP XSWLPH
6\VWHP KDUGZDUH YHUVLRQ
6\VWHP VRIWZDUH YHUVLRQ  $3B5*26      %
6\VWHP VHULDO QXPEHU
6\VWHP ERRW YHUVLRQ
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

6 TIME RANGE

6.1 absolute

— å Í + ž • •ož
absolute { [star t time date] [end time date] }

í ”] ¨ Í + ž • •ož
no absolute

o¬ @ ƒ ª ¢o-

@ ƒ	T
star t time date	• • ÷ ž •
end time date	• È Ø ž •

o¬ Þ . F åo- Z Ä F å Í + ž • • k Þ . ž Â Ý ž • •ož

o¬ x X % ”o- time-range % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç Ý } • î ¨%² Í + ž • • Ä ÿ | k U Y … absolute x X F å%² • ÷ y È Ø ž • •ož
Â Ý ž • • 0 v 1 Ã 1 ™00 y 00 k 9999 v 12 Ã 31 ™23 y 59ož

o¬ F å †o- 1 y ë •%² time range w µ time range % ”

```
5XLMLH FRQILJ WLPH UDQJH QR KWWS
5XLMLH FRQILJ WLPH UDQJH
```

2 y F å Í + ž • •

```
5XLMLH FRQILJ WLPH UDQJH DEVROXWH VWDUW -$1 HQG -
```

o¬ à • co- 1 y … show time-range [time-range-name] t i m e

6.2 periodic

— å u Ê ž •ož

periodic day-of-the-week time to [day-of-the-week] time

í ”] ¨ u Ê ž •ož

no periodic day-of-the-week time to [day-of-the-week] time

o¬ @ ƒ ª ¢o-

@ ƒ	T
day-of-the-week	u Ê ž • • ÷ ê ñ È Ø © ¨ ¤ Ê Ù
time	u Ê ž • • ÷ ê ñ È Ø © ¨ Ù µ Ù ã

o¬ F å †o- 1 y ë •%² time range

```
5XLMLH FRQILJ WLPH UDQJH QR KWWS
5XLMLH FRQILJ WLPH UDQJH
```

o¬ à • co- 1 y … show time-range [time-range-name] x X k U Y ò 0 time range © k ¨ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

7 HTTP

7.1 enable service web-server

ø • HTTP Æ ož
enable service web-server [http | https | all]

¼ { HTTP Æ ož
{ no | default } enable service web-server [http | https | all]

o¬ @ ƒ ª ¢o-

@ ƒ	T
http	https	all	ø • , • Æ ožhttp ø • HTTP Æ khttps ø • HTTPS Æ k all c ž ø • HTTP y HTTPS Æ ožÞ . c ž ø • HTTP y HTTPS Æ ož

o¬ Þ . F åo- HTTP Æ y HTTPS Æ ¼ {ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ü g ¥ x X ž e µ æ ` ~ ¼ p ê ñ æ all k é n P c ž ø • HTTP Æ y HTTPS Æ z ò ç æ http ¼ p k é n P Q ø • HTTP Æ z ò ç æ https ¼ p k é n P Q ø • HTTPS Æ ož
… no enable service web-server ê ñ default enable service web-server 9 ¼ { , • HTTP Æ ož
ò ç ¥ no x X ê default x X e µ æ ` ~ ¼ p k é n P c ž ¼ { HTTP Æ y HTTPS Æ ož

o¬ F å †o- 1 y c ž ø • HTTP y HTTPS Æ ož
5 X L M L H F R Q I L J H Q D E O H V H U Y L F H Z H E V H U Y H U

o¬ à • co- 1 y … show service x X k U Y ò 0 © Ï ¢ ù Æ Ù Áož
2 y … show web-server status

o¬ @ ƒ ª ¢o-

@ ƒ	T
port-number	— åHTTPS Æ € M k H › 8 443 C 1025-65535ož

o¬ Þ . F åo- ó • € M Z 443ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X — å HTTPS Æ € Mož

o¬ F å †o- 1 y — å HTTPS Æ € M © 4443ož

```
5 X L M L H F R Q I L J K W W S V H F X U H S R U W
```

o¬ à • co- … show web-server status x X k ò 0 Web Æ ˜ Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

7.4 show web-server status

ò 0 Web Æ F å ’ Î y Ù Áož

show web-server status

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y ò 0 Web Æ F å ’ Î y Ù Áož

o¬ F å †o- 1 y ò 0 Web Æ F å ’ Î y Ù Áož

```
5 X L M L H  V K R Z  Z H E  V H U Y H U  V W D W X V
K W W S  V H U Y H U  V W D W X V  H Q D E O H G
K W W S  V H U Y H U  S R U W
```

```
KWWSV VHUYHU VWDWXV HQDEOHG
KWWSV VHUYHU SRUW
```

< † K y

<	ª ¢
http server status	HTTP Æ Ù Á
http server port	HTTP Æ € M
https server status	HTTPS Æ Ù Á
https server port	HTTPS Æ € M

```
:HE SDFNDJH IRUPDW LQYDOLG
```

4 y ò ç WEB Í Î + k Ë ß Y U Pož

```
:HE SDFNDJH YHUVLRQ XQFRPSDWLEOH
```

5 y ò ç Ä á k - x â Â k Ë ß Y U Pož

```
:HE SDFNDJH LQVWDOO IDLO IRU KDYH QR HQRXJK PHPRU\
```

6 y ò ç x è k Ë ß Y U Pož

```
:HE SDFNDJH XSJUDGH VXFFHVVIXOO\
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

7.6 upgrade web download

ú w x k ´ tftp Æ ˜ WEB

upgrade web download tftp: path

o¬ @ ƒ ª ¢o-

@ ƒ	T
tftp: path	path tftp Æ ˜ WEB è ¬ k ¥ x X n P * ¿ * Ò ò M R Æ ˜ ú WEB k w ´

-

o¬ ÖúÀfð§ð¶à• ²,” ð Ç@p Ð

4 y ò ç WEB Í Î + k Ë ß Y U Pož

:H E S D F N D J H Y H U V L R Q X Q F R P S D W L E O H

5 y ò ç Ä á k - x â Â k Ë ß Y U Pož

:H E S D F N D J H L Q V W D O O I D L O I R U K D Y H Q R H Q R X J K P H P R U \

6 y ò ç x è k Ë ß Y U Pož

:H E S D F N D J H X S J U D G H V X F F H V V I X O O \

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

7.7 webmaster level

— å Web • • š ï d y % Aož

webmaster level privilege-level username name password { password | [e1(rver)]TJ /C2_0 1 Tf 0 Tc 0 Tw

ÌÜo së level 2 ã« } web j ú ¡,ÄÎš ã«d•8TÌÜ admin së level 0 ã « } web j•8TÌÜú N _Ÿ É¯¶»©€cP•8ÌÜÉÑã ÌÜ¶À9 šK í ¦ ÌÜsë level 1 ã«d

o¬ Få †o- Få Web ••š ïÇ Ó'^´ 0k ïd ruijie k % A adminož

5XLMLH FRQILJ ZHEPDVWHU OHYHO XVHUQDPH UXLMLH SDVVZRUG DG

o¬ à•co- -

o¬ UP'Îo- 1 yòçí"ó•Få admin ê guest •š'ÎkËßY UPož

QRWLFH &DQQRW FDQFHO WKH GHIDXOW XVHU FRQILJXUH

2yòç? Ó'^´kFå ïdÝ 10 kËßY UPož

QRWLFH FRQILJXUH ZHEPDVWHU OHYHO G VHUYHU UHDFKHG PD[DC

3yòçFå ïd ñêÝ 32 ... kËßY UPož

QRWLFH 8VHUQDPH WRR ORQJ 3OHDVH HQWHU OHVV WKDQ FKDUDFV

o¬ o•j¨o- -

o¬ uVª¢o- -

8 x ž z ¹

8.1 clear logging

Ž ” Ä Ù Ï ™ º ’ Îož
clear logging

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- ¥ x X Q Ž ” Ä Ù Ï ™ º † Ä ož Ž ” ™ º † Ï ‹ ’ Îož

o¬ F å †o- 1 y µ P † Ž ” Ä Ù Ï ™ º † Ä ož

```
5 X L M L H  F O H D U  O R J J L Q J
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

8.2 logging

1 ™ º “ £ ñ 6 Syslog Serverož
logging { ip-address | ipv6 ipv6-address } [udp-prot port]

í ” Syslog Server ç n 6 ª - Syslog Serverož
no logging { ip-address | ipv6 ipv6-address }

Ê Ö ™ º G Syslog Server ó • € M Z g514 bž
no logging { ip-address | ipv6 ipv6-address } udp-prot

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	N v ™ º ’ Î Ñ IP ª -

ipv6-address	6 N v ™ º ’ Î Ñ IPV6 ª -
udp-port port	6 ™ º Ñ € M Z g ó • € M Z 514 h

o¬ Þ . F åo- ó • g ` ~ Syslog Server G ™ º ’ Î

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X 6 %² Syslog server Û N v — Õ ™ º ’ Îož ï U Y F å Ú 5 Syslog Serverož ™ º ’ Î 1 c ž G Ë F å ñ Ä Syslog Serverož

o¬ F å †o- 1 y µ P † 6 %² ª - 202.101.11.1 syslog server y
5 X L M L H F R Q I L J O R J J L Q J

2 y µ P † 6 %² ª - 10.1.1.100 k € M Z 8099 syslog server y
5 X L M L H F R Q I L J O R J J L Q J X G S S R U W

3 y µ P † 6 %² IPV6 ª - AAAA:BBBB::FFFF
5 X L M L H F R Q I L J O R J J L Q J L S Y $ $ $ $ % % % %))))

o¬ à • co- 1 y … show logging x X k U Y ò 0 — å ™ º Æ ˜ ª -ož

o¬ U P ’ Îo- 1 y ò ç — Õ] Æ F å Syslog Server Ý 5 k é U P j ¨ož
: D U Q L Q J & D Q Q R W F R Q I L J X U H P R U H W K D Q V \ V O R J V H U Y H U V

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.3 logging buffered

— å “ £ ™ º ’ Î Ä Ù Ï @ ƒ g ™ º ’ Î M Åo• Ù Ï Ý 4 bž
logging buffered [buffer-size] [level]

W 2 ¨ Ä Ù Ï “ £ ™ º ’ Îož
no logging buffered

1 Ä Ù Ï Ý 4 Ê Ö Þ . ›ož
default logging buffered

o¬ @ ƒ ª ¢o-	@ ƒ	T
	buffer-size	

o¬ à • co- 1 y … show logging x X k U Y ò 0 — å ™ º Ä Ù Ï @ ƒ ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.4 logging console

— å ª • ¨ O ò V ª P ™ º ’ Î ´ ð
logging console [level]

W 2 ¨ O ò V ø - ™ º †ož
no logging console

o¬ @ ƒ ª ¢o-

@ ƒ	T
level	™ º † M Å k 8 R 0 ñ 7ož U Y … ´ ð d f k - U Y + N … ƒ ož ¼ 9 ™ º ’ Î M Å ¦ Â ª ¢ k ¬ @ Á ò o¬ … 6 -œž

o¬ Þ . F åo- 7 gDebugging k ² ¡ ’ Î)

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- — å%² ™ º M Å Y e k ¨ ƒ › ˆ 9 ê z 9 ¥ M Å ´ ð ™ º † 1 t ª P ¨ O ò V ož
* show logging x X U Y ò 0 ™ º — å , ¼ @ ƒ y Ï ‹ož
™ º ’ Î ã Y 8 ´ ð y

¼ p	ˆ ´	T
Emergencies	0	¬ Ä Õ Ñ k © Ï 3 o gož

o¬ F å †o- 1 y µ P † — å ª • ¨ O ò V ª P ™ º ' Î ´ ð 6 y

5 X L M L H F R Q I L J O R J J L Q J F R Q V R O H L Q I R U P D W L R Q D O

o¬ à • co- 1 y... show logging x X kU Y ò 0 — å ª • ¨ O ò V ª P ™ º ' Î ´ ð y] Æ ÿ ß ñ O ò V µ ™ º Ú)ož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.5 logging count

ø • ™ º Ï ‹ ož

logging count

Ž " ™ º Ï ‹ ƒ G w ¼ { ™ º Ï ‹ ož

no logging count

o¬ @ ƒ ª ¢o-

o¬ u V ª ¢o- -

8.6 logging delay-send file

F å • ž Ù ¨ — Õ Î ª ™ º † ^ dož
logging delay-send file flash: filename

Ê Ö • ž Ù ¨ — Õ Î ª ™ º † ^ d ó • ›ož
no logging delay-send file

o¬ @ ƒ ª ¢o-

@ ƒ	T
flash: filename	• ™ º † ^ d

o¬ Þ . F åo- ó • G ñ € Æ ˜ ™ º † ^ d ” y † ^ Ý 4_ — Õ IP ª -_ « – ›.txt k 3 “ w • † ^ d k é G ñ € Æ ˜ ™ º † ^ d y F å † ^ d ù Ö_ † ^ Ý 4_ — ÕIP ª -_ « – ›.txt z ò ‘ ¨ — Õ Î ª Flash † ^ d é y F å † ^ d ù Ö_ « – ›.txt ož ó • † ^ d ù Ö y syslog_ftp_serverož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * 4 x X U Y F å • ž Ù ¨ — Õ Î ª ™ º † ^ dož
F å † ^ d ß ë … µ Z g. hk œ © Ï ¨ ÿ è Î ª Ù † ^ ž k † ^ d k Í « – › y e Ö g.txt hk « – › © Y ' Í ¥ ” w J k - ß ë PC † ^ x d W 2 … k † ò y\/ y* <>| ož
† ò y ï F å † ^ d log_server k ¢ ù † ^ « – › 5 k † ^ Ý 4 1000B k G ™ º † ^ — ÕIP ª - 10.2.3.5 k é G € Æ ˜ ™ º † ^ d y log_server_1000_10.2.3.5_5.txt k x © ‘ ¨ Î ª ™ º † ^ d log_server_5.txtož
3 G ™ º † ^ — Õ IP ª - IPv6 ¥ ” k œ IPv6 ª - Ä U ß ë È Z g: hk ò È Z g: h A © PC † ^ x d ñ W 2 … k ñ Y ¬ } … g- h Û Á Wož
† ò y ï F å † ^ d log_server k N ù † ^ « – › 6 k † ^ Ý 4 1000B k G ™ º † ^ — ÕIPv6 ª - 2001::1 k é G € Æ ˜ ™ º † ^ d y log_server_1000_2001-1_6.txt k x © ‘ ¨ Î ª ™ º † ^ d log_server_6.txtož

o¬ F å †o- 1 y F å • ™ º † ^ d log_server y
5 X L M L H F R Q I L J O R J J L Q J G H O D\R J B Q G U M L H U I O D V K

o¬ à • co- 1 y … show logging x X k U Y ò 0 • ž Ù ¨ — Õ Î ª ™ º † ^ dož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.7 logging delay-send interval

F å ™ º • Ë Æ ˜ ž • • œož
logging delay-send interval seconds

Ê Ö ™ º • Ë Æ ˜ ž • • œ è ó • ›ož
no logging delay-send interval

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	™ º • ž • • œ g % y a h

o¬ Þ . F åo- ó • ž • • œ © 3600 a g 1 4 ž bž

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * 4 x X — å ™ º • Ë Æ ˜ ž • • œož U Y — å 8 600 ~ 65535 k % y y aož

o¬ F å †o- 1 y F å ™ º • ž • • œ © 600 a g 1 ã U hy
5 X L M L H F R Q I L J O R J J L Q J G H O D \ V H Q G L Q W H U Y D O

o¬ à • co- 1 y … show logging x X k U Y ò 0 ™ º • ž • • œož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.8 logging delay-send server

F å ™ º • Ë Æ ˜ ª - y • ”ož

o¬ u V ª ¢o- -

8.9 logging delay-send terminal

ø • • ž ™ º ÿ ß ñ O ò V y i Ä €ož
logging delay-send terminal

¼ { • ž ™ º ÿ ß ñ O ò V y i Ä €ož
no logging delay-send terminal

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . Õ Ñ ¼ { • ž ™ º ÿ ß ñ O ò V y i Ä €ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- U Y … 4 x X ø • • ž ™ º ÿ ß ñ O ò V y i Ä €ož

o¬ F å †o- 1 y µ P † ø • • ž ™ º ÿ ß ñ O ò V y i Ä € y
5 X L M L H F R Q R L W J L Q J G H O D \ V H Q G W H U P L Q D O

o¬ à • co- 1 y … show logging x X k U Y ò 0 ™ º ÿ ß ñ O ò V y i Ä € • ¼ Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.10 logging facility

— å ™ º ’ Î — Õ ›
logging facility facility-type

Ê Ö — Õ › ó • ›(23) ož

no logging facility

o¬ @ ƒ ª ¢o-	@ ƒ	T
Ýc •à'à²!#6h–E(gƒ ™Z€n"3f‰		Syslog — Õ › k À } — å › ¬ @ ðN " å › ¬ @ ðN •)Tj /C

22 (local6)	Local use
23 (local7)	Local use

ó • — Õ › (local7)23 ož

o¬ F å †o- 1 y µ — å Syslog — Õ › kernel y

5 X L M L H F R Q I L J O R J J L Q J I D F L O L W \ N H U Q

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.11 logging file

1 ™ º ’ Î ‘ ¨ † ^ k ™ º † ^ U Y ‘ ¨ F &o• ý J FLASH %² _ož

logging file { flash: filename } [max-file-size] [level]

H ƒ ¨ ý J FLASH “ £ ™ º ’ Îož

no logging file

o¬ @ ƒ ª ¢o-

@ ƒ	T
flash	™ º † ^ # + ‘ ¨ ý J FLASH ¢
filename	™ º † ^ dož k † ^ • º k ¡ txt • ºož
max-file-size	™ º † ^ Â Ý ›ož R 128K ñ 6M bytes k Þ . Ý 4 128Kož
level	ª • t “ £ ñ ™ º † ^ ™ º ’ Î ´ ðož U Y … ´ ð d f k - U Y + N … ƒ ož Þ . Ê ñ ý J FLASH ™ º ´ ð 6ož ¼ 9 ™ º ’ Î ´ ð k ¬ @ ðo¬ … 6 -œž

o¬ Þ . F åo- 1 ™ º ’ Î “ £ ñ ý J FLASH ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç Z Ä Syslog Server kê ñ Â 9 _ _ ¶ ð Y e È ¨ à Ì n ÿ ™ º ’ Î kU Y # + 1 ™ º ’ Î + N ‘ ¨ ý J FLASH ož

™ º † ^ e Ö ¡ txt k F å † ^ e Ö d 1 t ! Íož

Ü ð o š Ã þ ô º FLASH ¡ – ó ð s ô º FLASH " ´ ð s ô º FLASH logging file flash
Ü „ ‘ N å ÿ â m) û " d

™ º ’ Î ã Y 8 ´ ð y

¼ p	^ ´	T
Emergencies	0	¬ Ä Õ Ñ k © Ï 3 o gož
Alerts	1	¬ } y / J H R ‘ w 3 | Ê
Critical	2	M } Õ Ñ
Errors	3	j ¨ ’ Î
Warnings	4	Š s ’ Î
Notifications	5	¯ * • º k ¬ } ¼ h M } ’ Îož
Informational	6	ª ¢ Å ’ Î
Debugging	7	² ¡ ’ Î

o¬ F å †o- 1 y µ P † 1 ™ º ’ Î “ £ ¨ ý J FLASH k † ^ d syslog.txt k † ^ Ý 4 128K k ™ º ’ Î ´ ð 6ož
5 X L M L H F R Q I L J O R J J L Q J I L O H I O D V K V \ V O R J

o¬ à • co- 1 y … show logging x X k U Y ò 0 — å ™ º ’ Î ‘ ¨ ý J FLASH , ¼ @ ƒ ož

o¬ U P ’ Îo- 1 y ò ç F å ž ˜ ™ º † ^ d x † Ý 20 … k • ò F å ž † ^ d x † 21 k é U P j ¨ož
(U U R U 7 K H I L O H O H Q J W K P X V W Q R W E H O R Q J H U W K H Q & X U U H Q W I L

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.12 logging file numbers

F å © Ï ™ º ’ Î Ê µ ý J FLASH † ^ ƒož
logging file numbers numbers

H ƒ F å ™ º † ^ ƒ k Ê Ö ó • ›ož
no logging file numbers

o¬ @ ƒ ª ¢o-

@ ƒ	T
numbers	™ º † ^ ƒ k 8 y2~32 k % y y

o¬ Þ . F åo- ™ º † ^ ƒ ó • 16 ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo-

o¬ @ ƒ ª ¢o-

@ ƒ	T
exact-match	¤ G F k 3 # + ¤ G F k é e µ ¡ # ¾ C ¬ } Ê Êož
single-match	% F k3 # + % F ké e µ ¡ # ¾ Q ¬ } Ê Ê ¿ %² ož
module module-name	% ² d k / Ê Ê } ¡ % ² d fož
mnemonic mnemonic-name	“ … d f k / Ê Ê } ¡ ™ º ’ Î “ … d fož
level level	™ º ’ Î ˆ ´ k / Ê Ê } ¡ ™ º ’ Î ˆ ´ož

o¬ Þ . F åo- — ™ º ’ Î ¡ • é k g ™ º ¡

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4. î ? Õ Ñ k ï U Q Ý ¡ J î%² Ô ™ º ’ Î k é U Y … ¤ G F • é k ¨ F å ž k ¬ }
6 À } % ² do• “ … d fo• ™ º ˆ ´ož
5. î ? Õ Ñ k ï U Ý ¡ J î ? • º ™ º ’ Î k é U Y … % F • é k ¨ F å ž k Q ¬ }
6 % ² do• ™ º ˆ ´o• “ … d f ¢ %² _ož

ò " ð o ¶ Ò Ÿ • / / æ Q $ Ÿ • ä : ò $ Ÿ • / ½ ¨ " t ¢ , f Ö ` c Y š ø
g ð o ‰ • æ Q $ Ÿ ¥ • ‰ : : ò $ d

o¬ F å †o- 1 y F å ™ º ’ Î ¡ • é ¤ G F k % ² d LOGINo• ™ º ˆ ´ 5o• “ … d f LOGOUT y

I • ÛÐ4 04 8I70 ð I) I ð ° ð™w=Ð w=o, `SÐ7•´`žPyoKGSàVS/Š2_N•Aàš@ÀpQ•33B0[Vd@Aà4B6>Tj /TT0 1 Tf 0.9

o¬ …„+à À†=

Ê Ö ™ º ’ Î ¡ • ºož
no logging filter type

o¬ @ ƒ ª ¢o-

@ ƒ	T
contains-only	Q m kW n yQ ÿ ß m 4 ¡ • é L µ ¼ p ’ Î ™ º k ¿ Z Ä m ¡ • é L µ ™ º k ÿ ßož
filter-only	Q ¡ kW n y1 ¡ J m 4 ¡ • é L µ ¼ p ’ Î ™ º k k ÿ ß ? ¡ J ™ º ’ Îož

o¬ Þ . F åo- Þ . ¡ • º Q ¡

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-

6. î ? Õ Ñ k ¢ 1 ñ î % ² % ² ø ß Û ™ º ’ Î ß Ú k U k – Ü Ä € µ ß ë ó I k ï A ¼ ¶ 4 • ™ º ’ Î ž ˜ k U Y ¨ — Õ µ • Q ¡ % ² ™ º ¡ • º k 1 ó I ™ º ’ Î ¡ Jož
7. î ? Õ Ñ k ï U Q ¼ ¶ î ? ™ º ’ Î © k D ÿ k é U Y ¨ — Õ µ • Q m % ² ™ º ¡ • º k • m 4 4 • é ™ º ’ Î õ ÿ ß ñ Ä € µ k • Ž 9 € (î ? 7 ^ © k Ä G ÿož

} ¬ • ë ¶ Q / q g Ã r ä q ¶ Ò r ã f 5 ¶ Ò + ø g ‡ ½ ¢ ¨ ¹ Ÿ " ¢ 5 ¶ Ò + ø d

	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¨ © Ï • o ™ º ’ Î Ê FLASH † ^ e k — Õ D ÿ ™ º ’ Î k ¯ Ù ¨ © Ï ™ º Ù Ï k Q Ä ¢ Ù Ï
ê ž ˜ ñ Ê e k õ k 1 Ù Ï ™ º ’ Î Ê µ ñ FLASH † ^ k U Y * ¥ x X — å 1 © Ï Ù Ï
™ º ’ Î y / Ê µ ñ FLASH † ^ ož

" logging flash flush a —f3.03 ¨ 6 13 ´ 2 T 0 e 12 ˈ re K ¥ ¬ ÿ Ë ¥ ¬ ÿ Ö ¥ ¬ ÿ Ö 852 g ð 1 8 0 8 & 68947 <14.58 15.6 re f Q Q 0.852

o¬ F å †o- 1 y µ P † ¨ — Õ ¼ { ™ º • ¼ y

```
5XLMLH FRQILJ QR ORJJLQJ RQ
```

o¬ à • co- 1 y … show logging x X k U Y ò 0 © k ª • ™ º ’ Î ¨ — Õ ª Pož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.21 logging policy

F å ™ º ã ´ ž ñ … ã ´ Œ ož

logging policy module module-name [not-lesser-than] level direction { all | server | file | console | monitor | buffer }

í ”%² Ú ™ º ã ´ ã ´ Œ ož

no logging policy module module-name [not-lesser-than] level direction { all | server | file | console | monitor | buffer }

í ” ñ Ä ™ º ã ´ ã ´ Œ ož

no logging policy

o¬ @ ƒ ª ¢o-

@ ƒ	T
module-name	ã ´ Œ %² d
not-lesser-than	6 ¥ # ¾ ž k W n Ý 9 ˆ 9 ñ F å ™ º ´ ð ™ º õ k 7 Á ñ F å • g ÿ ß k 4 9 ñ F å ™ º ´ ð ™ º k t ¡ J z Z Ä 6 ¥ # ¾ ž k W n 4 9 ˆ 9 ñ F å ™ º ´ ð ™ º õ k 7 Á ñ F å • g ÿ ß k Ý 9 ñ F å ™ º ´ ð ™ º k t ¡ J
level	ñ } F å ã ´ Œ ™ º ´ ð
all	¨ ñ Ä • g C g ™ º ã ´ Œ
server	Q ¨ G ª ™ º Æ ˜ • g g ™ º ã ´ Œ
file	Q ¨ ÿ ß ñ ™ º † ^ • g g ™ º ã ´ Œ
console	Q ¨ ÿ ß ñ O ò V • g g ™ º ã ´ Œ
monitor	Q ¨ ÿ ß ñ ¡ Ä € • g g ™ º ã ´ Œ
buffer	Q ¨ ‘ ñ Ù Ï • g g ™ º ã ´ Œ

o¬ Þ . F åo- Þ . Õ Ñ k g ™ º ã ´ Œ ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- 4 x X 9 F å 7 % ² y M ´ ð 1 ™ º ÿ ß ñ c) ªož

o¬ F å †o- 1 y F å SYS % ² ´ ð Ý 9 ^ 9 5 ´ ™ º Q ª O ò V • g ÿ ß k ´ ð 4 9 ^ 9 3 ´ ™ º Q ª Ù Ï • g ÿ ß y

```
5XLMLH FRQILJ ORJJLQJ SROLF\ PRGXOH 6<6 QRW OHVVHU WKDQ GL
5XLMLH FRQILJ ORJJLQJ SROLF\ PRGXOH 6<6 GLUHFWLRQ EXIIHU
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.22 logging rate-limit

ø • ™ º , ä ’ ò k ’ ò ? a Ä ª • ÿ ß ™ º ’ Îož

logging rate-limit { number | all number | console { number | all number } } [except [severity]]

¼ { ™ º , ä ’ ò ož

no logging rate-limit

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	? a U Ä ª • Ô ò ™ º ’ Î k 8 1~10000ož
all	— å + ñ Ä ™ º ’ Î g , ä O ò k , 0~7 ´ ñ Ä ™ º ’ Îož
console	— å ? a U Ä ª • ¨ O ò V ª P ™ º ’ Î ƒož
except	4 9 ^ 9 4 M Å ´ ð ™ º ’ Î k g , ä O ò z ó • ´ ð error(3) k + 4 9 ^ 9 error ´ ð ™ º ’ Î g , ä O òož
severity	™ º ’ Î M Å ´ ð k ´ ð Þ 4 k M Å Þ ä k 8 0~7ož

o¬ Þ . F åo- g , ä O òož

o¬ x X % ”o- ¶ B F å % ”

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.24 logging rd rate-limit

¨ VSU ê Ë µ k } ø • M g ™ º , ä ’ ò k ’ ò ? a Ä ª • R Ñ ê Õ Ñ M g ñ Ñ ÿ ß ™ º ’ Îož

logging rd rate-limit number [except [severity]]

¼ { M g ™ º , ä ’ ò ož

no logging rd rate-limit

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
number	? a U Ä ª • M g ™ º ’ Î k 8 1~10000
except	4 9 ˆ 9 4 M Å ´ ð ™ º ’ Î k g , ä O ò z ó • ´ ð error(3) k + 4 9 ˆ 9 error ´ ð ™ º ’ Î g , ä O ò
severity	™ º ’ Î M Å ´ ð k ´ ð Þ 4 k M Å Þ ä k 8 0~7

o¬ Þ . F åo- ™ º M g ’ ò ? a Â Ú M g 200 Ú ™ º ’ Îož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4 x X O ò © Ï M g ™ º ’ Î ÿ ßož … 4 x X k U Y … 2 R Ñ ê Õ Ñ M g Ý O ™ º ’ Î ñ Ñož

o¬ F å †o- 1 y — å ? a U Ä ª • R Ñ M g ñ Ñ ñ Ä ™ º ’ Î g , debug h 10 Ú k x © + warning C ¾ M ´ ð g O ò y

5 X L M L H F R Q I L J O R J J L Q J U G U D W H O L P L W H [F H S W Z D U Q L Q J V

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.25 logging server

1 ™ º “ £ ñ 6 Syslog Serverož

logging server { ip-address | ipv6 ipv6-address } [udp-prot port]

í ” Syslog Server ç n 6 ª - Syslog Serverož

no logging server { ip-address | ipv6 ipv6-address }

Ê Ö ™ º G Syslog Server ó • € M Z g514 bž

no logging server { ip-address | ipv6 ipv6-address } udp-prot

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	N v ™ º ’ Î Ñ IP ª -
ipv6-address	6 N v ™ º ’ Î Ñ IPV6 ª -
udp-port port	6 ™ º Ñ € M Z g ó • € M Z 514 h

o¬ Þ . F åo- ó • g ` ~ Syslog Server G ™ º ’ Î

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X 6 %² Syslog server Û N v — Õ ™ º ’ Îož ï U Y F å Ú 5 Syslog Serverož ™ º ’ Î 1 c ž G Ë F å ñ Ä Syslog Serverož

o¬ F å †o- 1 y µ P † 6 %² ª - 202.101.11.1 syslog server y

```
5 X L M L H  F R Q I L J  O R J J L Q J  V H U Y H U
```

2 y µ P † 6 %² ª - 10.1.1.100 k € M Z 8099 syslog server y

```
5 X L M L H  F R Q I L J  O R J J L Q J  V H U Y H U  X G S  S R U W
```

3 y µ P † 6 %² IPV6 ª - AAAA:BBBB::FFFF

```
5 X L M L H  F R Q I L J  O R J J L Q J  V H U Y H U  L S Y  $ $ $ $  % % % %  ) ) ) )
```

o¬ à • co- 1 y … show logging x X k U Y ò 0 — å ™ º Æ ˜ ª -ož

o¬ U P ’ Îo- 1 y ò ç — Õ] Æ F å Syslog Server Ý 5 k é U P j ¨ož

:DUQLQJ &DQ QRW FRQILJXUH PRUH WKDQ V\VORJ VHUYHUV

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.26 logging source interface

— å ™ º † › N Mož
logging source [interface] interface-type interface-number

H ƒ 6 † › N M — åož
no logging source [interface]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type	N M • º
interface-number	N M Ú Z

o¬ Þ . F åo- ó • Z Ä — å ™ º › ª -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ó • Õ Ñ k G Ë Syslog Server ™ º † › IP ª - © † G N M IP ª -ož 4 Ž 9 æ í ’ ò k U
Y … ¥ x X 1 ñ Ä ™ º † › IP ª - ¡ î N M IP ª - k ý ’ ò t < * Š%² ª - œ ð R „ V
— Õ G ß Û ™ º † k — 3 — Õ IP [illegible] t€ 3 © † G [illegible] /C2_0 1 Tf7.96 1.1930 379

8.27 logging source ip | ipv6

— å ™ º † › IP ª -ož
logging source { ip ip-address | ipv6 ipv6-address }

H ƒ 6 † › IP ª - — åož
no logging source { ip | ipv6 }

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	6 g IPV4 ™ º Ñ G ™ º † › IPV4 ª -
ipv6-address	6 g IPV6 ™ º Ñ G ™ º † › IPV6 ª -

o¬ Þ . F åo- ó • Z Ä — å ™ º › ª -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ó • Õ Ñ k G Ë Syslog Server ™ º † › IP ª - © † G N M IP ª -ož 4 Ž 9 æ í ’ ò k U
Y … ¥ x X 1 ñ Ä ™ º † › IP ª - ¡ î IP ª - k ý ’ ò t < * Š%² ª - œ ð R „ V — Õ G
ß Û ™ º † k — 3 — Õ Ì F å ¥ IP ª - k é ™ º † › IP ª - Q † G N M IP ª -ož

o¬ F å †o- 1 y µ P † 6 ª - 192.168.1.1 Syslog † › ª - y
5 X L M L H F R Q I L J O R J J L Q J V R X U F H L S

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.28 logging statistic enable

ø • ™ º ž ož
logging statistic enable

¼ { ™ º ž ož

no logging statistic enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ó • © ¼ { ™ º ž ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- U Y … 4 x X ø • ™ º ž k ø • ™ º ž e k © Ï 1 7%² ž • • œ ÿ ß%² © ç Å Ï ‹ ƒ G k • Ž ™ º Æ ˜ + © Ï Å g æ íož

o¬ F å †o- 1 y µ P † ø • ™ º ž y

5 X L M L H F R Q I L J O R J J L Q J V W D W L V W L F H Q D E O H

o¬ à • co- 1 y … show logging x X k U Y ò 0 ™ º ž • ¼ Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.29 logging statistic interval

F å ™ º ž ž • • œož

logging statistic mnemonic mnemonic interval minutes

Ê Ö ó • ™ º ž ž • • œož

no logging statistic mnemonic mnemonic

o¬ @ ƒ ª ¢o-

@ ƒ	T
mnemonic	™ º ž “ … … k 9 ö œ © Ï Å Ï ‹ + »
minutes	ž ž • • œ k % y y ã U

o¬ Þ . F åo- ó • ž ž • • œ 15 ã Uož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- U Y … 4 x X F å © Ï î Å Ï ‹ + » ž ž • • œož U Y — å ž • • œ 0o•15o•30o•60o•120 ã U k ¿ 0 n P ¼ { 4 Ï ‹ + » ž ož

o¬ F å †o- 1 y µ P † — å Ï ‹ + » TUNNEL_STAT ž ž • • œ 30 ã U y
5 X L M L H F R Q I L J O R J J L Q J V W D W L V W L F P Q H P R Q L F 7 8 1 1 (/ B 6 7 $ 7 L Q W H U Y

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.30 logging statistic terminal

ø • ž ™ º g © Ï Å Ï ‹ ™ º h ÿ ß ñ O ò V y i Ä €ož
logging statistic terminal

¼ { ž ™ º ÿ ß ñ O ò V y i Ä €ož
no logging statistic terminal

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . Õ Ñ ¼ { ž ™ º ÿ ß ñ O ò V y i Ä €ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- U Y … 4 x X ø • ž ™ º ÿ ß ñ O ò V y i Ä €ož

o¬ F å †o- 1 y µ P † ø • ž ™ º ÿ ß ñ O ò V y i Ä € y
5 X L M L H F R Q R L J J L Q J V W D W L V W L F W H U P L Q D O

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.32 logging trap

— å ª • G Ë Syslog Server ™ º ’ Î ´ ðož
logging trap [level]

W 2 1 ™ º † G Ë Syslog Serverož
no logging trap

o¬ @ ƒ ª ¢o-

@ ƒ	T
level	™ º † M Åož U Y … ´ ð d f k - U Y + N … ƒ ož ¼ 9 ™ º ’ Î M Å ¦ Â ª ¢ k ¬ @ ðo¬ … 6 -œž

o¬ Þ . F åo- 6 gInformational k ª ¢ Å ’ Î h

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- } 1 ™ º ’ Î G Ë Syslog Server k Ù ¯ } … ¶ B F å x X logging F å Syslog Serverož À e k … logging trap 6 G Ë ™ º ’ Î M Å ´ ðož
* show logging x X U Y ò 0 ™ º — å , ¼ @ ƒ y Ï ‹ož
™ º ’ Î ã Y 8 ´ ð y

¼ p	ˆ ´	T
Emergencies	0	¬ Ä Õ Ñ k © Ï 3 o gož
Alerts	1	¬ } y / J H R ‘ w 3 | Ê
Critical	2	M } Õ Ñ
Errors	3	j ¨ ’ Î
Warnings	4	Š s ’ Î
Notifications	5	¯ * • º k ¬ } ¼ h M } ’ Îož
Informational	6	ª ¢ Å ’ Î
Debugging	7	² ¡ ’ Î

o¬ F å †o- 1 y µ † ÿ F å 1 ´ ð 6 ™ º ’ Î G Ë ª - 202.101.11.22 Syslog Server y

```
5XLMLH FRQILJ  ORJJLQJ VHUYHU
5XLMLH FRQILJ  ORJJLQJ WUDS LQIRUPDWLRQDO
```

o¬ à • co- 1 y … show logging x X k U Y ò 0 — å ª • G Ë Syslog Server ™ º ’ Î ´ ðož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.33 logging userinfo

• o “ £ ï £/ ß Log ’ Îož
logging userinfo

¼ { “ £ ï £/ ß Log ’ Îož
no logging userinfo

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ï £/ ß •P‘•yàl€6°pyÕ © k “ £ , ¼ Log ’ Îož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- • o “ £ ï £/ ß •P‘• Log ’ Î e k ¢ Ä ï N ñ •Pyà6°cÀF°o€Mð’Àh ‘• Log ’ Î U I •P™ •
t k ™ º ” ò y

```
0DU  /2*,1  /2*,1B68&&(66  8VHU ORJLQ IURP YW\  2
```

o¬ F å †o- 1 y µ † ÿ F å ø • “ £ ï £/ ß •P‘• Log ’ Î y

```
5XLMLH FRQILJ  ORJJLQJ XVHU LQIR
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ™ º ’ Î J ó • ™ º ” g ª Pož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ó • Õ Ñ k — Õ µ ™ º ’ Î ª P ” ò y

*timestamp: %facility-severity-mnemonic: description

‰) © y* ž • í: % % ² d- M Å ´ ð- “ … ’ Î: ¦ Â ™ º ’ Î

† ÿ ò y

0 D \ 6 < 6 & 2 1) , * B , & R Q I L J X U H G I U R P F R Q V R O H E \ F R Q V R O H

3 ø • \ Ä ™ º ” ª P k — Õ µ ™ º ’ Î ª P ” ò y

timestamp facility-severity-mnemonic: description

‰) © y ž • í % ² d- M Å ´ ð- “ … ’ Î: ¦ Â ™ º ’ Î

† ÿ ò y

0 D \ 6 < 6 & 2 1) , * B , & R Q I L J X U H G I U R P F R Q V R O H E \ F R Q V R O H

¿ k \ Ä ™ º ” ó • ™ º ” ð ¨ 9 ž • í y ö œ k \ Ä ™ º ” ž • í ù µ 5 4%² * o•

e µ 5 4%² : k ö œ ù µ 5 4%² %

o¬ F å †o- 1 y µ P † F å 1 ™ º ” ² … è \ Ä ™ º ”

5 X L M L H F R Q I L J V H U Y L F H S U L Y D W H V \ V O R J

o¬ à • co- 1 y … show logging x X k U Y ò 0 ™ º ª P ” © k ² … \ Ä ”ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.37 service sequence-numbers

¨ ™ º ’ Î ~ Z

service sequence-numbers

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ó • Õ Ñ k — Õ µ ™ º ’ Î ª P ” ò y
*timestamp: %facility-severity-mnemonic: description
‰) © y* ž • í: % % ² d- M Å ´ ð- “ … ’ Î: ¦ Â ™ º ’ Î
† ÿ ò y
0 D \ 6 < 6 & 2 1) , * B , & R Q I L J X U H G I U R P F R Q V R O H E \ F R Q V R O H

3 ø • ö Õ ™ º ” ª P k — Õ µ ™ º ’ Î ª P ” ò y
timestamp %facility-severity-mnemonic: description
‰) © y ž • í % % ² d- M Å ´ ð- “ … ’ Î: ¦ Â ™ º ’ Î
† ÿ ò y
0 D \ 6 < 6 & 2 1) , * B , & R Q I L J X U H G I U R P F R Q V R O H E \ F R Q V R O H
¿ k ö Õ ™ º ” ó • ™ º ” ð ¨ 9 ž • í k ö Õ ™ º ” ž • í ù µ 5 4 % ² *o • e µ 5
4 % ² :

o¬ F å †o- 1 y µ P † F å 1 ™ º ” ² … è ö Õ ™ º ”
5 X L M L H F R Q I L J V H U Y L F H V W D Q G D U G V \ V O R J

o¬ à • co- 1 y … show logging x X k U Y ò 0 ™ º ª P ” © k ² … ö Õ ”ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.39 service sysname

¨ ™ º ’ Î © Ï dož
service sysname

H ƒ ¨ ™ º ’ Î © Ï dož
no service sysname

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ™ º ’ Î k © Ï dož

datetime	¢ ù — Õ ™ Ê k ” y Ã ™ Ê ž y ã y a k † yJul 27 16:53:07
msec	¢ ù — Õ ™ Ê u 4 D a ª P k ” y Ã ™ Ê ž : ã : a . D a † yJul 27 16:53:07.299
year	¢ ù — Õ ™ Ê u 4 v a ª P k ” yv Ã ™ Ê ž yã ya † y2007 Jul 27 16:53:07

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † © ¨ Z Ä • o RFC5424 ™ º ” Õ Ñ k ü g show logging %² È ç y

```
5XLMLH VKRZ ORJJLQJ
6\VORJ ORJJLQJ HQDEOHG
  &RQVROH ORJJLQJ OHYHO GHEXJJLQJ PHVVDJHV ORJJHG
  0RQLWRU ORJJLQJ OHYHO GHEXJJLQJ PHVVDJHV ORJJHG
  %XIIHU ORJJLQJ OHYHO GHEXJJLQJ PHVVDJHV ORJJHG
  6WDQGDUG IRUPDW IDOVH
```

Trap logging	G Ë Syslog Server ™ º ' Î ´ ð k Y C Ï ‹
Log Buffer	" £ ¨ Ä Ù Ï ™ º †

2 y µ P † © ¨ • o RFC5424 ™ º " Õ Ñ k ü g show logging %² È ç y

```
5XLMLH  VKRZ ORJJLQJ
6\VORJ ORJJLQJ  HQDEOHG
 &RQVROH ORJJLQJ  OHYHO GHEXJJLQJ      PHVVDJHV ORJJHG
 0RQLWRU ORJJLQJ  OHYHO GHEXJJLQJ    PHVVDJHV ORJJHG
 %XIIHU ORJJLQJ  OHYHO GHEXJJLQJ      PHVVDJHV ORJJHG
 6WDWLVWLF ORJ PHVVDJHV  GLVDEOH
 6WDWLVWLF ORJ PHVVDJHV WR WHUPLQDO  GLVDEOH
 'HO\ VHQG ILOH QDPH V\VORJBIWSBVHUYHU  &XUUHQW ZULWH LQGH[
VHFRQGV
 &RXQW ORJ PHVVDJHV  HQDEOH
 7UDS ORJJLQJ  OHYHO LQIRUPDWLRQDO      PHVVDJH OLQHV ORJJHG
   ORJJLQJ WR
   ORJJLQJ WR
 'HO\ VHQG ORJJLQJ      PHVVDJH OLQHV ORJJHG
   ORJJLQJ WR              E\ WIWS
/RJ %XIIHU  7RWDO      %\WHV  KDYH ZULWWHQ      2YHUZULWWHQ
   !          7            = UXLMLH       3OHDVH FRQILJ WKH ,3 DGGUH
   !          7           = UXLMLH &$3:$3  12B,3B$''5  1R LS DGGUHVV
   !          7           = UXLMLH       3OHDVH FRQILJ WKH ,3 DGGUH
   !          7            = UXLMLH &$3:$3  12B,3B$''5  1R LS DGGUHVV
   !          7            = UXLMLH 6<6  6+(//B/2*,1 >86(5#    QDPH    W
IURP  FRQVROH @ XVHU ORJLQ VXFFHVV
   !          7            = UXLMLH 6<6  6+(//B&0' >86(5#    QDPH   @>&
WDVN  UOBFRQ  FPG  HQDEOH @
```

< † K y

<	ª ¢
Syslog logging	™ º • ¼ y ø • ª P enabled, ¼ { ª P disabled
Console logging	ø - ¨ O ò V ™ º ' Î ´ ð k Y C Ï ‹
Monitor logging	ø - ¨ VTY v M ™ º ' Î ´ ð k Y C Ï ‹
Buffer logging	" £ ¨ Ä Ù Ï ™ º ' Î ´ ð k Y C Ï ‹

Count log messages	™ º Ï ‹
Statistic log messages	™ º ž È • ¼
Statistic log messages to terminal	™ º ž ÿ ß O ò V y i Ä € • ¼
Delay-send file name	™ º • Ù ¨ — Õ Î ª † ^ do•¢ ù Ê µ † ^ « – Y C • ž • • œ
Trap logging	G Ë Syslog Server ™ º ' Î ´ ð k Y C Ï ‹
Delay-send logging	™ º • Ë Æ ˜ ª - y • " k Y C Ï ‹
Log Buffer	" £ ¨ Ä Ù Ï ™ º †

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

8.42 show logging config

ò 0 ™ º F å @ ƒ o• Ï ‹ ' Îož
show logging config

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % "o- Ô Ó ï % "

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † © ¨ Z Ä • o RFC5424 ™ º " Õ Ñ k ü g show logging config %² È ç y

```
5XLMLH VKRZ ORJJLQJ FRQILJ
6\VORJ ORJJLQJ HQDEOHG
  &RQVROH ORJJLQJ OHYHO GHEXJJLQJ PHVVDJHV ORJJHG
  0RQLWRU ORJJLQJ OHYHO GHEXJJLQJ PHVVDJHV ORJJHG
  %XIIHU ORJJLQJ OHYHO GHEXJJLQJ PHVVDJHV ORJJHG
  6WDQGDUG IRUPDW IDOVH
  7LPHVWDPS GHEXJ PHVVDJHV GDWHWLPH
  7LPHVWDPS ORJ PHVVDJHV GDWHWLPH
  6HTXHQFH QXPEHU ORJ PHVVDJHV HQDEOH
  6\VQDPH ORJ PHVVDJHV HQDEOH
  &RXQW ORJ PHVVDJHV HQDEOH
```

Console logging	ø - ¨ O ò V ™ º ' Î ´ ð k Y C Ï ‹
Monitor logging	ø - ¨ VTY v M ™ º ' Î ´ ð k Y C Ï ‹
Buffer logging	" £ ¨ Ä Ù Ï ™ º ' Î ´ ð k Y C Ï ‹
Count log messages	™ º Ï ‹
Statistic log messages	™ º ž È • ¼
Statistic log messages to terminal	™ º ž ÿ ß O ò V y i Ä € • ¼
Delay-send file name	™ º • Ù ¨ — Õ Î ª † ^ do•¢ ù Ê µ † ^ « – Y C • ž • • œ
Trap logging	G Ë Syslog Server ™ º ' Î ´ ð k Y C Ï ‹
Delay-send logging	™ º • Ë Æ ~ ª - y • " k Y C Ï ‹

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

8.43 show logging count

ò 0 © Ï _ % ² ™ º ' Î D ÿ) ƒ k Y C Â e D ÿ ž • ˆ Ï ‹ ' Îož
show logging count

o¬ @ ƒ ª ¢o-	@ ƒ	T
	-	-

o¬ x X % "o- Ô Ó ï % "

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- 4 … ™ º † Ï ‹ k¬ } ¨ ¶ B F å % " kü g logging count x Xožo 4 ™ º † Ï ‹ e k 1 + © Ï ÿ ß ™ º † g ã • Ï ‹ k Ï ‹ È ç U Y * x X show logging count g ò 0ož

o¬ F å †o- 1 y µ P † © ü g show logging count È ç y

```
5XLMLH VKRZ ORJJLQJ FRXQW
0RGXOH 1DPH 0HVVDJH 1DPH 6HY 2FFXU /DVW 7LPH
6<6 &21),*B,
-XO
6<6 727$/
```

< † K y

<	ª ¢
Module Name	™ º % ² d

Message Name	™ º “ … d f
Sev	™ º ´ ð
Occur	ø • logging count Y Û Ï ‹ ñ ¥ • ™ º Ú)
Last Time	Â e%²) D ÿ 4 • ™ º ž •

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

8.44 show logging reverse

ò 0 ™ º F å @ ƒo• Ï ‹ ’ Î k Y C Ä Ù Ï ™ º †ož ™ º ’ Î 7 Á ž • í R • ñ › ¿ ~ ª Pož
show logging reverse

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- 1 y µ P † © ¨ Z Ä • o RFC5424 ™ º ” Õ Ñ k ü g show logging reverse %² È ç y

```
5XLMLH  VKRZ ORJJLQJ UHYHUVH
6\VORJ ORJJLQJ  HQDEOHG
  &RQVROH ORJJLQJ  OHYHO GHEXJJLQJ      PHVVDJHV ORJJHG
  0RQLWRU ORJJLQJ  OHYHO GHEXJJLQJ   PHVVDJHV ORJJHG
  %XIIHU ORJJLQJ  OHYHO GHEXJJLQJ      PHVVDJHV ORJJHG
  6WDQGDUG IRUPDW  IDOVH
  7LPHVWDPS GHEXJ PHVVDJHV  GDWHWLPH
  7LPHVWDPS ORJ PHVVDJHV  GDWHWLPH
  6HTXHQFH QXPEHU ORJ PHVVDJHV  HQDEOH
  6\VQDPH ORJ PHVVDJHV  HQDEOH
  &RXQW ORJ PHVVDJHV  HQDEOH
  7UDS ORJJLQJ  OHYHO LQIRUPDWLRQDO      PHVVDJH OLQHV ORJJHG
    ORJJLQJ WR
    ORJJLQJ WR
```

```
       6HS          5XLMLH /,1(35272 83'2:1 /LQH SURWRFRO RQ ,QWH
FKDQJHG VWDWH WR XS
       6HS          5XLMLH /,1. 83'2:1 ,QWHUIDFH )DVW(WKHUQHW
       6HS          5XLMLH /,1(35272 83'2:1 /LQH SURWRFRO RQ ,QWH
FKDQJHG VWDWH WR GRZQ
       6HS          5XLMLH /,1. 83'2:1 ,QWHUIDFH )DVW(WKHUQHW
       6HS          5XLMLH /,1(35272 83'2:1 /LQH SURWRFRO RQ ,QWH
FKDQJHG VWDWH WR XS
       6HS          5XLMLH /,1. 83'2:1 ,QWHUIDFH )DVW(WKHUQHW
```

< † K y qù 'E%S& <

Syslog logging	™ º • ¼ y ø • ª P enabled, ¼ { ª P disabled
Console logging	ø - ¨ O ò V ™ º ' Î ´ ð k Y C Ï ‹
Monitor logging	ø - ¨ VTY v M ™ º ' Î ´ ð k Y C Ï ‹
Buffer logging	" £ ¨ Ä Ù Ï ™ º ' Î ´ ð k Y C Ï ‹
Standard format	ö Õ ™ º "
Timestamp debug messages	Debug ' Î ž • í "
Timestamp log messages	Log ' Î ž • í "
Sequence-number log messages	~ Z • ¼
Sysname log messages	™ º ' Î © Ï d
Count log messages	™ º Ï ‹
Trap logging	G Ë Syslog Server ™ º ' Î ´ ð k Y C Ï ‹
Log Buffer	" £ ¨ Ä Ù Ï ™ º †

2 y µ P † © ¨ • o RFC5424 ™ º " Õ Ñ k ü g show logging reverse %² È ç y

```
3 C BpH Xô?@A Q V H Jp H"? T H C A J@@ H ] \ V O R J H"0t20 F H PY H U SðC B`R PYPH Ep J PHÀ@t8 S
5 X L M L H V K R Z O R J J L Q J U H Y H U V H
```

```
   ORJJLQJ WR
 'HOD\ VHQG ORJJLQJ      PHVVDJH OLQHV ORJJHG
   ORJJLQJ WR              E\ WIWS
/RJ %XIIHU  7RWDO     %\WHV   KDYH ZULWWHQ      2YHUZULWWHQ
   !          7            = UXLMLH 6<6   6+(//B&0' >86(5#    QDPH   @>&
WDVN  UOBFRQ  FPG  HQDEOH @
   !          7            = UXLMLH 6<6   6+(//B/2*,1 >86(5#    QDPH   W
IURP  FRQVROH @ XVHU ORJLQ VXFFHVV
   !          7            = UXLMLH &$3:$3   12B,3B$''5   1R LS DGGUHVV
   !          7           = UXLMLH       3OHDVH FRQILJ WKH ,3 DGGUHV
   !          7           = UXLMLH &$3:$3   12B,3B$''5   1R LS DGGUHVV
   !          7            = UXLMLH       3OHDVH FRQILJ WKH ,3 DGGUHV
```

< † K y

<	ª ¢
Syslog logging	™ º • ¼ y ø • ª P enabled, ¼ { ª P disabled
Console logging	ø - ¨ O ò V ™ º ' Î ´ ð k Y C Ï ‹
Monitor logging	ø - ¨ VTY v M ™ º ' Î ´ ð k Y C Ï ‹
Buffer logging	“ £ ¨ Ä Ù Ï ™ º ' Î ´ ð k Y C Ï ‹
Count log messages	™ º Ï ‹
Statistic log messages	™ º ž È • ¼
Statistic log messages to terminal	™ º ž ÿ ß O ò V y i Ä € • ¼
Delay-send file name	™ º • Ù ¨ — Õ Î ª † ^ do•¢ ù Ê µ † ^ « – Y C • ž • • œ
Trap logging	G Ë Syslog Server ™ º ' Î ´ ð k Y C Ï ‹
Delay-send logging	™ º • Ë Æ ˜ ª - y • ” k Y C Ï ‹
Log Buffer	“ £ ¨ Ä Ù Ï ™ º †

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

8.45 terminal monitor

ª • ¨ ¢ ù VTY v M ª P ™ º ' Îož
terminal monitor

¼ { ¨ ¢ ù VTY v M ª P ™ º ’ Îož
terminal no monitor

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ¨ VTY v M ª • ª P ™ º ’ Îož

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Î x X Q © — å ¢ ù VTY ž K Åož • ž K Å — å k k t K ! ‘ ož ¨ VTY Ä € k ¢ È Ø e k ©
Ï 1 J ó • — å ò ¥ ž K Å — å 1 â |ož O ò V - U Y ü g ¥ x X k x Ü • ož

o¬ F å †o- 1 y µ P † k — å ¢ ù VTY v M ª • ø - ™ º ’ Îož
5 X L M L H W H U P L Q D O P R Q L W R U

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9 CWMP

9.1 acs password

F å CPE N ACS ž 9 • š % Aož

acs password { password | encryption-type encrypted-password}

Ê Ö Þ . F å

no acs password

o¬ @ ƒ ª ¢o-

@ ƒ	T
password	CPE N ACS 9 • š % Aož
encryption-type	U F å 0 ê 7 k 0 n P — % k 7 n P • % %ož
encrypted-password	% A † Îož

o¬ Þ . F åo- encryption-type ó • 0 kencrypted-password ó • qož

o¬ x X % ”o- cwmp F å % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- F å CPE N ACS 9 • š % A k * o — À ÿ µ % • ºož%² " Õ Ñ k Q Ä ¢ Ö ò w ¡ É] Æ % e

¥ x X % A ž k õ ¬ } ÿ µ % • ºož Ä | % A ”} L ò y

% A · À 6 † > ê ƒ ož

% A • C È A q é • % A %² B ãož

o¬ F å †o- 1 y F å CPE N ACS ž 9 • š % A 123 ož

```
5XLMLH FRQILJ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ FZPS
5XLMLH FRQILJ FZPS DFV SDVVZRUG
5XLMLH FRQILJ FZPS
```

o¬ à • co- * ¨ CPE — Õ show cwmp configuration x X ò 0 x X © k F å è ož

o¬ U P ’ Îo- 1: ò ç ï ÿ µ % A • º % † k % A x † Ý 254 ê ñ x † ¢ ƒ k é U P j ¨

```
(UURU ,QYDOLG (QFU\SWHG 3DVVZRUG
```

2: ò ç ï ÿ µ % A • º ¢ † k % A x † Ý 100, é U P j ¨.

```
(UURU 7KH /HQJWK RI $&6 V 3DVVZRUG LV 7RR /RQJ
```

3: ò ç ï ÿ µ % A • º ¢ † k w m ³ c …, é U P j ¨

(UURU 3DVVZRUG 6WULQJ ,QFOXGH ,QYDOLG &KDUDFWHUV

o¬ o • j ¨o-

- ò ç ï ÿ µ % A • º % † k % A x † Ý 254 ê ñ x † ¢ ƒož
- ò ç ï ÿ µ % A • º ¢ † k % A x † Ý 100ož
- ò ç ï ÿ µ % A • º ¢ † k w m ³ c …ož

o¬ u V ª ¢o- -

9.2 acs url

F å CPE N ACS URLož

acs url url

Ê Ö Þ . F åož

no acs url

o¬ @ ƒ ª ¢o-	@ ƒ	T

5XLMLH FRQILJ FZPS
5XLMLH FRQILJ FZPS DFV XUO KWWS ZZZ WHVW FRP VHUYLFH WU VH
5XLMLH FRQILJ FZPS

o¬ à • co- * ¨ CPE — Õ show cwmp configuration x X ò 0 x X © k F å è ož

o¬ U P ' Îo- 1 y ò ç ACS URL ª - NULL k é U P j ¨ož
LQSXW DFV DWWULEXWH SDUDPHWHU LV QXOO

o¬ o • j ¨o- ACS URL Z 7 } L " ÿ µož
ACS URL x † Ý 256 …ož

o¬ u V ª ¢o- -

9.3 acs username

F å CPE N ACS ž 9 • š ï dož
acs username username
Ê Ö Þ . F åož
no acs username

o¬ @ ƒ ª ¢o-	@ ƒ	T
	- username	CPE N ACS 9 • š ï dož a1Tj /3 15.6 re f Q Q 0.84>]T /3 15.6 re 8 369.8.84>]T

o¬ U P ' Îo- 1 y ò ç ï ÿ µ ï d NULL k é U P j ¨ož

```
LQSXW DFV DWWULEXWH SDUDPHWHU LV QXOO
```

o¬ o • j ¨o- —ož

o¬ u V ª ¢o- -

9.4 cpe back-up

F å CPE i ~/ F å Õ a Ê Ö ož
cpe back-up [delay-time seconds]
¼ { CPE i ~/ F å Õ a Ê Ö
no cpe back-up

o¬ @ ƒ ª ¢o-

@ ƒ	T	
seconds	CPE i ~/ F å Õ a Ê Ö • ž • k% y a kH › 8	30~10000ož

o¬ Þ . F åo- ó • › 60 aož

o¬ x X % ”o- cwmp F å % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- F å CPE i ~/ F å ¨ ‘ o Õ Ñ Ê Ö k 6 ¢ CPE g i ~/ F å ´ e — c N ACS k ß ë ’
ë » ž k C ž Ê Ö ñ ’ ù i ~ y F å k Ê Ö ACS + CPE ’ ò k _ Õ Ñ ß ë%² " © G 4 j
¨ i ~ ê F å ñ - ož

o¬ F å †o- 1 y ¼ { CPE i ~/ F å Õ a Ê Ö ož

```
5XLMLH FRQILJ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ FZPS
5XLMLH FRQILJ FZPS QR FSH EDFN XS
5XLMLH FRQILJ FZPS
```

o¬ à • co- * ¨ CPE — Õ show cwmp configuration x X ò 0 x X © k F å è ož

o¬ U P ' Îo- -

o¬ o • j ¨o- —ož

o¬ u V ª ¢o- -

9.5 cpe inform

F å CPE u Ê Å INFORM * s ož
cpe inform [interval seconds] [start-time time]
Ê Ö Þ . F å
no cpe inform

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	F å CPE u Ê Å INFORM * s ž • • œož % y a k H › 8 30 ½ 3600ož
time	• ÷ u Ê Å INFORM ™ Ê ž • k ” yyyy-mm-ddThh:mm:ss

o¬ Þ . F åo- ó • › 600 aož

o¬ x X % ”o- cwmp F å % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- F å CPE u Ê Å INFORM * s ož
¨ Z Ä F å INFORM • ÷ ž • ˜ð -¼,_ ð A“ "Â Du234R o E s o ž 9àMcwmp aož
4 F åINFORM • yR yà a ˜ðžúÛÂÅñÿ @,RG ü ,AG Đi žRPTP 'ò Z Ä ,_ ð uÄ 0 Â, hq “ ¨ĐI°AàINF

o¬ à • co- * ¨ CPE — Õ show cwmp configuration x X ò 0 x X © k F å è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- —ož

o¬ u V ª ¢o- -

9.6 cpe password

F å ACS N CPE ž 9 • š % A, ¥ x X no ¥ ” Ê Ö Þ . F åož

cpe password { password | encryption-type encrypted-password}

Ê Ö Þ . F å

no cpe password

o¬ @ ƒ ª ¢o-

@ ƒ	T
password	ACS N CPE 9 • š % Aož
encryption-type	U F å 0 ê 7 k 0 n P — % k 7 n P • % %ož
encrypted-password	% A † Îož

o¬ Þ . F åo- encryption-type ó • 0 kencrypted-password ó • qož

o¬ x X % ”o- cwmp F å % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- F å ACS N CPE 9 • š % A k * o — À ÿ µ % • ºož%² " Õ Ñ k Q Ä ¢ Ö ò w ¡ É] Æ % e ¥ x X % A ž k õ ¬ } ÿ µ % • ºož Ä | % A ”} L ò y

6 † > C ƒ Á èož

% A ù µ U Y Ä ù - q k x t ¿ ož • C È A q é • % A %² B ãož

o¬ F å †o- 1 y F å ACS N CPE ž 9 • š % A 123 ož

```
5XLMLH FRQILJ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ FZPS
5XLMLH FRQILJ FZPS FSH SDVVZRUG
5XLMLH FRQILJ FZPS
```

o¬ à • co- * ¨ CPE — Õ show cwmp configuration x X ò 0 x X © k F å è ož

o¬ F å †o- 1 y F å ACS } N CPE URL http://10.10.10.1:7547/ ož

```
5XLMLH FRQILJXUH WHUPLQDO
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ FZPS
5XLMLH FRQILJ FZPS FSH XUO KWWS
5XLMLH FRQILJ FZPS
```

o¬ à • co- * ¨ CPE — Õ show cwmp configuration x X ò 0 x X © k F å è ož

o¬ U P ' Îo- 1 y ò ç CPE URL ª - NULL k é U P j ¨ož

```
LQSXW &3( DWWULEXWH SDUDPHWHU LV QXOO
```

o¬ o • j ¨o- CPE URL Z 7 } L " ÿ µož
CPE URL x † Ý 256 …ož

o¬ u V ª ¢o- -

9.8 cpe username

F å ACS N CPE ž 9 • š ï dož
cpe username username
Ê Ö Þ . F åož
no cpe username

o¬ @ ƒ ª ¢o-

@ ƒ	T
username	F å ACS N CPE 9 • š ï d

o¬ x X % "o- cwmp F å % "

o¬ Þ . F åo- qož

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- F å ACS N CPE ž 9 • š ï dož

o¬ F å †o- 1 y F å ACS N CPE ž 9 • š ï d admin

```
5XLMLH FRQILJ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ FZPS
5XLMLH FRQILJ FZPS FSH XVHUQDPH DGPLQ
```

9.10 disable download

F å ¼ { R ACS ú i ~ y F å † ^ ož
disable download
Ê Ö Þ . F å
no disable download

o¬ @ ƒ ª ¢o-

@ ƒ	T

o¬ x X % ”o- cwmp F å % ”

o¬ Þ . ´ ðo- 1

Ê Ö Þ . F å

no disable upload

o¬ @ ƒ ª ¢o-	@ ƒ	T

o¬ x X % ”o- cwmp F å % ”

o¬ Þ . F åo- CPE † ^ n • o gno disable upload **b**ž

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- F å ¼ { g ACS n F å † ^ y ™ º † ^

o¬ F å †o- 1 y F å ¼ { g ACS n F å † ^ y ™ º † ^ ož

```
5XLMLH FRQILJ
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
5XLMLH FRQILJ FZPS
5XLMLH FRQILJ FZPS GLVDEOH XSORDG
5XLMLH FRQILJ FZPS
```

o¬ à • co- * ¨ CPE — Õ show cwmp configuration x X ò 0 x X © k F å è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- —ož

o¬ u V ª ¢o- -

9.12 show cwmp configuration

ª P CWMP ¢ ù F å

show cwmp configuration

o¬ @ ƒ ª ¢o-	@ ƒ	T

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o-

o¬ F å †o- 1 y ª P CWMP ¢ ù F åož

```
5XLMLH FRQILJ FZPS VKRZ FZPS FRQILJXUDWLRQ
&:03 6WDWXV HQDEOH
$&6 85/ KWWS ZZZ UXLMLH FRP FQ DFV
$&6 XVHUQDPH DGPLQ
$&6 SDVVZRUG
&3( 85/ KWWS
&3( XVHUQDPH UXLMLH
&3( SDVVZRUG
&3( LQIRUP VWDWXV GLVDEOH
&3( LQIRUP LQWHUYDO V
&3( LQIRUP VWDUW WLPH
&3( ZDLW WLPHRXW V
&3( GRZQORDG VWDWXV HQDEOH
&3( XSORDG VWDWXV HQDEOH
&3( EDFN XS VWDWXV HQDEOH
&3( EDFN XS GHOD\ WLPH V
```

< † K y

<	ª ¢
CWMP Status	CWMP … Ù Áož
ACS URL	CPE N ACS URLož
ACS username	CPE N ACS ï dož
ACS password	CPE N ACS % Aož
CPE URL	ACS N CPE URLož
CPE username	ACS N CPE ï dož
CPE password	ACS N CPE % Aož
CPE inform status	CPE u Ê Å INFORM * s Ù Áož
CPE inform interval	CPE u Ê Å INFORM * s ž • • œož
CPE wait timeout	CPE k ¢ Ý ž ž •
CPE inform start time	CPE u Ê Å INFORM • ÷ * s ™ Ê ž •ož
CPE download status	© k N I R ACS ú i ~ y F å † ^ož
CPE upload status	© k g ACS n F å † ^ y ™ º † ^
CPE back up status	© k • o i ~/ F å Ê Ö Ù Á
CPE back up delay time	i ~/ F å Ê Ö ^ - • ž •

o¬ U P ’ Îo-

o¬ u V ª ¢o- -

9.13 show cwmp status

ª P CWMP ¢ ù g Ù Á

show cwmp status

o¬ @ ƒ ª ¢o-

@ ƒ	T

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o-

o¬ F å †o- 1 y ª P CWMP ¢ ù g Ù Áož

```
5XLMLH FRQILJ FZPS VKRZ FZPS VWDWXV
&:03 6WDWXV HQDEOH
6HVVLRQ VWDWXV &ORVH
/DVW VXFFHVV VHVVLRQ 8QNQRZQ
/DVW VXFFHVV VHVVLRQ WLPH 7KX -DQ
/DVW IDLO VHVVLRQ 8QNQRZQ
/DVW IDLO VHVVLRQ WLPH 7KX -DQ
6HVVLRQ UHWU\ WLPHV
```

< † K y

<	ª ¢
CWMP Status	CWMP … Ù Áož
Session status	CPE ACS ¢ ù k ¢ Ù Áož
Last success session	Â e%²) è k ¢ • ºož
Last success session time	Â e%²) è k ¢ È Ø ž •
Last fail session	Â e%²) â Â k ¢ • º
Last fail session time	Â e%²) â Â k ¢ È Ø ž •
Session retry times	¢ ù k ¢ M ¡) ƒož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

9.14 timer cpe-timeout

F å ACS — € • CPE Ý ž ž •ož

timer cpe-timeout seconds

Ê Ö Þ . F å

no timer cpe-timeout

o¬ @ ƒ ª ¢o-	@ ƒ	T
	seconds	Ý ž ž •ož % y a k H › 8 10 ½600ož

10 MONITOR

10.1 show power

ª P › ' Î k , › Â Î ' Î y › º Zo• Ù Áo• F ^ Í Îo• © ç Zož

show power

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- 4 x X 9 ª P — Õ › ' Î

o¬ F å †o-

o¬ U P ' Îo- N/A n P — c ¯ H

o¬ u V ª ¢o- -

10.2 show fan

ª P Ñ ” Î ó ' Î k , ? Î ó & º Zo• ~ ç Zo• W • Ù Á ^ k Y C Î ó ² , % ”o• Î ó % ² Ž ô ,

^ ' Îož

show fan [speed]

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- 4 x X 9 ª P — Õ Î ó ' Î k U ò 0 W • Ù Á Y C Î ó ² , ^ ' Îož

o¬ F å †o- 1. S29XS ª P Î ó ' Î

```
5XLMLH VKRZ IDQ
)DQ LG )DQ W\SH  6WDWXV

     5*B)$1    RN
5XLMLH VKRZ IDQ VSHHG
)DQ LG )DQ W\SH  6WDWXV    6SHHG 5 P  6SHHG OHYHO

     5*B)$1    RN                1 $
```

2. S29XS POE ª P Â E Î ó ’ Î

```
5XLMLH VKRZ IDQ
)DQ LG )DQ W\SH  6WDWXV

     5*B)$1    RN
     5*B)$1    RN
5XLMLH VKRZ IDQ VSHHG
)DQ LG )DQ W\SH  6WDWXV    6SHHG 5 P  6SHHG OHYHO

     5*B)$1    RN        1 $
     5*B)$1    RN        1 $
5XLMLH
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- S29XS yshow fan speed u 4 Speed(R/m) Î ó ô , B Hož

S29XS POE y show fan speed Q u 4 Speed-level- Î ó ô , ´ ð B H k ´ ð y 0- 2 k 1 y z , k2 y ä ,ož

c — Õ ª P ” k U ¨ [‘

10.3 show temperature

“ † ’ Î ò ¤ x X k 9 ò 0 — Õ “ †o• Y C Ù Á ˆ ’ Îož

show temperature

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y ò 0 — Õ ¢ ù “ † k Y C — Õ “ † © k 3 oož

S2910-24GT4XS-E y 2 “ † µ k … †%² “ † µ g ! O k ¢ “ † ä 9 65 - k © Ï ° µ ± ° k — Õ ä “

s Š z ¢ “ † ä 9 78 - k — Õ M oož

S2910-48GT4XS-E y 2 “ † µ k … †%² “ † µ g ! O k ¢ “ † ä 9 74 - k © Ï ° µ ± ° k — Õ ä “ s Š z ¢ “ † ä 9 84 - k — Õ M oož

S29XS POE y 1 “ † µ k ¢ “ † ä 9 53 - k © Ï ° µ ð ° k — Õ ä “ s Š z ¢ “ † ä 9 58 - k © Ï ° ± ° k — Õ ä “ s Š z ¢ “ † ä 9 68 - k — Õ M oož

o¬ F å †o- 1 o•S29XS ò 0 ñ Ä á * “ † y y ’ F å y

```
5 X L M L H  V K R Z  W H P S H U D W X U H
6 O R W     & D U G B W \ S H                    & X U U H Q W  &   6 W D W X V

        6        * 7 ; 6 (                        R N
        6        * 7 ; 6 (                        R N
5 X L M L H
```

2o•S29XS POE ò 0 ñ Ä á * “ † y y ’ F å y

```
5 X L M L H  V K R Z  W H P S H U D W X U H
6 O R W     & D U G B W \ S H                    & X U U H Q W  &   6 W D W X V

        6    &    * 7 ; 6 + 3 (                     R N
5 X L M L H
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- S29XS Ä 2 “ † µ kS29XS POE Ä 1 “ † µ c — Õ ª P ” k U ¨ [‘

11 ZAM

11.1 show zam

ª P ZAM gZero Automatic Manager k © F å B æ © Ï h ¢ ù F å C Ù Áož

show zam

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”o• ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- … ¥ x X U Y ò 0 ª P ZAM ¢ ù F å C Ù Áož

o¬ F å †o- 1 y ò 0 ZAM ¢ ù F å C Ù Á

```
5 X L M L H
5 X L M L H  V K R Z  ] D P
= $ 0  V W D W H                G L V D E O H
= $ 0  V W D W X V              1 R Z  L V  L G O H

5 X L M L H
```

< † K y

<	ª ¢
ZAM stste	ZAM Ù Áož
ZAM manage interface	ZAM € M k È » Â Ú 2 € Mož

11.2 zam

• o ZAM ož
zam

¼ { ZAM
no zam

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- • o zam ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 1
o¬ Ö åo ,9jÐ

12 ±Cã 7

12.1 remove configuration device device-id

Ž ” î V VSU è t — Õ] Ä F å g N ¨ VSU % ” U k M o e ÿ | bž
remove configuration device device-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
device-id	Ñ ” Z

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ¬ } Ž ” VSU © Ï Ä î V è t — Õ] Ä F å k U Y … Î x Xož 4 x X ‘ M o e ÿ |ož

o¬ F å †o- Ž ” — Õ F åož
5 X L M L H F R Q I L J U H P R Y H F R Q I L J X U D W L R Q G H Y L F H

o¬ à • co- ü g ¥ x X w ‘ F å Y e k ï U M o — Õ * show run x X ò 6 — Õ F å © k] Æ t í ”ož

o¬ U P ’ Îo-

o¬ o • j ¨o- -

o¬ u V ª ¢o- - show manuinfo

ò 0 ¢ ù © Ï Ä ñ Ä Þ y B ^ Ï D ’ Î k 9 Ï D ’ ò k „ C B ^ • º , Ñ ”o• Î óo• ›o• ’ ò áo•
¿ * k ? B ^ ª P ’ Î , Ú Zo• V $ Zo• d fo• ~ ç Zo• ÷ F ^ Í Î Zo• MAC ª - ˆ k ? _ — Õ Ž
u 4 B H ’ Î ¶%² ý k N ø - Ž u 4 ’ Îož
show manuinfo

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g Î x X U Y ò 0 ¢ ù © Ï Ä ñ Ä Þ y B ^ Ï D ’ Îož

o¬ F å †o- -

o¬ U P ’ Îo- † 1 y % Ñ % ” Ï D ’ Î ª P ò y

5 X L M L H V K R Z P D Q X L Q I R
' H Y L F H
/ R F D W L R Q & K D V V L V

```
'HYLFH
   /RFDWLRQ                3RZHU
   'HYLFH QDPH              5* 3'   ,
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ          9

'HYLFH
   /RFDWLRQ                3RZHU
   'HYLFH QDPH              5* 3'   ,
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ          9

'HYLFH
   /RFDWLRQ                )$1
   'HYLFH QDPH              0     )$1
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ          9
```

†2yVSU %" ÏD'ÎªPò y

```
5XLMLH VKRZ PDQXLQIR
'HYLFH
   /RFDWLRQ                &KDVVLV
   'HYLFH QDPH              5* 6
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ          9
   0DF $GGUHVV              ' )

'HYLFH
   /RFDWLRQ                6ORW  0
   'HYLFH QDPH              0     &0
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ          9
   6RIWZDUH 9HUVLRQ        5*26     E   5HOHDVH
   0DF $GGUHVV              ' )

'HYLFH
   /RFDWLRQ                6ORW
   'HYLFH QDPH              0      ;)3 ($
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ          9
   6RIWZDUH 9HUVLRQ        5*26     E   5HOHDVH
```

```
'HYLFH
   /RFDWLRQ                6ORW
   'HYLFH QDPH              0      ;)3 ($
   'HYLFH 6HULDO 1XPEHU              $ % '$) )
   +DUGZDUH 9HUVLRQ          9
   6RIWZDUH 9HUVLRQ          5*26     E   5HOHDVH

'HYLFH
   /RFDWLRQ                3RZHU
   'HYLFH QDPH              5* 3'   ,
   'HYLFH 6HULDO 1XPEHU              $ % '$) )
   +DUGZDUH 9HUVLRQ          9

'HYLFH
   /RFDWLRQ                3RZHU
   'HYLFH QDPH              5* 3'   ,
   'HYLFH 6HULDO 1XPEHU              $ % '$) )
   +DUGZDUH 9HUVLRQ          9

'HYLFH
   /RFDWLRQ                )$1
   'HYLFH QDPH              0    )$1
   'HYLFH 6HULDO 1XPEHU              $ % '$) )
   +DUGZDUH 9HUVLRQ          9

'HYLFH
   /RFDWLRQ                &KDVVLV
   'HYLFH QDPH              5* 6
   'HYLFH 6HULDO 1XPEHU              $ % '$) )
   +DUGZDUH 9HUVLRQ          9
   6RIWZDUH 9HUVLRQ          5*26     E   5HOHDVH
   0DF $GGUHVV               ' )

'HYLFH
   /RFDWLRQ                6ORW  0
   'HYLFH QDPH              0    &0
   'HYLFH 6HULDO 1XPEHU              $ % '$) )
   +DUGZDUH 9HUVLRQ          9
   6RIWZDUH 9HUVLRQ          5*26     E   5HOHDVH
   0DF $GGUHVV               ' )
```

```
'HYLFH
   /RFDWLRQ                6ORW
   'HYLFH QDPH              0      ;)3 ($
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ         9
   6RIWZDUH 9HUVLRQ        5*26     E   5HOHDVH

'HYLFH
   /RFDWLRQ                6ORW
   'HYLFH QDPH              0      ;)3 ($
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ         9
   6RIWZDUH 9HUVLRQ        5*26     E   5HOHDVH

'HYLFH
   /RFDWLRQ                3RZHU
   'HYLFH QDPH              5* 3'   ,
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ         9

'HYLFH
   /RFDWLRQ                3RZHU
   'HYLFH QDPH              5* 3'   ,
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ         9

'HYLFH
   /RFDWLRQ                )$1
   'HYLFH QDPH              0    )$1
   'HYLFH 6HULDO 1XPEHU            $ % '$) )
   +DUGZDUH 9HUVLRQ         9
```

o¬ u V ª ¢o- -

12.3 show sysmac

ò 0 — Õ ¢ ù © Ï mac ª - ' Îož

show sysmac

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g Î x X U Y ò 0 ¢ ù © Ï mac ª - ’ Îož

o¬ F å †o- -

o¬ U P ’ Îo-

```
ò 0 ¢ ù © Ï P D₸ ’ Î
5 X L M L H V K R Z V \ V P D F
G I H
```

o¬ u V ª ¢o- -

12.4 show version module detail

ò 0 % ² ¦ Â ’ Îož

show version module detail [slot-num]

show version module detail [device-id / slot-num]

o¬ @ ƒ ª ¢o-

@ ƒ	T
device-id	Ñ ” Z k U # gVSU % ” k ò ç } ÿ µ V $ Z k · À c ž ÿ µ % ² ñ ¨ Ñ ” Z h
slot-num	V $ Z k U #

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g Î x X U Y ò 0 % ² ¦ Â ’ Îož

o¬ F å †o-

o¬ U P ’ Îo-

```
ò 0 V ¨ V $ % ² ¦ Â ’ Î
5 X L M L H V K R Z Y H U V L R Q P R G X O H G H W D L O
' H Y L F H
6 O R W
```

```
8VHU 6WDWXV        QRQH
6RIWZDUH 6WDWXV    QRQH
2QOLQH 0RGXOH
7\SH
3RUWV
9HUVLRQ
&RQILJXUHG 0RGXOH
7\SH
3RUWV
9HUVLRQ
```

o¬ u V ª ¢o- -

12.5 show version slots

ò 0 %² ¨¿ Ù Á ' Îož
show version slots [slot-num]
show version slots [device-id / slot-num]

o¬ @ ƒ ª ¢o-

@ ƒ	T
device-id	Ñ " Z kU # gVSU % " kò ç } ÿ µ V $ Z k · À c ž ÿ µ %² ñ ¨Ñ " Z h
slot-num	V $ Z k U #

o¬ x X % "o- Ô Ó ï % "

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- ü g Î x X U Y ò 0 %² ¨¿ Ù Á ' Îož

o¬ F å †o- -

o¬ U P ' Îo-

```
ò 0 %²¨¿ Ù Á ' Î
5XLMLH VKRZ YHUVLRQ VORWV
'HY 6ORW 3RUW &RQILJXUHG 0RGXOH 2QOLQH 0RGXOH 6RIWZDUH 6

            QRQH          QRQH          QRQH
            0    6)3 *7   0    6)3 *7   QRQH
            0    ;)3      0    ;)3      FDQQRW VWDUWXS
            0    *7  6)3  0    *7  6)3  RN
```

0	1 $	0	&0	P D V W H U
0	1 $	Q R Q H		Q R Q H

o¬ u V ª ¢o- -

12.6 sysmac

© Ï 6 MAC ª -ož
sysmac mac-address

í ” F å † ^ ‘ MAC ’ Îož
no sysmac

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac-address	— å MAC ª -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 o•%² " Õ Ñ k © Ï … MAC ª - » Ê ¨ ’ ò á ê ñ Ñ ” FLASH k x ¨ VSU % ” k 9 ² MAC ª - J - • v k © Ï k 1 … MAC ª - ‘ ¨ F å † ^ k M • o e k ò ç F å † ^ ¨ Ä | MAC ª - é k i ¯ … ož * no sysmac x X U Y í ” F å † ^ MAC ’ Î k M • … ó • » Ê ¨ FLASH MAC ª -ož
2o• ¨ à ¼ % ” g 6 © Ï F å 4 auth-mode gateway x X ħk%² ? u — Õ F å 4 Ç à ¼ MAC ª - k ò ç ¾ E à ¼ — Õ k ï U Y … sysmac x X 6 à ¼ — Õ MAC ª - t Á E à ¼ — Õ MAC ª - k R ò … • Ç à ¼ — Õ · “ w F åož ¥ x X N ¨ © Ï F å à ¼ % ” ž ÿ |ož
3o• © Ï 6 MAC ª - ê ñ í ” F å † ^ ‘ MAC ª - k ® ¬ ‘ F å w M o e ÿ |ož

o¬ F å †o- † 1 y í ” F å † ^ ‘ MAC ª - y

```
5 X L M L H  Q R  V \ V P D F
```

† 2 y © Ï 6 MAC ª - y

```
5 X L M L H  V \ V P D F  G  I  H
```

o¬ à • co- ü g ¥ x X Y e k ï U * show run x X © Ï mac F å © k] Æ J ¾ož

o¬ U P ’ Îo-

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13 a Â Â È ~

13.1 auto-sync time-period

F å E ' ò á É • ž c 5 F å † ^ ž • • œož
auto-sync time-period value

¼ { E ' ò á c 5ož
no auto-sync time-period

Ê Ö E ' ò á c 5 ž • • œ ó • ›ož
default auto-sync time-period

o¬ @ ƒ ª ¢o-

@ ƒ	T
value	c 5 ž • • œ k % y a z ž • 8 R 1 a ñ 1 Ã g2678400 a h

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.2 redundancy

µ É • F å % ”ož
redundancy

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ É • F å % ”ož

```
5XLMLH FRQILJ WHUPLQDO
5XLMLH FRQILJ UHGXQGDQF\
5XLMLH FRQILJ UHG H[LW
```

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.3 redundancy forceswitch

ô W ü g R ä Eož

redundancy forceswitch

o¬ @ ƒ ª ¢o-

	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¨ ' ò á ü g ¥ x X ' è • ' ò áož

ü g ½ Õ ä F

z ¨ VSD ½ Õ C Ô 9 ž Ù Á z

} ž W 2ož

õ ô } æ o f ´ • â [} VSU f ´ • redundancy
reload shelf

) k @ ½ Õož

o¬ F å †o- 1 y ò 0 ¢ ù ' ò á É • Ù Áož

```
5XLMLH! HQDEOH
5XLMLH VKRZ UHGXQGDQF\ VWDWHV
5HGXQGDQF\ UROH PDVWHU
5HGXQGDQF\ SHHU VODYH
$XWR V\QF WLPH SHULRG V
```

2 y ò 0 ¢ ù R ' ò á É • Ù Áož

```
5XLMLH! HQDEOH
5XLMLH VKRZ UHGXQGDQF\ VWDWHV
```

14 POE a Â

14.1 poe class-lldp enable

— å © Ï LLDP 8) ã ´ k ó • ø •
poe class-lldp enable

¼ { © Ï LLDP 8) ã ´ ož
no poe class-lldp enable

Ê Ö ó • F å
default poe class-lldp enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ó • u 4

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- — å © Ï LLDP 8) ã ´ ož

o¬ F å †o- 1 y • o © Ï LLDP 8) ã ´

```
5XLMLH FRQILJ SRH FODVV OOGS HQDEOH
5XLMLH FRQILJ HQG
5XLMLH ZULWH
```

o¬ à • co- … show poe powersupply ò 0 F å ' Î

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

14.2 poe enable

F å € M i ^ ož
poe enable

F å ¼ { € M i ^
no poe enable

Ê Ö ó • F å
default poe enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M ó • … i ^

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * Î x X Û F å k … / ¼ { € M i ^

o¬ F å †o- 1 y ¼ { N M * L J D E L W (W K H U Q ˆ H W 0/1
5 X L M L H F R Q I L J L Q W H U I D F H * L J D E L W (W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W Q R S R H H Q D E O H

o¬ à • co- … show poe interface g0/1 ò 0 F å ' Î

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

14.3 poe legacy

¶ B • o ³ ö Õ PD Ã ož
poe legacy

¶ B ¼ { ³ ö Õ PD Ã ož

Rc5AC5400978CE AAA07A26FAD>j/T0 1 Tf 0 Tj /Pr T [<BDB3 04C30620>-705 6946F9E> (DE)Tj /C2_P/1TT

	ä U ñ 95 ¨ Q u 4 802.3af © Ï 8 <0-15.4>

o¬ Þ . F åo- ó • + € M Â Ý u 4 ä Ÿ ' ò

o¬ x X % "o- N M F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * Î x X Û F å k — å € M Â Ý äož

o¬ F å †o- 1 y — å € M * L J D E L W (W K H Â Ý Q H W 0/1 0W

```
5 X L M L H  F R Q I L J  L Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  * L J D E L W ( W K H U Q H W  S R H  P D [  S R Z H U
```

o¬ à • co- … show poe interface g0/1 ò 0 F å ' Î

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

14.5 poe mode

— å © Ï ^ ' ò % "ož

poe mode {auto | energy-saving }

í " © Ï ^ ' ò % " F å k ó • F å%² ož

no poe mode

Ê Ö ó • F å

default poe mode

o¬ @ ƒ ª ¢o-

@ ƒ	T
auto	— å › ' ò % " % " k ¥ % " POE — Õ U # % "
energy-saving	— å › ' ò % " - % " k ¥ % " POE — Õ ó • % "

o¬ Þ . F åo- energy-saving

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g ò x X U Y — å © Ï ó • ˆ ' ò % ”ož

o¬ F å †o- 1 y — å ¢ ù POE

o¬ F å †o- 1 y — å © Ï • o ö Õ MIB RFC3621 trap G ož

o¬ à • co- … show poe interface g0/1 ò 0 F å ' Î

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

14.8 poe power-off time-range name

— å € M ž ^ ož
poe power-off time-range name

í " € M ž ^ F åož
no poe power-off time-range

Ê Ö ó • F å
default poe power-off time-range

o¬ @ ƒ ª ¢o-

@ ƒ	T
name	# ž • • d

o¬ Þ . F åo- -

o¬ x X % "o- N M F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * Î x X Û F å k … ê ñ ¼ { € M ž ^

o¬ F å †o- 1 y — å * L J D E L W (W K H U Q H W 8/30 ñ 17:30 ¼ {

```
5XLMLH FRQILJXUH
5XLMLH FRQILJ WLPH UDQJH SRH WLPH
5XLMLH FRQILJ WLPH UDQJH SHULRGLF ZHHNGD\V WR
5XLMLH FRQILJ WLPH UDQJH H[LW
5XLMLH FRQILJ LQWHUIDFH *LJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW SRH SRZHU RII WLPH UDQJH S
```

o¬ à • co- … show poe interface g0/1 ò 0 F å ' Î

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

14.9 poe priority

— å N M ^ ' ò i ¯ ´ož
poe priority { low | high | critical }

í ” N M ^ ' ò i ¯ ´ F å k ó • F å%²
no poe priority

Ê Ö ó • F å
default poe priority

o¬ @ ƒ ª ¢o-

@ ƒ	T
{ low | high | critical }	i ¯ ´ k Ä Low o•Higho•Critical U Y # +

o¬ Þ . F åo- Low k € M ó • i ¯ ´ z i ¯ ´

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * Î x X Û F å k … ê ñ ¼ { € M PoE ^ i ¯ ´ož

o¬ F å †o- 1 y — å € M * L J D E L W (W K H ü¯Q HÂ¼ 0/1

```
5XLMLH FRQILJ LQWHUIDFH *LJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW SRH SULRULW\ FULWLFDO
5XLMLH FRQILJ LI *LJDELW(WKHUQHW HQG
```

o¬ à • co- … show poe interface g0/1 ò 0 F å ' Î

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

14.10 poe uninterruptible-power

— å © Ï ½ o • • Ö y ož
poe uninterruptible-power

í " © Ï ½ o • • Ö y F å k ó •%²
no poe uninterruptible-power

Ê Ö ó • F å
default no poe uninterruptible-power

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ó • ¼ {

o¬ x X % "o- ¶ B F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¨ ¶ B % " • o ½ o • • ^ k ¥ x X Q Ä ¨ ' F å e õ ¨ %² Ê o ž • ¥

o¬ F å †o- 1 y • o ½ o • • ^ w ' F å

```
5XLMLH FRQILJ SRH XQLQWHUUXSWLEOH SRZHU
5XLMLH FRQILJ HQG
5XLMLH ZULWH
```

o¬ à • co- … show poe powersupply ò 0 F å ' Î

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

14.11 poe warning-power

— å © Ï ä s Š J ¿ož
poe warnig-power int

í " © Ï ä s Š J ¿ F å k ó •%²
no poe warnig-power

Ê Ö ó • F å
default poe warnig-power

o¬ @ ƒ ª ¢o-

@ ƒ	T
int	s Š ä ã A k 8 <0-99>

o¬ Þ . F åo- 90

o¬ x X % "o- ¶ B F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- — å RFC3621 pethMainPseUsageThreshold › k ä s Š J ¿ož

o¬ F å †o- 1 y — å © Ï ä s Š J ¿ 80%ož

```
5 X L M L H  F R Q I L J  S R H  Z D U L Q J  S R Z H U
5 X L M L H  F R Q I L J  H Q G
5 X L M L H  Z U L W H
```

o¬ à • co- … show poe powersupply ò 0 F å ' Î

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

14.12 show poe interface

ò 0 6 € M POE F å y Ù Á ' Îož
show poe interface interface-name

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	N M d f

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g Î x X U Y ò 0 6 € M ê ñ Ä € M POE Ù Á

o¬ F å †o- 1 y ò 0 € M * L J D E L W (W K H U POE Wå y1 Ù Á ' Îož

5 X L M L H V K R Z S R H L Q W H U I D F H * L J D E L W (W K H U Q H W
, Q W H U I D F H * L
3 R Z H U H Q D E O H G H Q D E O H
3 R Z H U V W D W X V R Q
08$ [H S R Z H U W À R Q X X $ X X X Q • •
$ 6 L M L F D W H 8 S • R Z H U 8 S S Z H X X $ T
&B • W H H Q H S S R Z H U R Q X X X Q H X X X X X X †G ï° œ! • 3d'd $ Q0Z H UpW H S R
$ Y H U D J H S R Z H U :

	Õ ã 4 ´ ðož
Trouble cause	{ ž = œ none n P ¨ © Ï { žož
Priority	€ M i ¯ ´ y low k z i ¯ ´ k € M ó • i ¯ ´ z high k i ¯ ´ k ¬ } ï F å z critical k Â ä i ¯ ´ k ¬ } ï F åož
Legacy	© k • o 4 ³ ö Ã % ”ož
Power-off time-range	PoE € M ž • + • ž • < d ož
Power management	^ ' ò % ” y auto k % ” z energy-saving, - % ” z
4pair status	HPOE M 4 ¿ + ^ Ù Á gHPOE M õ Ä ¥ ' Î hy normal y 4 ¿ + ^ 3 o z abnormal y2 ¿ + ^ 3 o k P Ù 2 ¿ + ^ ‘ oož

o¬ U P ' Îo- Trouble cause n P = œ k ? _ Ù Á C + • LED Ù Á k À } Ä ò :

ID	Port trouble cause	ª ¢ 3 o ^ g Õ) hz
0	None	AC/DC y ñ — Õ • • g ¯ hz € M Ì • o PoE g ¯ bž
1	Overload during start-up	^ ‰ < k G ë v ß Ý ò • • g ð) bž
2	Power overload	PD — Õ ú ò • •(ð))ož
3	Short circuit	PD — Õ ? è ò • •(ð))ož
4	Temperature rise too high	ä “ ‘ ò ¼ {(ð))ož
5	Power Management	ä ' ò ò ¼ {(ð))ož
6	Hardware error	F ^ { ž ò ¼ {(ð))ož

o¬ u V ª ¢o- -

14.13 show poe interfaces

ò 0 ñ Ä € M PoE Ù Á ê F åož

show poe interfaces status

show poe interfaces configuration

o¬ @ ƒ ª ¢o-

@ ƒ	T
status	ª P ñ Ä PoE € M Ù Á ' Î
configuration	ª P ñ Ä PoE € M F å ' Î

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g Î x X U Y ò 0 ñ Ä € M POE Ù Á ê F å

o¬ F å †o- 1 y ñ Ä € M PoE Ù Á ' Îož

```
5XLMLH VKRZ SRH LQWHUIDFHV VWDWXV
,QWHUIDFH 3RZHU   3RZHU &XUU $YJ   3HDN &XUU   7URXEOH 3'   3R
        &RQWURO 6WDWXV 3RZHU 3RZHU 3RZHU &XUUHQW &DXVH   &ODV

*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RQ       :    :    :   P$              9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RII      :    :    :   P$         1 $  9
*L      HQDEOH RII      :    :    :   P$         1 $  9
```

2 y ñ Ä € M PoE F å ' Îož

```
5XLMLH VKRZ SRH LQWHUIDFHV FRQILJXUDWLRQ
,QWHUIDFH 3RZHU   3RZHU  0D[  $OORF 3RUW    3RUW   3RZHU RI
        &RQWURO 6WDWXV 3RZHU 3RZHU 3ULRULW\ /HJDF\ 7LPH UD

*L      HQDEOH RQ    1 $  1 $  FULWLFDO RII   1 $
*L      HQDEOH RQ    1 $  1 $  FULWLFDO RII   1 $
*L      HQDEOH RQ    1 $  1 $  FULWLFDO RII   1 $
```

```
*L      HQDEOH   RII    1 $    1 $    FULWLFDO  RII     1 $
*L      HQDEOH   RQ     1 $    1 $    FULWLFDO  RII     1 $
*L      HQDEOH   RQ     1 $    1 $    KLJK      RII     1 $
*L      HQDEOH   RQ     1 $    1 $    KLJK      RII     1 $
*L      HQDEOH   RQ     1 $    1 $    KLJK      RII     1 $
*L      HQDEOH   RQ     1 $    1 $    KLJK      RII     1 $
*L      HQDEOH   RQ     1 $    1 $    KLJK      RII     1 $
*L      HQDEOH   RQ     1 $    1 $    KLJK      RII     1 $
*L      HQDEOH   RII    1 $    1 $    KLJK      RII     1 $
*L      HQDEOH   RQ     1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RQ     1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
*L      HQDEOH   RII    1 $    1 $    ORZ       RII     1 $
```

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

14.14 show poe powersupply

ò 0 ¢ ù POE © Ï ^ Ù Áož
show poe powersupply

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g Î x X U Y ò 0 ¢ ù POE © Ï ^ Ù Á

o¬ F å †o- 1 y ò 0 ¢ ù POE © Ï ^ Ù Á

```
6 ;6 VKRZ SRH SRZHUVXSSO\
'HYLFH PHPEHU
0FX VRIWZDUH YHUVLRQ
3RZHU PDQDJHPHQW HQHUJ\ VDYLQJ
36( WRWDO SRZHU :
36( WRWDO SRZHU FRQVXPSWLRQ :
36( DYDLODEOH SRZHU :
36( WRWDO UHPDLQ SRZHU :
36( SHDN SRZHU :
36( DYHUDJH SRZHU :
36( SRZHUHG SRUW
36( GLVFRQQHFW PRGH GF
36( ZDUQLQJ SRZHU
36( FODVV OOGS HQDEOH
36( XQLQWHUUXSWLEOH SRZHU GLVDEOH
```

< † K y

<	ª ¢
Device member	— Õid Z k ¨ Ä L ê VSU © Ï Û ö P © Ï ~ Zož
Mcu software version	MCU ¡ ^ Í Î Z
Power management	^ ' ò % " y auto k % " z energy-saving, - % " z
PSE total power	Î © Ï U Y u 4 Â Ý äož
PSE total power consumption	¢ ù © Ï] ã F ß äož
PSE total remain power	¢ ù © Ï Ä Ú 5 ä Ì … ož
PSE powered port	¢ ù © Ï] Æ Ú 5 € M ^ ož
PSE disconnect mode	¢ ù © Ï • N y % "ož
PSE warning power	© Ï › s Š ä ã A J ¿ož
PSE class lldp	© k … POE LLDP ož
PSE uninterruptible-power	© k • o ½ M o • • ^ ož

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

15 PKG_MGMT

15.1 clear storage

Ž ” Î ª x ož
clear storage [url]

o¬ @ ƒ ª ¢o-

@ ƒ	T
url	x y Î ª url) £ ê ¶ è ¬ d

o¬ Þ . F åo- l

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ¥ x X U Y 6 Ž ”î x ê î) £ ñ Ä x k ó • Ž ” Î ª ñ Ä x ož

o¬ F å †o-

```
5 X L M L H F O H D U V W R U D J H
5 H P R Y H W K H Z K R O H V W R U D J H G L U H F W R U \ " > \ Q @ \
```

o¬ à • co- ò 0 6 url

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

15.2 show component

ª P ¢ ù — Õ] x ñ Ä Á ^ C _ Á ^ ’ Îož
show component [component _name]

o¬ @ ƒ ª ¢o-

@ ƒ	T

component _name	Á ^ d fož ¢ ¨ 4 @ ƒ › ž k 9 ª P — Õ ñ Ä] x Á ^ C _ Á ^ Â Î ' Îož ¢ ¨ 4 @ ƒ › ž k 9 ª P + • Á ^ ¦ Â ' Î k û à Á ^ Ä © k … k y ¥ Á ^ k 3 o W •ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ¥ x X m _ ¥ ” k k component_name @ ƒ y k ¥ @ ƒož ï ¨ ´ k 3 ú Á ^ ù ª ª ¬ } 4 † ¢ ù — Õ ñ Ä] x Á ^ C Á ^ Í Î ' Î k 4 ž • … k @ ƒ show component x Xož ¢ ï ¬ } ¦ Â 4 † Á ^ ž } … k @ ƒ show component x X k U B H + • Á ^ ¦ Â ' Îož * ? ' Î ï U Y • Ž 4 † Á ^ W • Ù Á k î • Á ^ Ä © k t K D ° k ¨ L ” { ž k G ‘ Á ^ ¶ k U ´ g • µ Ä M } Þ #ož

v Ô ¦ Ñ ° ¶ Q / V ‘ † o " 3 Ñ 0 • ã ¾ þ (Æ ã â ë • É E * ì show component a — Ÿ ñ n ¦ Ñ 3 Ñ } ° ¶ Q / Ÿ “ t - M ¥ Õ Ó ¾ î ë • É E * ¡)
¢ ä ‘ û ñ n d

o¬ F å ‡o- m " ” — Õ ª P ¢ ù] x ñ Ä Á ^ C _ Á ^ ' Îož

% U ¦ H 3 D E N D V P H P S R O W W

[redacted]

G ' H F C @ ` À p 0

[redacted]

Install time	— Õ x ¥ Á ^ ž •
Description	Á ^ • % T

o¬ … 6 -o- ú x †^ñÎª†^©ÏeU … ¥xXÄ¯ò0 x }'Îož

o¬ Få †o- mªP x †^'Îož

```
5XLMLH  VKRZ XSJUDGH ILOH IODVK  EULGJHBHJ  PB  HD  PLSV
1DPH  EULGJH
9HUVLRQ  FG  DD
3DFNDJH W\SH  FRPPRQ FRPSRQHQW
6XSSRUW WDUJHW  HJ  P
6L]H
%XLOG WLPH  :HG 'HF
,QVWDOO GDWH  QRW LQVWDOOHG
'HVFULSWLRQ  WKLV LV D EULGJH SDFNDJH
3DFNDJH ILOHV
  3DFNDJH ILOHV
    OLE
    OLE  OLEEULGJH VR
    VELQ
    VELQ EULGJH
```

… ¥xXUYBH Ä'Îož

<	ª¢
Name	df
Version	GbÍÎ'Î
Package type	•º
Support target	u4 D}ª¢
Size	mÄ Ý4
Build time	Ú ž•
Install date	x™Ê
Description	T 'Î
Package files	Ä m ñÄÄ

o¬ UP'Îo- ügªP x 'Îož

```
1DPH  EULGJH
9HUVLRQ  FG  DD
```

```
,QVWDOO GDWH        QRW LQVWDOOHG
'HVFULSWLRQ       WKLV LV D EULGJH SDFNDJH
3DFNDJH ILOHV
    3DFNDJH ILOHV
        OLE
        OLE   OLEEULGJH VR
        VELQ
        VELQ EULGJH
```

o¬ u V ª ¢o- -

15.5 show upgrade history

ª P ´ 7 W ' Îož
show upgrade history

o¬ @ ƒ ª ¢o-

@ ƒ	T
/	I

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o-

o¬ U P ' Îo-

```
5XLMLH VKRZ XSJUDGH KLVWRU\
/DVW 8SJUDGH ,QIRUPDWLRQ
    7LPH
    0HWKRG       /2&$/
3DFNDJH 1DPH  1    B5*26      % B&0B      BLQVWDOO ELQ
3DFNDJH 7\SH  'LVWULEXWLRQ
```

o¬ u V ª ¢o- -

15.6 upgrade

x k ´ Î ª † ^ © Ï Ä x ož

upgrade url [force]

o¬ @ ƒ ª ¢o-

o¬ o • j ¨o- l

o¬ u V ª ¢o- -

15.7 upgrade auto-sync package

— Õ © Ï c 5 ´ ò 8 ož

upgrade auto-sync package url

o¬ @ ƒ ª ¢o-

@ ƒ	T
url	© Ï ´ ž k ñ … ´ è ¬

coordinate	Y ’ ò á ¥ © Ï ´ ‰ G k c 5 4 Í Î

o¬ Þ . F åo- coordinate

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- … ¥ x X ù ¬ } ¯ G • ´ © k] Æ < Ñož

o¬ F å †o- 1 m — Õ c 5 Œ Y ’ ò á Í Î Õož

```
5XLMLH XSJUDGH DXWR V\QF SROLF\ FRRUGLQDWH
```

o¬ à • co- 1. … show upgrade auto-sync ò 0 ¢ ù c 5 ´ Œ ož

o¬ U P ’ Îo- 1 m — å è U P y

```
8SJUDGH DXWR V\QF SROLF\ LV VHW DV FRRUGLQDWH
```

o¬ o • j ¨o- I

o¬ u V ª ¢o- -

15.9 upgrade auto-sync range

— å © Ï c 5 ´ 8 ož

upgrade auto-sync range [chassis | vsu]

o¬ @ ƒ ª ¢o-

@ ƒ	T
chassis	¨ Ñ ” 8 Ä g Í Î c 5 ´
vsu	vsu © Ï 8 Ä g Í Î c 5 ´

o¬ Þ . F åo- vsu

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- • ‘ — å vsu k Y ¨ Â Ý 8 Ä ‘ _ © Ï è t Í Î%² ož

```
8SJUDGH SURFHVVLQJ LV
8SJUDGH SURFHVVLQJ LV
8SJUDGH LQIR >2.@
      .HUQHO YHUVLRQ>        I G   !      I E  I@
      5RRWIV YHUVLRQ>      DG     !      EFF  H @
8SJUDGH SURFHVVLQJ LV
5HORDG WR WDNH HIIHFW
```

o¬ à • co- 10. … show version detail ò 0 ÿ © Ï Á ^ © k ´ è ož
11. … show component ò 0 Á ^ © k ´ è ož

o¬ UP ' Îo- 1 m ´ è UPy

```
8SJUDGH LQIR >2.@z
```

2m x —|êtC°M•BH x wüg ´xXy

```
,QYDOLG SDFNDJH ILOH
```

3m—Õ u4¥ x kM•BH x wüg ´xXy

```
'HYLFH GRQ W VXSSRUW
```

4m—Õ—¬ ´y

```
7KH YHUVLRQ LQ GHYLFH LV QHZHU RU WKH VDPH
```

5m ´q• ák ò—Õ•k U &©k ñy

```
1R HQRXJK VSDFH IRU GHFRPSUHVV
```

6mßë M|Êk©ÏC°kû© ÆÔòy

```
1R HQRXJK VSDFH  URRWIV EHHQ GHVWUR\HG  3OHDVH XSJUDGH LQ XER
```

o¬ o • j ¨o- l

o¬ u V ª ¢o- -

1 / L

1.1 bandwidth

¨ N M F å % ” — å N M k ! @ ƒ ož
bandwidth kilobits

Ê Ö k ! @ ƒ Þ . ›ož
no bandwidth

o¬ @ ƒ ª ¢o-

@ ƒ	T
kilobits	? a U k ! k Y ? a K A Ô % y

o¬ Þ . F åo- ¢ ¥ N M Z Ä — å bandwidth x X @ ƒ ž k ¨ Ô Ó ï % ” show interface x X Û ª P ¿ Þ . ›ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- bandwidth x X Ž § € î N M k ! k Q © • ï s • © Ï ¥ N M k ! 6 ö k ó • Õ Ñ k Y ß à
N M k ! © ÿ G Ž € M Link , ä Đ k ò ç Ä ¬ } U Y \ 6 k Bandwidth Q © è @ ƒ k k
§ € Ò ò e è N M 1 3 k !ož

o¬ F å †o- y Y † ÿ P 8 F å N M k ! @ ƒ 64Kbps y
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W (W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W E D Q G Z L G W K

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.2 carrier-delay

¨ N M F å % ” … x X carrier-delay ¨ N M — å ú f ž •ož

carrier-delay {[milliseconds] num | up [milliseconds] num down [milliseconds] num}
Ê Ö Þ . ›ož
no carrier-delay

o¬ @ ƒ ª ¢o-

@ ƒ	T
num	U # @ ƒ k ó • Y a % y k 8 0 ½60 aož
milliseconds	U # @ ƒ k 4 ¼ p knum ƒ › Y D a % y k 8 0~60000 D a
up	U # @ ƒ k — å ú f y ’ Z DCD R Down Ù Á ñ Up Ù Á ž • • ž
down	U # @ ƒ k — å ú f y ’ Z DCD R Up Ù Á ñ Down Ù Á ž • • ž

o¬ Þ . F åo- ú f ž • Þ . › © 2 aož

o¬ x X % ”o- N M % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ú f • © 6 N M e è ú f y ’ Z DCD R Down Ù Á ñ Up Ù Á ê ñ R Up ñ Down Ù Á ž • • ž kò
ç DCD ¨ • ž $ Ä G ÿ J k ; " © Ï 1 ¿ _ Ù Á J ò 9 C ƒ G e è C M • # Œož
ò ç DCD ú f • ž • A û x k ; " 1 ¥ @ ƒ — x ? k U Y @ ½ , è M ü k Y Ž è n U Y û ½ ª v •ož
ò ç , F k DCD ú f • ž • 4 9 è M ü ñ 0 ž • k ; " • ¥ 1 ¥ @ ƒ — å , + Ý ? k Y ² - è Z Ä ·
} è -TÙož

o¬ F å †o- 1 y F å N M ú f ž • 5 aož

```
5 X L M L H F R Q I L J  L Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J  L I  * L J D E L W ( W K H U Q H W  F D U U L H U  G H O D \
```

2 y F å N M ú f ž • 100 D aož

```
5 X L M L H F R Q I L J  L Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J  L I  * L J D E L W ( W K H U Q H W  F D U U L H U  G H O D \  P L O O L V H F R Q G
```

3 y F å N M e è ú f y ’ Z DCD R Down Ù Á ñ Up Ù Á ž • • 100 D a k R Up Ù Á ñ Down ž • • 200 D a

```
5 X L M L H F R Q I L J  L Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J  L I  * L J D E L W ( W K H U Q H W  F D U U L H U  G H O D \  X S  P L O O L V H F
```

o¬ à • co- 1 y … show interfaces x X k U Y ò 0 N M ú f ž •ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.3 clear counters

Ž ” N M ‹ ƒ ˜ož

clear counters [interface-type interface-number]

T	ÍúÎîC#îDn$0 … ÕM

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X Q + A E € M k 8 C ü ` € M è t € M k è € M y C ü ` € M è t € M Ä |ož ü g ¥ x X , ¢
9 + N M Ç ü g shutdown y no shutdown x Xož

o¬ F å †o- 1 y + N M GigabitEthernet 1/1 g F ^ Ö yož
5 X L M L H F O H D U L Q W H U I D F H * L J D E L W (W K H U Q H W

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

1.5 description

— å N M ð dož
description string

Ê Ö è Þ . ›ož
no description

o¬ @ ƒ ª ¢o- @ ƒ ¥ x X Q øZW€B \ pg Fw=Ö y Fuå4$p p9Ž ðÃ† ÞÐ± XpQ f• ÿ \ x%…\ný-a, w

1.7 eee enable

F å € M - Ù Áož

eee enable

o¬ @ ƒ ª ¢o-	@ ƒ	T

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- † D ÿ ž * show interfaces status err-disable Û ò 0 † = œ k L ” à Ì { ž $ e … 4 x X Ê Ö € Mož

o¬ F å †o- 1 y 1 † € M R j ¨ Ù Á Ê Ö Ûož

```
5 X L M L H  F R Q I L J  H U U G L V D E O H  U H F R Y H U \
5 X L M L H  F R Q I L J  H Q G
```

o¬ à • co- 1 y … show interfaces status err-disable x X k U Y ò 0 € M † ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.9 fiber antifake enable

F å ° % ² … q y ¼ { y • oož
fiber antifake {ignore | enable}

¼ { ° % ² … q y
no fiber antifake enable

o¬ @ ƒ ª ¢o-

Ô) ° % ² F ì … k + i H › Í Î ° % ² U k ¨ ož

o¬ F å †o- 1 y ø • — Õ ° % ² … q y

5 X L M L H F R Q I L J I L E H U D Q W L I D N H H Q D E O H

o¬ à • co- -

o¬ U P ' Îo- € M * L J D E L W (W K H U Q H W V Q ³ + 4 • š ° % ² ž k U P y
$ X J 2 3 7 , & $ / B 0 2 ' 8 / (: $ 5 1 , 1 * 7 K H 2 S W L F D O 0 R G X O H 6 H U L D O 1
L Q V H U W H G L Q W R L Q W H U I D F H * L J D E L W (W K H U Q H W L V Q R W R U L J L Q D O

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.10 flowcontrol

ø • ê ¼ { v O O òož
flowcontrol { auto | off | on }

Ê Ö è Þ . ›ož
no flowcontrol

o¬ @ ƒ ª ¢o-

@ ƒ	T
auto	# Œ v O O òož
off	¼ { v O O òož
on	ø • v O O òož

o¬ Þ . F åo- ¼ { v O O òož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- B ã D } u 4 ³ + f v O k u 4 send y receive ¼ p ož… show interfaces ò 0 N M v O O ò y Ž
v O O òož

o¬ F å †o- 1 y ø • GigabitEthernet 1/1 v O O ò

5 X L M L H F R Q I L J L Q W H U I D F H * L J D E L W (W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W I O R Z F R Q W U R O R Q

o¬ à • co- 1 y … show interfaces x X k U Y ò 0 N M v O % ”ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.11 interface

¥ x X © % ” - ! x X k µ N M F å % ”ož
interface interface-type interface-number

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type	N M • º
interface-number	N M Ú Z

o¬ Þ . F åo- -

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X µ N M F å % ” k %² 5 < U Y “ w N M F åož

o¬ F å †o- 1 y µ Aggregateport 1 F å % ”ož

```
5 X L M L H F R Q I L J L Q W H U I D F H $ J J U H J D W H S R U W
5 X L M L H F R Q I L J L I $ J J U H J D W H S R U W
```

2 y µ GigabitEthernet 1/2 F å % ”ož

```
5 X L M L H F R Q I L J L Q W H U I D F H * L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W ( W K H U Q H W
```

3 y µ VLAN 1 F å % ”ož

```
5 X L M L H F R Q I L J L Q W H U I D F H Y O D Q
5 X L M L H F R Q I L J L I 9 / $ 1
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.12 interface range

¨ ¶ B F å % ” … interface x X µ N M F å % ”ož
Interface range { port-range | macro macro_name }

Y x X d … define interface-range Û #ož
define interface-range macro_name

o¬ @ ƒ ª ¢o-

@ ƒ	T
port-range	O q • N M • º y N M Ú Z 8 k U Y © Y ß à Ò ò N Mo• Loopback M ˆ k ÿ µ ¥ ” interface-type slot-number/interface-numberož
macro macro_name	# + ÿ µ # Û n P N M 8 kmacro_name d ož

o¬ Þ . F åo- Þ . Õ Ñ k … ¥

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.13 line-detect

9 y ¡ N ¿ Ø Ù Áož
line-detect

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- line-detect x X } 9 ò ¿ Ø Ù Á k w ¨ ¿ Ø ß ë { ž g ò • è h ž k 9 y { ž G ÿ y åož

o¬ F å †o- 1 y y € M GigabitEthernet 0/1 ¿ Ø Ù Áož

```
5XLMLH FRQILJ LI *LJDELW(WKHUQHW      OLQH GHWHFW
7KLV RSHUDWLRQ PD\ IRUFH WKH SRUW GRZQ DQG XS RQFH  FRQWLQXH
VWDUW FDEOH GLDJQRVHV SOHDVH ZDLW
FDEOH GDLJQRVHV HQG WKLV LV UHVXOW
  SDLUV  OHQJWK       PHWHUV
SDLU VWDWH      OHQJWK PHWHUV

$     2.
%     2.
&     6KRUW
'     6KRUW
```

<	ª ¢
pairs	© 6 ¿ Ø L µ m ¿ + ƒ) k ò E Î ¿ © š + ¿ Á ` ò èož
	¢ ù ¿ + Ù Á k » Ä › yOK g 3 o h k h6 4 w ? è ™t |W k

state

length	¿ Ø x † k % y œož Q Ä state OK ¿ + x † õ Ä |ož P Ù k 9 ¿ Ø x † © ÿ G ' Z n ' ž • Û ‹ ' kñ Y U ¨%² ¨ [oŽÙ Á Short ê ñ Oen + • length © 6 € M ñ ¿ Ø { ž µ x †ož

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.14 load-interval

¨ N M F å % " 6 %² N M ¿ ú ‹ ' • œ ž •ož
load-interval seconds

Ê Ö Þ . F åož
no load-interval

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	% y a k H › 8 5 ñ 600

o¬ Þ . F åo- 10 aož

o¬ x X % "o- N M F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 y ¨ N M 4 x X U Y 6 ? œ Ú 5 ž • ‹ ' † ÿ µ ÿ ß ¿ ú Õ Ñ k%² " © ? œ 10 a ‹ '%²) ? a ÿ µ ÿ ß † ƒ y A Ô ƒož † ÿ k ò ç ¨ N M GigabitEthernet 0/1 1 4 @ ƒ ¾ w è 180 a k show interface gigabitEthernet 0/1 U Y 0 ñ y

```
 PLQXWHV LQSXW UDWH ELWV VHF SDFNHWV VHF
 PLQXWHV RXWSXW UDWH ELWV VHF SDFNHWV VHF
```

o¬ F å †o- 1 y Y † ÿ P 8 ¨ Y ß à M GigabitEthernet 0/1 — å ¿ ú ‹ ' • œ ž • è 180 a

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW ORDG LQWHUYDO
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.15 logging

F å ø - N M , ¼ ’ Îož

logging [link-updown | error-frame | link-dither]

o¬ @ ƒ ª ¢o-

@ ƒ	T
link-updown	ø - N M Ù Á G ÿ w J ž %•„˜Ÿp nòRfIF@$,ï xD”d ,ï xD”d .ñ „IF@$ nû ™ q• Vtƒ B!ð à À

N M G ÿ -TÙ ž U P ’ Î y

%LINK-4-DITHER: The state of Interface GigabitEthernet 0/1 is astable. Please check the physical link.

%LINK-4-DITHER: The state of interface GigabitEthernet 0/1 is astable and the interface will be shutdown.Please check the physical link

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

o¬ à • co- 1 y … show interfaces x X k U Y ò 0 N M P Å • ºož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.17 mtu

— å N M MTU
mtu num

o¬ @ ƒ ª ¢o-

@ ƒ	T
num	64 l?(c D } Â Ý › c k / Ì Ð)

o¬ Þ . F åo- Þ . 1500ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- — å N M ñ u 4 MTU k / e è C ƒ G B ã Â Ý x †ož) ù Q u 4 — å Ò ò € M MTUož

o¬ F å †o- 1 y € M GigabitEthernet 1/1 MTU — å 9000ož

```
5XLMLH FRQILJ LQWHUIDFH *LJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW PWX
```

o¬ à • co- 1 y … show interfaces x X k U Y ò 0 N M MTUož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.18 negotiation mode

ø • ê ¼ { # Œ % ”ož
negotiation mode { on | off }

Ê Ö è Þ . ›ož
no negotiation mode

o¬ @ ƒ ª ¢o-

@ ƒ	T
on	ø • # Œ % ”ož
off	¼ { # Œ % ”ož

o¬ Þ . F åo- ¼ { # Œ % ”ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- N M # Œ Ù Á y N M # Œ œ ÿ % ” w ¶ ˆ c k N M # Œ Ù Á * o N M , äo• E Wo• v O
y # Œ œ ÿ % ” » c Ð ož

o¬ F å †o- 1 y ø • GigabitEthernet 1/1 v O O ò

```
5 X L M L H  F R Q I L J  L Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  * L J D E L W ( W K H U Q H W  Q H J R W L D W L R Q  P R G H  R Q
```

o¬ à • co- 1 y … show interfaces x X k U Y ò 0 N M # Œ % ”ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.19 physical-port dither protect

F å N M -TÙ ‘ ož
physical-port dither protect

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ¥ • oož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Þ . Õ Ñ k ‘ M $ • C è w Z Ä t Š • k ž ˜ U Y * — å ‘ M $ • g è Û
ë ‘ M $ • è Š •

o¬ F å †o- 1 y F å ‘ M • C è Š •ož

```
5 X L M L H  F R Q I L J  S U R W H F W H G  S R U W V  U R X W H  G H Q \
5 X L M L H  F R Q I L J  H Q G
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.21 show eee interfaces status

o¬ @ ƒ ª ¢o-

ò 0 N M EEE Ù Áož show eee interfaces { interface-type interface-number | status }	
@ ƒ	T
interface-type interface-number	N M • º y N M Ú Zož
status	ñ Ä N M EEE Ù Á

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 6 N M ž @ ƒ status k ª P % N M EEE ’ Î k k é ª P ñ Ä N M EEE ’ Îož

o¬ F å †o- 1 y ª P N M GigabitEthernet 0/1 EEE Ù Á ’ Îož

```
5 X L M L H  V K R Z  H H H  L Q W H U I D F H  J L J D E L W ( W K H U Q H W
, Q W H U I D F H                    * L
( ( (  6 X S S R U W                 < H V
$ G P L Q  6 W D W X V                 ( Q D E O H
2 S H U  6 W D W X V                  ' L V D E O H
5 H P R W H  6 W D W X V               ' L V D E O H
7 U R X E O H  & D X V H               5 H P R W H  ' L V D E O H
```

Interface	N M ' Î
EE5644721rt [(Auto-Negotiation W)37(a)3(s Of)18(f/)]TJ Tc 0 Tw 23.94 -0.04 Td <07A9056B077507980 g /091>TA18052	0 Tc 0 Tw 23.94 -0.04 Td <07A9056B077507980 g /091>TA18052

```
* L          1 R
* L          1 R
* L          1 R
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

1.22 show interfaces

ò 0 N M — å ’ Îož

show interfaces [interface-type interface-number] [

3 U L R U L W \ L V

```
  0HGLXP W\SH LV &RSSHU
  $GPLQ GXSOH[ PRGH LV $872  RSHU GXSOH[ LV 8QNQRZQ
  $GPLQ VSHHG LV $872  RSHU VSHHG LV 8QNQRZQ
  )ORZ UHFHLYH FRQWURO DGPLQ VWDWXV LV 2)) IORZ VHQG FRQWURO
  )ORZ UHFHLYH FRQWURO RSHU VWDWXV LV 8QNQRZQ IORZ VHQG FRQ
  6WRUP &RQWURO  %URDGFDVW LV 2))  0XOWLFDVW LV 2))  8QLFDVW
%ULGJH DWWULEXWHV
  3RUW W\SH  DFFHVV
  9ODQ LG                    M $KF9/$1 ,'
4XHXHLQJ VWUDWHJ\  ),)2
  2XWSXW TXHXH      GURSV
  ,QSXW TXHXH       GURSV
5[ORDG LV      7[ORDG LV
  PLQXWHV LQSXW UDWH   ELWV VHF   SDFNHWV VHF
  PLQXWHV RXWSXW UDWH   ELWV VHF   SDFNHWV VHF
    SDFNHWV LQSXW   E\WHV   QR EXIIHU   GURSSHG
  5HFHLYHG   EURDGFDVWV   UXQWV   JLDQWV
    LQSXW HUURUV   &5&   IUDPH   RYHUUXQ   DERUW
    SDFNHWV RXWSXW   E\WHV   XQGHUUXQV   GURSSHG
    RXWSXW HUURUV   FROOLVLRQV   LQWHUIDFH UHVHWV
```

3 y ¢ GigabitEthernet 0/1 Hybrid € M ž k ò 0 N M 8 C ' Îož

```
6ZLWFK$ VKRZ LQWHUIDFHV *LJDELW(WKHUQHW
,QGH[ GHF    KH[
*LJDELW(WKHUQHW    LV '2:1   OLQH SURWRFRO LV '2:1
 +DUGZDUH LV %URDGFRP     *LJDELW(WKHUQHW
 ,QWHUIDFH DGGUHVV LV  QR LS DGGUHVV
 ,QWHUIDFH ,3Y  DGGUHVV LV
  1R ,3Y  DGGUHVV
 078     E\WHV  %:       .ELW
 (QFDSVXODWLRQ SURWRFRO LV (WKHUQHW ,,  ORRSEDFN QRW VHW
```

```
  )ORZ UHFHLYH FRQWURO DGPLQ VWDWXV LV 2)) IORZ VHQG FRQWURO
  )ORZ UHFHLYH FRQWURO RSHU VWDWXV LV 8QNQRZQ IORZ VHQG FRQ
  6WRUP &RQWURO %URDGFDVW LV 2)) 0XOWLFDVW LV 2)) 8QLFDVW L
%ULGJH DWWULEXWHV
  3RUW W\SH K\EULG
  7DJJHG YODQ LG                    9/$1 øö“
  8QWDJJHG YODQ LG QRQH             9/$1 ,' øö“
4XHXHLQJ VWUDWHJ\ ),)2
  2XWSXW TXHXH      GURSV
  ,QSXW TXHXH       GURSV
5[ORDG LV      7[ORDG LV
  PLQXWHV LQSXW UDWH   ELWV VHF    SDFNHWV VHF
  PLQXWHV RXWSXW UDWH   ELWV VHF    SDFNHWV VHF
    SDFNHWV LQSXW    E\WHV    QR EXIIHU    GURSSHG
  5HFHLYHG   EURDGFDVWV    UXQWV    JLDQWV
    LQSXW HUURUV    &5&    IUDPH    RYHUUXQ    DERUW
    SDFNHWV RXWSXW    E\WHV    XQGHUUXQV    GURSSHG
    RXWSXW HUURUV    FROOLVLRQV    LQWHUIDFH UHVHWV
```

4 y ò 0 GigabitEthernet 0/1 8 C ' Îož

```
5XLMLH VKRZ LQWHUIDFHV *LJDELW(WKHUQHW VZLWFKSRUW
,QWHUIDFH          6ZLWFKSRUW 0RGH    $FFHVV 1DWLYH 3URWHFW

*LJDELW(WKHUQHW      HQDEOHG   $&&(66          'LVDEOHG $/
```

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

1.23 show interfaces counters

ò 0 N M † v G Ï ‹ ' Îož

show interfaces [interface-type interface-number] counters [increment | error | rate | summary] [up | down]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type interface-number	U # @ ƒ k N M • º y N M Ú Z k # é ª P ñ Ä N M
increment	ò 0 ¨ %² J ý ž • • œ Í † Ï ‹ ›
error	ò 0 j ¨ † Ï ‹ ' Îož
rate	ò 0 N M † v G , äož

summary	ò 0 N M † • } Ï ‹ ›ož
up	U # @ ƒ k ª P N M Ù Á up Ï ‹ ›
down	U # @ ƒ k ª P N M Ù Á down Ï ‹ ›

o¬ x X % ”o- ñ Ä CLI ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç 6 N M d f k é ª P ñ Ä N M † Ï ‹ ›ož

o¬ F å †o- 1 y ª P N M GigabitEthernet 0/1 N M Ï ‹ ’ Îož

```
5XLMLH VKRZ LQWHUIDFHV *LJDELW(WKHUQHW FRXQWHUV
,QWHUIDFH *LJDELW(WKHUQHW
  PLQXWH LQSXW UDWH y ELWV VHF SDFNHWV VHF
  PLQXWH RXWSXW UDWH y ELWV VHF SDFNHWV VHF
5[ORDG
,Q2FWHWV
,Q3NWV 8QLFDVW 0XOWLFDVW %URDGFDVW
,Q8FDVW3NWV
,Q0XOWLFDVW3NWV
,Q%URDGFDVW3NWV
7[ORDG
2XW2FWHWV
2XW3NWV 8QLFDVW 0XOWLFDVW %URDGFDVW
2XW8FDVW3NWV
2XW0XOWLFDVW3NWV
2XW%URDGFDVW3NWV
8QGHUVL]H SDFNHWV
2YHUVL]H SDFNHWV
FROOLVLRQV
)UDJPHQWV
-DEEHUV
&5& DOLJQPHQW HUURUV
$OLJQPHQW(UURUV
)&6(UURUV
GURSSHG SDFNHW HYHQWV GXH WR ODFN RI UHVRXUFHV
SDFNHWV UHFHLYHG RI OHQJWK LQ RFWHWV
```

```
3DFNHW LQFUHPHQW LQ ODVW VDPSOLQJ LQWHUYDO  VHFRQGV
  ,Q2FWHWV
G i g a b i t E t h e r n e t  0 / 1  (FDVW
  ,Q0XOWLFDVW3NWV
  ,Q%URDGFDVW3NWV
```

```
ª¢y
8QGHU6L"]3HGxx†49 - †ƒz
2YHU6L]H © "3Gxx†Ý9 - †ƒož
&ROOLVLRQ©GÿÏs †ƒz
)UDJPHQ49 ©WV -kw Ä &5j¨ êñ+÷j¨ †ƒz
-DEEHUV ©Ý9 -kw Ä &5j¨ êñ+÷j¨ †ƒz
&5& $OLJQ (UU &5vjñÄ †ƒz
$OLJQB(UU ©vñl+÷j¨ †ƒz
)&6 (UU ©vñÄ6j¨ †ƒož

 ªPNM *LJDELW(WKHUQHW †ƒW,ä'Î
5XLMLH VKRZ LQWHUIDFH JLJDELW(WKHUQHW FRXQWHUV UDWH
,QWHUIDFH 6DPSOLQJ 7LPH ,QSXW 5DWH ,QSXW 5DWH
2XWSXW 5DWH
                                ELWV VHF SDFNHWV VHF ELWV
 SDFNHWV VHF


*L VHFRQGV


ª¢y
6DPSOLQJ 7LPH ©NM †Jýž•k,QSXW 5DWH ©NM †Nv,äk2XWSXW 5DWH ©NM †G ,äož

 ªPNM *LJDELW(WKHUQHW †ƒ}Ï‹'Î
5XLMLH VKRZ LQWHUIDFH JLJDELW(WKHUQHW FRXQWHUV VXPPDU\
,QWHUIDFH ,Q2FWHWV ,Q8FDVW3NWV ,Q0XOWLFDVW3N

*L
,QWHUIDFH 2XW2FWHWV 2XW8FDVW3NWV 2XW0XOWLFDV

*L
```

ª¢y

InOctets ©NMNvÈ † -ƒkInUcastPkts ©NMNv%n †ƒkInMulticastPkts ©NMNvÁn †ƒkInBroadcastPkts ©NMNvzn †ƒz

OutOctets ©NMG È † -ƒk OutUcastPkts ©NMG %n †ƒk OutMulticastPkts ©NMG Á n †ƒkOutBroadcastPkts ©NMG zn †ƒož

o¬UP'Îo- -

o¬uVª¢o- -

1.24 show interfaces link-state-change statistics

ò 0 € M e è Ù Á J ž • y) ƒ o ž

show interfaces [interface-type interface-number] link-state-change statistics

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç 6 N M d f k é ª P ñ Ä N M Ù Á ' Îož

o¬ F å †o- 1 y ª P N M GigabitEthernet 0/1 Ù Á ' Îož

```
5 X L M L H  V K R Z  L Q W H U I D F H V  * L J D E L W ( W K H U Q H W  V W D W X V
, Q W H U I D F H  6 W D W X V  9 O D Q  ' X S O H [  6 S H H G  7 \ S H

* L J D E L W ( W K H U Q H W  X S  ) X O O  0  F R S S H U
```

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

1.26 show interface s status err-disable

ò 0 N M † Ù Á ' Îož

show interfaces [interface-type interface-number] status err-disable

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type interface-number	U # @ ƒ k N M • º y N M Ú Z k # é ª P ñ Ä N Mož

o¬ x X % ”o- ñ Ä CLI ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç 6 N M d f k é ª P ñ Ä N M € M † Ù Á ' Îož

o¬ F å †o- 1 y ª P N M GigabitEthernet 0/1 € M † Ù Á ' Îož

```
5 X L M L H  V K R Z  L Q W H U I D F H  J L J D E L W ( W K H U Q H W  V W D W X V  H U U  G L V D E O H
, Q W H U I D F H  6 W D W X V  5 H D V R Q

* L J D E L W ( W K H U Q H W  H U U  G L V D E O H G  % 3 ' 8  * X D U G
```

ª ¢ y Status © € M © k † k † ª P err-disable kZ † ª P k Reason n P † = œ kZ † ª Pož

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

1.27 show interfaces transceiver

ò 0 N M ° % ² ' Îož

show interfaces [interface-type interface-number] transceiver [alarm | diagnosis]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type interface-number	N M • º y N M Ú Z
transceiver	ò 0 ° % ² Â Î ' Îož
alarm	ò 0 ° % ² ¢ ù { ž s Š ' Î k ¢ Z Ä { ž ž ª P None ož
diagnosis	ò 0 ° % ² ž • @ ƒ ¢ ù y O ›ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- ò ç @ ƒ k é ª P ñ Ä N M ° % ² ' Îož

o¬ F å †o- 1 y ª P ® N M Gigabitethernet 5/4 ° % ² ' Îož

```
5XLMLH VKRZ LQWHUIDFHV *LJDELW(WKHUQHW WUDQVFHLYHU
7UDQVFHLYHU 7\SH %$6( 6; 6)3
&RQQHFWRU 7\SH /&
:DYHOHQJWK QP
7UDQVIHU 'LVWDQFH
XP 20 ILEHU
P
XP 20 ILEHU
P
'LJLWDO 'LDJQRVWLF 0RQLWRULQJ <(6
9HQGRU 6HULDO 1XPEHU
```

2 y ª P ® N M Gigabitethernet 5/4 ° % ² ¢ ù { ž s Š ' Îož

```
5XLMLH VKRZ LQWHUIDFHV *LJDELW(WKHUQHW WUDQVFHLYHU DODUP
JLJDELW(WKHUQHW WUDQVFHLYHU FXUUHQW DODUP LQIRUPDWLRQ
5; ORVV RI VLJQDO
```

3 y ª P ® N M Gigabitethernet 5/4 ° % ² ž • @ ƒ ¢ ù y O ›ož

```
5XLMLH VKRZ LQWHUIDFHV *LJDELW(WKHUQHW WUDQVFHLYHU GLDJQ
&XUUHQW GLDJQRVWLF SDUDPHWHUV>$3 $YHUDJH 3RZHU@
7HPS &HOVLXV 9ROWDJH 9 %LDV P$ 5; SRZHU G%P
2. 2. 2. DODUP >$3@ DODUP
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

1.28 show interfaces usage

ò 0 N M k ! ï äož

show interfaces [interface-type interface-number] usage [up | down]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type interface-number	U # @ ƒ k N M • º y N M Ú Z k # é ª P ñ Ä N Mož
up	U # @ ƒ k ª P N M Ù Á up k ! ï ä
down	U # @ ƒ k ª P N M Ù Á down k ! ï ä

o¬ x X % ”o- ñ Ä CLI ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç 6 N M d f k é ª P ñ Ä N M k ! ï ä ’ Îož L k ! 6 © Ž e è k ! k ò © N M

bandwidth F å ›ož

o¬ F å †o- 1 y ª P N M GigabitEthernet 0/1 € M k ! ï ä ’ Îož

, Q W H U I D F H % D Q G Z L G W K $ Y H U D J H 8 V D J H 2 X W S X W 8 '

* L J D E L W (W K H U Q H W 0 E L W

ª ¢ y Bandwidth © N M e è " b••1Â m}qœ ð•fÂ Ý0 Dà^€B6ndwB6nsag(B6nern)-4(e)3(t 0/1)]TJ /C2_0 14.8931 Tf 0 T

ø • N Mož

no shutdown

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- N M ’ ò Ù Á © UPož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-

no snmp trap link-status

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g x X snmp-server if-index persist Y e k ‘ F å ž 1 ¢ ù ñ Ä N M « – ‘ Ü Û k M o e N M … M o ù ã F N M « –ož h Þ M o ù · À ‘ š F åož

o¬ F å †o- 1 y • o N M « – K ! ož

5 X L M L H F R Q I L J V Q P S V H U Y H U L I L Q G H [S H U V L V W

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.32 speed

— å N M , äož

speed [10 | 100 | 1000 | auto]

Â

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.34 switchport access

1%² € M — å Access € M k w 1 6 u %² VLAN è t € Mož
switchport access vlan vlan-id

1 ¥ € M 6 u ñ Þ . VLAN ož
no switchport access vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	€ M } µ VLAN IDož

o¬ Þ . F åo- € M Þ . % ” Access k Þ . VLAN VLAN 1ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ÿ µ%² VLAN IDož ò ç ÿ µ ©%² • VLAN ID k é — Õ k ë •%² VLAN k w 1 ¥ € M — å ¥ VLAN è tož ò ç ÿ µ ©] Æ ¨ VLAN ID k é Í VLAN è t € Mož ò ç ¥ € M ©%² trunkport k é ¥ q • 1 Z Ä ` ~ • ož

o¬ F å †o- 1 y € M GigabitEthernet 1/1 — å VLAN 2 è t € Mož

```
5 X L M L H  F R Q I L J  L Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  * L J D E L W ( W K H U Q H W  V Z L W F K S R U W  D F F H V V  Y O D Q
```

o¬ à • co- 1 y … show interfaces switchport x X k U Y ò 0 € M 8 C ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.35 switchport mode

6 %² 8 C € M % ” k U Y 6 ¥ N M Access € M ê ñ Trunk € Mož
switchport mode { access | trunk }

1 ¥ N M % ” Ê Ö Þ . ›ož
no switchport mode

o¬ @ ƒ ª ¢o-

@ ƒ	T
access	— å 8 C € M Access € Mož
trunk	— å 8 C € M Ttrunk € Mož

o¬ Þ . F åo- 8 C € M Þ . % ” Access

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç € M % ” © Access k é ¥ € M Q %² VLAN è tož U Y … switchport access vlan x X 6 ¥ N M © „%² VLAN è tož

ò ç%² € M % ” © Trunk k é ¥ N M U Y © Ú VLAN è tož ¥ N M U Y K 9 „ ? VLAN ¥ N M • U VLAN ç n Ð k Trunk € M © • U VLAN ç n ñ Ä VLAN è tožU Y … switchport trunk x X Û # N M • U VLAN ç nož

o¬ F å †o- 1 y € M GigabitEthernet 1/1 F å Trunk € Mož

```
5 X L M L H F R Q I L J L Q W H U I D F H * L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W ( W K H U Q H W V Z L W F K S R U W P R G H W U X Q N
```

o¬ à • co- 1 y … show interfaces switchport x X k U Y ò 0 € M 8 C ’ Îož

o¬ U P ’ Îo-

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.36 switchport protected

1 € M F å è ‘ Mož
switchport protected

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M — ‘

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ e È — Õ î ? € M $ • ; , * ’ ž k U 1 ? € M — å ‘ Mož ž N N Š • © 8 C * ’ k C è
‰ À U Y * k ò ç C - e È * k U Y Ç F å ¶ B x X protected-ports route-denyož

o¬ F å †o- 1 y 1 € M GigabitEthernet 0/1 F å è ‘ Mož

```
5XLMLH FRQILJ LQWHUIDFH *LJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW SURWHFWHG
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.37 switchport trunk

%² Trunk € M 6 %² native VLAN y F å • U VLAN ç nož
switchport trunk { allowed vlan { all | [add | remove | except] vlan-list } | native vlan vlan-id }

1 ¥ N M Trunk K Å Ê Ö Þ . ›ož
no switchport trunk { allowed vlan | native vlan }

o¬ @ ƒ ª ¢o-

@ ƒ	T
allowed vlan vlan-list	F å Trunk € M • U VLAN ç nož @ ƒ vlan-list U Y ©%² VLAN k - U Y ©%² © ç VLAN k Y 4 VLAN ID • ã k Y Ý VLAN ID È A k • g- h… Z Nožò y 10-20ož< $ • U Y g, h… Z œ • kò y 1-10,20-25,30,33 all m # © • U VLAN ç n m ñ Ä u 4 VLAN z

add n P 1 6

2 MAC ' ‹

2.1 clear mac-address-table dynamic

Ž ” 6 Á MAC ª -o• ê ñ 6 N M/VLAN Á

default mac-address-learning

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ª - . • o

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¨ • o ¶ € M ¼ { MAC ª - . k ¼ { ª - . € M F å ¶ ož

o¬ F å †o- 1 y ¼ { N M ª - . y

5XLMLH FRQILJ LI LQWHUIDFH LG QR PDF DGGUHVV OHDUQLQJ

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.3 mac-address-learning (µA)

ø • ¶ B MAC ª - . ož
mac-address-learning enable

¼ { ¶ B MAC ª - . ož
mac-address-learning disable

Ê Ö ¶ B MAC ª - . ož
default mac-address-learning

o¬ @ ƒ ª ¢o-

@ ƒ	T
enable	• o ¶ B MAC ª - . ož
disable	¼ { ¶ B MAC ª - . ož

o¬ Þ . F åo- ¶ B ª - . • o

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ ¶ B MAC ª - . ¼ { ž k ¶ B — c g MAC ª - . z ¢ ¶ B MAC ª - . • o ž k 7 € M MAC ª - . ÿ |ož

o¬ F å †o- 1 y ¼ { ¶ B ª - . y
5XLMLH FRQILJ PDF DGGUHVV OHDUQLQJ GLVDEOH

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.4 mac-address-table aging-time

— å Á ª - ï ž •ož
mac-address-table aging-time seconds

Ê Ö Þ . ›ož
no mac-address-table aging-time

Ê Ö Þ . ›ož
default mac-address-table aging-time

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	Á ª - ï ž • k Y a % yož 8 — Õ Ð ož0 n P ¼ { ï ož

o¬ Þ . F åo- Þ . › © 300 aož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … show mac-address-table aging-time x X ò 0 — åož

o¬ F å †o- 1 o• — å MAC ª - ï ž • 500 a

5XLMLH FRQILJ PDF DGGUHVV WDEOH DJLQJ WLPH

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.5 mac-address-table filtering

¨ 6 VLAN Ä — ¡ ª -ož

mac-address-table filtering mac-address vlan vlan-id

í ” ¡ ª -ož

no mac-address-table filtering mac-address vlan vlan-id

í ” ¡ ª -ož

default mac-address-table filtering mac-address vlan vlan-id

o¬ @ ƒ ª ¢o-

@ ƒ	T ¦ ¦ ¦ ¦ ¦ '
mac-address	¡ ª -ož
vlan-id	VLAN ID k 8 ¨ 1-4094ož

o¬ Þ . F åo- Þ . Z Ä — å ` ~ ¡ ª -ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¡ ª - Á n ª -ož

o¬ F å †o- 6 MAC ª - 0000.0202.0303 MAC

o¬ U P ’ Îo- 1 y U P — å ¡ ª - y

```
&DQ QRW VHW WKLV ILOWHU DGGUHVV
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.6 mac-address-table notification

ø • . MAC ª - * s o• — ª - * s MIB ž • • œ y ª - * s 7 W “ £ n “ £ Â Ý ƒož
mac-address-table notification [interval value | history-size value]

Ê Ö Þ . ›ož
no mac-address-table notification [interval | history-size]

Ê Ö Þ . ›ož
default mac-address-table notification [interval | history-size]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interval value	— å G MAC ª - Trap ž • • œ k Þ . 1 a k 8 ¨ 1-3600ož
history-size value	MAC * = 7 W “ £ n n ¾ Â Ý ƒ k Þ . 50 k 8 ¨ 1-200ož

o¬ Þ . F åo- ž • • œ Þ . 1 a k n ¾ ó • * s Â Ý * s ƒ 50ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- MAC ª - * = N S + Á ª - y ¶ ª - k ò + 9 ² Á ª - J 1 k D ÿ Trap * =ož U Y ¨ ¶ B F å % ” * x X snmp-server enable traps mac-notification Û ø • ê ¼ { — Õ G MAC ª - Trap ož

o¬ F å †o- 1 y — å MAC ª - * s ž • • œ y ?) Â Ý * s MAC ª - ƒ

```
5XLMLH FRQILJ PDF DGGUHVV WDEOH QRWLILFDWLRQ
5XLMLH FRQILJ PDF DGGUHVV WDEOH QRWLILFDWLRQ LQWHUYDO
5XLMLH FRQILJ PDF DGGUHVV WDEOH QRWLILFDWLRQ KLVWRU\ VL]H
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.7 mac-address-table static

— å%² ² Á ª -ož

mac-address-table static mac-addr vlan vlan-id interface interface-id

í ”%² ² Á ª -ož

no mac-address-table static mac-addr vlan vlan-id interface interface-id

í ”%² ² Á ª -ož

default mac-address-table static mac-addr vlan vlan-id interface interface-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac-addr	6 n ¾ + •) MAC ª -ož
vlan-id	6 n ¾ + • VLAN k 8 ¨ 1-4094ož
interface-id	1 ô G ñ N M(U Y © Ò ò € M ê AggregatePort)ož

o¬ Þ . F åo- Þ . Z Ä — å ` ~ ² Á ª -ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ² Á ª - y — Õ . ñ Á ª - , což , + Á ª - ò ˆ k ² Á ª - K k t ï k Q ô W g F
å y í ” z / … — Õ Ö y k ² Á ª - - k âož ² Á ª - t — å Ú n ª -ož … show
mac-address-table static x X ò 0 ² Á ª - n — åož

o¬ F å †o- -

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.8 max-dynamic-mac-count

— å VLAN ê N M Á MAC ª - . 'ož

max-dynamic-mac-count num

Ê Ö ó • F åož

no max-dynamic-mac-count

Ê Ö ó • F åož

default max-dynamic-mac-count

o¬ @ ƒ ª ¢o-

@ ƒ	T
num	6 n ¾ + •) MAC ª -ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.9 show mac-address-learning

ò 0 € M ª - .

show mac-address-learning

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P € M ª - . y

```
5XLMLH FRQILJ VKRZ PDF DGGUHVV OHDUQLQJ
*LJDELW(WKHUQHW OHDUQLQJ DELOLW\ GLVDEOH
*LJDELW(WKHUQHW OHDUQLQJ DELOLW\ HQDEOH
*LJDELW(WKHUQHW OHDUQLQJ DELOLW\ HQDEOH
*LJDELW(WKHUQHW OHDUQLQJ DELOLW\ HQDEOH
```

o¬ U P ’ Îo-

o¬ u V ª ¢o- -

2.10 show mac-address-table

ª P ñ Ä • º MAC ª - ’ Î g , Á ª - k ² Á ª - k ¡ ª - y • š è ï ª - hož

show mac-address-table [address mac-addr] [interface interface-id] [vlan vlan-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T

address mac-addr	6 MAC ª -ož
interface interface-id	N M Zož
vlan vlan-id	VLAN Z k 8 ¨ 1-4094ož

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- Type ç STATIC n P ² Á ª - kDYNAMIC n P Á ª - kFILTER n P ¡ ª - kOTHER n P • š g , 1x • šo•mab • š y web • š h è ï ª -ož

o¬ F å †o- 1 y ò 0 MAC ª - n

```
5XLMLH VKRZ PDF DGGUHVVG W/DEOH DGGUHVV
9ODQ 0$& $GGUHVV 7\SH ,QWHUIDFH

G I 67$7,& *LJDELW(WKHUQHW
5XLMLH VKRZ PDF DGGUHVV WDEOH
9ODQ 0$& $GGUHVV 7\SH ,QWHUIDFH

G I 67$7,& *LJDELW(WKHUQHW
G I '<1$0,& *LJDELW(WKHUQHW
G I 27+(5 *LJDELW(WKHUQHW
G I ),/7(5
```

< † K y

<	ª ¢
Vlan	N M ª -
MAC Address	MAC ª -
Type	MAC ª - • º
Interface	MAC ª - ñ ¨ N M

o¬ U P ’ Îo-

o¬ u V ª ¢o- -

2.11 show mac-address-table aging-time

ª P Á ª - ï ž •ož

show mac-address-table aging-time

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 MAC ª - ï ž •

```
5XLMLH VKRZ PDF DGGUHVV WDEOH DJLQJ WLPH
$JLQJ WLPH
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.12 show mac-address-table count

ª P ª - n ª - n ¾ ƒ Ï ‹ ’ Îož

show mac-address-table count [interface interface-id | vlan vlan-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface interface-id	N M Z
vlan vlan-id	VLAN Z k 8 ¨ 1-4094ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- show mac-address-table count x X k ÿ G MAC ª - n ¾ • º Ï ‹ n ¾ ƒ O z

show mac-address-table count interface x X k ÿ G MAC ª - n ¾ + • N M Ï ‹ n ¾ ƒ O z

show mac-address-table count vlan x X k ÿ G MAC ª - n ¾ ñ K VLAN Ï ‹ n ¾ ƒ Oož

o¬ F å †o- 1 y ª P MAC ª - _ • º n ¾ ƒ O y

```
5XLMLH VKRZ PDF DGGUHVV WDEOH FRXQW
'\QDPLF $GGUHVV &RXQW
6WDWLF $GGUHVV &RXQW
)LOWHU $GGUHVV &RXQW
7RWDO 0DF $GGUHVVHV
```

7 R W D O 0 D F $ G G U H V V 6 S D F H $ Y D L O D E O H

2 y ª P VLAN 1 MAC ª - ƒ O y

5 X L M L H P V D K R Z D G G U H V F V R X W Q W D E O H
' \ Q D P L F $ G G U H V V & R X Q W
6 W D W L F $ G G U H V V & R X Q W
) L O W H U $ G G U H V V & R X Q W
7 R W D O D D $ G G U H V V H V

3 y ª P interface g0/1 MAC ª - ƒ O y

5 X L M L H P V D K R Z D G G U H V L V Q W H U E J O H F H
' \ Q D P L F $ G G U H V V & R X Q W
6 W D W L F $ G G U H V V & R X Q W
) L O W H U $ G G U H V V & R X Q W
7 R W D O D D $ G G U H V V H V

< † K y

<	ª ¢
Dynamic Address Count	Á MAC ª - ƒ
Static Address Count	² Á MAC ª - ƒ
Filter Address Count	¡ ª - ƒ
Total Mac Addresses	È MAC ª - ƒ

Èà\tS -y Â,¬ u g¢ ùÐtàTÐP bÐ J"Â ðÀ(` 0 Û ò 0ož þ 0 Ì • X'gÐp B'JÊ"š .í†¡j Â ð Â@1aV¬à Œ¢,

o¬ … 6 -o- -

o¬ F å †o- 1 o• ò 0 ñ Ä Á MAC ª - n

```
5XLMLH  VKRZ PDF DGGUHVV WDEOH G\QDPLF
9ODQ    0$& $GGUHVV      7\SH       ,QWHUIDFH

                    '<1$0,&  *LJDELW(WKHUQHW
          F D       '<1$0,&  *LJDELW(WKHUQHW
          F  GII    '<1$0,&  *LJDELW(WKHUQHW
          FI HHH     '<1$0,&  *LJDELW(WKHUQHW
          FI I  I   '<1$0,&  *LJDELW(WKHUQHW
        E   G       '<1$0,&  *LJDELW(WKHUQHW
        EDGH  F     '<1$0,&  *LJDELW(WKHUQHW
```

< † K y

<	ª ¢
Vlan	MAC ª - ñ ¨ VLAN
MAC Address	MAC ª -
Type	MAC ª - • º
Interface	MAC ª - ñ ¨ N M

```
5XLMLH  VKRZ PDF DGGUHVV WDEOH ILOWHULQJ
9ODQ       0$& $GGUHVV          7\SH     ,QWHUIDFH

                              ),/7(5   1RW DYDLODEOH
```

< † K y

<	ª ¢
Vlan	MAC ª - ñ ¨ VLAN
MAC Address	MAC ª -
Type	MAC ª - • º
Interface	MAC ª - ñ ¨ N M

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.15 show mac-address-table interface

ª P 6 N M ñ Ä • º ª - ’ Î g , Á ª - k ² Á ª - hož

show mac-address-table interface interface-id [vlan vlan-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	6 N M(U Y © Ò ò € M ê AggregatePort)ož
vlan-id	6 n ¾ + • VLAN k 8 ¨ 1-4094ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1o• ò 0 6 N M MAC ª -

```
5XLMLH  VKRZ PDF DGGUHVV WDEOH LQWHUIDFH *LJDELW(WKHUQHW
9ODQ       0$& $GGUHVV          7\SH     ,QWHUIDFH

           G  I            67$7,&   *LJDELW(WKHUQHW
           G  I            67$7,&   *LJDELW(WKHUQHW
           G  I            67$7,&   *LJDELW(WKHUQHW
           G  I            67$7,&   *LJDELW(WKHUQHW
```

< † K y

<	ª ¢
Vlan	MAC ª - ñ ¨ VLAN
MAC Address	MAC ª -
Type	MAC ª - • º
Interface	MAC ª - ñ ¨ N M

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.16 show mac-address-table max-dynamic-mac-count

ª P Á MAC ª - . ’ož

show mac-address-table max-dynamic-mac-count { vlan [vlan-id] | interface [interface-id] }

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan	ò 0 ñ Ä 6 4 Á MAC ª - . ’ VLAN Ä MAC ª - . Õ Ñož
vlan-id	ò 0 6 VLAN Ä Á MAC ª - . ’ y . Õ Ñ k 8 ¨ 1-4094ož
interface	ò 0 ñ Ä 6 4 Á MAC ª - . ’ N M MAC ª - . Õ Ñož
interface-id	ò 0 6 N M Á MAC ª - . ’ y . Õ Ñož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1o• ò 0 ñ Ä 6 4 Á MAC ª - . ’ VLAN Ä MAC ª - . Õ Ñ

```
5XLMLH VKRZ PDF DGGUHVV WDEOH PD[ G\QDPLF PDF FRXQW YODQ
9ODQ /LPLW 0$& FRXQW /HDUQLQJ

< ( 6
```

2o• ò 0 6 VLAN Ä Á MAC ª - . Õ Ñ

```
5XLMLH VKRZ PDF DGGUHVV WDEOH PD[ G\QDPLF PDF FRXQW YODQ
9ODQ /LPLW 0$& FRXQW /HDUQLQJ

< ( 6
```

< † K y

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 o• ò 0 MAC ª - * s ¶ B F å ' Î

```
5XLMLH VKRZ PDF DGGUHVV WDEOH QRWLILFDWLRQ
0$& 1RWLILFDWLRQ )HDWXUH (QDEOHG
,QWHUYDO 6HF
0D[LPXP +LVWRU\ 6L]H
&XUUHQW +LVWRU\ 6L]H
```

< † K y

<	ª ¢
Interval(Sec)	* s MAC ª - ž • • œ
Maximum History Size	MAC ª - * s 7 W " £ n Â Ý n ¾ ƒ
Current History Size	¢ ù " £ Ú) ƒ

2o• ò 0 N M MAC ª - J * s … Ù Á

```
5XLMLH VKRZ PDF DGGUHVV WDEOH QRWLILFDWLRQ
0$& 1RWLILFDWLRQ )HDWXUH (QDEOHG
,QWHUYDO 6HF G 0$&-*= ž • • œ a
0D[LPXP +LVWRU\ 6L]H 0$&=7Wő£n ÂÝn¾ Ú
&XUUHQW +LVWRU\ 6L]H ¢ù"£Ú)ƒ
5XLMLH VKRZ PDF DGGUHVV WDEOH QRWLILFDWLRQ LQWHUIDFH *LJDELW
,QWHUIDFH 0$& $GGHG 7UDS 0$& 5HPRYHG 7UDS

*LJDELW(WKHUQHW (QDEOHG (QDEOHG
```

< † K y

<	ª ¢
Interface	N M
MAC Added Trap	MAC ª - • * s … Õ Ñ
MAC Removed Trap	MAC ª - í " * s … Õ Ñ

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

2.18 show mac-address-table static

ª P ² Á ª -ož

show mac-address-table static [addr mac-addr] [interface interface-id] [vlan vlan-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac-addr	6 n ¾ + •) MAC ª -ož
vlan-id	6 n ¾ + • VLAN k 8 ¨ 1-4094ož
interface-id	1 ô G ñ N M(U Y © Ò ò € M ê AggregatePort)

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P ñ Ä ² Á ª - ’ Î y

```
5XLMLH  VKRZ PDF DGGUHVV WDEOH VWDWLF
9ODQ    0$& $GGUHVV      7\SH         ,QWHUIDFH

      G  I          67$7,&  *LJDELW(WKHUQHW
      G  I          67$7,&  *LJDELW(WKHUQHW
      G  I          67$7,&  *LJDELW(WKHUQHW
```

< † K y

<	ª ¢
Vlan	MAC ª - ñ ¨ VLAN
MAC Address	MAC ª -
Type	MAC ª - • º
Interface	MAC ª - ñ ¨ N M

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.19 show mac-address-table vlan

ª P 6 VLAN ñ Ä • º ª - ’ Îož

show mac-address-table vlan [vlan-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	6 VLAN ID k 8 ¨ 1-4094ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 VLAN 1 MAC ª -

```
5XLMLH  VKRZ PDF DGGUHVV WDEOH YODQ
9ODQ    0$& $GGUHVV      7\SH       ,QWHUIDFH

        G  I          67$7,&  *LJDELW(WKHUQHW
        G  I          67$7,&  *LJDELW(WKHUQHW
        G  I          67$7,&  *LJDELW(WKHUQHW
```

< † K y

<	ª ¢
Vlan	MAC ª - ñ ¨ VLAN
MAC Address	MAC ª -
Type	MAC ª - • º
Interface	MAC ª - ñ ¨ N M

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.20 snmp trap mac-notification

ø • N M MAC ª - * = ož

snmp trap mac-notification { added | removed }

¼ { ¥ ož

no snmp trap mac-notification { added | removed }

¼ { ¥ ož

default snmp trap mac-notification { added | removed }

o¬ @ ƒ ª ¢o-

@ ƒ	T
added	¢ ª - Í ž * =ož
removed	¢ ª - t í ” ž * =ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … show mac-address-table notification interface x X ò 0 — åož

o¬ F å †o- 1 o• ø • € M MAC ª - Í ž * s trap • ¼

```
5XLMLH FRQILJ LQWHUIDFH *LJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VQPS WUDS PDF QRWLILFDWL
```

2o• ø • € M MAC ª - í ” ž * s trap • ¼

```
5XLMLH FRQILJ LQWHUIDFH *LJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VQPS WUDS PDF QRWLILFDWL
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3 Aggregate Port

3.1 aggregateport load-balance

F å AP ¶ B v O u k ‘ c ê ñ F å 6 AP M v O u k ‘ což
aggregateport load-balance { dst-mac | src-mac | src-dst-mac | dst-ip | src-ip | src-dst-ip }

1 AP ¶ B v O u k — å Ê Ö Þ . › ê ñ 1 6 AP M v O u k ‘ c ÿ | ¶ B v O u k ‘ což
no aggregateport load-balance

o¬ @ ƒ ª ¢o-

@ ƒ	T
dst-mac	ÿ G ÿ µ †) MAC ª - g v O ã Fož¨ AP _ e è k) MAC ª - , c † t ñ , c € M k) MAC c † ã F ñ c € Mož
src-mac	ÿ G ÿ µ † › MAC ª - g v O ã Fož ¨ AP _ e è k c MAC ª - † ã F ñ c € M k , c MAC ª - † … , c € Mož
src-dst-ip	ÿ G › IP) IP g v O ã Fož c › IP+) IP v O * c € M ô G k c%² › IP+) IP * , c e è ô Gož ¨ C Ú ^ k • ‘ J 4 v O u k • ”ož
dst-ip	ÿ G ÿ µ †) IP ª - g v O ã Fož¨ AP _ e è k) IP ª - , c † t ñ , c € M k) IP c † ã F ñ c € Mož
src-ip	ÿ G ÿ µ † › IP ª - g v O ã Fož¨ AP _ e è k c IP ª - † ã F ñ c € M k , c IP ª - † … , c € Mož
src-dst-mac	ÿ G › MAC) MAC g v O ã Fož c › MAC+) MAC v O * c € M ô G k c%² › MAC+) MAC * , c e è ô Gož

o¬ Þ . F åo-

s AP Ç — Ù ì ˜ • AP Ç •• T l Û & q 3 W MAC ä , MAC) û h Ó "
s AP Ç — Ù ì ˜ 8 AP Ç •• T l Û & q 3 W IP ä , IP) û h Ó

o¬ x X % ”o- ¶ B % ” ê ñ N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¨ î ? u 4 Â 9 6 AP M F å v O u k D } k µ 6 AP M N M % ” g v O u k ‘ c F å k F å ÿ | e k ¥ AP M < k Y • F å v O u k ‘ c g W • ož ¨ ? D } µ k ï U Y ¨ AP M N M % ” … no aggregateport load-balance x X … ¥ AP M F å v O u k ‘ c â | k ò ÿ | ¢ ù — Õ ÿ | AP ¶ B v O u k ‘ což

o¬ à • co- Ã ¹EîE› show running Q ¸ ¹,ßG!5B ú , ü Ä

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.3 interface aggregateport

F å Y ß à AP M ê ñ µ Y ß à AP M N M F å % ”ož
interface aggregateport ap-number

í ” AP Mož
no interface aggregateport ap-number

o¬ @ ƒ ª ¢o-

@ ƒ	T
ap-number	AP N M Zož

o¬ Þ . F åo- Þ . Õ Ñ kAP M Ì t ë •ož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ AP M] Æ ë • k F å interface aggregateport x X ž µ AP M N M F å % ” z ¢ AP M Ì ë • k F å interface aggregateport k ¯ ë • AP M k ò ç ë • è k é µ AP M N M F å % ”ož

o¬ F å †o- 1 y µ † ÿ 9 ë • w µ AP 5 N M F å % ” y

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ LQWHUIDFHV DJJUHJDWHSRUW
5XLMLH FRQILJ LI $JJUHJDWHSRUW HQG
```

o¬ à • co- Ã ¹EîE› show running Q ¸ ¹,ßG!5B ú , ü Ä

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.4 lacp port-priority

F å LACP AP è t M € M i ¯ ´ož

lacp port-priority port-priority

Ê Ö LACP AP è t M € M i ¯ ´ož

no lacp port-priority

o¬ @ ƒ ª ¢o-

@ ƒ	T
port-priority	0Ã ·,X LACP 0Ã · i ¯ ´ k5 ,Õ 32768 È 8 © 0-65535ož

o¬ Þ . F åo- Þ . › © 32768ož

o¬ x X % ”o- N M % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ*ü bG!5B0Ã · Gi0/1 ,X LACP 0Ã · ì 4{ 4096 y

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW ODFS SRUW SULRULW\
```

o¬ à • co- … show lacp summary Q ¸ ò 0) ù F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.5 lacp short-timeout

F å LACP AP è t M Ý ž % ” ? Ý ž % ”ož

lacp short-timeout

Ê Ö LACP AP è t M Ý ž % ” x Ý ž % ”ož

no lacp short-timeout

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	

o¬ Þ . F åo- Þ . › © x Ý ž % ”ož

o¬ x X % ”o- N M % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- x Ý ž % ” k € M 30 a G %² LACP † k90 a Ì v ñ † / Ý žož
? Ý ž % ” k € M 1 a G %² LACP † k3 a Ì v ñ † / Ý žož

o¬ F å †o- 1 y µ † ÿ*ü bG!5B0Ã · Gi0/1 ,X LACP 0Ã ·CY Ê õ ã -ÁCY Ê y

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW ODFS VKRUW WLPHRXW
```

o¬ à • co- … show lacp summary Q ¸ ` show run ò 0) ù F åož

```
5XLMLH FRQILJ VKRZ ODFS VXPPDU\
6\VW,HGP G I IE
)ODJV 6 'HYLFH LV 6UHTX H$&3'8V
) 'HYLFH LV UHTXHVW$&3'8V
$ 'HYLFH LV LQ DFWLYH PRGH 3 'HYLFH LV LQ SDVVLYH PRGH
$JJUHJDWH SRUW
/RFDO LQIRUPDWLRQ
/$&3 SRUW 2SHU 3RUW 3RUW
3RUW )ODJV 6WDWH 3ULRULW\ .H\ 1XPEHU 6WDWH

*L )$ EQGO [ [ [ G
*L 6$ EQGO [ [ [ G
3DUWQHU LQIRUPDWLRQ
/$&3 SRUW 2SHU 3RUW 3RUW
3RUW )ODJV 3ULRULW\ 'HY ,' .H\ 1XPEHU 6WDWH

*L 6$ G I [ [ [ G
*L 6$ G I [ [ [ G
```

Õ h y µ Flags < k F n P ½ u Ê k - < © ? Ý ž % ” kS n P ã u Ê k - < © x Ý ž % ”ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.6 lacp system-priority

F å LACP 2Ï4³ i ¯ ´ož

lacp system-priority system-priority

Ê Ö LACP 2Ï4³ i ¯ ´ož

no lacp system-priority

o¬ @ ƒ ª ¢o-

@ ƒ	T
system-priority	€ M LACP 2Ï4³ i ¯ ´ k Þ . › © 32768 k 8 © 0-65535ož

o¬ Þ . F åo- Þ . › © 32768ož

o¬ x X % ”o- ¶ B % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ 9 F å LACP 2Ï4³ i ¯ ´ 4096 y

```
Ruijie(config)# lacp system-priority 4096
```

o¬ à • co- … show lacp summary x X ò 0) ù F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.7 port-group

1%² Y ß à Ò ò € M — å M- Õ AP è t € Mož

port-group port-group-number

1%² Ò ò € M — å LACP è t € Mož

port-group key-number modeber

ª P Aggregate Port — å ’ Îož

show aggregateport aggregate-port-number [load-balance | summary]

o¬ @ ƒ ª ¢o-

@ ƒ	T
aggregate-port-number	AP N M Zož

o¬ Þ . F åo- -

o¬ x X % ”o- _ % ” ® U ü gož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç Z Ä 6 key-number k é ñ Ä LACP AP e è ü ` Ù Á ’ Î 1 t ª P ß Ûož

o¬ F å †o- 1 y ò 0 LACP AP 3 e è ü ` Ù Á ’ Î y

5 X L M L H F R Q I L J V K R Z O D F S V X P P D U \
6 \ V W ,HGP G I I E
) O D J V 6 ' H Y L F H L V 6 U H T X H V W 3 L Q V
) ' H Y L F H L V U H T X H V W 1 & 3 ' 8 V
$ ' H Y L F H L V L Q D F W L Y H P R G H 3 ' H Y L F H L V L Q S D V V L Y H P R G H

/ R F D O L Q I R U P D W L R Q

4 VLAN

4.1 add

g ¢ ù VLAN • %² ê%² Á Access N Mož
add interface { interface-id | range interface-range }

R ¢ ù VLAN í "%² ê%² Á Access N Mož
no add interface { interface-id | range interface-range }

R ¢ ù VLAN í "%² ê%² Á Access N Mož
default add interface { interface-id | range interface-range }

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	8 C Y ß à N M ê ñ 8 C AP M
range interface-range	8 C Y ß à N M 8 ê ñ 8 C AP M 8

o¬ Þ . F åo- ñ Ä 8 C Y ß à N M C K 9 VLAN1ož

o¬ x X % "o- VLAN F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X Q + Access M Ä |ož
¥ x X F å | ç c ¨ N M % " 6 ¥ N M ñ K VLAN x X g / switchport access vlan vlan-id h | ç
%² z + 9 _ ¥ " N M µ VLAN x X k F å ÿ | = é © e F å x X ~ $ ù µ F å x Xož
… ¥ x X 1 8 C AP M • ñ ¢ ù VLAN ž k ¥ F å Q + 8 C AP M ÿ | k + 9 8 C AP M è t M — |ož

o¬ F å †o- 1 y g VLAN20 µ GigabitEthernet 0/10 N Mož

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ YODQ
5XLMLH FRQILJ YODQ DGG LQWHUIDFH *LJDELW(WKHUQHW
5XLMLH FRQILJ YODQ VKRZ LQW J VZ
,QWHUIDFH 6ZLWFKSRUW 0RGH $FFHVV 1DWLYH 3UR

*LJDELW(WKHUQHW HQDEOHG $&&(66 'LVDEO
```

2 y g VLAN200 µ GigabitEthernet 0/1~ GigabitEthernet 0/10 N Mož

```
5XLMLH  FRQILJXUH WHUPLQDO
5XLMLH  FRQILJ  YODQ
5XLMLH  FRQILJ YODQ  DGG LQWHUIDFH UDQJH *LJDELW(WKHUQHW
5XLMLH  VKRZ YODQ
5XLMLH  VKRZ YODQ
9/$1 1DPH       6WDWXV                  3RUWV

    9/$1       67$7,&       *L    *L    *L    *L
                            *L    *L    *L    *L
                            *L    *L    *L    *L
                            *L    *L
   9/$1        67$7,&       *L    *L    *L    *L
                           *L    *L    *L    *L
                           *L    *L
```

3 y g VLAN20 µ AggregatePort 10 Mož

```
5XLMLH  FRQILJXUH WHUPLQDO
6ZLWFK$ FRQILJ  YODQ
6ZLWFK$ FRQILJ YODQ  DGG LQWHUIDFH DJJUHJDWHSRUW
5XLMLH  VKRZ LQWHUIDFH DJJUHJDWHSRUW   VZLWFKSRUW
,QWHUIDFH  6ZLWFKSRUW  0RGH  $FFHVV  1DWLYH 3URWHFWHG  9/$1 O

$JJUHJDWH3RUW   HQDEOHG  $&&(66        'LVDEOHG  $//
```

o¬ à • co- show vlan U Y ò 0 € M © k Q ¨ µ VLAN Äož

o¬ U P ’ Îo- -

o¬ o • j ¨o- 1 y µ N M © 8 C A E Mož
2o• µ N M © Access Mož
3o• µ N M © AP è t Mož

o¬ u V ª ¢o- -

4.2 name

— åVLAN d ož
name vlan-name

Ê Ö è Þ . ›ož

no name

Ê Ö è Þ . ›ož
default name

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-name	VLAN d

o¬ Þ . F åo- VLAN Þ . d VLAN jVLAN ID k ò VLAN 2 Þ . d ”VLAN0002” ož

o¬ x X % ”o- VLAN F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y — å VLAN 10 d y

```
5XLMLH FRQILJ YODQ
5XLMLH FRQILJ YODQ QDPH YODQ
```

o¬ à • co- … show vlan x X ò 0 vlan F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.3 show vlan

ª P VLAN è t € M ˆ ’ Îož
show vlan [id vlan-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	VLAN ID Zož

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 o• ò 0 VLAN 1 F å C VLAN 1 Ä A E M Õ Ñ

```
5 X L M L H  F R Q I L J  Y O D Q  V K R Z  Y O D Q  L G
9 / $ 1  1 D P H                          6 W D W X V    3 R U W V

    9 / $ 1                          6 7 $ 7 , &    * L
```

2o• ò 0 ñ Ä VLAN F å C VLAN Ä A E M Õ Ñ

```
5 X L M L H  F R Q I L J  Y O D Q  V K R Z  Y O D Q
9 / $ 1  1 D P H                          6 W D W X V    3 R U W V

    9 / $ 1                          6 7 $ 7 , &    * L    * L    * L    * L
                                            * L    * L    * L    * L
                                            * L    * L    * L    * L
                                            * L    * L    * L    * L
                                            * L    * L    * L    * L
                                            * L    * L    * L
    9 / $ 1                          6 7 $ 7 , &    * L
    9 / $ 1                          6 7 $ 7 , &    * L
```

< † K y

<	ª ¢
VLAN	VLAN ID
Name	VLAN d f
Status	VLAN K Å y Áo• ² Áo•Super VLAN ^ ^
Ports	K 9 ¥ VLAN € M

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

4.4 switchport access

1%² access port µ 6 VLANož

switchport access vlan vlan-id

Ê Ö Þ . F åož

no switchport access vlan

Ê Ö Þ . F åož

default switchport access vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	€ M } µ VLAN IDož

o¬ Þ . F åo- Access M Þ . N µ VLAN 1ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç µ VLAN ¨ k k ¯ ë •%² VLAN k À e € M µ VLAN z ò ç VLAN] Æ ¨ k é 1 ¥ € M µ 6 VLANož

ò ç ¥ € M ©%² trunk port k ü g ¥ q •ož

o¬ F å †o- 1 y F å € M access VLAN

5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W (W K H U Q H W

5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W V Z L W F K S R U W D F F H V V Y O D Q

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.5 switchport hybrid allowed

1 € M Y Tag ê UNTag ¥ ” µ 6 VLAN ç n k ê ñ 1 € M R 6 VLAN ç n ßož

switchport hybrid allowed vlan { { [add | only] tagged vlist | [add] untagged vlist } | remove vlist }

1 hybrid M Ê Ö è ó • K Åož

no switchport hybrid allowed vlan

1 hybrid M Ê Ö è ó • K Åož

no switchport hybrid allowed vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T

add	1 € M µ VLAN k 6
only	1 € M µ VLAN, c ž ß ¨ VLAN ç n VLAN k 6

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.6 switchport hybrid native

6 hybrid M ó • VLANož

switchport hybrid native vlan vlan-id

Ê Ö ó • ›ož

no switchport hybrid native vlan

Ê Ö ó • ›ož

default switchport hybrid native vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	6 hybrid M ó • VLAN k ó • VLAN Ä † R ¥ N M ÿ ß ž C k Tag.

o¬ Þ . F åo- Þ . Native VLAN © VLAN 1ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 6 native vlan e knative vlan † R hybrid M ÿ ß ž C k Tagož k Tag † R hybrid M Û ž • © native vlan †ož

o¬ F å †o- 1 y 1 hybrid M GigabitEthernet 0/1 M native vlan — å è VLAN 20 y

```
5XLMLH FRQILJ LI *LJDELW(WKHUQHW LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW PRGH K\EULG
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW K\EULG QDWLYH
```

o¬ à • co- * show running-config ò 0 N M F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.7 switchport mode

6 %² 8 C N Mgswitch port h % ” kU Y 6 ¥ N M access porto•trunk porto•hybrid porto•uplink port k ê ñ — 802.1Q Ÿ 3ož

switchport mode { access | trunk | hybrid | uplink }

1 ¥ N M % ” Ê Ö Þ . ›ož

no switchport mode

1 ¥ N M % ” Ê Ö Þ . ›ož

default switchport mode

o¬ @ ƒ ª ¢o-

@ ƒ	T
access	— å%² switch port access portož
trunk	— å%² switch port trunk portož
hybrid	— å%² switch port hybrid portož
uplink	— å%² switch port uplink portož

o¬ Þ . F åo- switch port Þ . % ” accessož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç%² switch port % ” © access ké ¥ N M Q %² VLAN è tožU Y … switchport access vlan x X 6 ¥ N M © î%² VLAN è tož

ò ç%² switch port % ” © trunk k ó • µ ñ Ä VLAN k - U Y * x X switchport trunk allowed 1 € M µ/ ß 6 VLANož

ò ç%² switch port % ” © uplink k ó • - © µ ñ Ä VLANož Trunk M c © kuplink M ÿ ß † C k Tag k/ k ü Y ó • VLAN Ä † Tagož - U Y * x X switchport trunk allowed 1 € M µ/ ß 6 VLANož

ò ç%² switch port % ” © hybrid k ó • - © µ ñ Ä VLAN k Trunk M c © k U Y * x X switchport hybrid allowed 6 € M © Y Tag ê UNTag ¥ ” µož

o¬ F å †o- 1 y 1 € M 1 — å access M

```
5XLMLH FRQILJ LQW J
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW PRGH DFFHVV
```

2 y 1 € M 1 — å trunk M

```
5XLMLH FRQILJ LQW J
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW PRGH WUXQN
```

3 y 1 € M 1 — å uplink M

```
5XLMLH FRQILJ LQW J
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW PRGH XSOLQN
```

4 y 1 € M 1 — å hybrid M

```
5XLMLH FRQILJ LQW J
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW PRGH K\EULG
```

o¬ à • co- U Y * show interface switch x X ò 0

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.8 switchport trunk allowed vlan

1%² trunk M ê ñ uplink M µ / ß 6 VLANož

switchport trunk allowed vlan { all | { add vlan-list | remove vlan-list | except vlan-list | only vlan-list } }

Ê Ö Þ . F åož

no switchport trunk allowed vlan

Ê Ö Þ . F åož

default switchport trunk allowed vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
all	1 trunk M µ ñ Ä VLAN
add	1 trunk M µ 6 VLAN ç n
remove	1 trunk M ß 6 VLAN ç n
except	1 trunk M ß 6 VLAN ç n kw 1 € M µ VLAN ç n trunk(• , € šÌ „ •$C Zï xVLAN Žò6X 9

vlan-list	6 q • VLAN ç n

o¬ Þ . F åo- Þ . Õ Ñ ktrunk M y uplink M K 9 ñ Ä VLANož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- %² trunk/uplink M Þ . U Y n ÿ Î — Õ u 4 ñ Ä VLAN g 1 l 4094 h v Oož x © k - U Y * — å trunk/uplink M • U VLAN ç n Û ’ ò î ? VLAN v O * trunk/uplink Mož … show interfaces x X ò 0 — åož

o¬ F å †o- 1 y µ ©%² VLAN 2 R trunk M GigabitEthernet 0/10 g ß y

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW WUXQN DOORZH
```

2 y µ © trunk M G 0/10 M µ ” 4 VLAN 10 Y Ù ¿ VLAN y

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW WUXQN DOORZH
```

3 y µ © trunk M G 0/10 M µ VLAN 10 w g ” ¿ VLAN y

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW WUXQN DOORZH
```

4 y µ © uplink M GigabitEthernet 0/10 M R VLAN 10 g ” y

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW PRGH XSOLQN
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW WUXQN DOORZH
```

5 y µ © uplink M GigabitEthernet 0/10 M µ ” 4 VLAN 10 Y Ù ¿ VLAN y

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW WUXQN DOORZH
```

6 y µ © uplink M G 0/10 M µ VLAN 10 w g ” ¿ VLAN y

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW VZLWFKSRUW WUXQN DOORZH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.9 switchport trunk native vlan

6 trunk/uplink M ó • VLANož
switchport trunk native vlan vlan-id

Ê Ö Þ . F åož
no switchport trunk native vlan

Ê Ö Þ . F åož
default switchport trunk native vlan

o¬ @ ƒ ª ¢o-

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.10 vlan

ë • VLAN ê ñ µ VLAN % ”ož
vlan { vlan-id | range vlan-range }

í ”] ¨ VLANož
no vlan { vlan-id | range vlan-range }

1 6] Æ ¨ VLAN Ê Ö è ¯ * ² Á VLANož
default vlan { vlan-id | range vlan-range }

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	VLAN ID Zož h Þ y Þ . VLAN gVLAN 1 h ª • í ”ož
vlan-range	VLAN ID 8 ož

o¬ Þ . F åo- ¯ * ² Á VLAN

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-

o¬ F å †o- 1 o• ë • VLAN 10 w µ VLAN 10 % ”

```
5 X L M L H F R Q I L J Y O D Q
5 X L M L H F R Q I L J Y O D Q
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5 MAC VLAN

5.1 mac-vlan enable

ø • € M MAC VLAN ož
mac-vlan enable

¼ { € M MAC VLAN ož
no mac-vlan enable

Ê Ö € M MAC VLAN ož
default mac-vlan enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M MAC VLAN ¼ {

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- · À ¨ € M • o MAC VLAN • ¼ e k ¶ B F å MAC VLAN n ¾ õ ¨ € M ÿ |ož
MAC VLAN N u 4 ¨ hybrid € M • o k ¿ € M u 4ož

o¬ F å †o- 1 y ø • € M MAC VLAN y
5 X L M L H F R Q I L J L I L Q W H U I D F H L G P D F Y O D Q H Q D E O H

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.2 mac-vlan mac-address

F å ² Á MAC VLAN n ¾ož

mac-vlan mac-address mac-address [mask mac-mask] vlan vlan-id [priority pri_val]

í ” ² Á MAC VLAN n ¾ož

no mac-vlan mac-address mac-address [mask mac-mask] vlan vlan-id [priority pri_val]

í ” ² Á MAC VLAN n ¾ož

default mac-vlan mac-address mac-address [mask mac-mask] vlan vlan-id [priority pri_val]

o¬ @ ƒ ª ¢o- [redacted]

5.3 show mac-vlan

ò 0 MAC VLAN n ¾ož

show mac-vlan { all | dynamic | static | vlan vlan-id | mac-address mac-address [mask mac-mask] }

o¬ @ ƒ ª ¢o-

@ ƒ	T
all	ª P MAC-VLAN n ñ Ä n ¾ož

5.4 show mac-vlan interface

ò 0 • o MAC VLAN € M ç nož

show mac-vlan interface

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ¨ € M • o MAC VLAN e k … 4 x X G • F å © k è ož

o¬ F å †o- 1 y ò 0 MAC ª - n

```
5XLMLH  VKRZ PDF YODQ LQWHUIDFH
0$& 9/$1 LV HQDEOHG RQ IROORZLQJ LQWHUIDFH

)DVW(WKHUQHW
)DVW(WKHUQHW
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

6 Protocol VLAN

6.1 protocol-vlan ipv4(/ L)

¨ N M … ÿ à VLANož

protocol-vlan ipv4

¨ N M H ƒ … ÿ à VLANož

no

6.2 protocol-vlan ip A)

F å ÿ à VLAN

protocol-vlan ipv4 addr vlan id

H ƒ 6 IP ª - ÿ à ož

no protocol-vlan ipv4 a ddr

H ƒ ñ Ä ÿ à VLAN F åo

no protocol-vlan ipv4

o¬ @ ƒ ª ¢o-

@ ƒ	
addr	I ¿ ” ÿ µ
id	VL Â Ý

o¬ Þ . F åo- ó • ¼ {

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 1 0.24 re 7F260.7 4N

ðs Þ F åðo-” VLAN F åož

6.3 protocol-vlan profile(/ L)

• î profile ñ ¥ N Mož

protocol-vlan profile num vlan id

Ž ” N M î profileož

no protocol-vlan profile id

Ž ” N M ñ Ä profileož

no protocol-vlan profile

o¬ @ ƒ ª ¢o-

@ ƒ	T
num	profile « –
id	VLAN ID k1- D } u 4 Â Ý VLAN

o¬ Þ . F åo- ó • ¼ {

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 y N M · À © Trunk ê ñ Hybrid % ”ož

2 y] F å « – Z n ¾ k U + N ¾ w • n ¾ k ¬ } ¯ í ” › n ¾ k Ç F å • n ¾ z

o¬ F å †o- 1 y € M • # ‘ VLAN

```
5XLMLH FRQILJ LI SURWRFRO YODQ SURILOH YODQ
```

o¬ à • co- … show protocol-vlan profile x X ª P protocol-vlan F å Õ Ñ

o¬ U P ’ Îo- 1 y ò ç # ‘ VLAN + • « – ¶ B F å 9 Ì F åož

```
3URWRFRO YODQ SURILOH KDVQ W EHHQ FUHDWHG SOHDVH FUHDWH
```

2 y ò ç # ‘ VLAN + • « – ¶ B F å] • ¨ N M k ¬ } ¯ í ” ¥ n ¾ož

```
3URWRFRO YODQ SURILOH KDV EHHQ DSSOLHG RQ WKH SRUW SOHDVH
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

6.4 protocol-vlan profile(µA)

F å # ‘ VLAN profileož

protocol-vlan profile num frame-type type ether-type type

protocol-vlan profile num frame-type LLC DSAP value SSAP value

í ” î profile F åož

no protocol-vlan profile num

Ž ” ñ Ä profile F åož

no protocol-vlan profile

o¬ @ ƒ ª ¢o-

@ ƒ	T
num	profile « –
type	† • º y Y ß à • º
value	Æ ˜ | µ • º

o¬ Þ . F åo- ó • ¼ {

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-] F å « – Z n ¾ k U + N ¾ w • n ¾ k ¬ } ¯ í ” › n ¾ k Ç F å • n ¾ z

n DUNE é + ¬ £ Ø Ð VLAN [» ^ + ø Ÿ • • Ÿ ! 6 a — / q 3 + ø " c P !

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

6.5 show protocol-vlan

ª P Protocol VLAN F åož

show protocol-vlan [profile [id] | ipv4]

o¬ @ ƒ ª ¢o-

@ ƒ	T
id	profile « –

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- … show protocol-vlan x X ª P protocol-vlan F å Õ Ñ

o¬ F å †o- 1 y ò 0 Protocol VLAN F å ’ Îož

```
5XLMLH VKRZ SURWRFRO YODQ

LS                PDVN              YODQ



LQWHUIDFH              LSY  VWDWXV



SURILOH IUDPH W\SH      HWKHU W\SH '6$3 66$3  LQWHUIDFH      YODQ
```

profile	# ‘ VLAN « –
frame-type	† • º
ether-type/DSAP+SSAP	Y ß • º

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

7 Private VLAN

7.1 debug bridge pvlan

ø • Private VLAN ² ¡ • ¼ož
debug bridge pvlan

¼ { Private VLAN ² ¡ • ¼ož
no debug bridge pvlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ¼ { ² ¡ • ¼ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ² ¡ ’ Î , Private VLAN ñ Ä F å i ß j ê ñ U P ï ’ Îož
Private VLAN _ _ VLAN y N M F å â Â = œ

Õ — ® 8 Ë — ‘ ‹ ¶ » ¡ µ Super VLAN N " Æ ã ƒ c ¥ Ç q 3 ‰ 8 Æ ã d

¡ ‰ 8 ž G ¨ 8 Ë ð o Y ƒ Ð ð n ä G * d

o¬ F å †o- 1 y ø • Private VLAN ² ¡ • ¼ož

```
5XLMLH GHEXJ EULGJH SYODQ
```

2 y ¼ { Private VLAN ² ¡ • ¼ož

```
5XLMLH QR GHEXJ EULGJH SYODQ
```

o¬ ² ¡ ’ Îo- 1 yPrivate VLAN F å ² ¡ ’ Î

² ¡ ’ Î	7KH YODQ SDLU LV LQYDOLG
’ Î † K	¼ û ê ñ † ¼ û € M Ç Private VLAN + ž k6 VLAN + © Ä | 8 C ¼ û Private VLAN +ož
D ÿ = œ	6 VLAN + © Ä | 8 C ¼ û Private VLAN +ož
Ô ò • ‘	6 VLAN + · À © 8 C ¼ û Private VLAN +ož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

7.2 private-vlan

F å ož ! ® BD G Ÿ`D ðG ‘aj Vÿ%&i‘aj Vÿñ‘aj VÿÉ •—A @Dp Ò"™XDAVÐož ! ® BD G šPD ðG • ¥oòRf™ Vÿñ• ¥o
o¬ u V ª‰w2‰-” Òˆ &ª¡“À sÖúÀgPU

```
5XLMLH FRQILJ YODQ YODQ
5XLMLH FRQILJ YODQ QR SULYDWH YODQ LVRODWHG
5XLMLH FRQILJ YODQ YODQ
5XLMLH FRQILJ YODQ QR SULYDWH YODQ FRPPXQLW\
```

3 y … default x X H ƒ Private VLANož

```
5XLMLH FRQILJ YODQ
5XLMLH FRQILJ YODQ GHIDXOW SULYDWH YODQ SULPDU\
5XLMLH FRQILJ YODQ YODQ
5XLMLH FRQILJ YODQ GHIDXOW SULYDWH YODQ LVRODWHG
5XLMLH FRQILJ YODQ YODQ
5XLMLH FRQILJ YODQ GHIDXOW SULYDWH YODQ FRPPXQLW\
```

o¬ à • co- 1 y… show vlan private-vlan { community | isolated | primary } x X kU Y ò 0 c • º Private VLAN F å Õ Ñož

o¬ U P ’ Îo- 1 y ò ç H ƒ Private VLAN % ” ž Ž VLAN % ” %² k é U P j ¨ož

```
7\SHV RI SULYDWH 9/$1V GR QRW PDWFK
```

o¬ o • j ¨o- 1 y 1 Á VLAN F å è Private VLANož

o¬ u V ª ¢o- -

7.3 private-vlan association

8 C ¼ û ü VLAN(secondary VLAN) VLAN(primary VLAN)ož
private-vlan association { svlist | add svlist | remove svlist }

H ƒ ñ Ä ¼ û ü VLANož
no private-vlan association

H ƒ ñ Ä ¼ û ü VLANož
default private-vlan association

o¬ @ ƒ ª ¢o-

@ ƒ	T
svlist	¼ û secondary vlan g ü VLAN h
add svlist	Í ¼ û

o¬ x X % ”o- VLAN % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- · À ¨ VLAN(primary VLAN) F åož
¼ û VLAN · À © Private VLAN • º ü VLANož

o¬ F å †o- 1 y ¼ û ü VLANož

```
5 X L M L H F R Q I L J Y O D Q
5 X L M L H F R Q I L J Y O D Q S U L Y D W H Y O D Q D V V R F L D W L R Q D G G
```

2 y VLAN y ü VLAN † ¼ ûož

```
5 X L M L H F R Q I L J Y O D Q
5 X L M L H F R Q I L J Y O D Q S U L Y D W H Y O D Q D V V R F L D W L R Q U H P R Y H
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

7.4 private-vlan mapping

VLAN y ü VLAN C ¼ ûož
private-vlan mapping { svlist | add svlist | remove svlist }

C † ¼ û ñ Ä ü VLANož
no private-vlan mapping

C † ¼ û ñ Ä ü VLANož
default private-vlan mapping

o¬ @ ƒ ª ¢o-

@ ƒ	T
svlist	¼ û ü VLAN
Add svlist	Í ¼ û ü VLAN
remove svlist	† ¼ û ü VLAN

o¬ Þ . F åo- Þ . VLAN y ü VLAN $ • Z Ä ¼ û

o¬ x X % ”o- N• w=Ÿ°

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç g ¼ û k ü VLAN ï g C * ’ož

o¬ F å †o- 1 y ü VLAN C ¼ û ñ VLANož

```
5XLMLH FRQILJ LQWHUIDFH YODQ
5XLMLH FRQILJ LI SULYDWH YODQ PDSSLQJ DGG
```

o¬ à • co- 1 y … show vlan private-vlan x X k U Y ò 0 Private VLAN F å Õ Ñož

o¬ o • j ¨o- 1 y F å C ¼ û VLAN y ü VLAN $ • Z Ä 8 C ¼ ûož

o¬ u V ª ¢o- -

7.5 show vlan private-vlan

ò 0 Private VLAN F å k U Y ò 0 6 • º VLAN F å Õ Ñož

show vlan private-vlan { community | primary | isolated }

ò 0 ñ Ä Private VLAN F å

show vlan private-vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
primary	ª P primary VLAN ’ Î
community	ª P community VLAN ’ Î
isolated	ª P isolated VLAN ’ Î

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 Private VLAN F å Õ Ñož

```
5XLMLH VKRZ YODQ SULYDWH YODQ

9/$1 7\SH 6WDWXV 5RXWHG 3RUWV $VVRFLDW

     SULPDU\ LQDFWLYH (QDEOHG
     LVRODWHG LQDFWLYH 'LVDEOHG 1R $VVRFL
```

```
    SULPDU\   DFWLYH   'LVDEOHG
    LVRODWHG   DFWLYH   'LVDEOHG
    FRPPXQLW\  DFWLYH   'LVDEOHG *L
<†Ky
 <
```

o¬ … 6 -o- ¬ } F å œ Y € M ê é } M N M Ò ¢ host % ”ož
¬ } • Œ Ò M N M Ò ¢ Œ Ò % ”ož

o¬ F å †o- 1 y 6 N M % ” \ Ä host % ”ož

```
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I V Z L W F K S R U W P R G H S U L Y D W H Y O D Q K R V W
```

2 y 6 N M % ” Œ Ò % ”ož

```
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W ( W K H U Q H W V Z P R G H S U L Y D W H Y O D Q S U R P
```

3 y H ƒ N M \ Ä host % ”ož

```
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I Q R V Z L W F K S R U W P R G H
```

o¬ à • co- 1 y … show running ò 0 N M F å

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

7.7 switchport private-vlan host-association

¼ û private VLAN % ” host M ñ ¼ û VLAN C ñ ¨ ü VLANož
switchport private-vlan host-association p_vid s_vid

H ƒ host ¼ û VLAN y ü VLANož
no switchport private-vlan host-association

Ê Ö Þ . F åož
default switchport private-vlan host-association

o¬ @ ƒ ª ¢o-

@ ƒ	T
p_vid	Private VLAN VLAN
s_vid	Private VLAN ü VLAN

o¬ Þ . F åo- Z Ä ¼ û Private VLAN +ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- N M · À © Private VLAN host M % ”ož
¼ û Private VLAN · À © 8 C ¼ û ož

o¬ F å †o- 1 yhost M ¼ û VLAN y ü VLANož

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI VZLWFKSRUW PRGH SULYDWH YODQ KRVW
5XLMLH FRQILJ LI VZLWFKSRUW SULYDWH YODQ KRVW DVVRFLDWLRQ
5XLMLH FRQILJ LI GHIDXOW VZLWFKSRUW SULYDWH YODQ KRVW DVVFL
5XLMLH FRQILJ LI VZLWFKSRUW SULYDWH YODQ KRVW DVVRFLDWLRQ
```

o¬ à • co- -

o¬ U P ’ Îo- 1 y ò ç 6 VLAN © VLAN k é U P j ¨ož

```
2SHUDWLRQ LV QRW VXSSRUWHG RQ LQWHUIDFH *LJDELW(WKHUQHW
```

2 y ò ç ¼ û ü VLAN VLAN Z Ä 8 C ¼ û k é U P j ¨ož

```
2SHUDWLRQ LV QRW VXSSRUWHG RQ LQWHUIDFH *LJDELW(WKHUQHW
```

o¬ o • j ¨o- 1 y ¼ û VLAN y ü VLAN Z Ä 8 C ¼ ûož
2 y ¼ û VLAN y ü VLAN À Õ Private VLAN K Å ê K Å j ¨ož

o¬ u V ª ¢o- -

7.8 switchport private-vlan mapping

private VLAN Œ Ò N M F å ñ } Œ Ò secondary VLANož
switchport private-vlan mapping p_vi d { svlist

show voice vlan oui

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- * 4 x X k U ò 0 ¢ ù — Õ u 4 § º OUI ª -ož

o¬ F å †o- 1 y ò 0 — Õ Voice VLAN OUI ª -

```
5XLMLH FRQILJ   VKRZ YRLFH YODQ RXL
28,              0DVN             'HVFULSWLRQ

    H          IIII II        6LHPHQV SKRQH
     E         IIII II        &LVFR SKRQH
     G         IIII II        $YD\D SKRQH
    E          IIII II        3KLOLSV 1(& SKRQH
  G    H        IIII II         3LQJWHO SKRQH
  H             IIII II        3RO\FRP SKRQH
  H   EE         IIII II          FRP SKRQH
```

< † K y

<	ª ¢
OUI	OUI ª - k § º † › MAC ª -ož
Mask	OUI ª - Q A kOUI ª - Ä | x † k Q A n Pož
Description	OUI ª - T

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

8.3 voice vlan

¶ B … Voice VLAN k — å%² VLAN Voice VLANož
voice vlan vlan-id

ï U Y … ¥ x X no # ¾ ¼ { Voice VLAN ož
no voice vlan

o¬ @ ƒ ª ¢o-

o¬ @ ƒ ª ¢o-

@ ƒ	T
minutes	n P Voice VLAN ï ž • k 8 <5 k10000> k % y y ã Uož

o¬ Þ . F åo- minutes @ ƒ Þ . › 1440 ã Uož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ï U ¨ — Õ — å Voice VLAN ï ž • k ¢ ¨ ï ž • Ä k — Õ Z Ä R ÿ µ € M v ñ ` ~ § º † ž k
1 ¥ € M R Voice VLAN í ”ož

$ ¨ · ' s ‘ N f ´ “ Ò d

o¬ F å †o- 1 y — å Voice VLAN ï ž • 10 ã U
5 X L M L H F R Q I L J Y R L F H Y O D Q D J L Q J

o¬ à • co- … show voice vlan ò 0 Voice VLAN F å ’ Î ¢ ù Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.5 voice vlan cos

¶ B — å Voice VLAN § º v CoS ›ož
voice vlan cos cos-value

ï U Y … ¥ x X no # ¾ 1 ¥ F å Ê Ö ñ Þ . ›ož
no voice vlan cos

o¬ @ ƒ ª ¢o-

@ ƒ	T
cos-value	n P Voice VLAN § º v CoS › k 8 <0 k7> ož

o¬ Þ . F åo- cos-value @ ƒ Þ . › 6ož

o¬ x X % ”o- ¶ B F å % ”

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o-

8.7 voice vlan enable

¨ N M F å % ” … 4 x X … € M Voice VLAN ož
voice vlan enable

ï U Y … ¥ x X no # ¾ ¼ { € M Voice VLAN ož
no voice vlan enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . Õ Ñ € M Voice VLAN ¼ {ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * ¥ x X ø • € M Voice VLAN kVoice VLAN Q ¨ Ò ò € M o ož i H D } u 4 ¨ Access Porto•Trunk Porto•Hybrid Porto•Private VLAN Ñ Mo•Private VLAN Œ Ò M Uplink M o Voice VLAN ož

} æ e Voice LAN ‘ ž Æ ã • ™ m ° Ÿ j Ç Voice LAN _ Ÿ ì â “ Ò d

o¬ F å †o- 1 y ø • € M FastEthernet 0/1 Voice VLAN ož

```
5 X L M L H F R Q I L J L Q W H U I D F H I D V W ( W K H U Q H W
5 X L M L H F R Q I L J L I Y R L F H Y O D Q H Q D E O H
```

o¬ à • co- … show voice vlan ò 0 Voice VLAN F å ’ Î ¢ ù Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.8 voice vlan mac-address

¶ B — å Voice VLAN U œ ð § º v OUI ª -ož
voice vlan mac-address mac-addr mask oui-mask [description text]

ï U Y … ¥ x X no # ¾ í ” — Õ — å î OUI ª -ož
no voice vlan mac-address mac-addr

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac-addr	” H.H.Hož § º † › MAC ª -
oui-mask	” H.H.HožOUI ª - Ä	x † k Q A n P
text	OUI ª - T

o¬ Þ . F åo- Þ . Õ Ñ Z Ä F å ` ~ OUIož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Û ö œ _ 4 Œ § º †ož § º — Õ MAC ª - ù - Û ö œ 4 Œ k Voice VLAN U Y * 1 v ñ
† › MAC ª - y OUI Q A , B H OUI k R ò î • ¥ † © k § º †ož

Voice VLAN OUI â Ÿ ¾ ¦ Ì N " c ò U # d

o¬ F å †o- 1 y — å OUI ª - 0012.3400.0000 Voice VLAN ` c ª - k 4 Œ Company Aož

5 X L M L H F R Q I L J Y R L F H Y O D Q P D F D G G U H V V P D V N I I I I I I

o¬ à • co- … show voice vlan oui ò 0 ¢ ù — Õ u 4 OUI ª -o•OUI ª - Q A y T ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.9 voice vlan mode auto

¨ N M F å % ” F å € M Voice VLAN W • % ” % ”ož
voice vlan mode auto

ï U Y … ¥ x X no # ¾ — å € M Voice VLAN W • % ” ô % ”ož
no voice vlan mode auto

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M Voice VLAN W • % ” Þ . % ”ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Voice VLAN W • % ” ã % ” ô % ” kÂ 9 € M F åož_ € M Voice VLAN W • % ” , ; Þ y k
c € M U Y — å c % ”ož ¨ c W • % ” € M µ Voice VLAN • ” c k U ‰ G € M
IP ¢ • ºo• € M • º Û — å € M Voice VLAN W • % ”ož

ò j Ç ° Ÿ t Voice VLAN É] ´ } Í] f ´ ¨ ¡ Í] Ü j Ç ¦ & Voice VLAN ì Ÿ l Voice VLAN _ Ÿ “ Ò d

ò j Ç] ´ ‘ N f ´ ¨ l _ Ÿ n û þ (È _ É â ‘ Ü j Ç native VLAN • " Voice VLAN d

, ! 6 Trunk Port/Hybrid Port ì ˜ ¶ » Ž Û N VLAN q 3 È • Ü Voice VLAN ¶ j Ç VLAN ¶ y ¶ / - { | Õ — Voice VLAN _ Ÿ » l # U 4 Û • • j Ç â V ¦ & Voice VLAN g) ¨ · â ° j Ç ¢ a • } Voice VLAN / d

j Ç ° Ÿ t Voice LAN _ Ÿ â m) û Í N f ´ ä ‘ N f ´ - 0 /) û f ´ - 0 È • ‘ ž j Ç Voice VLAN _ Ÿ d

‘ N f ´ • â m ¹ ¶ Í] " a — Ü j Ç ¦ & Voice LAN g ¶ Voice VLAN / W , d

o¬ F å †o- 1 y — å € M FastEthernet 0/1 Voice VLAN % ” % ”ož

```
5 X L M L H F R Q I L J L Q W H U I D F H I D V W ( W K H U Q H W
5 X L M L H F R Q I L J Y O D Q Y R L F H Y O D Q P R G H D X W R
```

o¬ à • co- … show voice vlan ò 0 Voice VLAN F å ’ Î ¢ ù Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.10 voice vlan security enable

¶ B ø • Voice VLAN ¶ % ”ož
voice vlan security enable

ï U Y … ¥ x X no # ¾ ¼ { ¶ % ”ož
no voice vlan security enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Voice VLAN ¶ % ” Þ . ø •ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4 Ü ¾ ñ ª g ï § º v ƒ G v ã Y n ÿ k U Y ø • Voice VLAN ¶ % ”ož ø • ¶ % ” e — Õ k + † › MAC ª - g ò k ¢ † › MAC ª - © U œ ð Voice VLAN OUI ª - ž k ª • ¥ † ¨ Voice VLAN Ä n ÿ k k é 1 ¥ † ’ož

Ù Ð 0 h â ‘ } Voice VLAN / ½ ¨ Ž Û 4 Û ä œ ` ô l d/ ò ® ‘ È ò Voice VLAN æ f ´ ¸ ‘ ž d

æ f ´ • ' s untagged q 3 ƒ Û Voice VLAN tag q 3) û W MAC ¿ s Û c Q Ä Voice VLAN tag q 3 • • Ö VLAN Ÿ • s q 3) û g Ÿ ä l y ‰ 8 â Ó Voice VLAN æ / T ¹ f ´ õ ¹ d

o¬ F å †o- 1 o• ø • Voice VLAN ¶ % ”ož
5 X L M L H F R Q I L J Y R L F H Y O D Q V H F X U L W \ H Q D E O H

o¬ à • co- … show voice vlan ò 0 Voice VLAN F å ’ Î ¢ ù Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9 MSTP

9.1 bpdu src-mac-check

ø • î N M bpdu › mac òož
bpdu src-mac-check H.H.H

¼ { N M bpdu › mac ò ož
no bpdu src-mac-check

o¬ @ ƒ ª ¢o-

@ ƒ	T
H.H.H	n P Q N v › mac ª - ¥ ª - bpdu lož

o¬ Þ . F åo- Þ . © ¼ { ož

o¬ x X % ”o- N M % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- … BPDU › MAC ò © 4 … 2 * K G BPDU † Û Ð Þ x à A E Ñ ò … MSTP W • 3 oož
¢ G 4 î € M µ + µ e è + € , A E Ñ ž k U * F å BPDU › MAC ò Û ñ Q N v + € A
E Ñ G BPDU l k ’ ñ Ä ¿ U BPDU l k R ò ñ … 2 Ð Þ x à) ož
U Y ¨ interface % ” Û Ô € M F å , • BPDU › MAC ò MAC ª - k %² € M Q ª
• F å%² ¡ MAC ª -ož

o¬ F å †o- 1 y F å N M Gi 1/1 Q N v › mac 00d0.f800.1e2f bpdu lož
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W H W K H U Q H W
5 X L M L H F R Q I L J L I L Q W H U I D F H L G L Q W H U I D F H L G E S G X V U F P D F F K H F

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- — å BPDU › MAC ª - ò k© Q N v ¥ › MAC ª - G BPDU l kò © ¡ J ¥ › MAC ª -
G BPDU lož

o¬ u V ª ¢o- -

9.2 bridge-frame forwarding protocol bpdu

ø • BPDU % n ož
bridge-frame forwarding protocol bpdu

¼ { BPDU % n ož
no bridge-frame forwarding protocol bpdu

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . © ¼ { ož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- ¨ IEEE 802.1Q ö Õ kBPDU) MAC ª - 01-80-C2-00-00-00 © • ‘ ª - … k / 8 ²
IEEE 802.1Q ö Õ — Õ k + 9 N v ñ BPDU l © ô G ož À ò k ¨ Ž à Ì b æ k U ¬ }
— Õ Ü u 4 % n BPDU lož † ò k — Õ Ì • o STP # ‘ ž k ¬ } % n BPDU l k … ± $; —
Õ $ • ÿ è ù ‹ ‘ 3 oož
BPDU % n Q ¨ STP # ‘ ¼ { ž õ o • ož ¢ STP # ‘ ø • ž k — Õ % n BPDU lož

o¬ F å †o- 1 y ø • BPDU % n ož
5 X L M L H F R Q I L J E U L G J H I U D P H I R U Z D U G L Q J S U R W R F R O E S G X

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.3 clear spanning-tree counters

Ž ” STP v G Ï ‹ ’ Î
clear spanning-tree counters [interface interface-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	+ • N M

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 4 x X Û Ž ” STP v G Ï ‹ ’ Îož

o¬ F å †o- 1 y Ž ” STP v G Ï ‹ ’ Îož

5 X L M L H F O H D U V S D Q Q L Q J W U H H F R X Q W H U V

2 y Ž ” N M Gi 0/1 v G Ï ‹ ’ Îož

5 X L M L H F O H D U V S D Q Q L Q J W U H H F R X Q W H U V L Q W H U I D F H J L J D E L W H W K H

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

9.4 clear spanning-tree detected-protocols

ò N M G RSTP BPDU k + BPDU l ü g ò òož

clear spanning-tree detected-protocols [interface interface-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	+ • N M

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 4 x X Û ò N M G RSTP BPDU lož

o¬ F å †o- 1 y + ñ Ä € M ò Í Î òož

5 X L M L H F O H D U V S D Q Q L Q J W U H H G H W H F W H G S U R W R F R O V

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

9.5 clear spanning-tree mst topochange record

Ž ” STP " ÷ w J ’ Î

clear spanning-tree mst instance-id topochange record

o¬ @ ƒ ª ¢o-

@ ƒ	T
instance-id	6 † IDož + 9 STP y RSTP # ‘ k Q Ä † 0 õ Ä |ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- … ¥ x X U Y Ž ” 6 † " ÷ w J ’ Î

o¬ F å †o- 1 y Ž ” † 0 " ÷ w J ’ Î

```
5XLMLH VKRZ VSDQQLQJ WUHH PVW WRSRFKDQJH UHFRUG
7RSRORJ\ FKDQJH LQIRUPDWLRQ RQ PVW
 7LPH ,QWHUIDFH 2OG VWDWXV 1HZ VWDWXV 7\S

*, /HDUQLQJ )RUZDUGLQJ 1RUPDO
5XLMLH FOHDU VSDQQLQJ WUHH PVW WRSRFKDQJH UHFRUG
5XLMLH VKRZ VSDQQLQJ WUHH PVW WRSRFKDQJH UHFRUG
 7KHUH V QR WRSRORJ\ FKDQJH LQIRUPDWLRQ KDV EHHQ UHFRUG RQ P
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

9.6 instance instance-id vlan vlan-range

MST F å % ” — å † C vlan ¥ 0 ¼ © k

instance instance-id vlan vlan-range

¨ MST F å % ” ñ Ä † F å Ê Ö Þ . ›ož

no instance instance-id {vlan vlan-range}

o¬ @ ƒ ª ¢o-

@ ƒ	T
instance-id	Instance Z k 8 0 l64
vlan-range	Vlan ç n k 8 1 - 4094

o¬ Þ . F åo- Þ . instance y vlan + • ¼ © © ñ Ä Vlan C ¨ Instance 0 ož

o¬ x X % ”o- MST F å % ”.

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- µ MST F å % ” e k … Y x X g F å @ ƒ y
instance instance-id vlan vlan-range y1 Vlan Á • ñ MST Instance ož L instance-id 8 0 l64ožvlan 8 1 l4094 ožvlan-range U Y ©%² ? vlan ¤ ` kVLAN ID •) Z œ • k Ò VLAN ID U Y … l N ã A VLAN ID N k † ò yinstance 10 vlan 2,3,6-9 # 4 1 VLAN 2 k 3 k 6 k 7 k 8 k 9 • ñ Instance 10 ož Þ . F å © ñ Ä VLAN ® ¨ Instance 0 ož 1 VLAN R Instance í ” • c © … no x X yno instance instance-id [vlan vlan-range] ož(} h Þ no x X Instance 8 1 l64)
i H — Õ ¨ Ò ò Ä A û 4 Õ Ñ g A ò 64M Ä Ћk ¨ Ä L Õ Ñ ë • 64 instance k - è Ä á Õ Ñ k • ‘ Ó ¨ Ä L Õ Ñ O ò ë • instance ƒ ož

o¬ F å †o- 1 y µ † Û ª ¢ ò ~ µ MST % ” k 1 VLAN 3, 5-10 ¥ 0 ñ MST Instance 1.

```
5XLMLH FRQILJ VSDQQLQJ WUHH PVW FRQILJXUDWLRQ
5XLMLH FRQILJ PVW LQVWDQFH YODQ k
5XLMLH FRQILJ PVW VKRZ VSDQQLQJ WUHH PVW FRQILJXUDWLRQ
0XOWL VSDQQLQJ WUHH SURWRFRO (QDEOH
1DPH
5HYLVLRQ
,QVWDQFH 9ODQV 0DSSHG
5XLMLH FRQILJ PVW H[LW
5XLMLH FRQILJ
```

2 y ò ç } 1 VLAN 3 R Instance 1 í ” k ; " µ MST F å % ” e k ü g ò i

```
5XLMLH FRQILJ PVW QR LQVWDQFH YODQ
```

3 y ò ç } 1 … Instance 1 í ” k • c ò y

```
5XLMLH FRQILJ PVW QR LQVWDQFH
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.7 l2protocol-tunnel stp

• o ¶ B BPDU TUNNEL ož
l2protocol-tunnel stp

¼ { ¶ B BPDU TUNNEL ož
no l2protocol-tunnel stp

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- • o ¶ B BPDU TUNNEL k ¬ } N M … BPDU TUNNEL õ ÿ |ož

o¬ F å †o- 1 y • o ¶ B BPDU TUNNEL ož

```
5XLMLH FRQILJ O SURWRFRO WXQQHO VWS
5XLMLH FRQILJ VKRZ O SURWRFRO WXQQHO VWS

/ SURWRFRO WXQQHO VWS (QDEOH
/ SURWRFRO WXQQHO GHVWLQDWLRQ PDF DGGUHVV G I
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

9.8 l2protocol-tunnel stp enable

• o N M BPDU TUNNEL
l2protocol-tunnel stp enable

» J N M BPDU TUNNEL
no l2protocol-tunnel stp enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- • o ¶ B BPDU TUNNEL k ¬ } N M … BPDU TUNNEL õ ÿ |ož

o¬ F å †o- 1 y • o N M BPDU TUNNEL ož

```
5XLMLH FRQILJ LI LQWHUIDFH LG  O SURWRFRO WXQQHO VWS HQDEOH
5XLMLH FRQILJ LI LQWHUIDFH LG  VKRZ O SURWRFRO WXQQHO VWS

/ SURWRFRO WXQQHO VWS (QDEOH
/ SURWRFRO WXQQHO GHVWLQDWLRQ PDF DGGUHVV  G I
*LJDELW(WKHUQHW  O SURWRFRO WXQQHO VWS HQDEOH
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

9.9 l2protocol-tunnel stp tunnel-dmac

— å BPDU TUNNEL ¬ } % n STP # ‘ ª -ož
l2protocol-tunnel stp tunnel-dmac mac-address

— å BPDU TUNNEL ¬ } % n STP # ‘ ª - Þ . ª -ož
no l2protocol-tunnel stp tunnel-dmac

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac-address	¬ } % n STP # ‘ ª -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 1 y BPDU TUNNEL % n STP # ‘ U # ª - 8 y01d0.f800.0005 o• 011a.a900.0005 o• 010f.e200.0003 o•

```
0XOWL VSDQQLQJ WUHH SURWRFRO (QDEOH
1DPH UHJLRQ
5HYLVLRQ
,QVWDQFH 9ODQV 0DSSHG

$//
5XLMLH FRQILJ PVW H[LW
5XLMLH FRQILJ
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.11 revision

MST F å % ” — å MSTP ¿ revision › k
revision version

¨ MST F å % ” ñ Ä † F å Ê Ö Þ . ›ož
no revision

o¬ @ ƒ ª ¢o-

@ ƒ	T
version	6 MST revision number k 8 0 l65535

o¬ Þ . F åo- Þ . revision 0ož

o¬ x X % ”o- MST F å % ”.

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- µ MST F å % ” e k U Y … Y x X g F å @ ƒ y
revision version y — å MST Í Î ƒ k 8 0 l65535ož U Y no revision 1 ¿ Ê Ö Þ . ›ož
show spanning-tree mst configuration y ª P ¢ ù MST region ’ Îož

o¬ F å †o- µ † Û ª ¢ ò ~ µ MST % ” k 1 revision F å 1.

```
5XLMLH FRQILJ VSDQQLQJ WUHH PVW FRQILJXUDWLRQ
5XLMLH FRQILJ PVW UHYLVLRQ
5XLMLH FRQILJ PVW VKRZ VSDQQLQJ WUHH PVW FRQILJXUDWLRQ
0XOWL VSDQQLQJ WUHH SURWRFRO (QDEOH
1DPH
5HYLVLRQ
,QVWDQFH 9ODQV 0DSSHG

$//
```

```
5XLMLH FRQILJ PVW H[LW
5XLMLH FRQILJ
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.12 show l2protocol-tunnel stp

ª P BPDU TUNNEL F å ’ Î

show l2protocol-tunnel stp

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ” k ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y … 4 x X ò 0 BPDU TUNNEL F å ’ Î y

```
5XLMLH VKRZ O SURWRFRO WXQQHO VWS
```

```
/ SURWRFRO WXQQHO VWS (QDEOH
/ SURWRFRO WXQQHO GHVWLQDWLRQ PDF DGGUHVV D D
*LJDELW(WKHUQHW O SURWRFRO WXQQHO VWS HQDEOH
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

ª P

9.13 show spanning-tree

ª P y ÿ è ù , ¼ ¶ B F å ’ Îož

show spanning-tree [summary | forward-time | hello-time | max-age | inconsistentports | tx-hold-count | pathcost method | max-hops | counters]

o¬ @ ƒ ª ¢o-

@ ƒ	T
summary	ª P MSTP _ instance ’ Î C ¿ € M ô G Ù Á ’ Îož
forward-time	ª P BridgeForwardDelayož
hello-time	ª P BridgeHelloTimeož
max-age	ª P BridgeMaxAgeož
inconsistentports	ª P œ ÿ ‘ ê ê è ‘ ò block € Mož
tx-hold-count	ª P TxHoldCountož
pathcost method	ª P ‹ ‘ è ¬ 0 Ë • což

max-hopsathcost method 25 etx-hold-count

```
                    6 7 3  7 &  R U  7 & 1  F R X Q W
0 6 7 , '      3 R U W                          5 H F H L Y H      6 H Q G
          * L J D E L W ( W K H U Q H W
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

9.14 show spanning-tree interface

ª P STP N M — åož , U # ÿ è ù F åož

show spanning-tree interface interface-id [{ bpdufilter | portfast | bpduguard | link-type }]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	€ M Z
bpdufilter	ª P bpdufilter Ù Áož
portfast	ª P portfast Ù Áož
bpduguard	ª P bpduguard Ù Áož
link-type	ª P € M linktype

o¬ x X % ”o- Ô Ó % ”o• ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- … 4 x X ò 0 N M STP F å ’ Îož

o¬ F å †o- 1 y ò 0 N M Gi 0/1 STP F åož

```
5 X L M L H   V K R Z  V S D Q Q L Q J  W U H H  L Q W  J L

3 R U W $ G P L Q 3 R U W ) D V W    ' L V D E O H G
3 R U W 2 S H U 3 R U W ) D V W    ' L V D E O H G
3 R U W $ G P L Q $ X W R ( G J H    ( Q D E O H G
3 R U W 2 S H U $ X W R ( G J H    ' L V D E O H G
3 R U W $ G P L Q / L Q N 7 \ S H    D X W R
3 R U W 2 S H U / L Q N 7 \ S H    S R L Q W  W R  S R L Q W
3 R U W % 3 ' 8 * X D U G    ' L V D E O H G
3 R U W % 3 ' 8 ) L O W H U    ' L V D E O H G
3 R U W * X D U G P R G H     1 R Q H
```

```
      067   YODQV PDSSHG  $//
3RUW6WDWH   IRUZDUGLQJ
3RUW3UL RULW\
3RUW'HVLJQDWHG5RRW            D D      HD
3RUW'HVLJQDWHG&RVW
3RUW'HVLJQDWHG%ULGJH          D D      HD
3RUW'HVLJQDWHG3RUW3UL RULW\
3RUW'HVLJQDWHG3RUW
3RUW)RUZDUG7UDQVLWLRQV
3RUW$GPLQ3DWK&RVW
3RUW2SHU3DWK&RVW
,QFRQVLVWHQW VWDWHV   QRUPDO
3RUW5RO H   URRW3RUW
```

< † K y

<	ª ¢
PortAdminPortFast	€ M ’ ò F å Port Fast Ù Á
PortOperPortFast	€ M Ž g Port Fast Ù Á
PortAdminAutoEdge	€ M ’ ò F å Auto Edge Ù Á
PortOperAutoEdge	€ M Ž g Auto Edge Ù Á
PortAdminLinkType	€ M ’ ò F å e è • º
PortOperLinkType	€ M Ž g e è • º
PortBPDUGuard	€ M BPDU Guard © k …
PortBPDUFilter	€ M BPDU Filter © k …
PortGuardmode	€ M Guard % ”
PortState	€ M ô G Ù Á
PortPriority	€ M i ¯ ´
PortDesignatedRoot	€ M 6 u ÿ
PortDesignatedCost	€ M Ù B ÿ è ¬ • f
PortDesignatedBridge	€ M 6 u à
PortDesignatedPortPriority	€ M 6 u € M i ¯ ´
PortDesignatedPort	€ M 6 u € M
PortForwardTransitions	€ M ô J Forwarding Ù Á) ƒ
PortAdminPathCost	€ M ’ ò è ¬ • f
PortOperPathCost	€ M Ž è ¬ • f
Inconsistent states	€ M ÿ ê ê è %² Ù Á
PortRole	€ M …)

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

9.15 show spanning-tree mst

ò 0 MST F å kInstance ' Îož

show spanning-tree mst { configuration | instance-id [interface interface-id] }

o¬ @ ƒ ª ¢o-

@ ƒ	T
configuration	— Õ mst F å
instance-id	Instance Z
interface-id	€ M Z

o¬ x X % ”o- Ô Ó % ”o• ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 ÿ è ù † , ¼ ' Îož

```
5XLMLH  VKRZ VSDQQLQJ WUHH PVW FRQILJXUDWLRQ
0XOWL VSDQQLQJ WUHH SURWRFRO (QDEOH
1DPH      WHVW
5HYLVLRQ
,QVWDQFH  9ODQV 0DSSHG
        À              À ¡ € 0H
```

9.16 show spanning-tree mst topochange record

ò 0 ÿ è ù " ÷ J “ £ ’ Îož

show spanning-tree mst instance-id topochange record

o¬ @ ƒ ª ¢o-

@ ƒ	T
instance-id	† ID

o¬ x X % ”o- Ô Ó % ”o• ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- … 4 x X U Y ò 0 € M ¨ 6 † " ÷ J ’ Î k „ ? € M G ÿ 4 Ù Á J Y C Ù Á J = œož

o¬ F å †o- 1 y ò 0 † 0 ÿ è ù " ÷ J “ £ož

```
5XLMLH VKRZ VSDQQLQJ WUHH PVW WRSRFKDQJH UHFRUG
7RSRORJ\ FKDQJH LQIRUPDWLRQ RQ PVW
 7LPH ,QWHUIDFH 2OG VWDWXV 1HZ VWDWXV 7\S

*, /HDUQLQJ )RUZDUGLQJ 1RUPDO
```

< † K y

<	ª ¢
Time	N M G ÿ " ÷ J ž •
Interface	G ÿ " ÷ J N M
Old status	N M › STP Ù Á
New status	N M • STP Ù Á
Type	N M G ÿ " ÷ J = œ kÀ } ã Y Ù _ U = œ y Normal --- N M 3 o Ù Á J k A ò N M UP/DOWN – Ü Ù Á J LoopGuard Block --- N M œ ê è %² ò µ Block Ù Á RootGuard Block --- N M œ ÿ %² ò µ Block Ù Á Inferior Block --- N M œ v ñ z i ¯ ´ BPDU ò µ Block Ù Á LoopGuard Unblock --- N M R ê è %² Ù Á Ê Ö k µ Forward Ù Á RootGuard Unblock --- N M R ÿ %² Ù Á Ê

	Ö k µ Forward Ù Á Inferior Unblock --- N M Z Ä Ç v ñ z i ¯ ´ BPDU k µ Forward Ù Á

o¬ U P ' Îo- 1 y ò ç 6 † Z Ä G ÿ " ÷ J k é U P ò y

7 K H U H V Q R W R S R O R J \ F K D Q J H L Q I R U P D W L R Q K D V E H H Q U H F R U G R Q F

¿ > G H F @ n P ,†ož

o¬ u V ª ¢o- -

9.17 spanning-tree

ø • MSTP k ñ k @ ƒ U ¨ ø • MSTP c ž k — å MSTP ¶ B Â Î — åož

spanning-tree [forward-time seconds | hello-time seconds | max-age seconds]

¼ { spanning-tree k ò ç no x X k @ ƒ # ¾ Q © 1 + • @ ƒ Ê Ö ò Þ . k x w ¼ { spanning treeož s o

```
5XLMLH FRQILJ VSDQQLQJ WUHH IRUZDUG WLPH
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož
2 y … show spanning-tree x X k ò 0 STP ¶ B F å ’ Îož

o¬ U P ’ Îo- 1 ySTP # ‘ ƒ G ¶ TRILL # ‘ ; ‹ k ò ç ¯ ø • TRILL # ‘ k Ç • o STP # ‘ k U P ò y

```
(UURU <RX PXVW GLVDEOH 75,// ILUVW
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.18 spanning-tree autoedge

ø • î N M Autoedge • ¼ož
spanning-tree autoedge

¼ { î N M Autoedge • ¼ož
spanning-tree autoedge disabled

o¬ @ ƒ ª ¢o-

@ ƒ	T
disabled	¼ { N M Autoedge • ¼ož

o¬ Þ . F åo- Þ . © ø • ož

o¬ x X % ”o- N M % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 6 u M ¨%² ž • 8 Ä(3 a) kò ç v ñ • € M G BPDU ké • ¥ € M , ©%² V à Ì — Õ kR ò — å ¥ € M Û € M k+ N µ Forwarding Ù Áož ö œ Û M € M œ v ñ BPDU ò œ ð ³ Û Mož

U Y * spanning-tree autoedge disabled x X H ƒ Û M œ ð ož

o¬ F å †o- 1 y ¼ { N M Gi 1/1 Û M œ ð • ¼ož

```
5XLMLH FRQILJ LQWHUIDFH JLJDELWHWKHUQHW
5XLMLH FRQILJ LI LQWHUIDFH LG LQWHUIDFH LG VSDQQLQJ WUHH DX
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

2 y … show spanning-tree interface x X k U Y ò 0 N M STP F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.19 spanning-tree bpdufilter

ø • î N M BPDU filter • ¼ož
spanning-tree bpdufilter enabled

¼ { î N M BPDU filter • ¼ož
spanning-tree bpdufilter disabled

o¬ @ ƒ ª ¢o-

@ ƒ	T
enabled	ø • N M BPDU filter • ¼ož
disabled	¼ { N M BPDU filter • ¼ož

o¬ Þ . F åo- Þ . © ¼ { ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- ø • BPDU Filter e k , • € M k ˜ G BPDU k - v BPDU k w € M ô G Ù Á + N — å Forwardingož

o¬ F å †o- 1 y ø • N M Gi 1/1 BPDU filter • ¼ož

5 X L M L H F R UM • ¼ož

o¬ u V ª ¢o- -

9.20 spanning-tree bpduguard

ø • î N M BPDU Guard • ¼ož
spanning-tree bpduguard enabled

¼ { î N M BPDU Guard • ¼ož
spanning-tree bpduguard disabled

o¬ @ ƒ ª ¢o-

@ ƒ	T
enabled	ø • N M BPDU Guard • ¼ož
disabled	¼ { N M BPDU Guard • ¼ož

o¬ Þ . F åo- Þ . © ¼ { ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 1. ø • % N M BPDU Guard Õ Ñ k ò ç ¥ N M v ñ 4 BPDU k < µ Error-disabled Ù Áož
2. Ô 9 Error-disabled Ù Á € M k U Y * errdisable recovery [interval seconds] x X Ê Öož

o¬ F å †o- 1 y ø • N M Gi 1/1 BPDU Guard • ¼ož

```
5 X L M L H  F R Q I L J  L Q W H U I D F H  J L J D E L W H W K H U Q H W
5 X L M L H  F R Q I L J  L I  L Q W H U I D F H  L G  L Q W H U I D F H  L G  V S D Q Q L Q J  W U H H  E S
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož
2 y … show spanning-tree interface x X k U Y ò 0 N M STP F å ’ Îož

o¬ U P ’ Îo- 1 yBPDU Guard ÿ | ž k k ø - ò SYSLOG U P ’ Î y

```
6 3 $ 1 7 5 ( (  % / 2 & . B % 3 ' 8 * 8 $ 5 '  5 H F H L Y H G  % 3 ' 8  R Q  S R U W  >  F K D U  @  Z L W K  % 3
S R U W
```

¿ [char] n P € M d fož

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.21 spanning-tree compatible enable

ø • N M Ã Å % ”ož
spanning-tree compatible enable

¼ { N M Ã Å % ”ož
no spanning-tree compatible enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . © ¼ { N M Ã % ”ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 1 y ø • N M Ã % ” k U Y ÿ G ¢ ù € M N M K Å ’ Î Ä # + Å ` k MSTI ’ Î g G k Y
ë ¿ D Œ $ • ; ož † ò y
// ë • † 1 k2
spanning-tree mst configuration
instance 1 vlan 1
instance 2 vlan 2
ò ç N M 1 Q K 9 VLAN 1 ¢ kø • N M STP Ã % ” kN M 1 G BPDU Q ` k † 0 y †
1 k ` k † 2 ’ Îož
2 y ø • N M Ã % ” k STP k ÿ G N M ñ K VLAN k Y C VLAN y † ¥ 0 ¼ © k ‹ ‘ ß N M ©
k @ 6 † ‹ ‘ož
3 y † 0 g / CIST h © ó • @ ‹ ‘ ož

o¬ F å †o- 1 y ø • N M Gi 0/1 N M Ã % ”
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W H W K H U Q H W
5 X L M L H F R Q I L J L I L Q W H U I D F H L G L Q W H U I D F H L G V S D Q Q L Q J W U H H F R P

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.22 spanning-tree guard loop

spanning-tree guard none

H ƒ N M guard ¼ {ož
no spanning-tree guard none

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ¼ { guard ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y ¼ { N M Gi 0/1 guard Ô Åož
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W H W K H U Q H W
5 X L M L H F R Q I L J L I L Q W H U I D F H L G V S D Q Q L Q J W U H H J X D U G Q R Q H

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.24 spanning-tree guard root

ø • î N M root guard Ô Åož
spanning-tree guard root

¼ { î N M root guard Ô Åož
no spanning-tree guard root

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ¼ { root guard ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 1. o root guard k … 2 œ j ¨ F å ê ³ c † x à - ¢ ù ÿ ª y J ož
2. N M root guard y loop guard ; ‹ož

o¬ F å †o- 1 y ø • N M Gi 0/1 root guard Ô Åož

```
5XLMLH FRQILJ LQWHUIDFH JLJDELWHWKHUQHW
5XLMLH FRQILJ LI LQWHUIDFH LG VSDQQLQJ WUHH JXDUG URRW
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.25 spanning-tree ignore tc

ø • î N M tc ¡ • ¼ož
spanning-tree ignore tc

¼ { î N M tc ¡ • ¼ož
no spanning-tree ignore tc

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ¼ { TC ¡

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- o tc ¡ k é € M v ñ TC † 1 Ô òož

o¬ F å †o- 1 y ø • N M Gi 0/1 TC ¡ož

```
5XLMLH FRQILJ LQWHUIDFH JLJDELWHWKHUQHW
5XLMLH FRQILJ LI LQWHUIDFH LG VSDQQLQJ WUHH LJQRUH WF
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.26 spanning-tree link-type

F å N M N • ºož

spanning-tree link-type [point-to-point | shared]

Ê Ö N M N • º Þ . ›ož

no spanning-tree link-type

o¬ @ ƒ ª ¢o-

@ ƒ	T
poinit-to-point	ò — å ¥ N M N • º point-to-point
shared	ò — å ¥ N M N • º shared

o¬ Þ . F åo- N M • º ¶ E W ž k ¥ N M N • º point-to-point z N M • º ! E W ž ¥ N M N • º sharedož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- F å ¥ € M N • º © ©“ µ + µ N” k %² µ ¼ © ñ RSTP © k ½ , v •ož¢ ï — å ¥ › ž k — Õ k ÿ G € M “ E W” Ù Á Û — å ož

o¬ F å †o- 1 y F å N M Gi 1/1 N • º point-to-pointož

```
5XLMLH FRQILJ LQWHUIDFH JLJDELWHWKHUQHW
5XLMLH FRQILJ LI LQWHUIDFH LG VSDQQLQJ WUHH OLQN W\SH SRLQW
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

2 y … show spanning-tree interface x X k ò 0 STP N M F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.27 spanning-tree loopguard default

ø • ¶ B loop guard Ô Åož
spanning-tree loopguard default

¼ { ¶ B loop guard Ô Åož
no spanning-tree loopguard default

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ¼ { loop guard ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- o loop guard k … 2 ÿ € M ê Õ a M œ v ñ bpdu ò D ÿ U ê èož

o¬ F å †o- 1 y ø • loop guard Ô Åož
5 X L M L H F R Q I L J V S D Q Q L Q J W U H H O R R S J X D U G G H I D X O W

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.28 spanning-tree max-hops

— åBPDU l Â Ý é ƒož

spanning-tree max-hops hop-count

Ê Ö Þ . ›ož

no spanning-tree max-hops

o¬ @ ƒ ª ¢o-

@ ƒ	T
hop-count	BPDU ¨ t ' $ ù U Y Æ — Õ) ƒ k 8 1 l40

o¬ Þ . F åo- hop-count Þ . › 20

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- ¨ Region Ä k Root Bridge G BPDU m%² Hot Count ¾ k R Root Bridge • ÷ k ? Æ %² — Õ kHop Count < k × 1 k + ñ 0 é n P ¥ BPDU ' Î Ý ž k — Õ v ñ Hops › 0 BPDU < } ' ož

4 x X 6 4 BPDU ¨%² Region Ä Æ Ú 5 V — Õ e t 'ožw J max-hops 1 § € ñ ñ Ä Instanceož

o¬ F å †o- 1 y † 1 ñ Ä MST Instance Max-hops › — 10 y

1 ÿ è ù % ” Ê Ö Þ . ›ož
no spanning-tree mode

o¬ @ ƒ ª ¢o-

@ ƒ	T
Stp	Spanning tree protocol(IEEE 802.1d)
Rstp	Rapid spanning tree protocol(IEEE 802.1w)
Mstp	Multiple spanning tree protocol(IEEE 802.1s)

o¬ Þ . F åo- MSTP Í Î

o¬ x X % ”o- ¶ B F å % ”

o¬ … 6 -o- Ä ? D Œ D } ¶ 7 ö Õ ë k U k - %² ? Ã Å | Êož ¨ ’ ò t G ë ¿ U 4 — Õ Î —
Õ Ã ž k … 4 x X U Y ä E ñ z Í Î Spanning Tree % ” k Y Ã $ož

¶ MSTP f ´ - 0 þ RSTP g STP f ´ ¨ ‘ MSTP Region N ð o Ü „ Â Â d

“ N î f ´ - 0 V ý ! “ N î 7 í ™ 8 d

o¬ Þ . ´ ðo- 15

o¬ F å †o- 1 y F å ÿ è ù STP % ”ož
5 X L M L H F R Q I L J V S D Q Q L Q J W U H H P R G H V W S

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož
2 y … show spanning-tree x X k U Y ò 0 ÿ è ù F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.30 spanning-tree mst configuration

F å MSTP Region k w µ MST % ” kož
spanning-tree mst configuration

9.31 spanning-tree mst cost

N M % ” — å ? Instance è ¬ 0 Ëož

spanning-tree [mst instance-id] cost cost

1 î%² N M Instance è ¬ 0 Ë Ê Ö Þ . ›ož

no spanning-tree [mst instance-id] cost

o¬ @ ƒ ª ¢o-

@ ƒ	T
instance-id	Instance Z k 8 0 l64
cost	è ¬ 0 Ë › k 8 1 l200 k000 k 000

o¬ Þ . F åo- Instance-ID Þ . › 0

Þ . › ÿ G Interface e è , ä ‹ ‘ož

1000 Mbps—20000

100 Mbps—200000

10 Mbps—2000000

o¬ x X % ”o- N M F å % ”.

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- cost › Þ Ý n ¢ è ¬ 0 Ë Þ äož

o¬ F å †o- 1 y Ë%² y Instance 3 , ¼ û N M F å è ¬ 0 Ë › 400 • c ò y

5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W H W K H U Q H W

5 X L M L H F R Q I L J L I L Q W H U I D F H L G V S D Q Q L Q J W U H H P V W F R V W

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

2 y … show spanning-tree mst interface interface-id x X k U Y à š F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.32 spanning-tree mst port-priority

— å î N M S + c Instance Y c € M i ¯ ´ož

spanning-tree [mst instance-id] port-priority priority

1 î N M Instance Ê Ö Þ . ›ož

no spanning-tree [mst instance-id] port-priority

o¬ @ ƒ ª ¢o-	@ ƒ	T

Instance-id

9.33 spanning-tree mst priority

— åInstance — Õ i ¯ ´ož

spanning-tree [mst instance-id] priority priority

— åInstance — Õ i ¯ ´ Ê Ö Þ . ›ož

no spanning-tree [mst instance-id] priority

o¬ @ ƒ ª ¢o-

@ ƒ	T
instance-id	Instance Z k 8 0 l64
priority	— Õ i ¯ ´ k U # 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152,53248, 57344 y 61440ož » 16 ... ƒ k ® 4096 • ƒož

o¬ Þ . F åo- instance-id Þ . › 0 kpriority Þ . › 32768ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 15

o¬ ... 6 -o- — å — Õ i ¯ ´ ¼ © ñ „ — Õ ... à Ì ÿ k c ž - ¼ © ñ ... à Ì "; È ãož

o¬ F å †o- 1 y Y † ÿ Ë Instance 20 — å — Õ i ¯ ´ › — 8192 y

5 X L M L H F R Q I L J V S D Q Q L Q J W U H H P V W S U L R U L W \

o¬ à • co- 1 y ... show running-config x X k U Y ò 0 ¥ x X © k t — åož

2 y ... show spanning-tree x X k U Y à š F åož

o¬ U P ’ Îo- 1 y — å à i ¯ ´ © 4096 • ƒ k 1 U P ò ’ Î y

E U L G J H S U L R U L W \ P X V W E H , 1 L Q F U H P H Q W V R I

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.34 spanning-tree pathcost method

F å € M è ¬ 0 Ë ‹ ‘ • což

spanning-tree pathcost method { long [standard] | short }

Ê Ö € M è ¬ 0 Ë ‹ ‘ • c Þ . ›ož

no spanning-tree pathcost method

o¬ @ ƒ ª ¢o-

@ ƒ	T
long [standard]	J 802.1t ö Õ — path-cost ›ož standard n P 7 Á ö Õ P < ¸ ” ‹ ‘ cost ›ož
short	J 802.1d ö Õ — path-cost ›ož

o¬ @ ƒ ª ¢o-

@ ƒ	T
disabled	¼ { N M Portfast • ¼ož

o¬ Þ . F åo- Þ . © ¼ { ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- ø • Port Fast e ¥ € M k + N Forwardingož x k œ v ñ BPDU ò … Port Fast Operational State disabled k R ò 3 o ª @ STP ‹ ‘ož

o¬ F å †o- 1 y ø • N M Gi 1/1 Portfast • ¼ož

5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W H W K H U Q H W

5 X L M L H F R Q I L J L I L Q W H U I D F H L G V S D Q Q L Q J W U H H S R U W I D V W

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

2 y … show spanning-tree interface x X k ò 0 ¥ x X © k t F åož

o¬ U P ’ Îo- 1 y ø • N M Port Fast • ¼ k k U P ò ’ Î y

: D U Q L Q J S R U W I D V W V K R X O G R Q O \ E H H Q D E O H G R Q S R U W V F R Q Q H F W H G

o¬ u1ðDJPW€E€z•WE€z•V°§@ W k ò 0 (éƒ&úÀ%é‡ I o¬ ÇE€z 6úÀì P p • úÀã

o¬ Þ . F åo- Þ . ¼ { BPDU filter

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 3. ¶ B BPDU Filter } y € M Port Fast Ô Å , È ` õ ÿ |ož
4. ø • ¶ B BPDU Filter e kw € M Port Fast € M ké ¥ € M ˜ G - v BPDUož.. show spanning-tree x X ò 0 — åož

o¬ F å †o- 1 y ø • ¶ B BPDU filterož
5 X L M L H F R Q I L J V S D Q Q L Q J W U H H S R U W I D V W E S G X I L O W H U G H I D X O W

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož
2 y … show spanning-tree x X k ò 0 ¥ x X © k t F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.37 spanning-tree portfast bpduguard default

ø • ¶ B BPDU guardož
spanning-tree portfast bpduguard default

¼ { ¶ B BPDU guardož
no spanning-tree portfast bpduguard default

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ¼ { ¶ B BPDU Guard.

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- ø • BPDU guard kò ç ¨ ¥ € M v ñ BPDU ké k µ error-disabled Ù Áož.. show spanning-tree

x X ò 0 — åož

Õ — v Ç portfast æ e BPDU guard " ì “ Ò d

o¬ F å †o- 1 y ø • BPDU Guard

5 X L M L H F R Q I L J V S D Q Q L Q J W U H H S R U W I D V W E S G X J X D U G G H I D X O W

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

2 y … show spanning-tree x X k ò 0 ¥ x X © k t F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.38 spanning-tree portfast default

ø • ñ Ä N M Portfast • ¼ož

spanning-tree portfast default

¼ { ñ Ä N M Portfast • ¼ož

no spanning-tree portfast default

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ¼ { ñ Ä N M Portfast • ¼ož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- -

o¬ F å †o- 1 y ø • ñ Ä N M Portfast • ¼

5 X L M L H F R Q I L J V S D Q Q L Q J W U H H S R U W I D V W G H I D X O W

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.39 spanning-tree reset

1 … spanning-tree — å Ê Ö Þ . ›ož
spanning-tree reset

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- 1 y ¥ x X Z Ä no # ¾ož
2 y F å spanning-tree reset x X k + 9 ÿ è ù # ‘ • ¼ Ù Á k — c Ê Ö è ó • ›ož / STP # ‘ ø •
Õ Ñ k F å spanning-tree reset x X kSTP # ‘ Q À ø •ož

o¬ F å †o- 1 y 1 … ÿ è ù F å Ê Ö Þ . ›ož
5 X L M L H F R Q I L J V S D Q Q L Q J W U H H U H V H W

o¬ à • co- 1 y … show running-config x X k U Y ò 0 STP x X © k Ê Ö è Þ . ›ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.40 spanning-tree tc-guard

ø • î N M tc- guard • ¼ož

o¬ Þ . F åo-	Þ . ¼ { tc-protection • ¼ož
o¬ x X % ”o-	¶ B F å % ”ož
o¬ Þ . ´ ðo-	15
o¬ … 6 -o-	-
o¬ F å †o-	1 y ø • tc-protection • ¼ 5 X L M L H F R Q I L J V S D Q Q L Q J W U H H W F S U R W H F W L R Q
o¬ à • co-	1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož
o¬ U P ’ Îo-	-
o¬ o • j ¨o-	-
o¬ u V ª ¢o-	-

9.42 spanning-tree tc-protection tc-guard

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

9.43 spanning-tree tx-hold-count

F å TxHoldCount k / ? a _ Â Ú G BPDU ƒož
spanning-tree tx-hold-count tx-hold-count

F å TxHoldCount Ê Ö è Þ . ›ož
no spanning-tree tx-hold-count

o¬ @ ƒ ª ¢o-

10 GVRP

10.1 bridge-frame forwarding protocol gvrp

ø • GVRP PDUs % n ož
bridge-frame forwarding protocol gvrp

¼ { GVRP PDUs % n ož
no bridge-frame forwarding protocol gvrp

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . © ¼ { ož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- ¨ IEEE 802.1Q ö Õ k GVRP PDU) MAC ª - 01-80-C2-00-00-21 © • ‘ ª - … k /
8 ² IEEE 802.1Q ö Õ — Õ k+ 9 N v ñ GVRP PDUs l © ô G ožÀ ò k¨ Ž à Ì b æ k
U ¬ } — Õ Ü u 4 % n GVRP PDUs lož † ò k — Õ Ì • o GVRP # ‘ ž k ¬ } % n GVRP PDUs
l k … ± $; — Õ $ • GVRP " ÷ ‹ ‘ 3 oož
GVRP % n Q ¨ GVRP # ‘ ¼ { ž õ o • ož ¢ GVRP # ‘ ø • ž k — Õ % n GVRP PDUs lož

o¬ F å †o- 1 y ø • GVRP PDUs % n ož
5 X L M L H F R Q I L J E U L G J H I U D P H I R U Z D U G L Q J S U R W R F R O J Y U S

o¬ à • co- 1 y … show running-config x X k U Y ò 0 ¥ x X © k t — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

10.2 clear gvrp statistics

Ž ” GVRP Ï ‹ › k … ¿ M • • ÷ ‹ ƒ ož

clear gvrp statistics {

o¬ … 6 -o- -

o¬ F å †o- 1 y F å N M GVRP * s % ”

5 X L M L H F R Q I L J L I J Y U S D S S O L F D Q W V W D W H Q R U P D O

o¬ à • co- 1 y … show gvrp configuration x X ò 0 — åož

o¬ U P ’ Îo- :1 y € M ³ trunk % ” F å U P j ¨ y

, W L V Q W D W U X Q N S R U W W K H * 9 5 3 D S S O L F D Q W W \ S H F D Q W E H V S H F

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

10.4 gvrp dynamic-vlan-creation

• o ª • Á ë • vlan ož

gvrp dynamic-vlan-creation enable

¼ { ª • Á ë • vlan ož

no gvrp dynamic-vlan-creation enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- W 2 Á ë • vlan

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … show gvrp configuration x X ò 0 — å

o¬ F å †o- 1 y • o Á VLAN ë • ož

5 X L M L H F R Q I L J J Y U S G \ Q D P L F Y O D Q F U H D W L R Q H Q D E O H

o¬ à • co- 1 y … show gvrp configuration x X ò 0 — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

10.5 gvrp enable

ø • GVRP
gvrp enable

¼ { GVRP
no gvrp enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ¼ { GVRP

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … show gvrp configuration x X ò 0 — å

o¬ F å †o- 1 y • o GVRP ož
5 X L M L H F R Q I L J J Y U S H Q D E O H

o¬ à • co- 1 y … show gvrp configuration x X ò 0 — åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

10.6 gvrp registration mode

— å € M “ % ” k O ò © k ª • Á ë •o• “ ê h f € M VLANož

gvrp registration mode { normal | disabled }

Ê Ö ó • F å

no gvrp registration mode

o¬ @ ƒ ª ¢o-

@ ƒ	T
normal	€ M ª • µ Á VLAN
disabled	€ M ª • µ Á VLAN

o¬ Þ . F åo- ª • Á ë •o• “ ê h f € M VLAN

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y — å N M GVRP h Æ % ”ož

5 X L M L H F R Q I L J L I J Y U S U H J L V W U D W L R Q P R G H Q R U P D O

o¬ à • co- 1 y … show ¢9 -o- 10ž (ma)4raN

leave timer_value	O ò € M ¨ N v ñ Leave Message e k1 € M R VLAN í ” ù ñ } ˆ - ž • k ò ç ¨ ž • < Ä € M M • v ñ Join Message k é € M VLAN è t ¼ © Q À ‘ k c ž ž ˜ â	z ò ç ¨ ž ˜ Ý ž ù Q Ì v ñ Join Message k é € M Ù Á J Emptyk€MR VLAN è t n í ”ož
leaveall timer_value	LeaveAll timer O ò ¨ € M G LeaveAll Message Â 4 • œ k ò ç ¨ ž ˜ Ý ž ù € M v ñ LeaveAll Message k é ž ˜ • ÷ M • ‹ ž z ò ç ž ˜ Ý ž k é ¨ € M G LeaveAll Message k LeaveAll Message c ž - G Ë € M Î ï k R ò ‡ G Leave timer - • ÷ ‹ ƒ ož Ž G • œ ¨ leaveall leaveall + join $ •ož

o¬ Þ . F åo- join timer Þ . › © 200ms kleave timer Þ . › © 600ms kleaveall timer Þ . › © 10,000ms

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- … show gvrp configuration x X ò 0 — å

	-	-

o¬ Þ . F åo- Þ . © ¼ { ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 15

o¬ … 6 -o- • o ¶ B GVRP PDUS TUNNEL k ¬ } N M … GVRP PDUs TUNNEL õ ÿ |ož

o¬ F å †o- 1 y • o ¶ B GVRP PDUs TUNNEGVRP /TP PDUS

o¬ F å †o- 1 y F å GVRP PDUs TUNNEL % n GVRP # ‘ ª - 011a.a900.0006 y

5XLMLH FRQILJ O SURWRFRO WXQQHO JYUS WXQQHO GPDF D D

o¬ à • co- 1 y … show l2protocol-tunnel gvrp x X ò 0 — åož

o¬ U P ’ Îo- 1 y ¢ F å ¬ } % n GVRP # ‘ ª - ¨ ª - 8 kCLI U P ò y

2SWLRQDO DW WKH IROORZLQJ DGGUHVVHV G I D D

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

10.11 show gvrp configuration

ª P GVRP F å ’ Î

show gvrp configuration

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- … show gvrp configuration x X ò 0 F å ’ Î

o¬ F å †o- 1 y ò 0 GVRP F å ’ Îož

```
*OREDO *953 &RQILJXUDWLRQ
*953 )HDWXUH HQDEOHG
*953 G\QDPLF 9/$1 FUHDWLRQ HQDEOHG
-RLQ 7LPHUV PV
/HDYH 7LPHUV PV
/HDYHDOO 7LPHUV PV
3RUW EDVHG *953 &RQILJXUDWLRQ
      3257          $SSOLFDQW 6WDWXV      5HJLVWUDWLRQ 0RGH

*LJDELW(WKHUQHW          QRUPDO          QRUPDO
```

< † K y

<	ª ¢
GVRP Feature	GVRP … Õ Ñ

GVRP dynamic VLAN creation	Á VLAN ë • … Õ Ñ
Join Timers	Join ž ˜ ž •
Leave Timers	Leave ž ˜ ž •
Leaveall Timers	Leaveall ž ˜ ž •
PORT	€ M
Applicant Status	* s % ”
Registration Mode	h Æ % ”

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

10.12 show gvrp statistics

ª P%² € M ê ñ Ä € M GVRP Ï ‹ ›

show gvrp statistics { interface-id | all }

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	à Ì N M ID

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- … show gvrp statistics ª P%² € M ê ñ Ä € M GVRP Ï ‹ ›

o¬ F å †o- 1 y

```
5 X L M L H  V K R Z  J Y U S  V W D W L V W L F V  J L J D E L W H W K H U Q H W
, Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 H F 9 D O L G * Y U S 3 G X
5 H F , Q Y D O L G * Y U S 3 G X
5 H F - R L Q ( P S W \
5 H F - R L Q , Q
5 H F ( P S W \
5 H F / H D Y H ( P S W \
5 H F / H D Y H , Q
5 H F / H D Y H $ O O
6 H Q W * Y U S 3 G X
6 H Q W - R L Q ( P S W \
```

```
6 H Q W - R L Q , Q
6 H Q W ( P S W \
6 H Q W / H D Y H ( P S W \
6 H Q W / H D Y H , Q
6 H Q W / H D Y H $ O O
- R L Q , Q G L F D W H G
/ H D Y H , Q G L F D W H G
- R L Q 3 U R S D J D W H G
/ H D Y H 3 U R S D J D W H G
```

< † K y

<	ª ¢
RecValidGvrpPdu	N v Ä | GPDU † ƒ)
RecInvalidGvrpPdu	N v — | GPDU † ƒ)
RecJoinEmpty/ SentJoinEmpty	v ñ/ G JoinEmpty ' Î ƒ)
RecJoinIn/ SentJoinIn	v ñ/ G JoinIn ' Î ƒ)
RecEmpty/SentEmpty	v ñ/ G Empty ' Î ƒ)
RecLeaveEmpty/SentLeaveEmpty	v ñ/ G LeaveEmpty ' Î ƒ)
RecLeaveIn/ SentLeaveIn	v ñ/ G LeaveIn ' Î ƒ)
RecLeaveAll/SentLeaveAll	v ñ/ G LeaveAll ' Î ƒ)
SentGvrpPdu	G GPDU ' Î È ƒ
JoinIndicated/ LeaveIndicated	Join/Leave Æ ¬ L ƒ)
JoinPropagated / LeavePropagated	Join/Leave " ÷ ¾ • ¬ L ƒ)

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

10.13 show gvrp status

ª P GVRP ÿ è Á VLAN ñ Ä è t € M y µ ² Á VLAN Á è t € Mož
show gvrp status

o¬ @ ƒ ª ¢o-

@ ƒ	T

o¬ … 6 -o- … show gvrp status x X ª P GVRP Ù Á

o¬ F å †o- 1 y ò 0 GVRP Ù Á ' Îož

```
5 X L M L H  V K R Z  J Y U S  V W D W X V
9 / $ 1
' \ Q D P L F  3 R U W V
' 9 / $ 1
' \ Q D P L F  3 R U W V y
```

< † K y

<	ª ¢
VLAN	² Á VLAN
DVLAN	Á VLAN
Dynamic Ports	Á è tož

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

10.14 show l2protocol-tunnel gvrp

o¬ u V ª ¢o- -

11 LLDP

11.1 {voice | voice-signaling} vlan

F å LLDP network-policy Œ ož ï U Y … no # ¾ í ” Œ • • ºož
{ voice | voice-signaling } vlan { { vlan-id [cos cvalue | dscp dvalue] } | { dot1p [cos cvalue | dscp dvalue] } | none | untagged }
no { voice | voice-signaling } vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
voice	6 voice • • º
voice-signaling	6 voice-signaling • • º
vlan-id	g U # h 6 § º v ñ ¨ vlan id k 8 1-4094
cos	g U # hClass of service
cvalue	g U # h F å § º v cos › k 8 0-7 k Þ . 5
dscp	g U # hdifferentiated services code point
dvalue	g U # h F å § º v dscp › k 8 0-63 k Þ . 46
dot1p	g U # h F å 802.1p priority tagging k ¥ TAG l Q m user_priority k vlan id 0
none	g U # h n P G network-policy F å Œ k voip ÿ G ï F å Ð à Ì Œ
untagged	g U # h 6 P voip ¨ voice vlan G untag l k 4 ž ¿ vlan id y cos ›

o¬ Þ . F åo- -

o¬ x X % ”o- LLDP network-policy F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- µ LLDP network-policy F å % ” e k F å LLDP network-policy Œ ož
voice n P § º ƒ G • º kvoice-signaling n P § º ’ Z • ºož
¢ — Õ û IP ¢ k 3 IP ¢ u 4 LLDP-MED k é U Y * F å Network Policy TLV G Œ Ë IP ¢ k IP ¢ “ w § º v Tag y QOSož — Õ k’ F å Œ Ù k ¬ } F å 5 â y 1. … Voice VLAN k N IP ¢ € M ² Á µ Voice VLAN z2. N IP ¢ € M F å QOS ’ ` M g P < … ’ ` DSCP % ” hz3. ò ç ¨ 4 € M c ž • o 4 1X • š k é ¬ } F å%² Ú ¶ * 3 k ª • Voice VLAN Ä † * ož 3 IP ¢ u 4 LLDP-MED k é · À … Voice VLAN k w 1 ¢ Ñ MAC ª

- ô F å ñ Voice VLAN OUI ç n ož

QOS ' ` % " F å • c ¬ @ •o¦IP QOS o§ ~ - z Voice VLAN F å • c ¬ @ •o¦Voice VLANo§ ~ - z

¶ * 3 F å • c ¬ @ •o¦ACL o§ ~ -ož

o¬ F å †o- 1 yF å lldp network-policygprofile-num 1 h Œ y voice • • º kö œ y © untagged zvoice-signaling • • º kvlan id © 3 kcos © 4 k dscp © 6ož

```
5XLMLH FRQILJ
5XLMLH FRQILJ OOGS QHWZRUN SROLF\ SURILOH
5XLMLH FRQILJ OOGS QHWZRUN SROLF\ YRLFH YODQ XQWDJJHG
5XLMLH FRQILJ OOGS QHWZRUN SROLF\ YRLFH VLJQDOLQJ YODQ FRV
5XLMLH FRQILJ OOGS QHWZRUN SROLF\ YRLFH VLJQDOLQJ YODQ GVFS
```

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.2 civic-location

F å LLDP ¯ * ª - ' Îož

{ country | state | county | city | division | ne ighborhood | street-group | leading-street-dir | trailing-street-suffix | street-suffix | number | street-number-suffix | landmark | additional-location-information | name | postal-code | building | unit | floor | room | type-of-place | postal-community-name | post-office-box | additional-code } ca-word

ï U Y … no # ¾ í " ª - ' Îož

no { country | state | county | city | division | ne ighborhood | street-group | leading-street-dir | trailing-street-suffix | street-suffix | number | street-number-suffix | landmark | additional-location-information | name | postal-code | building | unit | floor | room | type-of-place | postal-community-name | post-office-box | additional-code }

o¬ @ ƒ ª ¢o-

@ ƒ	T
country	¢ W A k2 …ožchina y CH
state	ª - ' Î CA • º 1
county	CA • º 2
city	CA • º 3
division	CA • º 4
neighborhood	CA • º 5

11.3 clear lldp statistics

Ž ” LLDP Ï ‹ ’ Îož

clear lldp statistics [interface interface-name]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	N M d f

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- 6 interface @ ƒ k 1 Ž ” 6 N M LLDP Ï ‹ ’ Îož

o¬ F å †o- 1 y Ž ” N M 1 LLDP Ï ‹ ’ Îož

```
5XLMLH  FOHDU OOGS VWDWLVWLFV LQWHUIDFH *LJDELW(WKHUQHW
5XLMLH  VKRZ OOGS VWDWLVWLFV LQWHUIDFH *LJDELW(WKHUQHW
/OGS VWDWLVWLFV LQIRUPDWLRQ RI SRUW >*LJDELW(WKHUQHW  @

7KH QXPEHU RI OOGS IUDPHV WUDQVPLWWHG
7KH QXPEHU RI IUDPHV GLVFDUGHG
7KH QXPEHU RI HUURU IUDPHV
7KH QXPEHU RI OOGS IUDPHV UHFHLYHG
7KH QXPEHU RI 7/9V GLVFDUGHG
7KH QXPEHU RI 7/9V XQUHFRJQL]HG
7KH QXPEHU RI QHLJKERU LQIRUPDWLRQ DJHG RXW
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

11.4 clear lldp table

Ž ” LLDP > D ’ Î

clear lldp table [interface interface-name]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	N M d f

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- µ LLDP Civic Address F å % ” e k F å LLDP ¯ * ª - — Õ • º ’ Îož

o¬ F å †o- 1 y F å lldp Civic Addressgid 1 h ’ Î y — Õ • º A E Ñož

```
5XLMLH FRQILJ
5XLMLH FRQILJ OOGS ORFDWLRQ FLYLF ORFDWLRQ LGHQWLILHU
5XLMLH FRQILJ OOGS FLYLF GHYLFH W\SH
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.6 lldp compliance vendor

dor_5( )Tj_0 i_0 a_5(nr_5(e_5( )-13(v)18 e_5 0 1 f)Tj ET 0.902 g 0 10.5 56.2 0.1 1 Tf 29.767 -1.693 Td 0.09Tj /C2_ 1 Tf 0

Tj /TT2 1 Tf 7.453 8 611.88 434.64 15150.4 f BT 0.199 g /C2_1 1 Tf 9 0 0 9 123.78 616.44 Tm <0035015

o¬ u V ª ¢o- -

11.7 lldp enable

ø • LLDP ož
lldp enable

¼ { LLDP ož
no lldp enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . © ø • ož

o¬ x X % ”o- ¶ B g ê N M h F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¬ } ¶ B ø • LLDP • ¼ k N M LLDP õ ÿ |ož

o¬ F å †o- 1 y ¼ { ¶ B y N M LLDP • ¼ož

```
5 X L M L H  F R Q I L J X U H  W H U P L Q D O
5 X L M L H  F R Q I L J  Q R  O O G S  H Q D E O H
5 X L M L H  F R Q I L J  L Q W H U I D F H  J L J D E L W H W K H U Q H W
5 X L M L H  F R Q I L J  L I  * L J D E L W ( W K H U Q H W  Q R  O O G S  H Q D E O H
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- N M] • o LLDP k x © ¶ B Z Ä • o LLDP k 4 ž N M LLDP © ÿ |ož
€ M . ñ > D ƒ ’ ò ¨ 5 k / € M Â Ú Q . ñ 5 > Dož
ò ç > D — Õ u 4 LLDP k x © > D — Õ — Õ u 4 LLDP k 9 > D — Õ U k ô G LLDP
† k ý k € M U k . ñ ³ + — Õ ’ Îož

o¬ u V ª ¢o- -

	value	LLDP ½ , G † ƒ k Þ . 3 k U F å 8 1-10
o¬ Þ . F åo-	Þ . Õ Ñ kLLDP ½ , G † ƒ 3	
o¬ x X % ”o-	¶ B F å % ”	
o¬ Þ . ´ ðo-	14	
o¬ … 6 -o-	-	
o¬ F å †o-	1 y F å LLDP ½ , G † ƒ 5 ož 5 X L M L H F R Q I L J X U H W H U P L Q D O 5 X L M L H F R Q I L J O O G S I D V W F R X Q W	
o¬ U P ’ Îo-	-	
o¬ o • j ¨o-	-	
o¬ u V ª ¢o-	-	

11.11 lldp hold-multiplier

F å TTL + ƒož
lldp hold-multiplier value

Ê Ö Þ . TTL + ƒož
no lldp hold-multiplier

o¬ @ ƒ ª ¢o-	@ ƒ	T
	value	TTL + ƒ k Þ . 4 k F å 8 2-10
o¬ Þ . F åo-	Þ . 4	
o¬ x X % ”o-	¶ B F å % ”	
o¬ Þ . ´ ðo-	14	
o¬ … 6 -o-	LLDP † Time To Live TLV ›=TTL + ƒ ˜ † G ž • • œ+1 ož œ 4 k * ² … TTL + ƒ U Y O ò Î — Õ ’ Î ¨ > D — Õ t ž •ož	

o¬ F å †o- 1 y F å TTL + ƒ 5ož

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ OOGS KROG PXOWLSOLHU
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.12 lldp location civic-location identifier

µ LLDP Civic Address F å % ” k ë • à Ì N — Õ ¯ * ª - ’ Îož

F å LLDP MED-TLV Civic Address ’ Îož

lldp location civic-location identifier id

í ” LLDP MED-TLV Civic Address ’ Îož

no lldp location civic-location identifier id

o¬ @ ƒ ª ¢o-

@ ƒ	T
id	à Ì — Õ ¯ * ª - ’ Î ö œ Z k 8 y1-1024

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … 4 x X U µ LLDP Civic AddressF å % ”ož

o¬ F å †o- 1 y ë • LLDP MED-TLV Civic Address ’ Î kid 1ož

```
5XLMLH FRQILJ
5XLMLH FRQILJ OOGS ORFDWLRQ FLYLF ORFDWLRQ LGHQWLILHU
5XLMLH FRQILJ OOGS FLYLF
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

… no # ¾ U Y H ƒ ’ ò ª - G bož

no lldp management-address-tlv

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	LLDP † G b ’ ò ª -

o¬ Þ . F åo- -

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Þ . Õ Ñ kLLDP † G b ’ ò ª -ož G b ’ ò ª - € M ª • * Â 4 VLAN IPv4 ª - k ò ç ¥ VLAN Ì F å IPv4 ª - k é Ð Ò ò %² ª • * Â 4 VLAN k + ñ ñ IPv4 ª - 2ož ò ç Ì ñ IPv4 ª - k é ò € M ª • * Â 4 VLAN IPv6 ª -ož ò ç Q Ì ñ IPv6 ª - k é J Î Ñ ª - 127.0.0.1 • ’ ò ª - G bož

o¬ F å †o- 1 y F å LLDP † G b ’ ò ª - 192.168.1.1ož

5 X L M L H F R Q I L J X U H W H U P L Q D O

5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W H W K H U Q H W

5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W O O G S P D Q D J H P H Q W D G G U H V V

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.15 lldp mode

F å LLDP W • % ”ož

lldp mode { rx | tx | txrx }

ï U Y … no # ¾ ¼ { LLDP W • % ”ož

no lldp mode

o¬ @ ƒ ª ¢o-

@ ƒ	T
rx	n P Q N v G LLDPDU
tx	n P Q G N v LLDPDU

txrx	n P / G A N v LLDPDU

o¬ Þ . F åo- txrx

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¼ { N M LLDP W • % ” k 4 ž N M Ç G y N v LLDP †ož
N M LLDP ÿ | ù U © ¶ B … 4 LLDP N M LLDP W • % ” Ô 9 txo•rx ê txrxož

o¬ F å †o- 1 y F å N M LLDP W • % ” Q G N v LLDPDUož

```
5 X L M L H  F R Q I L J X U H  W H U P L Q D O
5 X L M L H  F R Q I L J  L Q W H U I D F H  J L J D E L W H W K H U Q H W
5 X L M L H  F R Q I L J  L I  * L J D E L W ( W K H U Q H W  O O G S  P R G H  W [
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.16 lldp network-policy profile

ë • LLDP network-policy Œ k w µ LLDP network-policy F å % ”ož
lldp network-policy profile profile-num

… no # ¾ í ” LLDP network-policy Œ ož
no lldp network-policy profile profile-num

o¬ @ ƒ ª ¢o-

@ ƒ	T
profile-num	LLDP network-policy Œ ö œ k 8 y1-1024

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … 4 x X µ LLDP network-policy F å % ” k … 4 x X ž ¬ } 6 Œ IDož
µ LLDP network-policy F å % ” e k U … { voice | voice-signaling } vlan x X F å À } network-policy Œ ož

o¬ F å †o- 1 y ë • LLDP network-policy Œ k Œ Z 1ož

```
5 X L M L H F R Q I L J
5 X L M L H F R Q I L J O O G S Q H W Z R U N S R O L F \ S U R I L O H
5 X L M L H F R Q I L J O O G S Q H W Z R U N S R O L F \
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.17 lldp notification remote-change enable

F å LLDP Trap ož

lldp notification remote-change enable

… no # ¾ ¼ { LLDP Trap ož

no lldp notification remote-change enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ¼ {

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * F å Trap k U Y 1 Î ª — Õ LLDP ’ Î g † ò G ë • > Do• y ñ > D * ’ e è { ž ˆ ’ Î h
G Ë à ’ Æ ˜ k ’ ò t U Y ÿ G 4 ’ Î ! O à Ì g Ù Ñož

o¬ F å †o- 1 y F å LLDP Trap ož

```
5 X L M L H F R Q I L J X U H W H U P L Q D O
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W H W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W ( W K H U Q H W O O G S Q R W L I L F D W L R Q U H P R W H
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.18 lldp timer notification-interval

F å G LLDP Trap ž • • œož

lldp timer notification-interval seconds

… no # ¾ U Y Ê Ö Þ . ž • • œož

no lldp timer notification-interval

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	F å G LLDP Trap ’ Î ž • • œ kÞ . ž • • œ © 5 a kU F å 8 © 5-3600

o¬ Þ . F åo- Þ . 5 a

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4 … 2 LLDP Trap ’ Î È ¯ G kU Y F å G LLDP Trap ž • • œož¨ < ž • • œ Ä k y ñ LLDP ’ Î J k 1 G Trap Ë à ’ Æ ˜ož

o¬ F å †o- 1 y F å LLDP Trap G ž • • œ 10 aož

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ OOGS WLPHU QRWLILFDWLRQ LQWHUYDO
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.19 lldp timer reinit-delay

F å € M ì ÷ • ž •ož
lldp timer reinit-delay seconds

… no # ¾ U Y Ê Ö € M ì ÷ • ž • Þ . ›ož
no lldp timer reinit-delay

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	€ M ì ÷ • ž • k F å 8 1-10 a

o¬ Þ . F åo- 2 a

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4 9 ² € M W • % ” È ¯ J – Ü È ¯ ª ì ÷ Ù Á Ñ k U Y F å € M ì ÷ • ž •ož

o¬ F å †o- 1 y F å LLDP € M ì ÷ • ž • 3 aož

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ OOGS WLPHU UHLQLW GHOD\
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.20 lldp timer tx-delay

F å LLDP † G • ž •ož
lldp timer tx-delay seconds

… no # ¾ U Y Ê Ö G • ž • Þ . ›ož
no lldp timer tx-delay

o¬ @ ƒ ª ¢o-

@ ƒ	T

	seconds	LLDP † G • ž • k U F å 8 1-8192

o¬ Þ . F åo- 2 a

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ Î ª ’ Î G ÿ J ž k k y / g > D — Õ G LLDP †ož 4 9 ² Î ª ’ Î È ¯ J – Ü È ¯ ª G
LLDP † k U Y F å LLDLDP

o¬ F å †o-	1 y F å LLDP † G ž • • œ 10 aož 5 X L M L H F R Q I L J X U H W H U P L Q D O 5 X L M L H F R Q I L J O O G S W L P H U W [L Q W H U Y D O
o¬ U P ' Îo-	-
o¬ o • j ¨o-	-
o¬ u V ª ¢o-	-

11.22 lldp tlv-enable

F å ª • G b TLV • ºož

lldp tlv-enable { basic-tlv { all | port-description | system-capability | system-description | system-name } |dot1-tlv { all | port-vlan-id | protocol-vlan-id [vlan-id] | vlan-name [vlan-id] } |dot3-tlv { all | link-aggregation | mac-physic | max-frame-size | power } | med-tlv { all | capability | inventory | location { civic-location | elin } identifier id

dot3-tlv	802.3 Á Ã # TLV
link-aggregation	n P Link Aggregation TLV
mac-physic	n P MAC/PHY Configuratioin/Status TLV
max-frame-size	n P Maximum Frame Size TLV
power	n P Power Via MDI TLV
med-tlv	LLDP MED TLV
capability	n P LLDP-MED Capabilities TLV
inventory	n P) £ ' ò TLV k , F ^ Í Îo• ¡ ^ Í Îo• ÷ ^ Í Îo• ~ ç Zo• ò - D Œ d fo• % ² d f y Ï D ö œ … ˆ
location	n P Location Identification TLV
civic-location	n P / x à Ì N — Õ ¯ * ª - ' Î
elin	n P / x ¬ Ä ¢ Z A ' Î
id	n P F å Œ ID k F å 8 y1-1024
network-policy	n P Network Policy TLV
profile-num	Network Policy Œ ID k F å 8 y1-1024
power-over-ethernet	n P Extended Power-via-MDI TLV

o¬ Þ . F åo-

ò ç — Õ Þ . u 4 DCBX k é € M ª • G " 802.3 TLV y LLDP-MED TLV $ Ù ñ Ä • º TLV z ò ç — Õ u 4 DCBX k é € M ª • G b " Location Identification TLV $ Ù ñ Ä • º TLV k + 9 MED network policy ò ˆ k Þ . G Œ none ož

o¬ x X % "o- N M F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-

- z F å Â Î ' ò TLVo•IEEE 802.1 Á Ã # TLVo•IEEE 802.3 Á Ã # TLV ž k ò ç 6 all @ ƒ k 1 G b ¥ • º ñ Ä U # TLVož
- z F å LLDP-MED TLV ž k ò ç 6 all @ ƒ k 1 G b " Location Identification TLV $ Ù ñ Ä • º LLDP-MED TLVož
- z F å ª • G b LLDP-MED Capability TLV ž k ¬ } ¯ F å ª • G b LLDP 802.3 MAC/PHY TLV z H ƒ G b LLDP 802.3 MAC/PHY TLV ž k ¬ } ¯ H ƒ G b LLDP-MED Capability TLV

  F å LLDP-MED TLV ž k À F å ª • G b LLDP-MED Capability TLV kõ U Y F å ª • G b LLDP-MED ¿ • º TLVož H ƒ G b LLDP-MED TLV k · À ¯ H ƒ G b LLDP-MED ¿ • º TLV k õ ª • H ƒ G b LLDP-MED Capability TLVož¢ — Õ û IP ¢ k3 IP ¢ u 4 LLDP-MED ké U Y * F å network policy TLV G Œ Ë IP ¢

  ò ç — Õ Þ . u 4 DCBX k Þ . Õ Ñ € M ª • G b IEEE 802.3 TLV C LLDP-MED TLV

6 interface @ ƒ k 1 ª P - G 6 N M LLDP ' Îož

6 ` ~ @ ƒ k 1 ª P ñ Ä LLDP ' Î k , ¶ B y N M LLDP ' Îož

```
3URWRFRO ,GHQWLW\


    RUJDQL]DWLRQDOO\ LQIRUPDWLRQ
$XWR QHJRWLDWLRQ VXSSRUWHG        <(6
$XWR QHJRWLDWLRQ HQDEOHG          <(6
30' DXWR QHJRWLDWLRQ DGYHUWLVHG       %$6( 7; IXOO GXSOH[ PRGI
2SHUDWLRQDO 0$8 W\SH            VSHHG     GXSOH[ +DOI
3R( VXSSRUW                    12
/LQN DJJUHJDWLRQ VXSSRUWHG        <(6
/LQN DJJUHJDWLRQ HQDEOHG          12
$JJUHJDWLRQ SRUW ,'
0D[LPXP IUDPH 6L]H

//'3 0(' RUJDQL]DWLRQDOO\ LQIRUPDWLRQ
3RZHU YLD 0', GHYLFH W\SH         3'
3RZHU YLD 0', SRZHU VRXUFH        /RFDO
3RZHU YLD 0', SRZHU SULRULW\
3RZHU YLD 0', SRZHU YDOXH
0RGHO QDPH                    0RGHO QDPH
```

show lldp local-information x X ª P ’ Î T n y

<	ª ¢
Chassis ID type	Chassis ID • º k 9 ö œ Chassis ID <
Chassis ID	9 ö œ ª ¬ Õ k * o
System name	T — Õ d f
System description	— Õ T ’ Î k , F ^/ ÷ ^ Í Îo• q • © Ï ˆ ’ Î
System capabilities supported	© Ï u 4
System capabilities enabled	© Ï] …
LLDP-MED capabilities	© Ï u 4

Device class	Med — Õ • º k» ã è 2 • yà Ì N — Õ y Ä € — Õož Network connectivity device y à Ì N — Õ Class I y n P%² " Ä € — Õ Class II y n P ý } Ä € — Õ k m 4 Class I k c ž u 4 ý } v Class III y n P * ’ Ä € — Õ k m 4 Class I y Class II k c ž u 4

Auto-negotiation supported	© k u 4 # Œ
Auto-negotiation enabled	© k … # Œ
PMD auto-negotiation advertised	€ M # Œ * s
Operational MAU type	€ M # Œ , ä y E W Ù Á
PoE support	© k u 4 POE
Link aggregation supported	© k u 4 e è ü `
Link aggregation enabled	© k … e è ü `
Aggregation port ID	e è ü ` € M ID
Maxmum frame Size	€ M u 4 Â Ý I x †
Power-via-MDI device type	— Õ • º k , y PSE g ˆ — Õ h PD g I — Õ h
Power-via-MDI power source	› • º
Power-via-MDI power priority	› i ¯ ´
Power-via-MDI power value	€ M ˆ ä
Model name	% ² d f

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

11.24 show lldp location

ª P Î ª — Õ LLDP ¯ * ª - ’ Î ê ñ ¬ Ä ¢ Z A ’ Îož

show lldp location { civic-location | elin-location } { identifier id | interface interface-name | static }

o¬ @ ƒ ª ¢o-

@ ƒ	T
civic-location	n P / x à Ì N — Õ ¯ * ª - ’ Î
elin-location	n P / x ¬ Ä ¢ Z A ’ Î
identifier	ª P î%² ¾ ï F å ª - ’ Î ê ñ ¬ Ä ¢ Z A ’ Î

id	ï F å ’ Î Œ ID
interface	ª P î%² N M ª - ’ Î ê ñ ¬ Ä ¢ Z A ’ Î
interface-name	N M d f
static	ª P ï F å ñ Ä ª - ’ Î ê ñ ñ Ä ¬ Ä ¢ Z A ’ Î

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- 6 Œ ö œ Z k 1 ª P Ô ª - ’ Î ê ñ ¬ Ä ¢ Z A ’ Îož
6 N M d f k 1 ª P ¥ N M F å ª - ’ Î ¬ Ä ¢ Z A ’ Î
6 ` ~ @ ƒ k 1 ª P ñ Ä ª - ’ Î ê ñ ¬ Ä ¢ Z A ’ Î

o¬ F å †o- 1 y ª P ñ Ä ª - ’ Îož

```
5XLMLH  VKRZ OOGS ORFDWLRQ FLYLF ORFDWLRQ VWDWLF
//'3 &LYLF ORFDWLRQ LQIRUPDWLRQ

,GHQWLILHU                WHVWW
&RXQW\                   FKLQD
&LW\ 'LYLVLRQ
/HDGLQJ VWUHHW GLUHFWLRQ
6WUHHW QXPEHU
/DQGPDUN
1DPH                     OLX\
%XLOGLQJ                 EXL
)ORRU
5RRP
&LW\                     IX]KRX
&RXQWU\
$GGLWLRQDO ORFDWLRQ       DDD
3RUWV                    *L

,GHQWLILHU               WHH
```

2 y ª P ñ Ä ¬ Ä ¢ Z A ’ Îož

```
5XLMLH  VKRZ OOGS ORFDWLRQ HOLQ ORFDWLRQ VWDWLF
(OLQ ORFDWLRQ LQIRUPDWLRQ

,GHQWLILHU   W
(OLQ        LLLLLLLLLL
```

3 R U W V * L

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

11.25 show lldp neighbors

ª P > D — Õ LLDP ’ Îož

show lldp neighbors [interface interface-name] [detail]

o¬ @ ƒ ª ¢o-

@ ƒ	T
in705D50	[illegible]

```
0DQDJHPHQW DGGUHVV                    G  I     FG
,QWHUIDFH QXPEHULQJ VXEW\SH
,QWHUIDFH QXPEHU
2EMHFW LGHQWLILHU


//'3 0(' FDSDELOLWLHV
'HYLFH FODVV
+DUGZDUH5HY
)LUPZDUH5HY
6RIWZDUH5HY
6HULDO1XP
0DQXIDFWXUHU QDPH
$VVHW WUDFNLQJ LGHQWLILHU

3RUW ,' W\SH                    ,QWHUIDFH QDPH
3RUW LG                         *LJDELW(WKHUQHW
3RUW GHVFULSWLRQ

    RUJDQL]DWLRQDOO\ LQIRUPDWLRQ
3RUW 9/$1 ,'
3RUW DQG SURWRFRO 9/$1 ,' 339,'
   339,' 6XSSRUWHG              <(6
   339,' (QDEOHG                12
9/$1 QDPH RI 9/$1                9/$1
3URWRFRO ,GHQWLW\
    RUJDQL]DWLRQDOO\ LQIRUPDWLRQ
$XWR QHJRWLDWLRQ VXSSRUWHG        <(6
$XWR QHJRWLDWLRQ HQDEOHG         <(6
30' DXWR QHJRWLDWLRQ DGYHUWLVHG       %$6( 7 IXOO GXSOH[ PRGI
 %$6( 7; KDOI GXSOH[ PRGH   %$6( 7 IXOO GXSOH[ PRGH   %$6( 7 KDO
2SHUDWLRQDO 0$8 W\SH             VSHHG     GXSOH[ )XOO
3R( VXSSRUW                     12
/LQN DJJUHJDWLRQ VXSSRUWHG        <(6
/LQN DJJUHJDWLRQ HQDEOHG         12
$JJUHJDWLRQ SRUW ,'
0D[LPXP IUDPH 6L]H
//'3 0(' RUJDQL]DWLRQDOO\ LQIRUPDWLRQ
3RZHU YLD 0', GHYLFH W\SH
3RZHU YLD 0', SRZHU VRXUFH
3RZHU YLD 0', SRZHU SULRULW\
```

3RZHU YLD 0', SRZHU YDOXH

show lldp neighbors x X ª P ’ Î T n y

<	

Port ID	€ M ID
Port VLAN ID	€ M VLAN ID
Portand protocol VLAN ID	€ M # ‘ VLAN ID

o¬ @ ƒ ª ¢o-

@ ƒ	T
profile-num	network-policy Œ ö œ Z k 8 y1-1024
interface-name	N M d f

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- 6 Œ ö œ Z k 1 ª P Ô network-policy Œ ’ Îož
6 ` ~ @ ƒ k 1 ª P ñ Ä network-policy Œ ’ Îož

o¬ F å †o- 1 y ª P ñ Ä network-policy Œ ’ Îož

```
5XLMLH VKRZ OOGS QHWZRUN SROLF\ SURILOH
QHWZRUN SROLF\ LQIRUPDWLRQ

1HWZRUN 3ROLF\ 3URILOH
  YRLFH YODQ FRV GVFS
  YRLFH VLJQDOLQJ YODQ FRV GVFS
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

11.27 show lldp statistics

ª P LLDP Ï ‹ ’ Îož

show lldp statistics [global | interface interface-name]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	N M d f

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- 6 global @ ƒ k 1 ª P ¶ B LLDP Ï ‹ ’ Îož
6 interface @ ƒ k 1 ª P 6 N M LLDP Ï ‹ ’ Îož

o¬ F å †o- 1 y ª P ñ Ä LLDP Ï ‹ ’ Îož

```
5XLMLH  VKRZ OOGS VWDWLVWLFV
OOGS VWDWLVWLFV JOREDO ,QIRUPDWLRQ
1HLJKERU LQIRUPDWLRQ ODVW FKDQJHG WLPH        KRXU  PLQXWH  V
7KH QXPEHU RI QHLJKERU LQIRUPDWLRQ LQVHUWHG
7KH QXPEHU RI QHLJKERU LQIRUPDWLRQ GHOHWHG
7KH QXPEHU RI QHLJKERU LQIRUPDWLRQ GURSSHG
7KH QXPEHU RI QHLJKERU LQIRUPDWLRQ DJH RXW


/OGS VWDWLVWLFV LQIRUPDWLRQ RI SRUW >*LJDELW(WKHUQHW  @

7KH QXPEHU RI OOGS IUDPHV WUDQVPLWWHG
7KH QXPEHU RI IUDPHV GLVFDUGHG
7KH QXPEHU RI HUURU IUDPHV
7KH QXPEHU RI OOGS IUDPHV UHFHLYHG
7KH QXPEHU RI 7/9V GLVFDUGHG
7KH QXPEHU RI 7/9V XQUHFRJQL]HG
7KH QXPEHU RI QHLJKERU LQIRUPDWLRQ DJHG RXW
```

show lldp statistics x X ª P ' Î T n y

<	ª ¢
Neighbor information last change time	> D ' Î Â e ¾ • ž •
The number of neighbor information inserted	> D ' Î Í) ƒ
The number of neighbor information deleted	> D ' Î í ") ƒ
The number of neighbor information dropped	> D ' Î ') ƒ
The number of neighbor information aged out	> D ' Î Ý ž) ƒ
The number of lldp frames transmitted	G LLDP l ƒ
The number of frames discarded	' LLDP l ƒ
The number of error frames	j ¨ LLDP l ƒ
The number of lldp frames received	N v LLDP l ƒ
The number of TLVs discarded	' LLDP TLV ƒ
The number of TLVs unrecognized	U œ ð LLDP TLV ƒ
The number of neighbor information aged out	> D ' Î Ý ž) ƒ

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

11.28 show lldp status

ª P LLDP Ù Á ' Îož

show lldp status [interface interface-name]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	N M d f

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- 6 interface @ ƒ k 1 ª P 6 N M LLDP Ù Á ' Îož

o¬ F å †o- 1 y ª P ñ Ä € M LLDP Ù Á ' Îož

```
5XLMLH  VKRZ OOGS VWDWXV
*OREDO VWDWXV RI //'3                (QDEOH
1HLJKERU LQIRUPDWLRQ ODVW FKDQJHG WLPH   KRXU   PLQXWH   VHFR
7UDQVPLW LQWHUYDO                      V
+ROG PXOWLSOLHU
5HLQLW GHOD\                          V
7UDQVPLW GHOD\                         V
1RWLILFDWLRQ LQWHUYDO                   V
)DVW VWDUW FRXQWV

3RUW >*LJDELW(WKHUQHW    @

3RUW VWDWXV RI //'3           (QDEOH
3RUW VWDWH                   83
3RUW HQFDSVXODWLRQ             (WKHUQHW ,,
2SHUDWLRQDO PRGH              5[$QG7[
1RWLILFDWLRQ HQDEOH            12
(UURU GHWHFW HQDEOH            <(6
1XPEHU RI QHLJKERUV
1XPEHU RI 0(' QHLJKERUV
```

show lldp status x X ª P ’ Î T n y

<	ª ¢

Global status of LLDP

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	N M d f

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- 6 interface @ ƒ k 1 ª P 6 N M LLDP TLV F å ’ Î

o¬ F å †o- 1 y ª P N M 1 TLV ’ Îož

```
5XLMLH  VKRZ OOGS WOY FRQILJ LQWHUIDFH *LJDELW(WKHUQHW
//'3 WOY FRQILJ RI SRUW >*LJDELW(WKHUQHW    @

            1$0(            67$786 '()$8/7

%DVLF RSWLRQDO 7/9
3RUW 'HVFULSWLRQ 7/9            <(6    <(6
6\VWHP 1DPH 7/9                <(6    <(6
6\VWHP 'HVFULSWLRQ 7/9          <(6    <(6
6\VWHP &DSDELOLWLHV 7/9         <(6    <(6
0DQDJHPHQW $GGUHVV 7/9          <(6    <(6

,(((      H[WHQG 7/9
3RUW 9/$1 ,' 7/9               <(6    <(6
3RUW $QG 3URWRFRO 9/$1 ,' 7/9    <(6    <(6
9/$1 1DPH 7/9                  <(6    <(6

,(((      H[WHQG 7/9
0$& 3K\VLF 7/9                 <(6    <(6
3RZHU YLD 0', 7/9               <(6    <(6
/LQN $JJUHJDWLRQ 7/9            <(6    <(6
0D[LPXP )UDPH 6L]H 7/9          <(6    <(6

//'3 0(' H[WHQG 7/9
&DSDELOLWLHV 7/9                <(6    <(6
1HWZRUN 3ROLF\ 7/9              <(6    <(6
/RFDWLRQ ,GHQWLILFDWLRQ 7/9      12     12
([WHQGHG 3RZHU YLD 0', 7/9       <(6    <(6
,QYHQWRU\ 7/9                   <(6    <(6
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

12.2 dot1q outer-vid vid register inner-vid v-list

¨ tunnel € M k — å Â 9 Ä C VID • Ù C VID Œ n
dot1q outer-vid vid register inner-vid v-list

H ƒ Ù C VID • Œ
no dot1q outer-vid vid register inner-vid v-list

H ƒ Ù C VID • Œ ož
default dot1q outer-vid vid register inner-vid v-list

o¬ @ ƒ ª ¢o-

@ ƒ	T
v_list	Ä B vlan id ç nož
vid	Ù B vlan idož

o¬ Þ . F åo- Œ n q

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ — å ÿ µ † tag VID 4-22 ž k † • Ù C VLAN Tag 3ož

```
UXLMLH FRQILJXUH WHUPLQDO
UXLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
UXLMLH FRQILJ LI VZLWFKSRUW PRGH GRW T WXQQHO
UXLMLH FRQILJ LI GRW T RXWHU YLG UHJLVWHU LQQHU YLG
UXLMLH FRQILJ LI HQG
```

o¬ à • co- 1 y … show registration-table [interface intf-id] x X k ò 0 F å Õ Ñož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

12.4 dot1q relay-vid vid translate local-vid v-list

¨ access ktrunk khybrid kuplink € M k — å Â 9 Ù C VID “ w Ù C VID Œ n
dot1q relay-vid vid translate local-vid v-list

H ƒ Ù C VID “ w Œ
no dot1q relay-vid vid translate local-vid v-list

H ƒ Ù C VID “ w Œ
default dot1q relay-vid vid translate local-vid v-list

o¬ @ ƒ ª ¢o-

@ ƒ	T
v_list	ÿ µ † Ù C VLAN id ç nož k

12.5 dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

— å † Ä C tag i ¯ ´ ¥ 0 ñ Ù C tag
dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

H ƒ i ¯ ´ ¥ 0 Œ
no dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

H ƒ i ¯ ´ ¥ 0 Œ
default dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

o¬ @ ƒ ª ¢o-

@ ƒ	T
inner-cos-value	ÿ µ † Ä B Tag i ¯ ´ož
outer-cos-value	ÿ µ † Ù B Tag i ¯ ´ož
no	H ƒ N M † i ¯ ´ ¥ 0ož

o¬ Þ . F åo- Œ n q

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ï à Ì N Æ Œ à Ì — å 4 Â 9 cos QOS Œ ž k U Y ÿ G ï ƒ G † M } Å k 1 Ù C Tag cos — å c › k ‘ š M } i ¯ Ô ò n ÿož

o¬ F å †o- 1 y ò ç Ä C Tag cos 3 é 1 † Ù Tag cos › ¥ 0 5ož

```
UXLMLH FRQILJXUH WHUPLQDO
UXLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
UXLMLH FRQILJ LI GRW T 7XQQHO FRV UHPDUN FRV
UXLMLH FRQILJ LI HQG
```

o¬ à • co- 1 y … show interface [intf-id] remark x X k ò 0 F å Õ Ñož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

12.7 inner-priority-trust enable

i ¯ ´ Ö ò k — å N M † Ù C Tag i ¯ ´ Ä C Tag i ¯ ´
inner-priority-trust enable

H ƒ i ¯ ´ Ö ò Œ
no inner-priority-trust enable

¼ { ¥ € M i ¯ ´ Ö ò
default inner-prio rity-trust enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åá RXBR ðà´AV '

12.8 l2protocol-tunnel

¶ B • o Tunnel M ô G 8 C # ‘
l2protocol-tunnel { stp | gvrp }

¼ { Tunnel M ô G 8 C # ‘ • ¼
no l2protocol-tunnel { stp | gvrp }

¼ { Tunnel M ô G 8 C # ‘ • ¼
default l2protocol-tunnel { stp | gvrp }

o¬ @ ƒ ª ¢o-

@ ƒ	T
stp	ô G stp †ož
gvrp	ô G gvrp †ož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç } % n STP y GVRP # ‘ † k · À Y ¶ B • o ¥ ù U

o¬ F å †o- 1 y µ † ÿ ø • 8 C # ‘ gvrp y stp N v ož

```
UXLMLH FRQILJXUH WHUPLQDO
UXLMLH FRQILJ O SURWRFRO WXQQHO VWS
UXLMLH FRQILJ O SURWRFRO WXQQHO JYUS
UXLMLH FRQILJ HQG
```

o¬ à • co- 1 y … show l2protocol-tunnel { gvrp | stp} x X k ò 0 F å Õ Ñož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

12.9 l2protocol-tunnel enable

12.10 l2protocol-tunnel tunnel-dmac

F å , • # ‘ % n ª -ož
l2protocol-tunnel { stp | gvrp } tunnel-dmac mac-address

H ƒ , • # ‘ % n ª - k J ó • ›ož
no l2protocol-tunnel { stp | gvrp } tunnel-dmac mac-address

H ƒ , • # ‘ % n ª - k J ó • ›ož
default l2protocol-tunnel { stp | gvrp } tunnel-dmac mac-address

@ ƒ ª ¢o-

@ ƒ	T
stp	F å stp % n ª -
gvrp	F å gvrp % n ª -

o¬ Þ . F åo- Þ . … % n ª - ù - 01d0f8 k e 3 - (stp y000005 kgvrp y000006) ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ ¨ N M … 8 C # ‘ % n ož

```
U X L M L H F R Q I L J X U H W H U P L Q D O
U X L M L H F R Q I L J L I O S U R W R F R O W X Q Q H O J Y U S W X Q Q H O G P D F $ $
U X L M L H F R Q I L J L I H Q G
```

o¬ à • co- 1 y … show l2protocol-tunnel { gvrp | stp } x X k ò 0 F å Õ Ñož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

12.11 mac-address-mapping x source-vlan src-vlan-list destination-vlan dst-vlan-id

1 › vlan . ñ Á mac ª - Ö ò ñ) vlan ož
mac-address-mapping x source-vlan src-vlan-list destination-vlan dst-vlan-id

H ƒ MAC ª - . Ö ò ¼ ©ož
no mac-address-mapping x source-vlan src-vlan-list destination-vlan dst-vlan-id

H ƒ MAC ª - . Ö ò ¼ ©ož
default mac-address-mapping x source-vlan src-vlan-list destination-vlan dst-vlan-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
x	MAC ª - Ö ò Œ Ú Zož
src-vlan-list	MAC ª - Ö ò Œ › VLAN ç nož
dst-vlan-id	MAC ª - Ö ò Œ) VLAN IDož

o¬ Þ . F åo- MAC ª - Ö ò Ì • oož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ F å MAC ª - Ö ò Œ Ú Z 1 k › VLAN 1-3 MAC ª - Ö ò ñ) VLAN 5 ož

```
U X L M L H  F R Q I L J X U H  W H U P L Q D O
U X L M L H  F R Q I L J  L Q W H U I D F H  J L J D E L W ( W K H U Q H W
U X L M L H  F R Q I L J  L I  P D F  D G G U H V V  P D S S L Q J  V R X U F H  Y O D Q  G H V W L Q
U X L M L H  F R Q I L J  L I  H Q G
```

o¬ à • co- 1 y … show interface mac-address-mapping x x X k ò 0 F å Õ Ñož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

12.12 show dot1q-tunnel

ª P N M dot1q-tunnel © k © tunnel Mož

show dot1q-tunnel [interfaces

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 N M TPID ›ož

```
U X L M L H  V K R Z  I U D P H  W D J  W S L G
3 R U W V  W S L G

* L  [
```

< † K y

<	ª ¢
Ports	€ M d fož
tpid	tpid ›ož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

12.14 show inner-priority-trust

ª P € M 1 Ä Tag i ¯ ´ Ö ò ñ Ù Tag i ¯ ´ © k © k ø •ož

show inner-priority-trust

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 N M i ¯ ´ Ö ò © k • oož

```
U X L M L H  V K R Z  L Q Q H U  S U L R U L W \  W U X V W
3 R U W V  L Q Q H U  S U L R U L W \  W U X V W

* L  H Q D E O H
```

< † K y

<	ª ¢
Ports	€ M d fož

inner-priority-trust	N M i ¯ ´ Ö ò © k ø •ož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

12.15 show interfaces dot1q-tunnel

ª P dot1q-tunnel M • U VLAN y ó • VLAN F åož

show interfaces [intf-id] dot1q-tunnel

o¬ @ ƒ ª ¢o-

@ ƒ	T
intf-id	6 N M

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 tunnel M Â Î F åož

```
UXLMLH VKRZ LQWHUIDFHV GRW T WXQQHO
,QWHUIDFH *L
1DWLYH YODQ
$OORZHG YODQ OLVW k k
7DJJHG YODQ OLVW k k
```

1

12.16 show interface s mac-address-mapping

ò 0 N M MAC ª - Ö ò F åož

show interfaces mac-address-mapping

o¬ @ ƒ ª ¢o-

Destination mac	% n) mac ª -ož
L2protocol-tunnel	8 C # ‘ % n … Õ Ñož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

12.20 show registration-table

ª P Â 9 C-Tag dot1q-tunnel € M vid • Œ n
show registration-table [interfaces intf-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
intf-id	Ô N M

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 Â 9 C-Tag Ù C Tag • Œ ož

```
U X L M L H  V K R Z  U H J L V W U D W L R Q  W D E O H
3 R U W V        7 \ S H        2 X W H U  9 , '  , Q Q H U  9 , '  O L V W

* L              $ G G  R X W H U
```

< † K y

<	ª ¢
Ports	€ M d fož
Type	Â 9 # ‘ ² t 7 / 4 7 • ºož
Outer-VID	… ` Œ • Ù B < / *ož
Inner-VID-list	… ` Œ Ä B \ O J R O Y Zož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

12.21 show traffic-redirect

ª P Â 9 ACL vid J ¾ ê • Œ nož

show traffic-redirect [interfaces intf-id]

o¬ @ ƒ ª ¢o-

show translation-table [interfaces intf-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
intf-id	Ô N M

o¬ x X % ”o- ñ Ä % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 Ä Ù C Tag “ w Œ ož

```
U X L M L H  V K R Z  W U D Q V O D W L R Q  W D E O H
3 R U W V      7 \ S H      5 H O D \  9 , '  2 O G  O R F D O  / R F D O ? L Q Q H U  9 , '  O L V W

* L          , Q Q H U  & 9 , '          1 $
* L          / R F D O  6 9 , '          1 $
* L          , Q  2 X W
```

< † K y

<	ª ¢
Ports	€ M d fož
Type	Â 9 # ‘ ² t QINQ Œ • ºož
Relay-VID	ÿ µ † Ù B/ Ä B Tag “ w e VIDož
Old-local	ÿ µ † “ w ù Ù B Tag VIDož
Local\inner-VID-list	ÿ µ † “ w ù Ù B/ Ä B VID listož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

12.23 switchport dot1q-tunnel allowed vlan

— å dot1q-tunnel • U VLAN k w 6 Y UNTag ¥ ” ê Tag ¥ ” µ

switchport dot1q-tunnel allowed vlan { [add] tagged vlist | [add] untagged vlist | remove vlist }

Ê Ö ó • F å

no switchport dot1q-tunnel allowed vlan

Ê Ö ó • F å

default switchport dot1q-tunnel allowed vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
add	• Í tago•untag ç nož
tagged	1 € M Y Tag ¥ ” µ 6 VLAN k ¥ VLAN † R ¥ € M ÿ ß ž © k Tagož
untagged	1 [illegible] VLAN k ¥ VLAN † R ¥ € M ÿ ß ž Y
remove	[illegible] VLAN [illegible]
vlist	[illegible] µ ê ß VLAN ç n

o¬ Þ . F åo- ó • € M Y UNTa[illegible]AN 1 k ¿ VLAN Ì µož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ — å [illegible] M vlan 3-6 • U VLAN k † Ù C T[illegible] z F $ ÿ ß k ü Y Ù C Tagož

U X L M L H F F[illegible] W H U I D F H J L J D E L W (W K[illegible]
U X L M L H F R[illegible] Z L W F K S R U W G R W T[illegible] D O O R Z H G Y O D Q W D J J H
U X L M L H F R Q[illegible]

o¬ à • co- 1 y …

y µ † ÿ [illegible] 7.96 0 Tjd <037904080BB

Ê Ö ó • F å

default switchport dot1q-tunnel native vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
vid	— å ó • vlan idož

o¬ Þ . F åo- ó • VLAN 1

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ — å dot1q-tunnel M ó • vid 8ož

```
UXLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
UXLMLH FRQILJ LI VZLWFKSRUW GRW T WXQQHO QDWLYH YODQ
UXLMLH FRQILJ HQG
```

o¬ à • co- 1 y … show interface dot1q-tunnel x X k ò 0 F å Õ Ñož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

12.25 switchport mode dot1q-tunnel

— å N M dot1q-tunnel M

switchport mode dot1q-tunnel

Ê Ö Access M

no switchport mode

Ê Ö Access M

default switchport mode

o¬ @ ƒ ª ¢o-

@ ƒ	T

o¬ Þ . F åo- Þ . © tunnel M

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ — å € M dot1q-tunnel Mož

```
UXLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
UXLMLH FRQILJ LI VZLWFKSRUW PRGH GRW T WXQQHO
```

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ — å 1 N M › ª - 1.1.1.2 ÿ ß † Ù B vid “ w 6ož

```
UXLMLH FRQILJXUH WHUPLQDO
UXLMLH FRQILJ LS DFFHVV OLVW VWDQGDUG WRB
[redacted]
UXLMLH FRQILJ DFO VWG H[LW
UXLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
UXLMLH FRQILJ LI VZLWFKSRUW PRGH WUXQN
UXLMLH FRQILJ LI WU P p0°`À00@``£e €0p@Pp0p Àp°PUéHW XUSW €`€°À
```

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y µ † ÿ — å 1 N M › ª - 1.1.1.3 ÿ µ † • vid 10ož

```
UXLMLH FRQILJXUH WHUPLQDO
UXLMLH FRQILJ LS DFFHVV OLVW VWDQGDUG
UXLMLH FRQILJ DFO VWG SHUPLW KRVW
UXLMLH FRQILJ DFO VWG H[LW
UXLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
UXLMLH FRQILJ LI VZLWFKSRUW PRGH GRW T WXQQHO
UXLMLH FRQILJ LI WUDIILF UHGLUHFW DFFHVV JURXS QHVWHG YODQ
UXLMLH FRQILJ LI HQG
```

o¬ à • co- 1 y … show traffic-redirect x X k ò 0 F å Õ Ñož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

12.28 traffic-redirect access-group acl outer-vlan vid in

+ access,trunk,hybrid, uplink € M ÿ µ † È — å Â 9 v Ù B vid “ w Œ

traffic-redirect access-group acl outer-vlan vid in

¼ { SSMož

no traffic-redirect access-group acl outer-vlan

Ê Ö Þ . F åož

default traffic-redirect access-group acl outer-vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
acl	9 F v aclož
vd	“ w e Ù B vidož

o¬ @ ƒ ª ¢o- @ ƒ T

13 ERPS

13.1 associate sub-ring

¥ x X 9 ¼ û Y ß ê C ¿ ÿ êož
associate sub-ring raps-vlan vlan-list

¥ x X 9 H ƒ Î ¼ û Y ß ê C ¿ ÿ êož
no associate sub-ring raps-vlan vlan-list

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-list	ÿ ê R-APS VLAN

o¬ Þ . F åo- Þ . Õ Ñ k Y ß ê y ÿ ê • Ì • y ¼ û ¼ ©

o¬ x X % ”o- ERPS R-APS VLAN F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¬ } ¨ Y ß ê ñ Ä - µ F å ¥ x X k … ¿ ÿ ê ERPS # ‘ † U Y ¨ ¥ Y ß ê n nož
F å ¼ û ¼ © } © 4 … ÿ ê # ‘ † U Y ¨ ¿ Y ß ê n n k ï - U Y J VLAN % ² U ˆ
F å x X k F å VLAN C € M VLAN ¼ © k Y … ÿ ê # ‘ † U Y ¨ ¿ Y ß ê n n k
k ` ° ñ ï à Ìož

o¬ F å †o- µ © %² ¼ û Y ß ÿ ê y ¿ Y ß ê † ÿ y

```
#  µ ¶ B F å % ”ož
5 X L M L H  F R Q I L J X U H  W H U P L Q D O
# F å Y ß ê € M e è % ”ož
5 X L M L H  F R Q I L J  L Q W H U I D F H  J L J D E L W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  J L J D E L W ( W K H U Q H W  V Z L W F K S R U W  P R G H  W U X Q N
5 X L M L H  F R Q I L J  L I  J L J D E L W ( W K H U Q H W  H [ L W
5 X L M L H  F R Q I L J  L Q W H U I D F H  J L J D E L W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  J L J D E L W ( W K H U Q H W  V Z L W F K S R U W  P R G H  W U X Q N
5 X L M L H  F R Q I L J  L I  J L J D E L W ( W K H U Q H W  H [ L W
#  µ erps F å % ”ož
5 X L M L H  F R Q I L J  H U S V  U D S V  Y O D Q
# F å µ Y ß ê k @ 9 ERPS # ‘ ‹ ‘ € Mož
5 X L M L H  F R Q I L J  H U S V  U L Q J  S R U W  Z H V W  J L J D E L W ( W K H U Q H W  H D
```

```
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
# ... ¶B ERPS ož
5XLMLH FRQILJ HUSV HQDEOH
# w µ ERPS F å % ”ož
5XLMLH FRQILJ HUSV UDSV YODQ
# ... 6 ê ERPS ož
5XLMLH FRQILJ HUSV VWDWH HQDEOH
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.3 erps monitor link-state by oam

¥ x X 9 F å ERPS e è Ù Á y • ”ož

erps monitor link-state by oam vlan vlan-id

```
5XLMLH FRQILJ  HUSV PRQLWRU OLQN VWDWH E\ RDP YODQ
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.4 erps raps-vlan

¥ x X 9 F å Y ß ê R-APS VLANož

erps raps-vlan vlan-id

¥ x X 9 í ” Y ß ê R-APS VLANož

no erps raps-vlan vlan-id

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
vlan-id	R-APS VLAN ID

o¬ Þ . F åo- Z Ä F å R-APS VLANož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- R-APS VLAN · À © — Õ Ì t … VLAN kVLAN 1 t — å R-APS VLAN ož
c — Õ c%² Y ß ê ¬ F å , c R-APS VLANož
ò ç } ¨%² V Ì F å ERPS — Õ % n ERPS # ‘ † k• ‘ š ¥ — Õ Q Ä N µ ERPS ê ;
€ M ª • ¥ ERPS ê ñ + • R-APS VLAN † * kò ¿ € M C ª • ¿ * zk é k¿ VLAN
† U * % n µ R-APS VLAN k R ò + ERPS ê D ÿ Ï àož

o¬ F å †o- # µ ¶ B F å % ”ož

```
5XLMLH FRQILJXUH WHUPLQDO
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
```

F å ¶ B R-APS VLANož

```
5XLMLH FRQILJ HUSV UDSV YODQ
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.5 protected-instance

¥ x X 9 F å ¥ Y ß ê ñ ‘ VLAN k Y ë ¿ ú ® k ož
protected-instance instance-id-list

¥ x X 9 Ê Ö Þ . F å k ‘ ñ Ä VLANož
no protected-instance

o¬ @ ƒ ª ¢o-

@ ƒ	T
instance-id-list	¥ Y ß ê ñ ‘ † g ? † ñ + • VLAN / ¥ Y ß ê ‘ VLAN bž

o¬ Þ . F åo- Þ . Õ Ñ ‘ ñ Ä VLANož

o¬ x X % ”o- ERPS F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ‘ VLAN ¥ Y ß ê R-APS VLAN + ¥ Y ß ê ¬ } ‘ ƒ G VLAN Á èož

o¬ F å †o- • — 4 ë ¿ ú ® k k A E Ñ F å 4 ERP1 y ERP2ožERP1 R-APS VLAN 100 k ‘ ƒ G VLAN 1-99 k101-2000 z ERP2 R-APS VLAN 4093 k ‘ ƒ G VLAN 2001-4092 k4094ož é ¿ ú ® k F å ò y

µ ¶ B F å % ”ož

```
5XLMLH FRQILJXUH WHUPLQDO
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
```

F å ERP1 ‘ VLANož

```
5XLMLH FRQILJ VSDQQLQJ WUHH PVW FRQILJXUDWLRQ
5XLMLH FRQILJ PVW LQVWDQFH YODQ
5XLMLH FRQILJ PVW H[LW
5XLMLH FRQILJ HUSV UDSV YODQ
5XLMLH FRQILJ HUSV SURWHFWHG LQVWDQFH
```

F å ERP2 ‘ VLANož

```
5XLMLH FRQILJ VSDQQLQJ WUHH PVW FRQILJXUDWLRQ
5XLMLH FRQILJ PVW LQVWDQFH YODQ
5XLMLH FRQILJ PVW H[LW
```

```
5XLMLH FRQILJ  HUSV UDSV YODQ
5XLMLH FRQILJ HUSV      SURWHFWHG LQVWDQFH
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.6 ring-port

¥ x X 9 F å ERPS êož

ring-port west {interface-name1 | virtual-channel } east {interface-name2 | virtual-channel }

¥ x X 9 í ” ERPS êož

no ring-port

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name1	West port d
interface-name2	East port d
virtual-channel	1 € M 6 Z ' e è € M

o¬ Þ . F åo- Z Ä F å ` ~ ERP êož

o¬ x X % ”o- ERPS F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-

- ¢ € M µ ERP ê $ e k Ç ª • “ w € M trunk K Åož
- ò ç 1 ê € M F å ñ virtual-channel k é 4 ê 1 t • © ÿ êož
- g ERPS € M @ STP ‹ ‘ zERPS y RERPo•REUP » € Mož

o¬ F å †o- µ © ERPS ê † ÿ y

µ ¶ B F å % ”ož

```
5XLMLH FRQILJXUH WHUPLQDO
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
```

F å Y ß ê € M e è % ”ož

```
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
```

```
5XLMLH FRQILJ LI JLJDELW(WKHUQHW      VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW      H[LW
5XLMLH FRQILJ  LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI JLJDELW(WKHUQHW      VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW      H[LW
#  µ erps F å % ”ož
5XLMLH FRQILJ  HUSV UDSV YODQ
# F å µ Y ß ê k @ 9  ERPS # ‘ ‹ ‘ € Mož
5XLMLH FRQILJ HUSV       ULQJ SRUW ZHVW JLJDELW(WKHUQHW     HD
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.7 rpl-port

¥ x X 9 F å RPL owner € Mož
rpl-port {west | east} rpl-owner

¥ x X 9 í ” RPL owner € Mož
no rpl-port

o¬ @ ƒ ª ¢o-

@ ƒ	T
west	6 west + • € M rpl-owner
east	6 east + • € M rpl-owner

o¬ Þ . F åo- Z Ä F å RPL owner € M

o¬ Þ . ´ ðo- 14

o¬ x X % ”o- ERPS F å % ”

o¬ … 6 -o- ? ê ¬ } N F å%² Ú RPL e è y%² RPL owner - µož
+ 9 ³ RPL owner - µ k RPL port ³ · } F å k ò ç ¬ } F å ¬ ¨ RPL e è N € M g F åož

o¬ F å †o- µ © F å RPL € M y RPL owner † ÿ y
µ ¶ B F å % ”ož

```
5XLMLH  FRQILJXUH WHUPLQDO
```

```
(QWHU FRQILJXUDWLRQ FRPPDQGV RQH SHU OLQH (QG ZLWK &17/ =
# F å Y ß ê € M e è % ”ož
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI JLJDELW(WKHUQHW VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW H[LW
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI JLJDELW(WKHUQHW VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW H[LW
# µ erps F å % ”ož
5XLMLH FRQILJ HUSV UDSV YODQ
# F å µ Y ß ê k @ 9 ERPS # ‘ ‹ ‘ € Mož
5XLMLH FRQILJ HUSV ULQJ SRUW ZHVW JLJDELW(WKHUQHW HD
# 6 ¢ RPL e è ñ ¨ € M y RPL ownerož
5XLMLH FRQILJ HUSV USO SRUW ZHVW USO RZQHU
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.8 show erps

ª P ERPS @ ƒ C Ù Áož

show erps [{ global | raps_vlan vlan-id [sub-ring] }]

o¬ @ ƒ ª ¢o-

@ ƒ	T
global	ª P ¶ B ERPS ’ Î
raps_vlan vlan-id	ª P 6 ERPS RAPS-VLAN ’ Î
sub-ring]	ª P 6 ÿ ê ’ Î

o¬ Þ . F åo- -

o¬ x X % ”o- ` Þ % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- µ P † ¦ P ¥ x X … y

```
5XLMLH  VKRZ HUSV
(536 ,QIRUPDWLRQ
*OREDO 6WDWXV                    (QDEOHG
/LQN PRQLWRUHG E\               1RW 2DP

5 $36 9/$1
5LQJ 6WDWXV                      (QDEOHG
:HVW 3RUW                        *L     %ORFNLQJ
(DVW 3RUW                        *L     )RUZDUGLQJ
53/ 3RUW                        :HVW 3RUW
3URWHFWHG 9/$1V                    $//
53/ 2ZQHU                       (QDEOHG
+ROGRII 7LPH                       PLOOLVHFRQGV
*XDUG 7LPH                         PLOOLVHFRQGV
:75 7LPH                        PLQXWHV
&XUUHQW 5LQJ 6WDWH                  ,GOH
$VVRFLDWH 5 $36 9/$1

5 $36 9/$1
5LQJ 6WDWXV                      (QDEOHG
:HVW 3RUW                        9LUWXDO &KDQQHO
(DVW 3RUW                        *L     )RUZDUGLQJ
53/ 3RUW                        1RQH
3URWHFWHG 9/$1V                    $//
53/ 2ZQHU                       'LVDEOHG
+ROGRII 7LPH                       PLOOLVHFRQGV
*XDUG 7LPH                         PLOOLVHFRQGV
:75 7LPH                        PLQXWHV
&XUUHQW 5LQJ 6WDWH                  ,GOH
$VVRFLDWH 5 $36 9/$1

5 $36 9/$1
5LQJ 6WDWXV                      (QDEOHG
:HVW 3RUW                        9LUWXDO &KDQQHO
(DVW 3RUW                        *L     )RUZDUGLQJ
53/ 3RUW                        1RQH
3URWHFWHG 9/$1V                    $//
53/ 2ZQHU                       'LVDEOHG
+ROGRII 7LPH                       PLOOLVHFRQGV
*XDUG 7LPH                         PLOOLVHFRQGV
:75 7LPH                        PLQXWHV
```

```
&XUUHQW 5LQJ 6WDWH                ,GOH
$VVRFLDWH 5 $36 9/$1
5XLMLH  VKRZ HUSV UDSVBYODQ     VXE ULQJ
5 $36 9/$1
6XE 5LQJ 5 $36 9/$1V    7& 3URSDJDWLRQ 6WDWH

                        (QDEOH
```

```
5XLMLH FRQILJ LI JLJDELW(WKHUQHW      VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW      H[LW
5XLMLH FRQILJ  LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI JLJDELW(WKHUQHW      VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW      H[LW
#  µ erps F å % ”ož
5XLMLH FRQILJ  HUSV UDSV YODQ
# F å µ Y ß ê k @ 9  ERPS # ‘ ‹ ‘ € Mož
5XLMLH FRQILJ HUSV       ULQJ SRUW ZHVW JLJDELW(WKHUQHW     HD
# … 6 ê  ERPS  ož
5XLMLH FRQILJ HUSV       VWDWH HQDEOH
# … ¶ B ERPS  ož
5XLMLH FRQILJ HUSV       H[LW
5XLMLH FRQILJ  HUSV HQDEOH
```

```
#  µ ¶ B F å % ”ož
5XLMLH  FRQILJXUH WHUPLQDO
(QWHU FRQILJXUDWLRQ FRPPDQGV  RQH SHU OLQH  (QG ZLWK &17/ =
# F å Y ß ê € M  e è % ”ož
5XLMLH FRQILJ  LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI JLJDELW(WKHUQHW  VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW  H[LW
5XLMLH FRQILJ  LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI JLJDELW(WKHUQHW  VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW  H[LW
#  µ erps F å % ”ož
5XLMLH FRQILJ  HUSV UDSV YODQ
# F å  µ Y ß ê k @ 9  ERPS # ‘ ‹ ‘  € Mož
5XLMLH FRQILJ HUSV  ULQJ SRUW ZHVW IDVW(WKHUQHW  HDVW I
# F å Y ß ÿ êož
5XLMLH FRQILJ  HUSV UDSV YODQ
5XLMLH FRQILJ  LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI JLJDELW(WKHUQHW  VZLWFKSRUW PRGH WUXQN
5XLMLH FRQILJ LI JLJDELW(WKHUQHW  H[LW
5XLMLH FRQILJ  HUSV UDSV YODQ
5XLMLH FRQILJ HUSV  ULQJ SRUW ZHVW JLJDELW(WKHUQHW  HDV
# ¼ û ÿ ê y ¿  Y ß êož
5XLMLH FRQILJ HUSV  VXE ULQJ DVVRFLDWH UDSV YODQ
# …  ÿ ê  " ÷ J  * sož
5XLMLH FRQILJ HUSV  VXE ULQJ WF SURSDJDWLRQ HQDEOH
```

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

13.11 timer

```
¥ x X  9 F å  ERPS # ‘  ž ˜ož
timer { holdoff-time  interval1 | guard-time  interval2 | wtr-time  interval3 }

¥ x X  9 Ê Ö  ERPS # ‘  ž ˜ ó • ›ož
no timer {  holdoff-time  | guard-time |  wtr-time }
```

o¬ @ ƒ ª ¢o-	@ ƒ	T
	holdoff-time interval1	

1 IP © ¬/ §

1.1 ip address

F å N M IP ª -ož
ip address ip-address network-mask [secondary]

í ” 6 N M IP ª -ož
no ip address [ip-address network-mask [secondary]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	32 A Ô y IP ª - k8 y%² Á k Y ò • ” n P k Á $ • µ œ •ož
network-mask	32 A Ô y à Ì Q A k“1” n P Q A y k“0” n P Ñ yož ? 8 y%² Á k Y ò • ” n P k Á $ • µ œ •ož
secondary	n P F å) IP ª -ož Þ . F å ip ª -ož

o¬ Þ . F åo- N M Z Ä F å IP ª -

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- %² — Õ Q Ä F å 4 IP ª - k õ U Y N v y G IP ƒ G k N M F å 4 IP ª - k ª ¢ ¥ N M ª • g IP # ‘ož
à Ì Q A - ©%² 32 y A Ô ƒ › k ö œ 5 ¥ IP ª - „ Ù A Ô à Ì B ãož à Ì Q A k › 1
A Ô + • IP ª - A Ô y < © à Ì B ã k › 0 A Ô + • IP ª - A Ô y < © Ñ ª - B ãož ò A • à Ì + • à Ì Q A 255.0.0.0 ož , U Y ï à Ì Q A +%² à Ì g ÿ à æ ã k ÿ à æ ã < © 1%² Ñ ª - B ã %² ? A Ô y - • à Ì B ã k Ý 4 Ñ O k Í à Ì ƒ O k ž à Ì Q A < f ÿ à Q Aož
RGOS ÷ ^ U Y u 4%² N M F å Ú IP ª - k ¿ %² IP ª - k ¿ • ¶ B) IP ª -ož) IP ª - F å ò – Z Ä ƒ) ’ ò k U Y š Þ F å k x Q Ä F å 4 IP ª - e õ F å) IP ª -ož) IP ª - IP Y C) IP

%² à Ì ÿ à t P Ù%² à Ì œ Y • k , U Y ë •%² t œ Y à Ì ÿ à k * F å) IP ª - • ” k 1 œ Y ÿ à N Ü Ûož%² ÿ à ¨ — Õ ê Y N M ß ëož

¹ (Æ ã • • ì 0 o [° ip default-gateway a — ÿ " ¢ Q ì ˜ ‘ d ¨ ¶ Ÿ ¹ ¶ telnet Y Q • 8 • ì 0 o É ¯ ‘ • ì 0 o • 8 IP 0 ì ˜ ‘ dã ¨ M â ¾ " ip address g ip default-gateway a — c / ¢ Q – ¢ Q \ M ¥ | ± " t Ù " - $ ý ! M ¥ ¹ ¶ î À

9 þ • • t d ã 5 Æ ã • ‘ ° ip address a — gateway ‘ Ï “ ÿ ½ ¨ • 8 IP 0 ì ˜ ‘ d gateway ‘ Ï “ â } show running config / ¡ µ — ¾ § ö ip default-gateway a — ÿ ¡ µ ´ d

o¬ F å †o-

```
 y F å 4 N M , 3ª - k à Ì Q A ož
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W ( W K H U Q H W L S D G G U H V V

 y “ w Þ . à ¼ ož
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W ( W K H U Q H W L S D G G U H V V
```

o¬ à • co- 1 yshow ip interface U • N M F å Õ Ñož

o¬ U P ’ Îo- 1. ª • F å mask ¶ 1 ê ¶ 0 Q A g ê › N M U Y u 4 y Q A h k ò ç F å 4 k é ß ë Y U P y

```
, Q Y D O L G , 3 P D V N
```

2. Ì F å ip ª - Õ Ñ ª • F å) ip ª - k k é k ß ë Y U P y

```
& D Q Q R W D G G , 3 D G G U H V V
```

o¬ o • j ¨o- 1. Ì F å ip ª - Õ Ñ F å) ip ª -ož

2 í ” ª - $ ù Z Ä í ” ñ Ä R ª -ož

c%² N M c , 3ª - à < M Lož

o¬ u V ª ¢o- -

1.2 ip broadcast-address

F å%² N M z n ª -ož

ip broadcast-address ip-address

H *f* z n ª - F åož

no ip broadcast-address

o¬ @ *f* ª ¢o-

@ *f*	T

ip-address	IP à Ì z n ª -ož

o¬ Þ . F åo- Þ . IP z n ª - 255.255.255.255

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 2

o¬ ... 6 -o-) ù IP z n †) ö ª -%² " ¶ 1 k n P 255.255.255.255ožRGOS ÷ ^ U Y * # D ÿ ¿ IP ª - z n † k ò U Y c ž N v ¶ 1 Y C \ # z n ož

o¬ F å †o- 1 y F å N M IP z n †) ö ª - 0.0.0.0ož

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW LS EURDGFDVW DGGUHVV
```

o¬ à • co- -

o¬ U P ’ Îo- 1. Z Ä F å ip ª - Õ Ñ F å N M z n F å k k é ß ë Y U P y

```
&DQQRW VHW EURDGFDVW DGGUHVV 1R SULPDU\ DGGUHVV H[LVW
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.3 ip directed-broadcast

o IP g z n ñ Ò ò z n ô Eož

ip directed-broadcast [access-list-number]

H ƒ g z n ñ Ò ò z n ô Eož

no ip directed-broadcast

o¬ @ ƒ ª ¢o-

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- IP g z n † © 6) ö ª - î IP ÿ à z n ª - IP † k ò) ö ª - 172.16.16.255 † < f
g z n †ož x © D ÿ ¥ † - µ A ©) ö ÿ à è tož
Z Ä) ö ÿ à + — Õ N v ñ IP g z n † kæ ô G % n †%² ý Ô ò g z n †ož ¢ g z n †
ñ + ¥ ÿ à — Õ e k — Õ 1 g z n † ô E A! Z z n † g%² " 6) ö IP ª - ¶ 1 z n
† h k À e Y e è C z n • ” G Ë) ö ÿ à ñ Ä Ñož
ï U Y ¨ 6 N M k o g z n ñ Ò ò z n ô E k ý ¥ N M < U Y ô G ñ + à Ì g z
n 4ož ¥ x X Q § €] ñ Â Ä) ö ÿ à g z n † Â e n ÿ k § € ¿ g z n † 3 o ô Gož
¨ N M k ï U Y * # ˜ | ç n Û O ò ô G „ ? g z nož ¢ # 4 ˜ | ç n k Q Ä … ` ˜ | ç n
ƒ G õ g g z n ñ Ò ò z n ô Eož
ò ç ¨ N M F å 4 no ip directed-broadcast kRGOS 1 ’ N v ñ + à Ì g z n †ož

o¬ F å †o- 1 y ¨ — Õ gigabitEthernet 0/1 € M o 4 g z n ô Gož
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W (W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W L S G L U H F W H G E U R D G F D V W

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.4 ip icmp error-interval

F å IP Ù B U ã Ì y ‡ G ICMP) U † G , äož
ip icmp error-interval DF milliseconds [bucket-size]

å ¿ ICMP [j † G , äož
ip icmp error-interval milliseconds [bucket-size]

IP Ù B U ã Ì y ‡ G ICMP) U † G , ä Ê Ö è Þ . ›ož
no ip icmp error-interval DF milliseconds [bucket-size]

¿ ICMP [j † G , ä Ê Ö è Þ . ›ož
no ip icmp error-interval milliseconds [bucket-size]

o¬ @ ƒ ª ¢o-

@ ƒ	T
milliseconds	X Î ó • u Ê k H › 8 0~2147483647 k Þ . › 100 k % y D aož H › 0 ž k n P ’ ò ICMP [j † G , äož
bucket-size	X Î ¹ X Î ƒ k H › 8 1~200 k Þ . › 10ož

o¬ Þ . F åo- 100 D a G 10 ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4 … 2 ! Í Æ x à k + ICMP [j † G , ä g ’ ò k J X Î ‘ což
ò ç IP † ¬ } ã Ì kx © IP Ù B U ã Ì y t — å 4 k — Õ k g › IP ª - G Ú Z 4 ICMP)
U † k _ ICMP [j † } (© è ¬ MTU G ëož 4 … 2 ¿ ICMP [j † ß Ú - G ß
Ú Z 4 ICMP) U † k R ò - è ¬ MTU G ë â | k + Ú Z 4 ICMP) U †
y ¿ ICMP [j † ã ð ’ ,ož
œ ž ˜ ¤ † © 10 D a k • ‘ ï X Î ó • u Ê F å è 10 D a … ƒ •ož ò ç X Î ó • u Ê
Ý 9,0 4 9 10 k Ž ÿ | ó • u Ê © 10 D a k † ò F å 5 D a 1 k Ž | ç © 10 D a 2 z ò ç X Î
ó • u Ê © 10 D a … ƒ • k Ž ÿ | ó • u Ê E ‘ è 10 D a … ƒ • k † ò F å 15 D a 3
k Ž | ç © 10 D a 2 ož

o¬ F å †o- 1 y F å IP Ù B U ã Ì y ‡ G ICMP) U † G , ä 1 a 100 ož

```
5 X L M L H F R Q I L J L S L F P S H U U R U L Q W H U Y D O ')
```

2 y F å ¿ ICMP [j † G , ä 1 a 10 ož

```
5 X L M L H F R Q I L J L S L F P S H U U R U L Q W H U Y D O
```

o¬ à • co- … show running-config ò 0 F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.5 ip mask-reply

o ICMP Q A • ‹ ƒ Îož
ip mask-reply

¼ { ICMP Q A • ‹ ƒ Îož

no ip mask-reply

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . • o G ICMP Q A € • †

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 2

o¬ ... 6 -o- à Ì — Õ Ä ž ¬ } = 3 ; û à î ÿ à ÿ à Q A k 4 B H ¥ ’ Î k à Ì — Õ U Y G ICMP Q A ¬ L ƒ Î k N v ñ ICMP Q A ¬ L ƒ Î à Ì — Õ < k G Q A • ‹ ƒ Îož

o¬ F å †o- 1 y — Õ gigabitEthernet 0/1 N M 1 k € • ICMP Q A ¬ L †ož

5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W (W K H U Q H W

5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W L S P D V N U H S O \

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.6 ip mtu

F å IP Â Ý n ÿ % « gMTU ož ož ož

o¬ Þ . ´ ðo- 2

RGOS ÷ ^ Þ . o ICMP M gož

o¬ F å †o- 1 ygigabitEthernet 0/1 N M ¼ { 4 ICMP M gož

```
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW QR LS UHGLUHFWV
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.8 ip source-route

• o IP › è ’ Î Ô ò ož
ip source-route

¼ { IP › è ’ Î Ô ò ož
no ip source-route

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . o

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- RGOS u 4 IP › è ož ¢ — Õ N v ñ IP ƒ G ž k k + IP ã › è o• ! à › è o• “ £ è ˆ # ¾ g ò k ? # ¾ ¨ RFC 791 Ä ¦ Â T ožò ç y ñ ¥ ƒ G o 4 ¿ %² # ¾ k < k ü g € • • z ò ç y ñ — | # ¾ k < k Ë ƒ G › G %² ICMP @ ƒ | Ê ƒ Î k À e ’ ¥ ƒ G ož
RGOS ÷ ^ Þ . Õ Ñ u 4 IP › è Ô Åož

o¬ F å †o- 1 y ¼ { 4 IP › è ’ Î Ô ò ož

```
5XLMLH FRQILJ QR LS VRXUFH URXWH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.9 ip ttl

1.10 ip unreachables

o ICMP # ‘ U ƒ Îož

ip unreachables

¼ { G ICMP # ‘ U ƒ Îož

no ip unreachables

o¬ @ ƒ ª ¢o-	@ ƒ	T
	-	-

o¬ Þ . F åo- Þ . o

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ò ç RGOS ÷ ^ N v ñ%²) ö ª - ï % n † k A Ô ò ¥ † C # ‘ k < k G %² ICMP) ö U ƒ Îož

ò ç RGOS ÷ ^ 9 Z Ä è k ò ô G%² ƒ G k < k g ƒ G › G ICMP Ñ U ƒ Îož

¥ x X § € ñ Ä ICMP) ö U ƒ Îož

o¬ F å †o- 1 y ¼ { gigabitEthernet 0/1 N M G ICMP) ö U ƒ Îož

```
5 X L M L H F R Q I L J L Q W H U I D F H J L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W ( W K H U Q H W Q R L S X Q U H D F K D E O H V
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.11 show ip interface

ª P N M IP Ù Á ’ Îož

show ip interface [interface-type interface-number | brief]

o¬ @ ƒ ª ¢o-

@ ƒ	T
Interface-type	6 N M • º
Interface-number	6 N M Ú Z
brief	ª P C N M IP Â Î F å ' Î g , N M primary ipo•secondary ip y N M Ù Á h

o¬ x X % "o- Ô Ó % "

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- %² N M Ô 9 U Ù Á kRGOS 1 k ¨ è n ë •%² Ú + è ož U N M © 6 RGOS ÷ ^ * ¥ N M U Y v G ƒ G ož ò ç N M R U Ù Á J U Ù Á kRGOS ÷ ^ 1 k R è n í " , • + è ož ò ç N M Ô 9 U Ù Á k / ª • E g * ' Ù Á k ¿ è # ' Ù Á k ª P UP z ò ç N Ò ò ¿ è Ô 9 U Ù Á k N M Ù Á k ª P UP ož
c N M • º k ª P È ç U %² ý k œ Ä ? Ä © î ? N M Ô Ä # ¾ož

o¬ F å †o- 1 y ª P ñ Ä N M IP Ù Á ' Îož

```
5XLMLH VKRZ LS LQWHUIDFH EULHI
,QWHUIDFH ,3 $GGUHVV 3UL6 WIP-Address(Sec) WRFRO
*LJDELW(WKHUQHW GRZQ GRZQ
*LJDELW(WKHUQHW QR DGGUHVV QR DGGUHVV GRZQ GRZQ
9/$1 QR DGGUHVV GRZQ GRZQ
```

Status M í Ç] ¾ q _ Ü up down ä administratively down û shutdown a — < Ç œ % ' ž d

Protocol M í Ç IPv4 Ø Ð q _ d

2 y ª P VLAN 1 N M IP Ù Á ' Îož

```
5XLMLH VKRZ LS LQWHUIDFH YODQ
9/$1
 ,3 LQWHUIDFH VWDWH LV '2:1
 ,3 LQWHUIDFH W\SH LV %52$'&$67
 ,3 LQWHUIDFH 078 LV
 ,3 DGGUHVV LV
          SULPDU\
 ,3 DGGUHVV QHJRWLDWH LV 2))
 )RUZDUG GLUHFW EURDGFDVW LV 2))
 ,&03 PDVN UHSO\ LV 21
 6HQG ,&03 UHGLUHFW LV 21
 6HQG ,&03 XQUHDFKDEOHG LV 21
```

```
 3UR[\ $53 LV 2))
$53 SDFNHW LQSXW QXPEHU
    5HTXHVW SDFNHW
    5HSO\ SDFNHW
    8QNQRZQ SDFNHW
77/ LQYDOLG SDFNHW QXPEHU
,&03 SDFNHW LQSXW QXPEHU
    (FKR UHTXHVW
(FKR UHSO\
    8QUHDFKDEOH
    6RXUFH TXHQFK
    5RXWLQJ UHGLUHFW
```

< † K y

<	ª ¢
IP interface state is:	à Ì N M Ô 9 U Ù Á k ¿ N M F ^ Ù Á y ¿ è # ' Ù Á ® "UP"ož
IP interface type is:	ª P N M • º k ò z n k µ + µ ˆož
IP interface MTU is:	ª P N M — å MTU ›ož
IP address is:	ª P N M IP ª - y Q A ' Îož
IP address negotiate is:	ª P N M IP ª - © k # Œ B ±ož
Forward direct-boardcast is:	ª P © k ô G g z nož
ICMP mask reply is:	ª P © k G ICMP Q A • ‹ †ož
Send ICMP redirect is:	ª P © k G ICMP M g †ož
Send ICMP unreachabled is:	ª P © k G ICMP U †ož
Proxy ARP is:	ª P © k o W ò ARP ož
ARP packet input number: 0 Request packet: 0 Reply packet: 0 Unknown packet: 0	ª P N M v ñ ARP † È ƒ k , y ARP ¬ L † ARP • ‹ † Ì = • º †
TTL invalid packet number:	ª P N M v ñ TTL — | † ƒ

ICMP packet input number: 0
Echo request: 0
Echo reply: 0
Unreachable: 0
Source quench: 0
Routing redirect: 0 5 2 5 (-) 2 2 5

o¬ u V ª ¢o- -

1.12 show ip packet queue

ª P # ‘ ÷ IP † v G Ï ‹ ’ Î
show ip packet queue

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o-

```
5XLMLH VKRZ LS SDFNHW TXHXH
5HFHLYH      SDFNHWV IUDJPHQW
 ,3 SDFNHW UHFHLYH TXHXH  OHQJWK    PD[      RYHUIORZ
 5HFHLYH    ,&03 HFKR SDFNHWV     ,&03 UHSO\ SDFNHWV
 'LVFDUGV
   )DLOHG WR DOORF VNE
   5HFHLYH TXHXH RYHUIORZ
   8QNQRZ SURWRFRO GURSV
   ,&03 UFY GURSV     IRU VNE FKHFN IDLO
   ,&03 UFY GURSV     IRU VNE LV EURDGFDVW
6HQW SDFNHWV
 6XFFHVV
 *HQHUDWH    DQG VHQG   ,&03 UHSO\ SDFNHWV  VHQG    ,&03 HFKR SD
 ,W UHFRUGV     XV DV PD[ WLPH LQ ,&03 UHSO\ SURFHVV
 )DLOHG WR DOORF HIEXI
 'URSSHG E\ ()03
 1R5RXWHV
 *HW YUI IDLOV
 &DQQRW DVVLJQHG DGGUHVV GURSV
 )DLOHG WR HQFDSVXODWH HWKHUQHW KHDG
,&03 HUURU TXHXH  OHQJWK    PD[      RYHUIORZ
```

< † K y

<	ª ¢
IP packet receive queue	# ‘ ÷ IP N v „ ç @ *ƒ*
Discards	N v i ’ †
Sent packets	G IP † qð¨°l là
ICMP error queue	ICMP j ¨ † N v „ ç @ *ƒ*

ò • 29 , y Q ‡ â [vrf " h H ' ´ ?PŠ• 0ÊÀyÐ°Q ¼€û°†àÙ€È 8 °Q à y d

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

1.13 show ip packet statistics

ò 0 IP † ‹ ’ Îož

show ip packet statistics [total | interface-name]

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
total	ñ Ä N M ‹ › vÈ yož
interface-name	N M d f

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- 1 y Y ©¥ x X t’ Î r ë y

```
5  VKRZ LS SDFNHW VWDWLVWLFV
7RWDO
```

```
   8QLFDVW À0Àp 0XOWLFDVW ‡P`PðPP @p`@`pÐ
   'LVFDUGV 00
     +GU(UURUV 0°P@p`°€`à`€ Ð 77/([FHHGHG 0ð p°€P`Ð
     1R5RXWHV 00
     2WKHUV 00
 6HQW À@ 00@`à€p`ð0@°•`@p•0PÀp€`0
   8QLFDVW `0• °ð €ðpÀ`@`pÐp %URDGFDVW 00
```

```
*LJDELW(WKHUQHW
  5HFHLYHG      SDFNHWV        E\WHV
    8QLFDVW      0XOWLFDVW      %URDGFDVW
    'LVFDUGV
      +GU(UURUV   %DG&KHFNVXP   77/([FHHGHG   2WKHUV
      1R5RXWHV
      2WKHUV
  6HQW      SDFNHWV        E\WHV
    8QLFDVW      0XOWLFDVW      %URDGFDVW
/RRSEDFN
  5HFHLYHG   SDFNHWV    E\WHV
    8QLFDVW   0XOWLFDVW   %URDGFDVW
    'LVFDUGV
      +GU(UURUV   %DG&KHFNVXP   77/([FHHGHG   2WKHUV
      1R5RXWHV
      2WKHUV
  6HQW   SDFNHWV    E\WHV
    8QLFDVW   0XOWLFDVW   %URDGFDVW
7XQQHO
  5HFHLYHG   SDFNHWV    E\WHV
    8QLFDVW   0XOWLFDVW   %URDGFDVW
    'LVFDUGV
      +GU(UURUV   %DG&KHFNVXP   77/([FHHGHG   2WKHUV
      1R5RXWHV
      2WKHUV
  6HQW      SDFNHWV        E\WHV
    8QLFDVW      0XOWLFDVW   %URDGFDVW
```

< † K y

<	ª ¢
Total	n P N Û ª P © ñ Ä N M Ï ‹ › È y
GigabitEthernet 0/1	n P N Û ª P © S + %² À } N M Ï ‹ › ' Î
Received	N v ñ † ƒ) k - ƒ)ož Y C % n/ Á n/ z n Ï ‹ k , ƒ) k Y C + • = œ
Sent	G † ƒ) k - ƒ) k % n/ Á n/ z n ƒ)

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

1.14 show ip raw-socket

ª P ñ Ä IPv4 = ÷ ì N ož

show ip raw-socket [num]

o¬ @ ƒ ª ¢o-

@ ƒ	T
num	# ‘ Z

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 ñ Ä IPv4 = ÷ ì N ož

5 X L M L H V K R Z L S U D Z V R F N H W

o´`g < †ËÅ( n' † D“ 3qt —B V$n3qty 'ƒ5F Y•…! V „ 2AVï R Fã Q#it ñ o° œbã ‚w™ x`• @ ƒ <(n' † DU@S7 BeR" V)Bã7 G

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 ñ Ä IPv4 ì N ož

```
5XLMLH  VKRZ LS VRFNHWV
1XPEHU 3URFHVV QDPH    7\SH    3URWRFRO /RFDO,3 3RUW  )RUHLJQ,3
      GKFS HOI       5$:     ,&03
      YUUS HOI       5$:     ,&03
      LJPS HOI       5$:     ,*03
      YUUS HOI       5$:     9553
      GKFSF HOI      '*5$0   8'3
      UJ VQPSG       '*5$0   8'3
      ZEDY          '*5$0   8'3
      YUUSBSOXV HOI   '*5$0   8'3
      PSOV HOI       '*5$0   8'3
      UGVBRWKHUBWK    '*5$0   8'3
      UJ VQPSG       '*5$0   8'3
      UJ VVKG        675($0  7&3                                  /,67(1
      UJ WHOQHWG      675($0  7&3                                    /,67
      ZEDUG          675($0  7&3                                  /,67(1
      ZEDUG          675($0  7&3                                  /,67(1
7RWDO
```

< † K y

<	ª ¢
Number	~ Z
Process name	i d f
Type	ì N •º k RAW n P = ÷ ì N k DGRAM n P ƒ G •º k STREAM n P v •ºož
Protocol	# ‘ Z
LocalIP:Port	Î ª IP ª - y € M
ForeignIP:Port	+ € IP ª - y € M
State	Ù Á k Q + TCP ì N Ä Þ #ož

Total	ì N È ƒ

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

1.16 show ip udp

ª P ñ Ä IPv4 UDP ì N k U Y = 3 „ ? UDP € M + Ù U ˆ Æ ož
show ip udp [local-port num]

ª P IPv4 UDP ì N Ï ‹ ›ož
show ip udp statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
local-port num	Î ª € M Z

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 ñ Ä IPv4 UDP ì N ož

```
5XLMLH VKRZ LS XGS
1XPEHU /RFDO $GGUHVV 3HHU $GGUHVV 3URFHVV QDPH
GKFSF HOI
UJ VQPSG
ZEDY
YUUSBSOXV HOI
PSOV HOI
UGVBRWKHUBWK
UJ VQPSG
```

< † K y

<	ª ¢
Number	~ Z
Local Address	Î ª IP ª - y € M

Peer Address	+ € IP ª - y € M
Process name	i d f

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2 ARP

2.1 arp

J0B4.49E50BB206C1>

o¬ u V ª ¢o- -

2.2 arp anti-ip-attack

F å ARP …IP † x àož
arp anti-ip-attack num

Ê Ö ñ Þ . ›ož
no arp anti-ip-attack

o¬ @ ƒ ª ¢o-

@ ƒ	T
num	— å ‡ G ARP ’ n ¾ IP † ƒ kH › 8 <0-100> oð n P ¼ { ARP …IP † x à ož Þ . › 3ož

o¬ Þ . F åo- ó • Õ Ñ k ¨ 3 Ì = d % n † CPU e — å ’ n ¾ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- + 9 x + è † k¨ Ì . ñ) IP + • ARP ž kA E Ñ Ü g F ^ ô G k¬ } † CPU g ª - † ä g / ARP . hož ò ç 4 • † Ý O CPU k + CPU - è Ï à k § € A E Ñ ¿ gož 4 … 2 4 • IP † + CPU - è Ï à k ¨ ª - † ä ž k — å%² ’ n ¾ ñ F ^ ke Ò ñ Ä ¥) IP † C k CPU z ¨ ª - † ä è ž k ¾ • n ¾ ô G Ù Á k … ± A E Ñ Ü + ¥) IP † g F ^ ô Gož
* o Õ Ñ k ¨ ARP ¬ L Ê • kA E Ñ CPU v ñ 3) IP x ¥ ARP n ¾ † ž k• ¨ x à CPU U k œ 4 — å ’ n ¾ k Û … 2 Ì = d % n † + CPU Ï àož x c%² ARP n ¾ IP † ƒ Ú 5 ž k õ î © x à CPU k ï U Y S + À } à Ì ê Ë ² … @ ƒ k - U Y ¼ { ¥ ož
ARP …IP † x à k ¨ I ñ Ì = d % n IP † x à ž ¬ }) A E Ñ F ^ è Ï › Û … x àož ò ç F ^ è Ï › A û - ã karp anti-ip-attack num U Y — å ± 4%² ?ož ¨ F ^ è Ï › A û ¬ ™ Õ Ñ k } i ¯ á 3 o è … k U Y 1 arp anti-ip-attack num — å ± A û Ý k ê ñ ¼ { ¥ ož

o¬ F å †o- 1 y F å ‡ G ARP ’ n ¾ IP † ƒ) 5ož

```
5XLMLH FRQILJ DUS DQWL LS DWWDFN
```

2 y ¼ { ARP …IP † x à ož

```
5XLMLH FRQILJ DUS DQWL LS DWWDFN
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.3 arp cache interface-limit

F å ’ ò N M ARP . ƒ Oož
arp cache interface-limit limit

Ê Ö Þ . F åož
no arp cache interface-limit

o¬ @ ƒ ª ¢o-

@ ƒ	T
limit	6 N M ñ . ARP ƒ O Â Ý ’ ò k , ² Á F å y Á . ARP k H › 8 <0- — Õ u 4 ARP n ¾ O> k0 n P ’ ò N M ARP . ƒ Oož

o¬ Þ . F åo- ó • Õ Ñ ’ ò N M ARP . ƒ Oož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ’ ò N M ARP . ƒ O k U … 2 Ð Þ ARP x à k • — Õ ÿ è Ý O ARP n ¾ k) Ú n ¾ Ï ›ož

o¬ Þ YS= F ï

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.4 arp gratuitous-send interval

F å ž G ² Ë ARP ¬ Lož

arp gratuitous-send interval seconds [number]

¼ { ž G ² Ë ARP ¬ Lož

no arp gratuitous-send

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	G ² Ë ARP ¬ L ž • • œ k % y a k H › 8 <1-3600> ož

seconds

2.5 arp retry interval

F å M n ARP ¬ L ž • • œož
arp retry interval seconds

Ê Ö Þ . F åož
no arp retry interval

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	ARP ¬ L M n ž • U Y — å 1~3600 a k ó • › 1 ož

o¬ Þ . F åo- ARP ¬ L M n ž • • œ 1 ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 2

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	c%² ARP ¬ L G) ƒ k 8 <1-100> ož ¢ — å 1 ž k n P M n ARP ¬ L k Q © G 1) ARP ¬ L †ož

o¬ Þ . F åo- ò ç Z Ä v ñ ARP • ‹ † kARP ¬ L † k G 5) k À e Ý žož

o¬ x X % ”o- ¶ B % ”ož

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ¢ G ë Î — Õ Ä È ¯ g Ù G ARP ¬ L k – Ü à Ì ¯¼ ˆ ¿ | Ê ž k U Y 1 ARP ¬ L M n) ƒ — å 4 %² µ k%² " } 1 M n) ƒ — å ± ß Ýož

o¬ F å †o- 1 y F å Î ª ARP ¬ L M nož

```
5 X L M L H F R Q I L J D U S U H W U \ W L P H V
```

2 y F å Î ª ARP ¬ L M n 1)ož

```
5 X L M L H F R Q I L J D U S U H W U \ W L P H V
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.7 arp timeout

F å ARP Ù Ï Á ARP n ¾ Ý ž ž •ož
arp timeout seconds

Ê Ö Þ . F åož
no arp timeout

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	Ý ž ž • k Y a ‹ ‘ % y k 8 0-2147483ož

o¬ Þ . F åo- Þ . Ý ž ž • 3600 aož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ARP Ý ž — å Q + Á . ñ IP ª - y MAC ª - ¥ 0 Ü • ož Ý ž ž • — å ± Þ ? kARP Ù Ï ‘
¥ 0 n < Þ 1 k x © ARP ƒ ô à Ì k ! - Þ Ú k ñ Y ¬ } Ó k ï4+ož ” ³ Ä Ô ð ¬ } k k é%² " ¬ }
F å ARP Ý ž ž •ož

o¬ F å †o- y 1 R

Ú k U - Á ARP n ¾ q • Üož%² " 7 ¬ — å k } — å ± ß Ýož

o¬ F å †o- 1 y F å Â Ú U Y — å 1000 U ' ` ARPož

```
5XLMLH FRQILJ DUS WUXVWHG
```

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.9 arp trusted aging

F å U ' ` ARP • ÷ ï ož

arp trusted aging

Ê Ö ó • ›ož

no arp trusted aging

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- GSN U ' ` ARP ó • ï ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- … ¥ x X e U ' ` ARP • ÷ ï k ï ž • y Á ARP ï ž • , což ï ž • U Y * N M % ” arp timeout x X — åož

o¬ F å †o- 1 y F å U ' ` arp • ÷ ï ož

```
5XLMLH FRQILJ DUS WUXVWHG DJLQJ
```

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.10 arp trusted user-vlan

F å U ' ` ARP n ¾ ž g VLAN ô Eož

arp trusted user-vlan vid1 translated-vlan vid2

í " U ' ` ARP n ¾ož

no arp trusted user-vlan vid1 translated-vlan vid2

o¬ @ ƒ ª ¢o-

@ ƒ	T
vid1	Æ ˜ — å VID
vid2	ô E e VID

o¬ Þ . F åo- Þ . g VLAN ô E

o¬ x X % "o- ¶ B % "

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- } … 4 x X ÿ | kÙ ¯ o U ' ` ARP ožQ Ä ¨ Æ ˜ G VLAN y U ' ` ARP ÿ | VLAN c ž k õ ¬ } F å 4 x Xož

o¬ F å †o- 1 y Æ ˜ G VLAN 3 k x U ' ` ARP Ž ÿ | VLAN 5 ž k F å ò x X y

5 X L M L H F R Q I L J D U S W U X V W H G X V H U Y O D Q W U D Q V O D W H G Y O D Q

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.11 arp trust-monitor enable

• o ARP U ’ y ož
arp trust-monitor enable

¼ { ARP U ’ y ož
no arp trust-monitor enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ¥ ¼ {

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ¥ x X 9 … 2 arp - á - — arp n ¾ Ú) — Õ Ï ›ož ¨ C N M • o arp U ’ y e k R ¥ N M v ñ arp ¬ L † y

1. ò ç + • n ¾ ¨ k é ë • Á arp n ¾ k w Æ 1 ñ 5 a %² š Ñ ž • e µ NUDg > D U M y h k / 1 • . arp n ¾ — å ï Ù Á w % n arp ¬ L k ¨ ï ž • Ä v ñ + € arp ¾ • k é ‘ n ¾ k k é + N í ” ¥ n ¾ož
2. ò ç + • arp n ¾] Æ ¨ k mac ª - Z G ÿ ¾ • k é g NUD M y . þož
3. ò ç] Ä Á arp n ¾ MAC ª - t ¾ • k - Ú NUD M y . þož

¥ 9 ¨ ARP . i Í 4%² G • i k ñ Y • o ¥ k § € ñ ARP . Å ož
¼ { ¥ e karp n ¾ . y ¾ • ¬ } NUD iož

o¬ F å †o- 1 y • o ARP U ’ y ož

```
5XLMLH FRQILJ LQWHUIDFH JL
5XLMLH FRQILJ LI *LJDELW(WKHUQHW DUS WUXVW PRQLWRU HQDEO
```

2 y ¼ { ARP U ’ y ož

```
5XLMLH FRQILJ LQWHUIDFH JL
5XLMLH FRQILJ LI *LJDELW(WKHUQHW QR DUS WUXVW PRQLWRU HQD
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.12 arp unresolve

F å ARP n ¾ Ì † ä n ¾ Â Ý ƒož
arp unresolve number

Ê Ö ó • ›ož
no arp unresolve

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	Ì † ä ARP n ¾ Â Ý ƒ k H › 8 Â 4 1 k Â Ý ARP n ¾ È Oož ó • › ARP n ¾ È Oož

o¬ Þ . F åo- ARP Ù Ï n Â Ú U Y ¹ Ì † ä n ¾ ARP n ¾ È Oož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ¢ G ë ARP Ù n ß ë Ý O Ì † ä n ¾ k w %² < ž • e Z Ä ƒ â ž k U Y 4 x X ’ ò Ì † ä n ¾ ƒož

o¬ F å †o- 1 y F å Î Ñ Ì † ä n ¾ Â Ý ƒ 500ož
5 X L M L H F R Q I L J D U S X Q U H V R O Y H

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.13 clear arp-cache

í ” ARP Ù Ï n Á ARP ¥ 0 “ £ož ¨ à ¼ • š % ” k k í ” • š VLAN Á ARP n ¾ož
clear arp-cache [trusted] [ip [mask]] | interface interface-name]

no ip proxy-arp

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . Ì F å

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- — Õ W ò ARP U Y n Z Ä è ’ Î Ñ k B ± ¿ à Ì ê ÿ à IP ª - MAC ª -ož A ò — Õ N v ñ%² ARP ¬ L kARP ¬ L G ñ IP ª - ñ ¬ L IP ª - K 9 c%² à Ì k ò — Õ A = 3 ñ ¬ L IP ª - è k — Õ < k G ARP € • k € • MAC ª - — Õ ï Y ß à MAC ª -ož Y i < © W ò ARP ož

o¬ F å †o- 1 y ¨ gigabitEthernet 0/1 o W ò ARP y

```
5 X L M L H F R Q I L J  L Q W H U I D F H  J L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J  L I  * L J D E L W ( W K H U Q H W  L S  S U R [ \  D U S
```

o¬ à • co- 1 y ¨ ø • W ò Õ Ñ kshow ip interface N M 1 U • Proxy ARP © y ONož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.15 local-proxy-arp

¨ SVI N M o Î ª W ò ARP ož
local-proxy-arp

¨ SVI N M ¼ { Î ª W ò ARP ož
no local-proxy-arp

o¬ @ ƒ ª ¢o-

@ ƒ	T

-	-

o¬ Þ . F åo- -

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 2

o¬ ... 6 -o- — Õ • o Î ª W ò ARP e k U Y n Ñ B ± ÿ à Ä ¿ U Ñ MAC ª -ož A ò ¨ — Õ • o € M ‘ Õ Ñ k c € M ï t 8 C œ Y k ¨ • o Î ª ARP W ò e k — Õ N v ñ%² ARP ¬ L k < k W ò G ARP € • k € • MAC ª - — Õ ï Y ß à MAC ª - k ý c Ñ $ • * ’ ´ C è Û ëož i < © Î ª W ò ARP ož

o¬ F å †o- 1 y ¨ VLAN 1 o Î ª W ò ARP ož

```
5 X L M L H F R Q I L J L Q W H U I D F H Y O D Q
5 X L M L H F R Q I L J L I 9 / $ 1 O R F D O S U R [ \ D U S
```

o¬ à • co- 1 y ¨ ø • Î ª W ò ARP Õ Ñ kshow run interface [name] U • N M ¨ local-proxy-arp x Xož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.16 service trustedarp

o U ’ ` ARP ož
service trustedarp

¼ { U ’ ` ARP ož
no service trustedarp

o¬ @ ƒ ª ¢o-	@ ƒ	T
	-	-

o¬ Þ . F åo- Þ . ¼ { U ’ ` ARP

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- — Õ U ' ` ARP ©%² _ … 2 ARP - á k • GSN • %² B ã k ¬ } y GSN • %² Ü … ož

o¬ F å †o- 1 y ¨ ¶ B F å % ” k o service trustedarp ož

5 X L M L H F R Q I L J V H U Y L F H W U X V W H G D U S

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.17 show arp

ª P ª - † ä # ‘ gARP h Ù Ï nož

show arp [interface-type interface-number | trusted [ip [mask]] | [ip [mask] | mac-address | static | complete | incomplete]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type interface-number	ª P 6 C € M ê ñ 8 C € M ARP
trusted	ª P U ' ` ARP n ¾ k ¢ ù Q Ä ¶ B VRF u 4 U ' ` ARPož
ip	IP ª - k ª P 6 IP ª - ARP n ¾ z ò ç 6 trusted ¼ p k é Q ª P U ' ` ARP n ¾ k k é ª P ³ U ' ` ARP n ¾ož
mask	ª P IP ÿ à Ä ARP n ¾; ò ç 6 trusted ¼ p ké Q ª P U ' ` ARP n ¾ k k é ª P ³ U ' ` ARP n ¾ož
static	ª P ñ Ä ² Á arp n ¾, Y C ª P ² Á arp Û ›ož
complete	ª P ñ Ä] Æ † ä Á arp n ¾ož
incomplete	ª P ñ Ä Ì † ä Á arp n ¾ož
mac-address	ª P 6 mac ª - ARP n ¾ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- ª P ARP Ù Ï n k ¿ complete / incomplete ¼ p © Û ã ð ª P Á ARP] † ä n Ì † ä n ¾ož

o¬ F å †o- 1 y ª P show arp ÿ ß È ç y

```
5XLMLH  VKRZ DUS
7RWDO 1XPEHUV RI $US
```

Address	IPv4 ª -
Age(min)	n ¾ ¢ ù v ù k + 9 Î Ñ IP, ª P'-' k + 9 ² Á n ¾ k ª P <static>, + 9 Á n ¾ kª P n ¾] Æ . ñ Ú x ž • 4 k% y ã Uož
Hardware	F ^ ª - k / 48 bit MAC ª - k ? 16 bit %² Á k '.' œ •ož ¹ ò n Pož
Type	¢ ù Q Ä arpa ›
Interface	ARP n ¾ + • 3 C N Mož + 9 ² Á ARP n ¾ kÄ ž ˜ ª • — ' Î k= œ © ² Á ARP IP Z Ä ¨ — Õ ` ~ + à < ož
Origin	² Á $ 5 ª ¾ Û › k Configure ô W F å k Authentication n P * • š ÿ è ož

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

2.18 show arp counter

ª P ARP Ù n arp n ¾ ƒ Oož
show arp counter

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % "o- Ô Ó % "

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P ARP Ù n arp n ¾ ƒ Oož

```
5XLMLH VKR DUS FRXQWHU
$53 /LPLW
&RXQW RI VWDWLF HQWULHV
&RXQW RI G\QDPLF HQWULHV      FRPSOHWH      LQFRPSOHWH
7RWDO
```

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

2.19 show arp detail

ª P ARP Ù n ¦Â ’ Îož

show arp detail [interface-type interface-number | trusted [ip [mask]] | [ip [mask] | mac-address | static | complete | incomplete]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type interface-number	ª P 6 C € M ê ñ 8 C € M ARP
trusted	ª P U ’ ` ARP n ¾ k ¢ ù Q Ä ¶ B VRF u 4 U ’ ` ARPož
ip	ip ª - k ª P 6 ip ª - ARP n ¾
ip mask	ª P ip mask ñ , à < ARP n ¾
mac-address	ª P 6 mac ª - ARP n ¾
static	ª P ñ Ä ² Á arp n ¾
complete	ª P ñ Ä] Æ † ä Á arp n ¾
incomplete	ª P ñ Ä Ì † ä Á arp n ¾

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 1

o¬ … 6 -o- ¢ ï Ý ò 0 ARP ¦Â ’ Î k A ò ARP • º g Áo• ² Áo• Î ªo• U ’ ` ho• ñ ¨ 8 C € M ž k U Y … 4 x Xož

" ´ Û & min_value Ö max_value â ” µ Ð b þ (¡ µ Û & subvlan ³ • ARP ¶ » d

o¬ F å †o- 1 y ª P ARP Ù n ¦Â ’ Îož

```
5 X L M L H  V K R Z  D U S  G H W D L O
, 3  $ G G U H V V  0 $ &  $ G G U H V V  7 \ S H  $ J H  P L Q  , Q W H U I D F H  3 R U


G  E  E E  / Ry P L F  9 O  7 H
```

2.: + 9 u 4 QINQ 0 0 0 @ € ° À À 0 0 0 Ã 6 X E 9 O D Q

G I E E /R F D O 9 O

ARP Ù Ï n _ < m # T ò y

<	T
IP Address	F ^ ª - + • IP ª -ož
MAC Address	IP ª - + • F ^ ª -ož
Type	ARP • º k , ² Áo• Áo• U ' `o• Î Ñ š _ • ºož
Age	ARP . ñ Ú x ž • k % y ã Uož
Interface	IP ª - ¼ û C N Mož
Port	ARP ¼ û 8 C € Mož
SubVlan	ARP ¼ û subvlanož
InnerVlan	ARP ¼ û Ä C vlan k / CE-VLAN
Location	Local y n P ARP n ¾ © Î € — Õ ÿ è ê . ; Remote y n P ARP n ¾ © * € à ¼ c 5 Û

o¬ U P ' Îo- -

o¬ u V ª ¢o- - 480 g /TT2 1

```
,QWHUIDFH                5HFHLYHG   5HFHLYHG 5HFHLYHG   6HQW      6HQW
1DPH                    5
HTXHVWV  5HSOLHV  2WKHUV  5HTXHVWV  5HSOLHV  [redacted]

*LJDELW(WKHUQHW
*LJDELW(WKHUQHW
*LJDELW(WKHUQHW
*LJDELW(WKHUQHW
*LJDELW(WKHUQHW
*LJDELW(WKHUQHW
*LJDELW(WKHUQHW
/RRSEDFN
```

<†Ky

[redacted]

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P Á ARP n ¾ ï ž •ož

```
5 X L M L H  V K R Z  D U S  W L P H R X W
, Q W H U I D F H  D U S  W L P H R X W  V H F

9 / $ 1
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.22 show ip arp

ª P ª - † ä # ‘ gARP h Ù Ï nož

show ip arp

o¬ @ ƒ ª ¢o-

<	ª ¢
Protocol	à Ì ª - # ‘ k ¥ < ® Internetož
Address	F ^ ª - + • IP ª -ož
Age (min)	ARP Ù Ï “ £ ¨ ž • k Y ã U ‹ož ò ç © Î ª ê ñ ² Á F å k ¥ < › < ? ¿“-” n Pož
Hardware	IP ª - + • F ^ ª -ož
Type	F ^ ª - • º k Y ß à ª - ® ARPAož
Interface	IP ª - ¼ û N Mož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3 IPv6

3.1 clear ipv6 neighbors

Ž ” Á . ñ > Dož

clear ipv6 neighbors [interface-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	N M d f k n P í ” 6 N M Á > D

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- A _ " â V „ Â , " ‘ f ´ • vlan • N _ ƒ b â V „ W , d

o¬ F å †o- 1 y Ž ” ñ Ä * Á . ñ > Dož

```
5 X L M L H  F O H D U  L S Y  Q H L J K E R U V
```

2 y Ž ” gigabitEthernet 0/1 M ñ Ä Á . > Dož

```
5 X L M L H  F O H D U  L S Y  Q H L J K E R U V  J L J D E L W ( W K H U Q H W
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3.2 ipv6 address

F å IPv6 ª - k … * ù Öož

ipv6 address ipv6-address | prefix-length

í ” 6 IPv6 ª -ož

no ipv6 address ipv6-address | prefix-length

F å eui-64 ” IPv6 ª -ož

ipv6 address ipv6-prefix | prefix-length eui-64

í ” 6 eui-64 ” IPv6 ª -ož
no ipv6 address ipv6-prefix | prefix-length eui-64

… * ù Ö Û F å IPv6 ª - k , eui-64 ” ª -ož
ipv6 address prefix-name sub-bits | prefix-length [eui-64]

í ” 6 … * ù Ö F å IPv6 ª - k , eui-64 ” ª -ož
no ipv6 address prefix-name sub-bits| prefix-length [eui-64]

í ” N M ñ Ä IPv6 ª -
no ipv6 address

o¬ @ ƒ ª ¢o-

@ ƒ	T
ipv6-address	IPV6 ª - k · À 8 ² RFC4291 # ª - ¥ ” k ? ª - ¿ $ • È Z œ • k ? ¿) 16 A Ô k ¹ ò ƒ n P.
ipv6-prefix	IPV6 ª - ù Ö k · À 8 ² RFC4291 # ª - ¥ ” k ? ª - ¿ $ • È Z œ • k ? ¿) 16 A Ô k ¹ ò ƒ n P.
prefix-length	IPV6 ù Ö x † / IPV6 ª - W n à Ì B ãož
prefix-name	* ù Ö d ož … 6 * ù Ö ÿ è N M ª -ož
sub-bits	ÿ ù Ö A Ô Ñ A Ô ›ož › * ù Ö ù Ö ` w ÿ è N M ª -ož › n P c } 8 ² RFC4291 T È Z n P což
eui-64	n P ÿ è IPV6 ª - F å ª - ù Ö y 64 A Ô N M ID ö œ … Á èož

o¬ Þ . F åo- — ª -

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢%² IPV6 N M t ë • w e è Ù Á UP ž ; " © Ï 1 ¥ N M ÿ è e è Î ª ª -ož
N M IPV6 ª - - U Y … * ù Ö Ñ ò ÿ èož ¿ Ñ ò < © IPv6 ª -= * ù Ö +

```
5XLMLH FRQILJ LI *LJDELW(WKHUQHW      LSY DGGUHVV          HXL
5XLMLH FRQILJ LI *LJDELW(WKHUQHW      QR LSY DGGUHVV          HX
```

2 y µ † ÿ © ¨ GigabitEthernet 0/1 M … * ù Ö F å ª -ož

```
5XLMLH FRQILJ LI *LJDELW(WKHUQHW      LSY DGGUHVV P\ SUHILL[
```

• — * ù Ö my-prefix F å ù Ö © 2001:1111:2222::/48 k ; " ÿ è N M IPv6 ª - © 2001:1111:2222:7272::72/64 d

o¬ à • co- … show ipv6 address y

o¬ F å †o- 1 y ¨

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.5 ipv6 general-prefix

F å IPv6 * ù Öož

ipv6 general-prefix prefix-name ipv6-prefix | prefix-length

í ” IPv6 * ù Öož

no ipv6 general-prefix prefix-name ipv6-prefix | prefix-length

o¬ @ ƒ ª ¢o-

@ ƒ	T
prefix-name	* ù Ö d ož
ipv6-prefix	* ù Ö à Ì ù Ö ›ož › n P c } 8 ² RFC4291 T È Z n P což
prefix-length	* ù Ö x †ož

o¬ Þ . F åo- Ì F å

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … * ù Ö U Y • Ž à Ì Ú Zož œ * ù Ö # ß%² ù Ö k ® Ú ¾ x Ô ù Ö U Y – ož ¢ * ù Ö J ž k ? – * ù Ö Ô ù Ö < k æ 5 J ož à Ì Ú Z J ž k Q } “ w%² * ù Ö / Uož %² * ù Ö U Y m Ú ù Öož

? ¾ x Ô ù Ö * o ¨ N M IPv6 ª - F å ož

o¬ u V ª ¢o- -

3.6 ipv6 hop-limit

F å G % n † é ƒož
ipv6 hop-limit value

Ê Ö Þ . F åož
no ipv6 hop-limit

o¬ @ ƒ ª ¢o-

@ ƒ	T
value	é ƒ › k 8 © 1 --- 255ož

o¬ Þ . F åo- ó • › © 64ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X Q + % n † ÿ | k + Ú n † — |ož

o¬ F å †o- 1 y F å G % n † é ƒ 100ož
5 X L M L H F R Q I L J L S Y K R S O L P L W

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.7 ipv6 icmp error-interval

F å ICMPv6 † ß Ý ƒ Î G , äož
ipv6 icmp error-interval too-big milliseconds [bucket-size]

F å ¿ ICMPv6 [j † G , äož
ipv6 icmp error-interval milliseconds [bucket-size]

ICMPv6 † ß Ý ƒ Î G , ä Ê Ö è Þ . ›ož
no ipv6 icmp error-interval too-big milliseconds [bucket-size]

¿ ICMPv6 [j † G , ä Ê Ö è Þ . ›ož
no ipv6 icmp error-interval milliseconds [bucket-size]

o¬ @ ƒ ª ¢o-

@ ƒ	T
milliseconds	X Î ó • u Ê k H › 8 0~2147483647 k Þ . › 100 k % y D aož H › 0 ž k n P ’ ò ICMPv6 [j † G , äož
bucket-size	X Î ¹ X Î ƒ k H › 8 1~200 k Þ . › 10ož

o¬ Þ . F åo- 100 D a G 10 ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

A5175 7Tc 0 p7Tj 7-BT 52.-7.8 32072109CDF3 06065B 07TD <E0813 062B1 Tf -0.0028 T7 TT0 1 Tf 3.247 0 Td (ICMPv6)Tj /C2_

o¬ u V ª ¢o- -

3.8 ipv6 mtu

F å IPv6 Â Ý n ÿ % « gMTU hož
ipv6 mtu bytes

Ê Ö Þ . F åož
no ipv6 mtu

o¬ @ ƒ ª ¢o-

@ ƒ	T
bytes	IPv6 Â Ý n ÿ % « k Y - % y k 8 1280~1500(Â Ý › I N M mtu ' ò k c N M • º Â Ý › c)ož

o¬ Þ . F åo- Þ . N M x X mtu F å › , což

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç%² IPv6 † Ý IPv6 MTU Ý 4 k RGOS ÷ ^ < k + † g ãož ñ Ä ¨ c%² Ò ò à < — Õ k ¿ ; û N M IPv6 MTU %² }%² ož

o¬ F å †o- 1 y 1 GigabitEthernet 0/1 N M IPv6 MTU › — 1400 -ož

```
5 X L M L H F R Q I L J L Q W H U I D F H * L J D E L W ( W K H U Q H W
5 X L M L H F R Q I L J L I * L J D E L W ( W K H U Q H W L S Y P W X
```

o¬ à • co- * show ipv6 interface ò 0 N M F å mtu ›ož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.9 ipv6 nd cache interface-limit

F å ’ ò N M . > D ƒ Oož

ipv6 nd cache interface-limit value

Ê Ö Þ . F åož

no ipv6 nd cache interface-limit

o¬ @ ƒ ª ¢o-

value	> D ¬ L(NS) † ƒ Oož ¢ — å › 0 ž n P Š 2 ¥ N M ª - o ª - Ï s yož 8 y0-600ož Þ . 1	Ipv6

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ ¨ N M F å%² • IPV6 ª - ù } o ª - Ï s y k ò ç y ñ Ï s 4 k ; " — Õ 1 N v)
ª - ¥ ª - ipv6 †ož¥ x X ¨ F å ž • ñ Ê e k +] Ï s ª - M • g%² 2 ª - Ï s y kò ç
M • y Z Ä Ï s k ¥ ª - 1 U Y 3 o … ož

o¬ F å †o- 1 y “ w M Ö ª - Ï µ y • œ 10sož
5 X L M L H F R Q I L J L S Y Q G G D G U H W U \

o¬ à • co- * show run U Y 0 ñ F å © k ÿ |ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.12 ipv6 nd managed-config-flag

F å è ˜ ¸ s † managed address configuration ö º yož
ipv6 nd managed-config-flag

í ” ¥ ö º yož
no ipv6 nd managed-config-flag

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . — F åož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ ö º y — å Ð 4 v ñ ¥ è ˜ ¸ s Ñ © k } … ¶ Ù Á F å Û B H ª -ož ò ç F å 4 ¥ ö º y k
1 … ¶ Ù Á F å Û B ± ª - k k é … ož

o¬ F å †o- 1 y ¨ GigabitEthernet 0/1 N M F å è ˜ ¸ s † managed address configuration ö º yož

```
5XLMLH FRQILJ LI *LJDELW(WKHUQHW LSY QG PDQDJHG FRQILJ IOD
```

o¬ à • co- * show ipv6 interface ò 0 N M F å Ä Ù Á ª - F å ö ºož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.13 ipv6 nd max-opt

F å — Õ Ô ò ND # ¾ ƒ O ’ òož
ipv6 nd max-opt value

Ê Ö Þ . F åož
no ipv6 nd max-opt

o¬ @ ƒ ª ¢o-

@ ƒ	T
value	u 4 # ¾ ƒ k › 8 y 1-100ož

o¬ Þ . F åo- Þ . Ô ò # ¾ ƒ 10ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- F å — Õ Ô ò ND # ¾ ƒ O ’ ò k A ò › e è C ª - # ¾ kMTU # ¾ k M g # ¾ k ù Ö # ¾ož

o¬ F å †o- 1 y F å — Õ Ô ò ND # ¾ ’ ò 20ož

```
5XLMLH FRQILJ LSY QG PD[ RSW
```

o¬ à • co- * show run ò 0 F å © k ÿ |ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.14 ipv6 nd ns-interval

F å N M > D ¬ L(NS) M n • œož

ipv6 nd ns-interval milliseconds

Ê Ö Þ . F åož

no ipv6 nd ns-interval

o¬ @ ƒ ª ¢o-

@ ƒ	T
milliseconds	> D ¬ L M n • œ k Y D a % y k › 8 y 1000-4294967295 ož

o¬ Þ . F åo- 9 Ê µ — Õ G è ˜ ¸ s †(RA) ž k Þ . › 0 g n P Ì 6 h z

9 O ò — Õ ï G > D ¬ L M n • œ ž k Þ . › 1000 D aož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- F å › 1 ¨ è ˜ ¸ s †(RA) t G b ß > k c ž ¥ › - t — Õ ï … ož • ‘ } 1 ¥ › — å ± ß 4ož

o¬ F å †o- 1

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . — F å

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- — å 4 4 ö º y e k— Õ G ß è ˜ ¸ s † ö º y t å yož Ñ v ñ ö º y e k1 … dhcpv6 Û B H ” IPv6 ª - Y Ù ¿ U ’ Î g F åož ¢ managed address configuration t — å ž k ó • other stateful configuration - t — åož

o¬ F å †o- 1 y ¨ GigabitEthernet 0/1 N M F å è ˜ ¸ s † other stateful configuration ö º yož 5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W L S Y Q G R W K H U F R Q I L J I O D J

o¬ à • co- * show ipv6 interface ò 0 ñ N M © k F å 4 Ä Ù Á F å ö º g ” ª - Ù ¿ F å hož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.16 ipv6 nd prefix

F å è ˜ ¸ s †(RA) ñ m ª - ù Öož

ipv6 nd prefix { ipv6-prefix/prefix-length

preferred-lifetime	Ñ v ñ è ˜ ¸ s ù Ö e • Ù # Ä | ž • k H › 8 0-4294967295 k Þ . 7 Þož

at valid-date preferred-date

‘ N " d

o¬ à • co- * show ipv6 interface [interface-id] ra-info ò 0 è ˜ ¸ s † ù Ö ’ Î

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.17 ipv6 nd ra-hoplimit

F å N M G è ˜ ¸ s(RA) † é ƒož
ipv6 nd ra-hoplimit value

Ê Ö Þ . F åož
no ipv6 nd ra-hoplimit

o¬ @ ƒ ª ¢o-

@ ƒ	T
value	è ˜ ¸ s(RA) † é ƒ › k H › 8 0-255ož Þ . © 64 éož

o¬ Þ . F åo- Þ . › © 64ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ GigabitEthernet 0/1 N M F å G è ˜ ¸ s † é ƒ 110ož
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W L S Y Q G U D K R S O L P L W

o¬ à • co- * show ipv6 interface [interface-id] ra-info ò 0 è ˜ ¸ s † é ƒ ’ ò ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.18 ipv6 nd ra-interval

F å N M G è ˜ ¸ s(RA) † • œož

ipv6 nd ra-interval { seconds | min-max min_value max_value }

Ê Ö Þ . F åož

no ipv6 nd ra-interval

3.19 ipv6 nd ra-lifetime

F å N M G è ˜¸ s(RA) † è ˜ÿ Ê ož
ipv6 nd ra-lifetime seconds

Ê Ö Þ . F åož
no ipv6 nd ra-lifetime

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	¥ — Õ • ¥ N M Þ . — Õ Ä	ž • k H › 8 0-9000ož Þ . © 1800 aož

o¬ Þ . F åo- 1800 a

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- è ˜ÿ Ê < ¨ 9 ? è ˜¸ s(RA) † k ¥ › 6 ¢ 4 ¥ N M ñ ¨ e è Ñ U Y 1 ¥ — Õ
• Þ . — Õ ž •ož ò ç — å › 0 n P Ç t ¢ • Þ . — Õož ¢ — å ³ 0 › ž } h Þ ¥ › · À Ý 9 ˆ 9
— Õ G è ˜¸ s(RA) † • œ(ra-interval) ož

o¬ F å †o- 1 y ¨ GigabitEthernet 0/1 N M F å G è ˜¸ s † ÿ Ê 2000 aož
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W L S Y Q G U D O L I H W L P H

o¬ à • co- * show ipv6 interface [interface-id] ra-info ò 0 è ˜¸ s † 4 è ˜ ÿ x Êož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.20 ipv6 nd ra-mtu

F å N M G è ˜¸ s(RA) † MTUož
ipv6 nd ra-mtu value

Ê Ö Þ . F åož

no ipv6 nd ra-mtu

o¬ @ ƒ ª ¢o-

@ ƒ	T
value	è ˜ ¸ s(RA) † MTU < › k H › 8 0-4294967295ož Þ . IPv6 MTU ‘ 4%² ož

o¬ Þ . F åo- à Ì N M IPv6 MTU ›ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç 6 0 k è ˜ ¸ s < k k MTU # ¾ož

o¬ F å †o- 1 y ¨ N M F å G è ˜ ¸ s † MTU 1400 -ož

5 X L M L H F R Q I L J L I L S Y Q G U D P W X

o¬ à • co- * show ipv6 interface [interface-id] ra-info ò 0 è ˜ ¸ s † mtu ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.21 ipv6 nd reachable-time

F å > D t • U ñ ž •ož

ipv6 nd reachable-time milliseconds

Ê Ö Þ . F å

no ipv6 nd reachable-time

o¬ @ ƒ ª ¢o-

@ ƒ	T
milliseconds	> D t • U ñ ž • k Y D a % y k 8 y 0-3600000 ož Þ . 30 aož

o¬ Þ . F åo- ¨ è ˜ ¸ s †(RA) Þ . › 0 g n P Ì 6 h k — Õ \ ¨ > D G ë g > D t • U ñ 4 Ò ž

- 30000ms(30 a)ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- — Õ * ¥ F å ž • Û y U > D k ñ — å ž • Þ ? Þ v 5 U Y ¾ ½ y ñ > D â | k x © 1 ~
Ë ¾ Ú à Ì k !o• ƒ ô — Õ ¾ Ú Ï ›ož œ 4 • ‘ 1 ¥ ž • F å 4ož
F å › 1 ¨ è ˜ ¸ s †(RA) t G b ß > k c ž ¥ › - t — Õ ï … ož ò ç — å › 0 n P — Õ Ì
6 ¥ ž • k / … Þ . ›ož

o¬ F å †o- 1 y ¨ GigabitEthernet 0/1 N M F å > D t • U ñ ž • 1000 aož
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W L S Y Q G U H D F K D E O H W L P H

o¬ à • co- * show ipv6 interface ò 0 è ˜ ¸ s † è ˜ U ž • ›

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.22 ipv6 nd stale-time

F å > D ‘ 4 stale Ù Á ž •ož
ipv6 nd stale-time seconds

Ê Ö Þ . F å
no ipv6 nd stale-time

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	> D stale Ù Á ‘ 4 ž • k Y a % y k 8 y 0-86400 ož Þ . 3600 aož

o¬ Þ . F åo- > D Ù Á g ñ stale Ù Á 4 Ò ž • k ó • 1hož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ F å U “ w stale Ù Á 4 Ò ž • k ¥ ž • Ê e g > D U yož F å ž • Þ ? Þ v 5 U Y ¾ ½

y ñ > D â | k x © 1 ~ Ë ¾ Ú à Ì k !o• ƒ ô — Õ ¾ Ú Ï ›ož œ 4 • ‘ 1 ¥ ž • F å 4ož

o¬ F å †o- 1 y F å — Õ > D stale ü g ž • 600sož

```
5XLMLH FRQILJ LSY QG VWDOH WLPH
```

o¬ à • co- * show run U Y ò 0 F å © k ÿ |

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.23 ipv6 nd suppress-ra

ò ¨ N M G è ˜ ¸ s(RA) †ož

ipv6 nd suppress-ra

¨ N M G RA †ož

no ipv6 nd suppress-ra

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ¨ IPv6 N M 1 k G è ˜ ¸ s †ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ GigabitEthernet 0/1 N M ò G è ˜ ¸ s †ož

```
5XLMLH FRQILJ LI *LJDELW(WKHUQHW LSY QG VXSSUHVV UD
```

o¬ à • co- * show ipv6 interface ò 0 RA † G © k t òož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.24 ipv6 nd unresolved

F å Ì † ä > D n ¾ Â Ý ƒ Oož

ipv6 nd unresolved number

Ê Ö Þ . F åož

no ipv6 nd unresolved

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	Ì † ä > D n ¾ ’ ò ƒ kÂ 4 H › 1 kÂ Ý H › — Õ u 4 > D n ¾ Oož

o¬ Þ . F åo- ó • › 0 k n P ’ ò k / I ’ 9 — Õ u 4 > D n ¾ Oož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4 … 2 Ð Þ þ T x à - ÿ è Ý O Ì † ä ND n ¾ k) n ¾ Ï › k U Y * F å ’ ò Ì † ä ND n ¾ ƒ ož

o¬ F å †o- 1 y F å Ì † ä > D n ¾ ’ ò ƒ 200ož

5 X L M L H F R Q I L J L S Y Q G X Q U H V R O Y H G

o¬ à • co- * s show run ò 0 F å © k%²

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.25 ipv6 neighbor

F å%² ² Á > Dož

ipv6 neighbor ipv6-address interface-id hardware-address

í ”%² ² Á > Dož

no ipv6 neighbor ipv6-address interface-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
ipv6-address	> D IPV6 ª - k · À 8 ² RFC4291 # ª - n P ¥ ”ož
interface-id	6 ¥ > D ñ ¨ à Ì N M g , Routed Port,L3 AP M y SVI N M hož
hardware-address	> D e è ª - k / Y XXXX.XXXX.XXXX n P 48 y MAC ª - k’X’ n P ¹ ò ƒož

o¬ Þ . F åo- Z Ä F å ` ~ ² Á > Dož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X • w ARP x X k ² Á > D Q F å ¨ • o IPv6 # ‘ N M k ò ç } F å > D] Æ * NDP ñ w ¥ ¨ > D n k ; " ¥ Á ÿ è > D 1 ô E ² Á ož F å ² Á > D ò ç Ä | k 1 È © Ô 9 Reachable Ù Áož — | ² Á > D k © 6 F å ² Á > D IPV6 ª - k N M F å ª - F g ¨ ¥ N M `%² IPV6 ª - à < Ä k ê ¥ N M ª - Ï s h k 4 ž ƒ G k 7 ² Á > D 6 mac ª - ô Gož — | ² Á > D k Ô 9 inactive Ù Á k U Y * show ipv6 neighbor static x X ò 0 ¥ ² Á > D Ä | Å Ù Áož … clear ipv6 neighbors x X 1 Ž ” ñ Ä Á ñ (/ * NDP) > Dož

o¬ F å †o- 1 y ¨ SVI 1 F å%² ² Á > Dož

5 X L M L H F R Q I L J L S Y Q H L J K E R U Y O D Q G I

o¬ à • co- … show ipv6 neighbors x X ò 0 > D ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.26 ipv6 ns-linklocal-src

G > D ¬ L ž 1 ò … e è Î ª ª - • › ª -ož

ipv6 ns-linklocal-src

G > D ¬ L ž ò … e è Î ª ª - • › ª - kò © ÿ G) IPv6 ª - 7 RFC3484 # + … e è Î ª ª - ê ñ ¶ ñ % n ª -ož

no ipv6 ns-linklocal-src

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- G > D ¬ L ž k È © Y e è Î ª ª - • › ª -ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ G > D ¬ L ž ò … e è Î ª ª - • › ª -ož

5 X L M L H F R Q I L J Q R L S Y Q V O L Q N O R F D O V U F

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.27 ipv6 redirects

• o ICMPv6 M gož

ipv6 redirects

¼ { ICMPv6 M gož

no ipv6 redirects

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . • o ICMPv6 M gož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ GigabitEthernet 0/1 N M • o ICMPv6 M gož

5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W L S Y U H G L U H F W V

o¬ à • co- * show ipv6 interface ò 0 N M © k ª • G ICMPv6 M gož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.28 ipv6 source-route

F å — Õ ô G k Ä è Ù B IPv6 †ož

ipv6 source-route

W 2 ô G k Ä è Ù B IPv6 †ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

3.29 show ipv6 address

ª P IPv6 ª - ’ Îož

show ipv6 address [interface-name]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	N M d f k Þ . ª P ñ Ä IPv6 ª -ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 Î — Õ F å ñ Ä IPv6 ª -ož

```
 5XLMLH VKRZ LSY DGGU
*OREDO XQLFDVW DGGUHVV OLPLW       *OREDO XQLFDVW DGGUHVV FRX
7HQWDWLYH DGGUHVV FRXQW    'XSOLFDWH DGGUHVV FRXQW
3UHIHUUHG DGGUHVV FRXQW    'HSUHFDWHG DGGUHVV FRXQW
  *LJDELW(WKHUQHW
                                        7HQWDWLYH
  3UHIHUUHG OLIHWLPH ,1),1,7( 9DOLG OLIHWLPH ,1),1,7(
    IH    G  I II IHIE GHE                  7HQWDWLYH
  3UHIHUUHG OLIHWLPH ,1),1,7( 9DOLG OLIHWLPH ,1),1,7(
                                        7HQWDWLYH
  3UHIHUUHG OLIHWLPH ,1),1,7( 9DOLG OLIHWLPH ,1),1,7(
5XLMLH
```

2 y ò 0 Î — Õ N M GigabitEthernet 0/1 F å IPv6 ª -ož

```
 5XLMLH VKRZ LSY DGGU JL
*OREDO XQLFDVW DGGUHVV FRXQW
7HQWDWLYH DGGUHVV FRXQW    'XSOLFDWH DGGUHVV FRXQW
3UHIHUUHG DGGUHVV FRXQW    'HSUHFDWHG DGGUHVV FRXQW
```

```
                                        7HQWDWLYH
  3UHIHUUHG OLIHWLPH ,1),1,7( 9DOLG OLIHWLPH ,1),1,7(
    IH     G  I II IHIE GHE                  7HQWDWLYH
  3UHIHUUHG OLIHWLPH ,1),1,7( 9DOLG OLIHWLPH ,1),1,7(
                                        7HQWDWLYH
  3UHIHUUHG OLIHWLPH ,1),1,7( 9DOLG OLIHWLPH ,1),1,7(
5XLMLH
```

< † K y

<	ª ¢
Global unicast address count	4 N M F å ¶ ñ % n IPv6 ª - ƒ
Tentative address count	ž ª - ƒ
Duplicate address count	G ÿ Ï s ª - ƒ
Preferred address count	Ù # ª - ƒ
Deprecated address count	Ê ª - ƒ
Preferred lifetime	Ù # ÿ x Ê
Valid lifetime	Ä | ÿ x Ê

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3.30 show ipv6 general-prefix

ª P * ù Ö ù Ö ’ Îož

show ipv6 general-prefix

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ô W F å * ù Ö k DHCPv6 ï € . ñ * ù Ö k C k ª P ß Ûož

o¬ F å †o- 1 y ª P * ù Ö ’ Îož

```
5XLMLH  VKRZ LSY  JHQHUDO SUHIL[
7KHUH LV  JHQHUDO SUHIL[
,3Y  JHQHUDO SUHIL[ P\ SUHIL[  DFTXLUHG YLD 0DQXDO FRQILJXUDWLRQ
```

< † K y

<	ª ¢
There is	¢ ù ¨ * ù Ö ƒ
IPv6 general prefix	* ù Ö d f
acquired via	H ± • ”
Prefix/len	À } ù Ö ç n

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3.31 show ipv6 interface

ª P IPV6 N M ’ Îož

show ipv6 interface [[interface-id] [ra-info]] [brief [interface-id]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	N M g , Y ß à N Mo• aggregateport N Mo•SVI N M h k Þ . ª P ñ Ä N Mož
ra-info	ò 0 ¥ N M ¼ 9 G RA † @ ƒ ’ Îož
brief	ª P N M •} ’ Î g N M Ù Á y ª - ’ Î h

o¬ x X % ”o-

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * ¥ x X U Y ò 0 IPV6 N M ª - F åo•ND F å Y C , ¼ Ï ‹ ’ Îož

o¬ F å †o- 1 y ª P IPV6 N M ’ Îož

```
5XLMLH  VKRZ LSY  LQWHUIDFH YODQ
,QWHUIDFH YODQ  LV 8S  LILQGH[
DGGUHVV HV
```

```
VWDWLVWLFV  5$ RXW LQ LQFRQVLVWHQW        56 LQSXW
/LQN OD\HU DGGUHVV
3K\VLFDO 078
1' URXWHU DGYHUWLVHPHQWV OLYH IRU     VHFRQGV
1' URXWHU DGYHUWLVHPHQWV DUH VHQW HYHU\     VHFRQGV      !
)ODJV  0 2  $GY 078
1' DGYHUWLVHG UHDFKDEOH WLPH LV  PLOOLVHFRQGV
1' DGYHUWLVHG UHWUDQVPLW WLPH LV  PLOOLVHFRQGV
1' DGYHUWLVHG &XU+RS/LPLW LV
3UHIL[HV  WRWDO
IHF          'HI $XWR YOWLPH       SOWLPH       IODJV  /$
```

¼ 9 ra-info _ < m # y

<	ª ¢
RA timer is stopped (on)	n P ž G è ˜ ¸ s † ž ˜ © k ø •ož
waits	n P] Æ v ñ è ˜ ¬ L † x Z Ä ¿ • ‹ ƒož
initcount	n P RA ž ˜ M • o ž ì ÷ G ß è ˜ ¸ s † ƒož
RA(out/in/inconsistent)	Out y n P G ß è ˜ ¸ s † ƒož in y n P v ñ è ˜ ¸ s † ƒož inconsistent yn P v ñ è ˜ ¸ s † y è ˜ ï ¸ s † @ ƒ %² † ƒož
RS(input)	n P v ñ è ˜ ¬ L † ƒož
Link-layer address	¥ N M e è C ª -ož
Physical MTU	¥ N M e è MTUož
!M | M	!M n P è ˜ ¸ s † ož managed-config-flag ö º y Z Ä å ož M: Þ Ã µ , Fož
!O | O	!O n P è ˜ ¸ s † ož other-config-flag ö º y Z Ä å ož O y Þ Ã µ , Fož

¼ 9 ra-info ù Ö n(Prefix) _ < P Å y

<	ª ¢
total	n P ¥ N M ù Ö ƒož
fec0:1:1:1::/64	À } ù Öož
Def	¥ ö º n P ¥ ù Ö … N M Þ . ù Ö @ ƒ F åož
Auto | CFG	Auto ö º n P ¥ ù Ö © 9 ¨ N M F å 4 , • IPV6 ª - ò ÿ è ù Ö, CFG ö º n P ¥ ù Ö © ô W F å ož

!Adv

vltime	n P ¥ ù Ö Ä | ž •(a)ož
pltime	n P ¥ ù Ö Ù # Ä | ž •(a)ož
L | !L	L ö º n P ¥ ù Ö on-link y å ož !L Þ Ã µ , Fož
A | !A	A ö º n P ¥ ù Ö auto-config y å , !A Þ Ã µ , Fož

```
IH        II IH        G            YODQ
```

2 yªP > D ¦Â'Î

```
5XLMLH  VKRZ LSY  QHLJKERUV YHUERVH
,3Y  $GGUHVV  /LQNOD\HU $GGU ,QWHUIDFH
              G  I        YODQ
       6WDWH  5HDFK + $JH   DVNHG
IH       II IH          G  I        YODQ
       6WDWH  5HDFK + $JH   DVNHG
```

< † K y

<	ª ¢
IPv6 Address	> D IPV6 ª -
Linklayer Addr	e è ª - / Mac ª - k ò ç Ì ± ñ é ª P incomplete
Interface	¥ > D ñ ¨ N M
State	> D Ù Á y state/H(R) STATE › ò y INCMP(Incomplete)— ¥ > D ª - † ä 3 ¨ g k > D ¬ L(NS) †] Æ G x © Z Ä v ñ > D • ‹ †(NA)ož REACH(Reachable) — n P R — Õ ñ > D © * k ¨ ¥ Ù Á g > D G † ž ¬ } Ì Ù •ožSTALE — n P > D t • U ñ ž •] Æ ñ Ê k Ô ¨ ¥ Ù Á ž — Õ ¬ } Ì Ù • + ñ Ä † G ñ ¥ > D k 4 ž / 1 o NUD (Neighbor Unreachability Detection) ož DELAY— n P Ä † g Ô 9 STALE Ù Á > D G k4 ž Ù Á STALE ô E DELAY Ù Á k ¨ DELAY_FIRST_PROBE_TIME seconds(5 a) Ä ò ç Z Ä v ñ > D U Å * = ' Î k ; " Ù Á 1 DELAY ô E PROBE k c ž g ¥ > D G > D ¬ L †(NS) k 3 ” o NUDož PROBE— n P NUD] Æ o k y > D U Å k ? œ RetransTimer milliseconds g > D G > D ¬ L(NS) † + ñ v ñ 4 > D • ‹ ê ñ G > D ¬ L † ƒ O] ñ ' › MAX_UNICAST_SOLICIT(3)

```
G I DE *LJDELW(WKHUQHW $&7,9(
G I DF 9/$1 ,1$&7,9(
```

< † K y

<	ª ¢
IPv6 Address	² Á > D IPV6 ª -
Linklayer Addr	F å e è ª - / Mac ª -
Interface	¥ > D ñ ¨ N M
State	² Á > D Ù Á y STATE › ò y ACTIVE— t INACTIVE— t k ¢ F å ² Á > D IPV6 ª - k N M F å ª - F g ¨ `%² N M ª - à < Ä k ê N M ª - Î ï Ï s h k ¥ ² Á > D F å t k / ƒ G k 7 ² Á > D 6 mac ª - ô Gož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3.33 show ipv6 neighbors statistics

ª P IPv6 > D n Ï ‹ ’ Î

show ipv6 neighbors statistics [all]

o¬ @ ƒ ª ¢o-

@ ƒ	T
all	ª P ñ Ä IPv6 > D n Ï ‹ ’ Î

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 ¶ B > D n Ï ‹ ’ Îož

```
5XLMLH VKRZ LSY QHLJKERU VWDWLVWLFV

0HPRU\ E\WHV
(QWULHV
```

```
 6WDWLF  '\QDPLF  /RFDO
 ,QFRPSOHWH  5HDFKDEOH  6WDOH  'HOD\  3UREH
5XLMLH
```

2yò0ñÄ>Dn Ï‹'Î

```
 5XLMLH VKRZ LSY  QHLJKERU VWDWLVWLFV DOO

,3Y  QHLJKERU WDEOH FRXQW
6WDWLF QHLJKERU FRXQW    DFWLYH  LQDFWLYH
7RWDO
0HPRU\  E\WHV
(QWULHV
 6WDWLF  '\QDPLF  /RFDO
 ,QFRPSOHWH  5HDFKDEOH  6WDOH  'HOD\  3UREH

*OREDO
0HPRU\  E\WHV
(QWULHV
 6WDWLF  '\QDPLF  /RFDO
 ,QFRPSOHWH  5HDFKDEOH  6WDOH  'HOD\  3UREH
5XLMLH
```

<†Ky

<	ª¢
IPv6 neighbor table count	>Dn f
Static neighbor count	²Á>Dn¾f
active	t >Dn¾ f
inactive	t >Dn¾ f
Memory	Ä) O
Entries	>Dn¾f
Static	²Án¾f)
Dynamic	Án¾f)
Local	Îª IPv6 ª-+• n¾f)
Incomplete	Ì†än¾f)
Reachable	U >Dn¾f)
Stale	Stale ÙÁ n¾f)
Delay	Delay ÙÁ n¾f)

Probe	Probe Ù Á n ¾ *f*)

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

3.34 show ipv6 packet statistics

ª P IPv6 † Ï ‹ ' Îož

show ipv6 packet statistics [total | interface-name]

o¬ @ *f* ª ¢o-

@ *f*	T
total	ñ Ä N M Ï ‹ ' Î È y Þ . ˜ ª P ñ Ä N M Ï ‹ $ y k - ª P ?%² N M Ï ‹ ›ož
interface-name	N M d f

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 IPv6 † Ï ‹ ' Î È y y ? N M Ï ‹ ' Î

```
5XLMLH VKRZ LSY SDFN VWDWLVWLFV
7RWDO
  5HFHLYHG SDFNHWV E\WHV
    8QLFDVW 0XOWLFDVW
    'LVFDUGV
      +GU(UURUV +RSOLPLW([FHHGHG 2WKHUV
      1R5RXWHV
      2WKHUV
  6HQW SDFNHWV E\WHV
    8QLFDVW 0XOWLFDVW
  *LJDELW(WKHUQHW
  5HFHLYHG SDFNHWV E\WHV
    8QLFDVW 0XOWLFDVW
    'LVFDUGV
      +GU(UURUV +RSOLPLW([FHHGHG 2WKHUV
      1R5RXWHV
```

```
      2WKHUV
  6HQW    SDFNHWV     E\WHV
    8QLFDVW    0XOWLFDVW
5XLMLH
```

2yò0 IPv6 †Ï‹'ÎÈy

```
 5XLMLH VKRZ LSY  SDFN VWDWLVWLFV WRWDO
7RWDO
  5HFHLYHG    SDFNHWV     E\WHV
    8QLFDVW    0XOWLFDVW
    'LVFDUGV
      +GU(UURUV    +RSOLPLW([FHHGHG    2WKHUV
      1R5RXWHV
      2WKHUV
  6HQW    SDFNHWV     E\WHV
    8QLFDVW    0XOWLFDVW
5XLMLH
```

<†Ky

<	ª¢
Total	µÙgnPñÄNM IPv6 †Ï‹$y GigabitEthernet 0/5 µÙgnP ©4NM †Ï‹
Received	Nvñ IPv6 †ƒ)k -ƒ)
Unicast	IPv6 %n †ƒ)
Multicast	IPv6 Án †ƒ)
Discards	' IPv6 †ƒ)
HdrErrors	IPv6 ÙBj¨ ' †ƒ)
HoplimitExceeded	†ôG i kÝ 4éƒ'òò ' †ƒ)
Others	¿U IPv6 ÙBj¨k- ' †ƒ)
NoRoutes	9ZÄè kò ' IPv6 †ƒ)
Others	¿ =œ ' IPv6 †ƒ)

o¬UP'Îo- -

o¬uVª¢o- -

3.35 show ipv6 raw-socket

ª P ñ Ä IPv6 = ÷ ì N ož

show ipv6 raw-socket [num]

o¬ @ ƒ ª ¢o-

@ ƒ	T
num	# ‘ Z

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 ñ Ä IPv6 = ÷ ì N ož

```
5XLMLH  VKRZ LSY  UDZ VRFNHW
1XPEHU 3URWRFRO 3URFHVV QDPH
       ,&03Y    YUUS HOI
       ,&03Y    WFSLS HOI
       9553     YUUS HOI
7RWDO
```

< † K y

<	ª ¢
Number	~ Z
Protocol	# ‘ Z
Process name	i d f
Total	È ƒ

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3.36

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type interface-number	U # @ ƒož ª P 6 N M v ñ è ¸ s ' Îož Þ . ª P ñ Ä N M v ñ è ¸ sož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç Z Ä 6 N M k é ª P Î — Õ v ñ ñ Ä è ¸ s ' Îož

o¬ F å †o- 1 y ª P > D è ˜ y è ¸ s ' Îož

```
5XLMLH VKRZ LSY URXWHUV
5RXWHU )(  ' ) )) )(&  & (  RQ 9/$1  ODVW XSGDWH  VHF
 +RSV  /LIHWLPH  VHF 0DQDJHG)ODJ  2WKHU)ODJ  078
 3UHIHUHQFH 0(',80
 5HDFKDEOH WLPH  PVHF 5HWUDQVPLW WLPH  PVHF
 3UHIL[  RQOLQN DXWRFRQILJ
  9DOLG OLIHWLPH  VHF SUHIHUUHG OLIHWLPH  VHF
 3UHIL[  RQOLQN DXWRFRQILJ
  9DOLG OLIHWLPH  VHF SUHIHUUHG OLIHWLPH  VHF
```

< † K y

<	ª ¢

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

3.37 show ipv6 sockets

ª P ñ Ä IPv6 ì N k U Y = 3 „ ? UDP € M y TCP € M + Ù U ˆ Æ ož
show ipv6 sockets

o¬ @ ƒ ª ¢o-	@ ƒ	T

ForeignIP:Port + € IPv6

Process name	i d f

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

4 DHCP

4.1 address range

} ¨ DHCP ª - P ¼ û CLASS 6 CLASS ñ ã F ª - à < 8 k ª - P class F å % ”
address range x X
address range low-ip-address high-ip-address

¥ x X no ¥ ” U Y í ” ¥ à < 8 ož
no address range

o¬ @ ƒ ª ¢o-

@ ƒ	T
low-ip-address	à < 8 Ü ÷ ª -ož
high-ip-address	à < 8 Ä 2 ª -ož

o¬ Þ . F åo- Þ . ¼ û CLASS Ì F å à < 8 k ó • ª - P à < 8 ož

o¬ x X % ”o- ª - P CLASS F å % ”

o¬ … 6 -o- ¥ x X K 9 Server F å z ? CLASS + •%² à < 8 k à < 8 · À R z ª - ñ ä ª - k U Y ª •
Ú CLASS $ • à < 8 M Öož ò ç 6 ¢ 4 ª - P ¼ û CLASS k x + • à < 8 Z Ä F å k é
¥ CLASS ó • à < 8 y CLASS ñ Ô ª - P à < 8 , což

o¬ F å †o- 1 y F å ª - P mypool0 ¼ û class1 à < 8 172.16.1.1—172.16.1.8ož

```
5 X L M L H F R Q I L J L S G K F S S R R O P \ S R R O
5 X L M L H G K F S F R Q I L J F O D V V F O D V V
5 X L M L H F R Q I L J G K F S S R R O F O D V V D G G U H V V U D Q J H
```

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.2 bootfile

} # DHCP ï € Þ . o ¥ ¦ † ^ d k DHCP ª - P F å x X bootfile
bootfile file-name

no ¥ ” U Y H ƒ #
no bootfile

Ê Ö ó • ›
default bootfile

o¬ @ ƒ ª ¢o-

@ ƒ	T
file-name	# 9 o † ^ d

o¬ Þ . F åo- Þ . Z Ä # o † ^ d

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z Ä ? DHCP ï € ¨ o i ¬ } ú q • © Ïo• F å † ^ ˆ kDHCP Æ ˜ ·
À U ˆ o ž ¬ } ¥ ¦ † ^ d kDHCP ï € õ U Y * , • Æ ˜ g ò TFTP h ú † ^ož ¿ Æ ˜
* next-server x X g #

o¬ F å †o- 1 y — Õ o 4 DHCP Æ ˜ y Ð Ô Åož

```
5XLMLH GKFS FRQILJ ERRWILOH URXWHU FRQI
```

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.3 class

} ¨ DHCP ª - P F å ¼ û CLASS k DHCP ª - P F å % ” class x X

class class-name

no ¥ ” U Y H ƒ #
no class class-name

o¬ @ ƒ ª ¢o-

@ ƒ	T
class-name	ÿ µ CLASS d f k U Y © … ê ƒ k ò myclass ê ñ 1ož

o¬ Þ . F åo- Þ . ª - P Ì ¼ û ` ~ CLASSož

o¬ x X % ”o- DHCP ª - P F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z ? DHCP ª - P U Y ÿ G Option82 F ’ Î g ª - ã F k é [Option82 ’ Î g F ¡ • k ¨ DHCP ª - P ? ¡ • ã ð 6 U Y ã F à < 8 ož ¡ • f CLASS k%² DHCP ª - P U Y ¼ û Ú CLASS k ? CLASS U Y 6 c à < 8 ož

¨ ª - ã F i ¯ ÿ G ï € ñ Ô à < G U Y ã F ª - P k Ç ÿ G ¿ Option82 ’ Î %² 5 G ¿ ñ K CLASS k R CLASS + • à < 8 ã F IP ª -ož ¢%² ¬ L † F ª - P Ú CLASS ž k 7 Á CLASS ¨ ª - P F å ¯ e ¿ ~ R + • CLASS à < 8 ã F ª - kò ç ¥ CLASS ã F ª -] ñ ’ k é Ð Ò R %² F CLASS g ã F k ‰ 4 • Pož ? CLASS + •%² à < 8 k à < 8 · À R z ª - ñ ä ª - k U Y ª • Ú CLASS $ • à < 8 M Öož ò ç 6 ¢ 4 ª - P ¼ û CLASS k w Ì F å CLASS à < k é ¥ CLASS ó • à < 8 y CLASS ñ Ô ª - P à < 8 , což

o¬ F å †o- 1 y F å ª - P mypool0 ¼ û class1ož

```
5 X L M L H F R Q I L J  L S  G K F S  S R R O  P \ S R R O
5 X L M L H G K F S F R Q I L J  F O D V V  F O D V V
```

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.4 clear ip dhcp binding

} Ž ” DHCP Ç n k ¨ Ô Ó ï % ” clear ip dhcp binding x X

clear ip dhcp binding { * | ip-address }

o¬ @ ƒ ª ¢o-

@ ƒ	T
*	í ” ñ Ä DCHP Ç
ip-address	í ” 6 IP ª - “ £

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z¥ x X Q Ž ” DHCP Ç k DHCP ô W Ç í ” U Y * no ip dhcp pool x X

o¬ F å †o- 1 y Ž ” 4 IP ª - 192.168.12.100 DHCP Ç

5 X L M L H F O H D U L S G K F S E L Q G L Q J

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

4.5 clear ip dhcp conflict

} Ž ” DHCP Ï s “ £ k ¨ Ô Ó ï % ” clear ip dhcp conflict x X

clear ip dhcp conflict { *

o¬ u V ª ¢o- -

4.6 clear ip dhcp history

} Ž ” DHCP 7 W “ £ k ¨ Ô Ó ï % ”

o¬ … 6 -o- ¥ x X K 9 Relay F å zDHCP Đ † Ï ‹ k‡ DHCP Đ N v y G _ • † g 4 Ï ‹ož clear ip dhcp relay statistics x X U Y í ” 7 W ‹ ƒ “ £ k M • • ÷ Ï ‹ož

o¬ F å †o- 1 y Ž ” DHCP Đ Ï ‹ “ £

5 X L M L H F O H D U L S G K F S U H O D \ V W D W L V W L F V

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

4.8 clear ip dhcp server rate

} Ö y DHCP Æ ˜ † ¨ _ , ¼ % ² Ô ò ƒ ä Ï ‹
clear ip dhcp server rate

-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z DHCP Æ ˜ † Ï ‹ k “ £ DHCP ª - Po• Ç o• ô W Ç y Ê Ç ƒ) k w + DHCP Æ ˜ N v y G _ • † g 4 Ï ‹ožclear ip dhcp server statistics x X U Y í ” 7 W ‹ ƒ “ £ k M • • ÷ Ï ‹ož

o¬ F å †o- 1 y Ž ” DHCP Æ ˜ Ï ‹ “ £

5 X L M L H F O H D U L S G K F S V H U Y H U V W D W L V W L F V

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

4.10 client-identifier

} # DHCP ï € Š%² ö œ g Y µ œ • ¹ ò ƒ n P h k DHCP ª - P F å x X client-identifier client-identifier unique-identifier

no ¥ ” U Y í ” ï € ö œ
no client-identifier

Ê Ö ó • ›
default client-identifier

o¬ @ ƒ ª ¢o- @ ƒ	T

d f GigabitEthernet 0/1 + • ï € ö œ
0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31 k ¿ 01 W n Y ß à ý P • º k
67.6967.6162.6974.4574.6865.726e.6574.302f.31 GigabitEthernet0/1 ¹ ò Aož¼ 9 ý P W A # k
U Y @ • RFC1700 † Address Resolution Protocol Parameters ~ -ož
Q Ä ¨ g DHCP ô W Ç # ž k õ U Y … ¥ x Xož

o¬ F å †o- 1 y # 4 MAC ª - 00d0.f822.33b4 Y ß à DHCP ï € ï € ö œož

5 X L M L H G K F S F R Q I L J F O L H Q W L G H Q W L I L H U
G I E H I

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.11 client-name

} # DHCP ï € d k DHCP ª - P F å x X client-name
client-name client-name

no ¥ ” í ” DHCP ï € d
no client-name

Ê Ö ó • ›
default client-name

o¬ @ ƒ ª ¢o-

@ ƒ	T
client-name	# DHCP ï € d ožU Y ` ~ ö Õ ASCII … ¤ožd • , e Ö ¿ d k A ò #river DHCP ï € d k # river.i-net.com.cn

o¬ Þ . F åo- Þ . Z Ä # ï € d

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z Q Ä ¨ g DHCP ô W Ç # ž k õ U Y ï ¥ x X # DHCP ï € d ož ¥ d • ¥ , e Ö ¿ d

o¬ F å †o- 1 y # 4%² … river • ï € d ož

5 X L M L H G K F S F R Q I L J F O L H Q W Q D P H U L Y H U

o¬ à • co- * show run U • F å è

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.12 default-router

DHCP ï € Þ . à ¼ k DHCP ª - P F å x X default-router

default-router ip-address [ip-address2…ip-address8]

no ¥ " U Y í " Þ . à ¼ #

no default-router

Ê Ö ó • ›

defaut default-router

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	# WINS Æ ˜ IP ª -ož } L 5 F å%²
ip-address2…ip-address8	g U # h Â Ú U Y F å 8 à ¼ož Þ . Õ Ñ Q Ä%² IP ª -

o¬ Þ . F åo- Þ . Z Ä # Þ . à ¼

o¬ x X % "o- DHCP ª - P F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z%² " Õ Ñ kDHCP ï € ¬ } R DHCP Æ ˜ B ± Þ . à ¼ ' ÎožDHCP Æ ˜ 5 ¬ } ï € 6 %² à ¼ IP ª - k ¥ ª - · À ã F Ë ï ª - ¨ c%² à <ož

o¬ F å †o- 1 y # 4 192.168.12.1 • Þ . à ¼

5 X L M L H G K F S F R Q I L J F O L H Q W U R X W H U

o¬ à • co- * show run U • F å è

o¬ U P ' Îo- 1 y F å ³ c ª -

```
5XLMLH GKFS FRQILJ GHIDXOW URXWHU
 (UURU LS DGGUHVV LV QRW YDOLG
```

o¬ o • j ¨o- 1. F å ³ % n ª -
2. F å Ý 8 Ä | ª -

o¬ u V ª ¢o- -

4.13 dns-server

} # DHCP ï € DNS Æ ˜ k DHCP ª - P F å x X dns-server
dns-server { ip-address [ip-address2…ip-address8] }

no ¥ " U Y í " DNS Æ ˜ #
no dns-server

Ê Ö ó • ›
defaut dns-server

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	# DNS DÆ ˜ IP ª -ož } L 5 F å%² N
ip-address2…ip-address8	Æ•à¶.å.¢ID #

o¬ U P ' Îo- 1 y F å ³ c ª -

```
5 X L M L H  G K F S  F R Q I L J  dns-server
 (U U R U  L S  D G G U H V V  L V  Q R W  Y D O L G
```

o¬ o • j ¨o- 1. F å ³ % n ª -
2. F å Ý 8 Ä | ª -

4.14 domain-name

} # DHCP ï € e Ö ¿ d k DHCP ª - P x X domain-name
domain-name domain-name

no ¥ " U Y í " e Ö ¿ d
no domain-name

Ê Ö ó • ›
defaut domain-name

o¬ @ ƒ ª ¢o-

@ ƒ	T
domain-name	# DHCP ï € e Ö ¿ d …

o¬ Þ . F åo- Þ . Z Ä e Ö ¿ d

o¬ x X % "o- DHCP ª - P F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å zDHCP ï € B ± 4 6 e Ö ¿ d e k ¢ ˜ | À Ä c ý e Ö ¿ d Ñ ž k + N *
Ñ d < U Y 4

o¬ F å †o- 1 y Ë DHCP ï € # 4 e Ö ¿ d i-net.com.cn

```
5 X L M L H  G K F S  F R Q I L J  G R P D L Q  Q D P H  L  Q H W  F R P  F Q
```

o¬ à • co- * show run U • F å è

o¬ U P ' Îo- 1 y F å ï € e Ö ¿ d

```

5 X L M L H  G K F S  F R Q I L J  G R P D L Q  Q D P H  U X L M L H  F R P  F Q
```

o¬ o • j ¨o- -

4.15 hardware-address

} # DHCP ï € F ^ ª - k DHCP ª - P F å x X hardware-address

hardware-address hardware-address [type]

no ¥ ” U Y í ” F ^ ª - #

no hardware-address

Ê Ö ó • ›

defaut hardware-address

o¬ @ ƒ ª ¢o-

@ ƒ	T
hardware-address	# DHCP ï € MAC ª -
type	ö œ DHCP ï € F ^ u V # ‘ kU Y … ê ƒ #ož … # ¾ y „ ethernet „ ieee802 ƒ # ¾ y „ 1 g10M ethernet h „ 6 gIEEE 802 h

o¬ Þ . F åo- Þ . Z Ä F ^ ª -

ò ç # F ^ ª - ž Z æ # ¾ k Þ . ethernet

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z Q Ä ¨ g DHCP ô W Ç # ž k õ U Y … ¥ x X

o¬ F å †o- 1 y # 4 • º ethernet MAC ª - 00d0.f838.bf3d

5 X L M L H G K F S F R Q I L J K D U G Z D U H D G G U H V V G I E I G

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

4.16 host

} # DHCP ï € Ñ IP ª - y à Ì Q A k DHCP ª - P F å x X host
host ip-address [netmask]

no ¥ ” U Y í ” DHCP ï € IP ª - y à Ì Q A #
no host

Ê Ö ó • ›
defaut host

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	# DHCP ï € Ñ IP ª -
netmask	# DHCP ï € Ñ à Ì Q A

o¬ Þ . F åo- Z Ä # Ñ IP ª - y à Ì Q A

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z ò ç à Ì Q A Z Ä ¢ G # kDHCP Æ ˜ 1 ï ¥ IP ª - À à Ì Q AožA •
ª - à Ì Q A 255.0.0.0 z B • ª - à Ì Q A 255.255.0 zC • ª - à Ì Q A 255.255.255.0ož
Q Ä ¨ g DHCP ô W Ç # ž k õ U Y … ¥ x Xož

o¬ F å †o- 1 y 1 ï € IP ª - — 192.168.12.91 k Q A 255.255.255.240

```
5XLMLH GKFS FRQILJ KRVW
```

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- 1 y F å ³ c ª -

```
5XLMLH GKFS FRQILJ KRVW
 (UURU LS DGGUHVV LV QRW YDOLG
```

o¬ o • j ¨o- 1. F å ³ c ª -

4.17 ip address dhcp

} … ± Y ß à ê ñ PPPoHDLCoFR / x N M Ü * DHCP B ± IP ª - ’ Î k N M F å x X ip address dhcp

ip address dhcp

no ¥ ” U Y H ƒ ¥ F å

no ip address dhcp

Ê Ö ó • ›

defaut ip address dhcp

o¬ @ ƒ ª ¢o-	@ ƒ	T

high-ip-address	L ‹ ª - 8 È Ø IP ª -ož Þ . Õ Ñ ¿ ›	low-ip-address

o¬ Þ . F åo- Þ . DHCP Æ ˜ ã F … ª - P IP ª -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z ò ç Z Ä F å L ‹ IP ª - kDHCP Æ ˜ k ¡ £ ã F DHCP ª - P ñ Ä IP ª -ož¥ x X U Y Ô Ñ ‘ %² ? IP ª - k9 ² ? ª - t ã F Ë DHCP ï €ož¤ G ª # L ‹ IP ª - k - U Y × 5 DHCP Æ ˜ ã F ª - ž Ï s y ž •

o¬ F å †o- 1 yDHCP Æ ˜ 1 k ¡ £ ã F 192.168.12.100~150 8 Ä IP ª -

P € ` ` 0 @ €Ñ™Ž 0Ý•/ Ý•-Ù 3 0Ý•&Ù Ý•-Ù ƒ à›@O úÐ 1

default ip dhcp force-send-nak

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . F å • o ò G NAK †

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å zDHCP ï € ¨ ?) — Õ o ž ˜ C k ò $ ù … IP ª - k G DHCPREQUEST ¬ L † g Ò ³ k e È Ü Ç) … ¥DHCPREQUES14 Md†}… ’ ¬ „ÊteÖ.• % ”o-

o¬ x X % ”o- C N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ Þ . F åo- Þ . F å + N M VRRP Ù Á g ! O

o¬ … 6 -o- ¥ x X K 9 Server F å z ò ç N M F å 4 VRRP ª - kDHCP Æ ˜ N Ô ò Ô 9 — Õ gMaster h Ù Á N M ¬ L † k ’ Ô 9 ³ gMaster h Ù Á N M ¬ L †ož + 9 Ì F å VRRP ª - N M k DHCP Æ ˜ Ç ! O VRRP Ù Á k ñ Ä DHCP ¬ L † C 1 t Ô ò

o¬ F å †o- 1 yDHCP Æ ˜ + ¢ ù C N M VRRP Ù Á g ! O

```
5XLMLH FRQILJ LI LS GKFS PRQLWRU YUUS VWDWH
```

o¬ à • co- -

o¬ U P ’ Îo- 1 y ¨ 8 C N M F å VRRP Ù Á ! O

```
5XLMLH FRQILJ LI *LJDELW(WKHUQHW LS GKFS PRQLWRU YUUS VWDW
 ,QYDOLG LQSXW GHWHFWHG DW A PDUNHU
```

o¬ o • j ¨o- 1 y ¨ 8 C N M F å VRRP Ù Á ! O

o¬ u V ª ¢o- -

4.22 ip dhcp ping packets

} F å DHCP Æ ˜ y ª - Ï s ž kping ¥ ª -) *ƒ*

ip dhcp ping packets [number]

no ¥ ” Ê Ö Þ . F å

no ip dhcp ping packets

Ê Ö Þ . F å

default ip dhcp ping packets

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
number	g U # h 8 R 0 ñ 10 k 0 n P ¼ { ping q •ož Þ . ping

o¬ Þ . F åo- Þ . ping _ *ƒ* 2

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å zDHCP Æ ˜ R DHCP ª - P ¡ £ ã F IP ª - ž k k ping q • Û y ¥ ª - © k] t ¿ Ñ) k ò ç) < “ £ Û k ò ç Z) < ã F Ë DHCP ï €ožPing q • Þ . G ƒ G k Â Ú U Y G 10

o¬ F å †o- 1 y 1 ping q • G ƒ G ƒ — 3

5 X L M L H F R Q I L J L S G K F S S L Q J S D F N H W V

o¬ à • co- * show run U 0 ñ F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.23 ip dhcp ping timeout

} F å DHCP Æ ˜ ping q • y ª - Ï s ž k ˆ - • ‹ Ý ž ž •
ip dhcp ping timeout milli-seconds

no ¥ ” U Y Ê Ö Þ . F å
no ip dhcp ping timeout

Ê Ö Þ . F å
default ip dhcp ping timeout

o¬ @ ƒ ª ¢o-

@ ƒ	T	
milli-seconds	DHCP Æ ˜ ˆ - ping • ‹ ž • g Y D a ‹ hžH › 8	100 ñ 10000

o¬ Þ . F åo- Þ . Ý ž ž • 500 D a

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z # ˆ -%² ping • ‹ ž •

o¬ F å †o- 1 y ping • ‹ ˆ - ž • — 600ms

5XLMLH FRQILJ LS GKFS SLQJ WLPHRXW

o¬ à • co- * show run U 0 ñ F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.24 ip dhcp pool

} #%² DHCP ª - P d w µ DHCP ª - P F å % ”

ip dhcp pool pool-name

no ¥ ” U Y í ” DHCP ª - P

no ip dhcp pool pool-name

Ê Ö ó • › í ” ª - P

default ip dhcp pool pool-name

o¬ @ ƒ ª ¢o-

@ ƒ	T
pool-name	ª - P d f

o¬ Þ . F åo- Þ . Z Ä # DHCP ª - P

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z

1 y ü g ¥ x X k < k µ DHCP ª - P F å % ” k ª P

5XLMLH GKFS FRQILJ

¨ F å % ” k U Y F å IP ª - 8 o•DNS Æ ˜o• Þ . à ¼ ˆ @ ƒ

o¬ F å †o- 1 y # 4%² d mypool0 DHCP ª - Pož

5XLMLH FRQILJ LS GKFS SRRO P\SRRO

5XLMLH GKFS FRQILJ

o¬ à • co- * show ip dhcp pool mypool0 U € (F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.25 ip dhcp relay check server-id

o DHCP relay check server-di ož
ip dhcp relay check server-id

¼ { DHCP relay check server-id ož
no ip dhcp relay check server-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ¼ { DHCP relay check server-id ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z ¢ F å x X ip dhcp relay check server-id e kDHCP Relay N 1 DHCP ¬ L † ô G ñ option server-id 6 Æ ˜ož ò ç Z Ä F å ¥ x X k é g ñ Ä F å DHCP Æ ˜ ô G DHCP ¬ L †ož

o¬ F å †o- 1 y o DHCP relay check server-di ož

```
5 X L M L H F R Q I L J L S G K F S U H O D \ F K H F N V H U Y H U L G
```

2 y ¼ { DHCP relay check server-id ož

```
5 X L M L H F R Q I L J Q R L S G K F S U H O D \ F K H F N V H U Y H U L G
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 © k F å è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.26 ip dhcp relay information circuit-id format

F å DHCP option82 ÿ # ¾ circuit-id # Ê - Ä ož
ip dhcp relay information ci rcuit-id format {hex | ascii} [string]

¼ { DHCP option82 ÿ # ¾ circuit-id # Ê - Ä ož
no ip dhcp relay information circuit-id format {hex | ascii}

o¬ @ ƒ ª ¢o-

@ ƒ	T
hex	Ê - Ä ” ¹ ò ƒ
ascii	Ê - Ä ” ascii A
string	Circuit-id ÿ # ¾ # Ê - Ä

o¬ Þ . F åo- ¼ { DHCP option82 ÿ # ¾ circuit-id # Ê - Ä ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Relay F å z ¢ F å x X ip dhcp relay information circuit-id format x X ž k — Õ Ÿ DHCP
Ð k ¨ ô G DHCP ¬ L † i k ¨ DHCP ¬ L † • option ’ Îož

o¬ F å †o- 1 y F å DHCP option82 ÿ # ¾ circuit-id # Ê - Ä ož

```
5 X L M L H F R Q I L J  L S G K F S U H O D \ L Q I R U P D W L R Q F L U F X L W L G I R U P D W K H [
5 X L M L H F R Q I L J  L S G K F S U H O D \ L Q I R U P D W L R Q F L U F X L W L G I R U P D W D V F
```

2 y ¼ { DHCP option82 ÿ # ¾ circuit-id # Ê - Ä ož

```
5 X L M L H F R Q I L J  Q R L S G K F S U H O D \ L Q I R U P D W L R Q F L U F X L W L G I R U P D W
5 X L M L H F R Q I L J  Q R L S G K F S U H O D \ L Q I R U P D W L R Q F L U F X L W L G I R U P D W
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 © k F å è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.27 ip dhcp relay information circuit-id string

o¬ Þ . F åo- ¼ { DHCP option82 ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Relay F å z ¢ F å x X ip dhcp relay information option82 x X ž k — Õ Ÿ DHCP Đ k ¨
ô G DHCP ¬ L † i k ¨ DHCP ¬ L † • option ’ Îož

o¬ F å †o- 1 y o DHCP option82 ož

5 X L M L H F R Q I L J L S G K F S U H O D \ L Q I R U P D W L R Q R S W L R Q

2 y ¼ { DHCP option82 ož

5 X L M L H F R Q I L J Q R L S G K F S U H O D \ L Q I R U P D W L R Q R S W L R Q

o¬ à • co- 1 y … show running-config x X k U Y ò 0 © k F å è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.29 ip dhcp relay information remote-id format

F å DHCP option82 ÿ # ¾ remote-id # Ê - Ä ož
ip dhcp relay information re mote-id format {hex | ascii} [string]

¼ { DHCP option82 ÿ # ¾ remote-id # Ê - Ä ož
no ip dhcp relay information re mote-id format {hex | ascii}

o¬ @ ƒ ª ¢o-

@ ƒ	T
hex	Ê - Ä ” ¹ ò ƒ
ascii	Ê - Ä ” ascii A
string	Remote-id ÿ # ¾ # Ê - Ä

o¬ Þ . F åo- ¼ { DHCP option82 ÿ # ¾ remote-id # Ê - Ä ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- ¥ x X K 9 Relay F å z ¢ F å x X

5XLMLH FRQILJ QR LS GKFS UHOD\ LQIRUPDWLRQ UHPRWH LG VWULQJ

o¬ à • co- 1 y … show running-config x X k U Y ò 0 © k F å è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.31 ip dhcp relay suppression

o DHCP relay suppression ož
ip dhcp relay suppression

¼ { DHCP relay suppresson ož
no ip dhcp relay suppression

4.33 ip dhcp relay-information remote-id string

F å î N M DHCP option82 ÿ # ¾ remote-id # û M d f ož
ip dhcp relay-information remote-id string [portname]

¼ { î N M DHCP option82 ÿ # ¾ remote-id # û M d f ož
no ip dhcp-relay information remote-id string

o¬ @ ƒ ª ¢o-

@ ƒ	T
portname	ï # û M d f

o¬ Þ . F åo- ¼ { î N M DHCP option82 ÿ # ¾ remote-id # û M d f ož

o¬ x X % ”o- N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Relay F å z ¢ F å x X ip dhcp relay-information remote-id string x X ž k — Õ Ÿ DHCP
Ð k ¨ ô G DHCP ¬ L † i k ¨ DHCP ¬ L † • option ’ Îož

o¬ F å †o- 1 y F å î N M DHCP option82 ÿ # ¾ remote-id # û M d f ož
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W L S G K F S U H O D \ L Q I R U P D W L R Q
2 y ¼ { î N M DHCP option82 ÿ # ¾ remote-id # û M d f ož
5 X L M L H F R Q I L J L I * L J D E L W (W K H U Q H W Q R L S G K F S U H O D \ L Q I R U P D W

o¬ à • co- 1 y … show running-config x X k U Y ò 0 © k F å è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.34 ip dhcp server arp-detect

o DHCP ï ¿ y ož
ip dhcp server arp-detect

¼ { DHCP ï ¿ y ož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ … 6 -o- ¥ x X K 9 Server F å z

o¬ F å †o- 1 y F å o CLASS g ª - ã Fož

```
5XLMLH FRQILJ LS GKFS XVH FODVV
```

o¬ à • co- * show run U 0 ñ F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

4.36 ip helper-address

• %² ¶ B ê + • N M DHCP Æ ˜ ª -ož

ip helper-address { cycle-mode | A.B.C.D }

í ”%² ¶ B ê + • N M DHCP Æ ˜ ª -ož

no ip helper-address { cycle-mode | A.B.C.D }

o¬ @ ƒ ª ¢o-

@ ƒ	T
cycle-mode	• o dhcp ¬ L † ô G ñ Ä dhcp Æ ˜
A.B.C.D	DHCP Æ ˜ ª -

o¬ Þ . F åo- DHCP Æ ˜ ç n qož

o¬ x X % ”o- ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Relay F å z¨ F å DHCP Æ ˜ IP ª - e k— Õ 1 v ñ DHCP ¬ L † 1 ô G Ë zc ž k 1 v ñ DHCP Æ ˜ € • † ô G Ë DHCP ï €ož
DHCP Æ ˜ ª - U Y ¶ B F å k - U Y ¨ C N M F åož ¶ B ê ñ ? C N M Â Ú U Y F å 20
DHCP Æ ˜ ª -ož ¨ N M v ñ DHCP ¬ L † ž k Ù ¯ … N M DHCP Æ ˜ ç n z ò ç N M µ
Z Ä F å DHCP Æ ˜ ç n k é … ¶ B F å DHCP Æ ˜ ç nož
¶ B F å % ” U + dhcp relay cycle-mode @ ƒ g F å k¢ o cycle-mode ž ˜ n P dhcp relay ª • N v ñ dhcp client ¬ L † ô G ñ Y • é ñ Ä dhcp server ¢ o cycle-mode ž ˜ n P dhcp

relay Q N v ñ dhcp client ¬ L † ô G ñ Y • é †%² dhcp server ožcycle-mode Q ¨ ¶ B F å
% ” F å k • 9 ¶ B y N M k ó • o ož

o¬ F å †o- 1 y ¨ intterface vlan 1 F å%² DHCP Æ ˜ IP ª - 192.168.11.1

```
5 X L M L H  F R Q I L J X U H  W H U P L Q D O
( Q W H U  F R Q I L J X U D W L R Q  F R P P D Q G V  R Q H  S H U  O L Q H  ( Q G  Z L W K  & 1 7 / =
5 X L M L H  F R Q I L J  L Q W H U I D F H  Y O D Q
5 X L M L H  F R Q I L J  L I  L S  K H O S H U  D G G U H V V
```

2 y í ” intterface vlan 1] Æ F å DHCP Æ ˜ IP ª - 192.168.11.1

```
5 X L M L H  F R Q I L J  L I  Q R  L S  K H O S H U  D G G U H V V
```

3 y F å%² ¶ B DHCP Æ ˜ IP ª - 192.168.100.1ož

```
5 X L M L H  F R Q I L J X U H  W H U P L Q D O
( Q W H U  F R Q I L J X U D W L R Q  F R P P D Q G V  R Q H  S H U  O L Q H  ( Q G  Z L W K  & 1 7 / =
5 X L M L H  F R Q I L J  L S  K H O S H U  D G G U H V V
```

4 y í ” $ ù F å ¶ B DHCP Æ ˜ IP ª - 192.168.100.1ož

```
5 X L M L H  F R Q I L J  Q R  L S  K H O S H U  D G G U H V V
```

5 y • o dhcp ¬ L † ô G ñ Ä dhcp Æ ˜ož

```
5 X L M L H  F R Q I L J  L S  K H O S H U  D G G U H V V  F \ F O H  P R G H
```

6 y ¼ { dhcp ¬ L † ô G ñ Ä dhcp Æ ˜ož

```
5 X L M L H  F R Q I L J  Q R  L S  K H O S H U  D G G U H V V  F \ F O H  P R G H
```

o¬ à • co- 1 y … show running-config x X k U Y ò 0 © k F å è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- 1 yip helper-address F å x X Q ¶ B F å ê ¨ C N M F å k ¨ 8 C N M F å
2 y • o ip helper-address $ ù ¬ } G ‘ DHCP Relay] Æ • o
3 y 1 ï € B æ ˜ U Y * DHCP Relay B H ª - k A U Y * DHCP Server + N B H ª - k k - ï
€ U — c B H 3 G ª -

o¬ u V ª ¢o- -

4.37 lease

} # DHCP Æ ˜ ã F Ë ï € ª - c Ê ž • k DHCP ª - P F å x X leaseož ¥ x X no ¥ ” Ê Ö
Þ . F åož Ä ’ c Ê 8 R 1 ã U ñ 365 Þ 23 4 ž 59 ã U
lease {days [hours] [minutes] | infinite }

no ¥ ” Ê Ö Þ . F å
no lease

Ê Ö ó • ›

defaut lease

o¬ @ ƒ ª ¢o-

@ ƒ	T
days	# c Ê ž • k Y Þ % y
hours	g U # h # c Ê ž • k Y 4 ž % yož # 4 ž ƒ ù · À # Þ ƒož Þ . 0
minutes	g U # h # c Ê ž • k Y ã U % yož # ã U ù · À # Þ ƒ y 4 ž ƒ , Þ . 0
infinite	# Z Ä ’ ò c Ê

Ê Ö ó • ›
defaut lease-threshold

o¬ @ ƒ ª ¢o-

@ ƒ	T
percentage	# ª - P s Š ã A k H › 8 60 ñ 100

o¬ Þ . F åo- Þ . 90%

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z ò ç ª - P Â Ý IP ï ä ñ y ’ › k DHCP Æ ˜ 1 D ÿ SYSLOG s Š ’ Îož IP ï ä n P ¢ ù] ã F ª - ƒ ¢ ù ª - P U ã F ª - È ƒ A ›ožò ç ã F ª - ƒ)%² + Ô 9 s Šf9 › Y k ; " ? 5 ã U 1 D ÿ%²) s Š ’ Î

o¬ F å †o- 1 y 1 ª - P s Šf9 › — 80% y

```
5XLMLH GKFS FRQILJ OHDVH WKUHVKROG
```

2 y ¼ { ª - P s Š

```
5XLMLH GKFS FRQILJ QR OHDVH WKUHVKROG
```

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

4.39 netbios-name-server

} F å ³ ÷ DHCP ï € NETBIOS WINS d Æ ˜
netbios-name-server ip-address [ip-address2…ip-address8]

í ” WINS Æ ˜
no netbios-name-server

Ê Ö ó • ›
defaut netbios-name-server

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	# WINS Æ ˜ IP ª -ož } L 5 F å%²

ip-address2…ip-address8	g U # h Â Ú U Y F å 8 WINS Æ ˜

	„ 8 k W n h-node … # y „ b-node k z n º - µ „ p-node k + ^ º - µ „ m-node k Œ ` º - µ „ h-node k Ö ` º - µ

o¬ Þ . F åo- Þ . Z Ä # NetBIOS - µ • º

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z ³ ÷ DHCP ï € NetBIOS - µ • º Ä š _ y 1 h Broadcast k z n º - µ k * z n • ” g NetBIOS d † ä z 2 h Peer-to-peer k + ^ º - µ k * + N ¬ L WINS Æ ˜ g NetBIOS d † ä z3 hMixed k Œ ` º - µ k ¯ * z n • ” ¬ L d † ä k e * WINS Æ ˜ N g d † ä z 4 hHybrid k Ö ` º - µ k Ù ¯ + N ¬ L WINS Æ ˜ g NetBIOS d † ä k ò ç Z Ä ± ñ • ‹ k < * z n • ” g NetBIOS d † äož Þ . Õ Ñ k ³ ÷ q • © Ï - µ • º z n º ê ñ Ö ` ºož ò ç Z Ä F å WINS Æ ˜ k < z n º - µ z ò ç F å 4 WINS Æ ˜ k < Ö ` º - µož • ‘ 1 NetBIOS - µ • º — Hybrid

o¬ F å †o- 1 y 1 ³ ÷ DHCP ï € NetBIOS - µ — Ö ` º - µ y

```
5 X L M L H G K F S F R Q I L J Q H W E L R V Q R G H W \ S H K Q R G H
```

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

4.41 network

} #

o¬ @ ƒ ª ¢o-

@ ƒ	T
network-number	DHCP ª - P IP ª - à Ì Z
net-mask	DHCP ª - P IP ª - à Ì Q Aož ò ç Z Ä # Q A k Þ . À à Ì Q A
low-ip-address	U Ü ÷ IP ª -
high-ip-address	U È Ø IP ª -

o¬ Þ . F åo- Þ . Z Ä # à Ì Z y à Ì Q A

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z # • • ª - P ÿ à C ¿ Q A k DHCP Æ ˜ U ˆ 4%² U ã F Ë ï € ª - q •ož ” ³ Ä ª - L ‹ F å k k é ñ Ä ª - P ª - C Ä U ã F Ë ï €ož DHCP ¨ ã F ª - P ª - k © 7 ¿ ~ g k ò ç ¥ ª -] Æ ¨ DHCP Ç n ê ñ y ñ ¥ ª -] Æ ¨ ¥ à < ¨ k < ò %² ª - k + ñ ã F%² Ä | ª -ož

ª - ã F Õ Ñ U show ip dhcp binding x X ò 0 kª - y Ï s Õ Ñ U show ip dhcp conflict x X ò 0ož

o¬ F å †o- 1 y # 4 DHCP ª - P à Ì Z 192.168.12.0 k Q A 255.255.255.240

```
5 X L M L H G K F S F R Q I L J Q H W Z R U N
```

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- 1 y F å ³ c ª -

```
5 X L M L H G K F S F R Q I L J Q H W Z R U N
238.5.5.5 / 255.0.0.0 is an invalid network
```

o¬ o • j ¨o- 1. F å ³ % n ª -

4.42 next-server

} # DHCP ï € o i ¬ } ˜ | o Æ ˜ ç n k DHCP ª - P F å x X next-server

next-server ip-address [ip-address2…ip-address8]

no ¥ ” U Y í ” o Æ ˜ ç n #

no next-server

Ê Ö ó • ›

defaut next-server

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	# o Æ ˜ IP ª - k * o TFTP Æ ˜ož } L 5 F å%²
ip-address2…ip-address8	g U # h Â Ú U Y F å 8 o Æ ˜

o¬ Þ . F åo- — Þ . F å

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z # Ú o Æ ˜ ž k Ê ¨ ù µ i ¯ Ó ä kDHCP ï € Q Ä L ¨ ù ã o Æ ˜ * ’ â Â k õ k # + %² o Æ ˜ož

o¬ F å †o- 1 y DHCP ï € 6 4 o Æ ˜ 192.168.12.4

5 X L M L H G K F S F R Q I L J Q H [W V H U Y H U

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- 1 y F å ³ c ª -

5 X L M L H G K F S F R Q I L J Q H [W V H U Y H U

code	# DHCP # ¾ W A
ascii string	#%² ASCII …
hex string	# ¹ ò …
ip ip-address	# IP ª - ç n

o¬ Þ . F åo- — Þ . F å

o¬ x X % ”o- DHCP ª - P F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z DHCP U ˆ 4%² Ñ ò k ª • ¨ TCP/IP à Ì 1 F å ’ Î n Ë Ñož DHCP † y Ä option

¥ x X U ^ no ¥ ”

5 À D M £ d H ° ` F R À Q I L ° J 0 G ` ð F @ S ` ` F D ¢ ð V @ À U À H • O T D À L 0 Q I R

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

4.47 remark

} ¨ ¶ B CLASS F å T ¥ CLASS ö œ ’ Î
remark class-remark

no ¥ ” U Y í ” ¥ ö œ ’ Î
no remark

o¬ @ ƒ ª ¢o-

@ ƒ	T
class-remark	ö œ ¥ CLASS ’ Î k U Y © … k • U Y k q

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B CLASS F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z

o¬ F å †o- 1 y F å%² ¶ B CLASS ö œ ’ Îož

```
5XLMLH FRQILJ LS GKFS FODVV P\FODVV
5XLMLH FRQILJ GKFS FODVV UHPDUN XVHG LQ EXLOG
```

o¬ à • co- * show run U • F å è

o¬ U P ’ Îo- -
o¬ o • j ¨o- -

4.48 service dhcp

} ¨ — Õ o DHCP Æ ˜ y Ð W ò Ô Å k ¶ B F å x X service dhcp
service dhcp

no ¥ ” U Y ¼ { DHCP Æ ˜ y Ð W ò Ô Å
no service dhcp

Ê Ö ó • ›
defaut service dhcp

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ¥ x X K 9 Server F å z Þ . ¼ { DHCP Æ ˜ y Ð W ò Ô Å

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ x X % ”o-

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Client F å z ª P • ï € ªÀO ‘• ip ª - , ¼ ’ Î

o¬ F å †o- 1 DHCP

```
5XLMLH VKRZ GKFS OHDVH
7HPS ,3 DGGU IRU SHHU RQ ,QWHUIDFH )DVW(WKHUQHW
7HPS VXE QHW PDVN
'+&3 /HDVH VHUYHU VWDWH %RXQG
'+&3 WUDQVDFWLRQ LG EHHG
/HDVH VHFV 5HQHZDO VHFV 5HELQG VHFV
7HPS GHIDXOW JDWHZD\ DGGU
1H[W WLPHU ILUHV DIWHU
5HWU\ FRXQW &OLHQW ,' G I H ( )
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • jª†úÐ -

4.50 show ip dhcp binding

ª P DHCP ª - Ça@mPM

show ip dhcp binding [ip-address]

o¬ @ ƒª z&úÐ

@ ƒ	T
ip-address	g U # h Q ª P 6a@ IP ª - Ça@mPM ùà•à’àmPM z • o |@œv ’ Î

o¬ Þ . F åo- — Þ . g

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6bÖúÐ ¥ x X K 9 Server F å z ò ç Z Ä # IP ª - k 1 ª P ñ Ä ª - Ça@mPM ùà ò ç # 4 IP ª - k 1 Q ª P ¥ IP ª - Ç Õ Ñ

o¬ F å †o- 1 y ª P DHCP ª - Ç Õ Ñ

```
5XLMLH VKRZ LS GKFS ELQGLQJ
7RWDO QXPEHU RI FOLHQWV
([SLUHG FOLHQWV
5XQQLQJ FOLHQWV

,3 DGGUHVV +DUGZDUH DGGUHVV /HDVH H[SLUDWLRQ
```

20.1.1.1 2000.0000.2011 000 days 23 hours 59 mins Automatic ª P È

ç _ < m #fA ò y

IP address	ã F Ë DHCP ï € IP ª -ož
Hardware address	DHCP ï € F ^ ª -
Lease expiration	Y c Ê ñ Ê ž •ožInfinite n P Z Ä ž • ' ò zIDLE n P ¢ ù q ~ ª - kq ù = œ U © Ê Z Ò R ê ñ DHCP ï € K yož
Type	ª - Ç • ºož Automatic n P ã F z Manual n P ô W ã Fož

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

4.51 show ip dhcp conflict

ª P DHCP Æ ˜ Ï s " £

show ip dhcp conflict

o¬ @ ƒ ª ¢o- - 612

```
5XLMLH  VKRZ LS GKFS FRQIOLFW
,3 DGGUHVV     'HWHFWLRQ 0HWKRG
                    3LQJ
```

ªP È ç _ <m#fA ò y

IP address	U ã F Ë DHCP ï € IP ª-ož
Detection Method	Ï s y • což

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

4.52 show ip dhcp history

ªP DHCP 7 W c ³ " £

show ip dhcp history

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- — Þ . g

o¬ x X % "o- Ô Ó ï % "

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- ¥ x X K 9 Server F å z ¥ x X U Y ª P DHCP] ã F c ³ ' Î

o¬ F å †o- 1 y ª P DHCP] ã F c ³ ' Î

```
5XLMLH VKRZ LS GKFS KLVWRU\
([SLUHG FOLHQWV
,3 DGGUHVV      +DUGZDUH DGGUHVV     /HDVH H[SLUDWLRQ
                DEFG  DF       ,'/(
                DEFG  DH       ,'/(
                DEFG  DG       ,'/(
5XQQLQJ FOLHQWV
```

ªP È ç _ <m#fA ò y

IP address	] ã F Ë DHCP ï € IP ª-ož

Total	ª - P U ˆ ã F ª - P È ƒož
Distributed	] ã F ª - ƒ)ož
Remained	, Ì ã F y U Ö þ • ª - ƒ)ož

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

4.54 show ip dhcp pool

ª P DHCP Æ ˜ ª - P … Õ Ñ C ¿ ï ä ˆ ’ Î

show ip dhcp pool [poolname]

o¬ @ ƒ ª ¢o-

@ ƒ	T
poolname	g U # h Q ò 0 6 d f ª - P ’ Îož Þ . Õ Ñ ª P ñ Ä ª - P F å

o¬ Þ . F åo- — Þ . g

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z ¥ x X U Y ª P DHCP Æ ˜ ª - P … Õ Ñ Y C ª - ï ä ˆ ’ Î

o¬ F å †o- 1 y ª P DHCP Æ ˜ ª - P … Õ Ñ C ¿ ï ä ˆ ’ Î

```
5XLMLH  VKRZ LS GKFS SRRO
5XLMLH VK LS GK SRRO
3RRO  QDPH      7RWDO     'LVWULEXWHG  5HPDLQHG  3HUFHQWDJH
QHW
test          0          0          0          0.00000
```

ª P È ç _ < m #fA ò

Remained	, Ì ã F y U Ö þ • ª - ƒ)ož
Percentage	¢ ù ª - P ª - ï ä

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

4.55 show ip dhcp relay-statistics

ª P DHCP Æ ˜ _ _ Ï ‹ ƒ G

show ip dhcp relay-statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- — Þ . g

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Relay F å

o¬ F å †o- 1. ª P DHCP -Relay _ _ Ï ‹ ƒ G

```
5XLMLH VKRZ LS GKFS UHOD\ VWDWLVWLFV
&\FOH PRGH

0HVVDJH                    &RXQW
'LVFRYHU
2IIHU
5HTXHVW
$FN
1DN
'HFOLQH
5HOHDVH
,QIR
%DG
```

```
'LUHFWLRQ                    &RXQW
5[ FOLHQW
5[ FOLHQW XQL
5[ FOLHQW EUR
7[ FOLHQW
7[ FOLHQW XQL
7[ FOLHQW EUR
5[ VHUYHU
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

4.56 show ip dhcp server statistics

ªP DHCP Æ ˜ _ _ Ï ‹ ƒ G

show ip dhcp server statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- — Þ . g

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X K 9 Server F å z ¥ x X U Y ª P DHCP Æ ˜ ¢ ù _ ¾ Ï ‹ ƒ G

o¬ F å †o- 1. ªP DHCP Æ ˜ _ _ Ï ‹ ƒ G

```
5XLMLH VKRZ LS GKFS VHUYHU VWDWLVWLFV
$GGUHVV SRROV
/HDVH FRXQWHU
$FWLYH /HDVH &RXQWHU
([SLUHG /HDVH &RXQWHU
0DOIRUPHG PHVVDJHV
'URSSHG PHVVDJHV
```

```
0HVVDJH                    5HFHLYHG
%2275(48(67
'+&3',6&29(5
'+&35(48(67
'+&3'(&/,1(
'+&35(/(($6(
'+&3,1)250

0HVVDJH                     6HQW
%2275(3/<
'+&32))(5
'+&3$&.
'+&31$.
'+&35(47,0(6
'+&35(468&7,0(6
',6&29(5 352&(66 (5525
/($6( ,1 3,1*67$7(
12 /($6( 5(6285&(
6(59(5,' 12 0$7&+

UHFY
VHQG
```

ª P È ç _ < m #fA ò

Address pools	ª - P ƒ
Automatic bindings	ª - Ç ƒ)ož
Manual bindings	ô W ª - Ç ƒ)ož
Expired bindings	Ê ª - Ç ƒ)ož
Malformed messages	DHCP N I ñ 3 o † ƒ)ož
Message Received or Sent	DHCP Æ ˜ N v y G ? _ † ƒ)ož
DHCPREQTIMES	DHCP v ñ ¬ L † È ƒ)
DHCPREQSUCTIMES	DHCP v ñ ¬ L t è Ô ò † ƒ)
DISCOVER-v6OCESS-ERROR	DHCP v ñ DISCOVER † Ô ò ß j ƒ)
LEASE-IN-PINGSTATE	¢ ù Ô ¨ PING y Ù Á c ³ ƒ)
NO-LEASE-RESOURCE	— ª - U ã F ª - P ƒ)
recv	v ñ DISCOVER kREQUEST k INFORM † M È ƒ)

send	Î • G € • † ƒ) Ï ‹

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

4.57 show ip dhcp socket

ª P DHCP Æ ˜ ñ N « –

show ip dhcp socket

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P DHCP Æ ˜ ì N « –

```
U X L M L H  V K R Z  L S  G K F S  V R F N H W
G K F S  V R F N H W
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

5 DHCPv6

5.1 clear ipv6 dhcp client

¨ N M M o DHCPv6 ï €ož

clear ipv6 dhcp client interface-type interface-number

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type	N M • ºož
interface-number	

o¬ … 6 -o- * ¥ x X U Y Ž ” — Õ ¢ ù DHCPv6 Relay , ¼ _ • † v G Õ Ñ Ï ‹ož

o¬ F å †o- 1 y Ž ” DHCPv6 Relay Agent Ï ‹ ’ Î x X †ož

```
5XLMLH FOHDU LSY GKFS UHOD\ VWDWLVWLFV
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

5.3 ipv6 dhcp client ia

¨ N M o DHCPv6 client w ¬ L IANA ª - ’ Îož
ipv6 dhcp client ia [rapid-commit]

¨ N M ¼ { DHCPv6 client ª - ¬ Ložž
no ipv6 dhcp client ia

o¬ @ ƒ ª ¢o-

@ ƒ	T
rapid-commit	ª • … • A ; iož

o¬ Þ . F åo- IANA ª - ¬ L Z Ä o ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç DHCPv6 ï € % ” Z Ä ø • k ¥ x X k ¨ N M o DHCPv6 ï € % ”ož
ipv6 dhcp client ia x X o $ e k g DHCPv6 Server G ß IANA ª - ¬ Ložž
rapid-commit ¼ p ª • ï € y Æ ˜ € … two-message A ; i k ò ç F å 4 ¥ ¼ p k ï € G ß
solicit ƒ Î 1 m rapid-commit # ¾ož

o¬ F å †o- 1 y ¨ N M o ª - ’ Î ¬ Ložž

```
5XLMLH FRQILJ LQWHUIDFH IDVWHWKHUQHW
5XLMLH FRQILJ LI LSY GKFS FOLHQW LD
```

o¬ à • co- 1 y … show ipv6 dhcp interface x X k U Y ò 0 N M © k o DHCPv6 Clientož

o¬ U P ’ Îo- 1 y ò ç o DHCPv6 Client â Â k é U Pož

```
)DLOHG WR FRQILJXUH '+&3Y LQWHUIDFH SOHDVH WU\ DJDLQ
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.4 ipv6 dhcp client pd

¨ N M o DHCPv6 client w ¬ L ª - ù Ö ' Îož
ipv6 dhcp client pd prefix-name [rapid-commit]

¨ N M ¼ { DHCPv6 client ¼ { ª - ù Ö ¬ Lož
no ipv6 dhcp client pd

o¬ @ ƒ ª ¢o-

@ ƒ	T
prefix-name	IPv6 * ù Ö dož
rapid-commit	ª • … • A ; iož

o¬ Þ . F åo- ª - ù Ö ¬ L Z Ä o ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç DHCPv6 ï € % ” Z Ä ø • k ¥ x X k ¨ N M o DHCPv6 ï € % ”ož
ipv6 dhcp client pd x X o $ e k g DHCPv6 Server G ß ù Ö ¬ Lož± ñ ù Ö ' Î ž k client k 1 ù Ö
' Î ‘ ¨ IPv6 * ù Ö P k ¿ U x X Y C • i ~ < U Y … ù Öožož
rapid-commit ¼ p ª • ï € y Æ ˜ € … two-message A ; i k ò ç F å 4 ¥ ¼ p k ï € G ß
solicit ƒ Î 1 m rapid-commit # ¾ož

o¬ F å †o- 1 y ¨ N M o ù Ö ' Î ¬ Lož

```
5XLMLH FRQILJ LQWHUIDFH IDVWHWKHUQHW
5XLMLH FRQILJ LI LSY GKFS FOLHQW SG SGBQDPH
```

o¬ à • co- 1 y … show ipv6 dhcp interface x X k U Y ò 0 N M © k o DHCPv6 Clientož

o¬ U P ' Îo- 1 y ò ç o DHCPv6 Client â Â k é U Pož

```
)DLOHG WR FRQILJXUH '+&3Y LQWHUIDFH SOHDVH WU\ DJDLQ
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.5 ipv6 dhcp relay destination

ø • î N M DHCPv6 Relay Agent w 6) ª - C ñ) ª - N Mož

ipv6 dhcp relay destination ipv6-address [interface-type interface-number]

¼ { N M Relay Agent ê ñ í ”) ª -ož

no ipv6 dhcp relay destination ipv6-address [interface-type interface-number]

o¬ @ ƒ ª ¢o-

@ ƒ	T
ipv6-address	6 Relay Agent) € ª -ož
interface-type	6 ñ) € N M • º g U # **b**ž
interface-number	6 ñ) € N M Ú Z g U # **b**ž

o¬ Þ . F åo- Z Ä N M DHCPv6 Relay Agent k Z Ä 6) ª - C ñ) ª - N Mož

2 y ò ç N M Y C Ô 9 ¿ U % ” k é U P j ¨ož

, Q W H U I D F H L V L Q '+ & 3 [[[P R G H

3 y ò ç F å â Â k é U P j ¨ož

) D L O H G W R F R Q I L J X U H '+ & 3 Y U H O D \ S O H D V H W U \ D J D L Q

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

5.6 show ipv6 dhcp

ò 0 — Õ DUID ’ Îož

show ipv6 dhcp

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”o• ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- c%² — Õ Æ ˜o• ï €o• Ð » %² DUIDož

o¬ F å †o- 1 y ª P ¢ ù — Õ DUIDož

5 X L M L H V K R Z L S Y G K F S

7 K L V G H Y L F H V '+ & 3 Y X Q L T X H L G H Q W L I L H U '8 , ' G I E

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

5.7 show ipv6 dhcp interface

ò 0 DHCPv6 N M ’ Îož

show ipv6 dhcp interface [interface-name]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-name	N M d fož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç Z Ä 6 @ ƒ interface-name k é ª P ñ Ä DHCPv6 N M ’ Îož ò ç 6 4 @ ƒ interface-name k é Q ª P 6 N M ’ Îož

o¬ F å †o- 1 y ª P N M ’ Î(S + DHCPv6-SERVER) y

```
5XLMLH VKRZ LSY GKFS LQWHUIDFH
9/$1 LV LQ VHUYHU PRGH
 6HUYHU SRRO GKFS SRRO
 5DSLG &RPPLW GLVDEOH
```

< † K y

<	ª ¢
xxx is in yyy mode	N M xxx Ô 9 yyy % ”ož % ” Ä yClient kRelay k Serverož
Server pool xxx	N M % ” x0786]TJ /TT63/C2_0 1 Tf5f5fA08>7< Tf 0Td [0736061

o¬ @ ƒ ª ¢o-

6 DNS

6.1 clear host

Ž ” Á Ñ d Ù Ï nož
clear host [* | host-name]

o¬ @ ƒ ª ¢o-

@ ƒ	T
host-name	U Y í ” î 6 Á ¿ d Ù Ïož
*	n P í ” ñ Ä Á ¿ d Ù Ï

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Ñ d Ù Ï n ¥ 0 “ £ k Ä Û › y

* ip host ê ipv6 host ² Á F å z
* DNS Á .ož ü g ¥ x X k k í ” ¢ ù * DNS Á . ñ Ñ d “ £ož

o¬ F å †o- 1 y Y F å k k í ” Ñ d-IP ª - Ù Ï n ñ Ä Á . ñ ¥ 0 “ £ Ä

5 X L M L H F R Q I L J F O H D U K R V W

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

6.2 ip domain-lookup

o DNS g ¿ d † äož
ip domain-lookup

¼ { DNS ¿ d † ä ož
no ip domain-lookup

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ F å †o- 1 y ² Á F å www .test.com ¿ d 192.168.5.243

5 X L M L H F R Q I L J L S K R V W Z Z Z W H V W F R P

o¬ à • co- show run ò 0 F å k ¨ ñ F å x X

show hosts ò 0 ¢ ù ¿ d y IP + • ¼ © k ¨ ñ F å ¿ d y IP + • n ¾

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

6.4 ip name-server

F å ¿ d Æ ˜ IP/IPv6 ª -ož

ip name-server { ip-address | ipv6-address }

í " F å ¿ d Æ ˜ož

no ip name-server { ip-address | ipv6-address

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

6.5 ipv6 host

ô W F å Ñ d y IPv6 ª - ¥ 0ož
ipv6 host host-name ipv6-address

í ” Ñ ç nož
no ipv6 host host-name ipv6-addres

o¬ @ ƒ ª ¢o-

@ ƒ	T
host-name	— Õ Ñ d
Ipv6-address	— Õ IPV6 ª -

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ² Á F å ¿ d + • ipv6 ª -
5 X L M L H F R Q I L J L S Y K R V W Z Z Z W H V W F R P '%

o¬ à • co- show run ò 0 F å k ¨ ñ F å x X
show hosts ò 0 ¢ ù ¿ d y IP + • ¼ © k ¨ ñ F å ¿ d y ip + • n ¾

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

6.6 show hosts

ª P DNS F å ' Îož

show hosts [hostname]

o¬ @ ƒ ª ¢o-

@ ƒ	T
hostname	ò 0 6 ¿ dož Þ . Õ Ñ ò 0 ñ Ä ¿ d ' Î

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

F å FTP k ¢ • Ä | ž x
ftp-server login timeout time

… ¥ x X no ¥ ” Ê Ö q ~ ž ’ ó • › g2 ã U h
no ftp-server login timeout

Ê Ö Þ . F å
default ftp-server login timeout

o¬ @ ƒ ª ¢o-

@ ƒ	T
time	q ~ ž ’ g % y y ã U z 8 y1-30 h

o¬ Þ . F åo- ó • ž ’ 2 ã U

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- • Ä | ž • © 6 ï • y e N e k ?) • š ï Ã Z y % A Â x ¨ ¿ ž •ož ¨ ¥ Ä | ž • Ä ï 3 Ì Ç)
g ï % A • š 1 t 2 k ¢ k R ò ‘ š ¿ U ï Ü •ož

o¬ F å †o- 1 y Y P 8 ò ~ F å q ~ ž ’ 5 ã U y
5 X L M L H F R Q I L J I W S V H U Y H U O R J L Q W L P H R X W
2 y Y P 8 ò ~ Ê Ö q ~ ž ’ ó • › g10 ã U h y
5 X L M L H F R Q I L J Q R I W S V H U Y H U O R J L Q W L P H R X W

o¬ à • co-

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

7.3 ftp-server login times

F å FTP k ¢ • Ä |) ƒ
ftp-server login times time

… ¥ x X no ¥ ” Ê Ö ó • › g3) h

no ftp-server login times

Ê Ö Þ . F å
default ftp-server timeout

o¬ @ ƒ ª ¢o-

@ ƒ	T
time	q ~ ž ’ g 8 y1-10 h

o¬ Þ . F åo- ó •) ƒ 3)

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- k ¢ Ä |) ƒ © 6 ¨%² FTP k ¢ ¨ • i k ï Â Ú U Y g Ã Z % A • š) ƒ ož ó • — å 3
) k / ¨ ® ‹) ÿ µ j ¨ ï d ê % A ž k k ¢ t 2 k R ò ª • ¿ U ï ¿ož

o¬ F å †o- 1 y Y P 8 ò ~ F å q ~ ž ’ 5 ã U y
5 X L M L H F R Q I L J I W S V H U Y H U O R J L Q W L P H V
2 y Y P 8 ò ~ Ê Ö q ~ ž ’ ó • › g3) h y
5 X L M L H F R Q I L J Q R I W S V H U Y H U O R J L Q W L P H V

o¬ à • co-

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

7.4 ftp-server timeout

F å FTP k ¢ q ~ ž ’ gSession idle timeout h
ftp-server timeout time

… ¥ x X no ¥ ” Ê Ö q ~ ž ’ ó • › g10 ã U h
no ftp-server timeout

Ê Ö Þ . F å
default ftp-server timeout

o¬ @ ƒ ª ¢o-

@ ƒ	T
time	q ~ ž ’ g % y y ã U z 8 y1-3600 h

o¬ Þ . F åo- ó • ž ’ 10 ã U

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- F å FTP k ¢ q ~ ž ’ož ò ç ¢ ù k ¢ ¨ 6 ž ’ Z Ä g ` ~ q • g k ¢ q ~ h kFTP Æ ˜ / U
• N] Æ â | k ò • • ¥ ï N
k ¢ q ~ ž • © 6 ¨%² FTP k ¢ R) FTP q • è e ñ) FTP q • • ÷ $ • ž •ož Æ ˜ ¨%²
FTP x X Æ è e g ò%² † ^ ¶ B n ÿ B e h R 0 • ÷ ‹ ‘ k ¢ q ~ ž • z ¨ x X ñ Û ž ˜
2 ‹ ‘ k ¢ q ~ ž •ož œ 4 k ¢ q ~ ž ’ F å w k + î ? ô ž † ^ n ÿ q • k Û ` ~ § €

o¬ F å †o- 1 y Y P 8 ò ~ F å q ~ ž ’ 5 ã U y

```
5 X L M L H F R Q I L J I W S V H U Y H U W L P H R X W
```

2 y Y P 8 ò ~ Ê Ö q ~ ž ’ ó • › g10 ã U h y

```
5 X L M L H F R Q I L J Q R I W S V H U Y H U W L P H R X W
```

o¬ à • co- 1. show ftp-server U 0 ñ F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

7.5 ftp-server topdir

’ ò FTP ï € Ü g † ^ ¯ Ê q •) £ 8
ftp-server topdir directory

… ¥ x X no ¥ ” ¨ , W 2 ï € ˜ | FTP Æ ˜ ` ~ † ^
no ftp-server topdir

Ê Ö Þ . F å
default ftp-server topdir

o¬ @ ƒ ª ¢o-

@ ƒ	T
directory	FTP ï € Ü g q • ½ C) £

o¬ Þ . F åo- ó • — ½ C) £ — å g ª • ¯ Ê ` ~) £ h

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- FTP Æ ˜ ½ C) £ ’ 4 ï € £ e U Y ˜ | † ^) £ 8 ož · À 3 G 6 ½ C) £ õ • FTP ï € ˜ | FTP Æ ˜ † ^
3 Z Ä F å ¥ x X kFTP ï € 1 — c ˜ | Æ ˜ ` ~ † ^ ê) £

o¬ F å †o- 1 y Y P 8 ò ~ o FTP Æ ˜ w ’ ò ï € N ˜ | syslog ÿ) £ož

```
5XLMLH FRQILJ IWS VHUYHU WRSGLU V\VORJ
5XLMLH FRQILJ IWS VHUYHU HQDEOH
```

2 y Y P 8 ò ~ H ƒ ÿ) £ F åož

```
5XLMLH FRQILJ QR IWS VHUYHU WRSGLU
```

o¬ à • co- 1 yshow ftp-server U 0 ñ F å è

o¬ U P ’ Îo- 1 y Ì F å ˜ |) £

```
)73659 86(5 +DYHQ W FRQILJ WRSGLU
```

2 y F å ¨) £

```
5XLMLH FRQILJ IWS VHUYHU WRSGLU DE
IROGHU DE GRQ W H[LVW
```

o¬ o • j ¨o- 1. F å ³ c) £
2. Ì F å) £

o¬ u V ª ¢o- -

7.6 ftp-server username password

F å FTP Æ ˜ £ ï d y % A
ftp-server username username password [type] password

… ¥ x X no ¥ ” H ƒ ï d F å
no ftp-server username username

Ê Ö Þ . F å

default ftp-server username username

o¬ @ ƒ ª ¢o-

@ ƒ	T
username	£ ï d
password	£ % A

o¬ Þ . F åo- ó • — ï d k — % A

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- F å ï € • FTP Æ ˜ ž ¬ } U ˆ ï dož ï € £ ž ¬ } c ž U ˆ 3 G ï d y % A õ £ož
ï d Â Ý x † 64 … k • ª • Ä q ož ï d U Y 6 † >o• ! … ƒ y ! … … Z Á èožFTP
Æ ˜ Â Ú Q F å%² ï d
% A · À m > ê ƒ k % A ù e U Y Ä q k x 1 t ¿ z % A • q • % A %² B ãož
¢ † % A Â 4 x † 1 …o• Â Ý x † 25 … z % † % A Â 4 x † 4 …o• Â Ý x † 52
…
FTP Æ ˜ · À F å £ ï d y £ % A Y Ž + ï € N g ï a à š k % A y ï%²%² F +ož FTP Æ
˜ u 4 d ï £ k ò ç Ž ” 4 ï d F å ï € 1 — c * Æ ˜ ï a à š

o¬ F å †o- † 1 y Y P 8 ò ~ F å ï d user y

```
5XLMLH FRQILJ IWS VHUYHU XVHUQDPH XVHU SDVVZRUG SDVV
```

† 2 y Y P 8 ò ~ H ƒ ï d F å y

```
5XLMLH FRQILJ QR IWS VHUYHU XVHUQDPH XVHU
```

o¬ à • co- 1: show ftp-server U • F å è

o¬ U P ’ Îo- 1: Ì F å ï d k ï : ¡ N

```
)73659 86(5 +DYHQ W FRQILJ XVHUQDPH
```

2. F å ï d x

```
5XLMLH FRQILJ VVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVGGGGGGG
8VHUQDPH DEFGHIJKMLMNOQQ VVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVV
is NULL or too long, max length is 64.
```

3 yServer € Ì F å % A k ï : ¡ N

```
)73659 3$66 +DYHQ W FRQILJ SDVVZRUG
```

4 y F å % † % A x † ß ?

```
5XLMLH FRQILJ IWS VHUYHU XVHUQDPH XVHU SDVVZRUG
,QYDOLG HQFU\SWHG SDVVZRUG PLQ OHQJWK LV PD[ OHQJWK LV
```

5 y F å ¢ † % A ß x

```
5XLMLH FRQILJ IWS VHUYHU XVHUQDPH XVHU SDVVZRUG DEFGHIJKLMNO
% Password is too long, max length is 25
```

o¬ o • j ¨o- 1. F å ï d m ³ c … ê x
2. Ì F å ï d < : ¡ N
3. ï Ì F å % A
4. F å % A x † ß ? ê ñ ß x
5. ÿ µ ³ c % A

o¬ u V ª ¢o- -

7.7 show ftp-server

ª P FTP Æ ˜ ,¼ Ù Á ' Î
show ftp-server

o¬ @ ƒ ª ¢o-	@ ƒ	T
	-	-

o¬ Þ . F åo- -

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ª P FTP Æ ˜ ,¼ Ù Á ' Î k , y
Æ ˜ © k o
Æ ˜ ½ C) £
Æ ˜ ï ' Î y ï do• % Ao• N ƒož 3 Ä N é ª P N , ¼ IP,Port k n ÿ • º k % ” ê
t % ” ˆ ' Îož

o¬ F å †o- 1: Y P 8 ò ~ ò 0 FTP Æ ˜ ,¼ Ù Á ' Î y

```
5XLMLH VKRZ IWS VHUYHU
   IWS VHUYHU LQIRUPDWLRQ

HQDEOH   <
WRSGLU   WPS
WLPHRXW    PLQ
XVHUQDPH DDDD       SDVVZRUG  3/$,17 EEEE       FRQQHFW QXP> @
   > @WUDQV W\SH %,1$5<  FWUO VHUYHU ,3          > @
                        FOLHQW ,3          >   @
```

8 FTP Client

8.1 copy flash

… FTP Client Î ª — Õ † ^ n ñ Æ ˜ož

copy flash: [local-directory/] local-file ftp: //username:password@dest-address [/remote-directory] / remote-file

o¬ @ ƒ ª ¢o-	@ ƒ	T
	username	£ FTP Server

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.2 copy ftp

… FTP Client R Æ ˜ † ^ ú ñ — Õož

copy ftp: //username:password@dest-address

o¬ à • co- … dir ¨ Î ª ª — Õ ò 0 local-file † ^ © k ¨ k ¨ ú è k ¨ ú â Âož

o¬ U P ’ Îo- ú è k ø • debug ftp-client k U P , • j ¨ k è k U P successož

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.3 ftp-client ascii

… † Î gASCII h • ” g FTP n ÿož
ftp-client ascii

H ƒ † Î n ÿ • ” k … 8 ò n ÿ • ”ož
no ftp-client ascii

Ê Ö Þ . F å. ož
default ftp-client

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ó • Õ Ñ FTP n ÿ % ” 8 ò gBINARY h • ”

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- _ É ° default a — ¨ Ü FTP Client K ì ˜ " ‡ ô l U „ N PASV º ´ 3 Ñ Ž Û
•) % BINARY f ´ º j W IP â) û ^ G d

o¬ F å †o- 1 y F å … † Î gASCII h • ” g FTP n ÿož

```
5 X L M L H  F R Q I L J  I W S  F O L H Q W  D V F L L
```

2 y F å … † Î gBINARY h • ” g FTP n ÿož

```
5 X L M L H  F R Q I L J  Q R  I W S  F O L H Q W  D V F L L
```

3 yFTP Client Ê Ö Þ . F åož

```
5 X L M L H  F R Q I L J  G H I D X O W  I W S  F O L H Q W
```

o¬ à • co- 1 y … show run x X k U Y ò 0 ftp-client ascii F åož

o¬ U P ’ Îo- 1 y%² F å è k k ß ë ` ~ U Pož
2 y%² F å è k k ß ë ` ~ U Pož

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.4 ftp-client port

F å FTP … gPORT h • ” g ƒ G Nož
ftp-client port

Ê Ö t • ”ož
no ftp-client port

Ê Ö Þ . F å. ož
default ftp-client

o¬ @ ƒ ª ¢o-	@ ƒ	T

3 yFTP Client Ê Ö Þ . F åož

5 X L M L H F R Q I L J G H I D X O W I W S F O L H Q W

o¬ à • co- 1 y … show run x X k U Y ò 0 ftp-client port F åož

o¬ U P ’ Îo- 1 y%² F å è k k ß ë ` ~ U Pož
2 y%² F å è k k ß ë ` ~ U Pož

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

8.5 ftp-client source-address

FTP Client U Y Ç ï € › IP ª - k … ¥ IP ª - Æ ˜ € IP ª - g * ’ož
ftp-client source-address {ip-address | ipv6-address}

H ƒ + ï € › IP ª - Ç ož
no ftp-client source-address

Ê Ö Þ . F å. ož
default ftp-client

o¬ @ ƒ ª ¢o- @ ƒ

5 X L M L H F R Q I L J I W S F O L H Q W V R X U F H D G G U H V V

2 y F å FTP Client Ç ï € › IP 4 2003:0:0:0::2 ª -ož

5 X L M L H F R Q I L J I W S F O L H Q W V R X U F H D G G U H V V

3 yno x X H ƒ + ï € › IP ª - Ç ož

5 X L M L H F R Q I L J Q R I W S F O L H Q W V R X U F H D G G U H V V

4 yFTP Client Ê Ö Þ . F åož

5 X L M L H F R Q I L J G H I D X O W I W S F O L H Q W

o¬ à • co- 1 y … show run x X k U Y ò 0 ftp-client source-address 192.168.23.236 F åož

2 y … show run x X k U Y ò 0

9 TFTP-Server

9.1 tftp-server enable

o TFTP Æ ˜ož
tftp-server enable

2 TFTP Æ ˜ož
no tftp-server enable

o¬ @ÆïµXlïµXt˜l'D@Xf |n\|nöÌ•n 5 X L uÂÀ € ° ` • À À ˜T0 p €n€%%„D$@$ï° œ • Vt˜fo¬ ÆïµXlïµXtûP Eïo¶àr F rÂ RG sY€gp¹ O a nð˜ l

-	-

o¬ Þ . F åo- ¼ { Ù Á

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ TFTP Æ ˜ o ž k * TFTP ï € U Y $ N k w g † ^ n ê ú ˆ q • k · À c ž F å 4 x
X y tftp-server topdir x X õ … TFTP ï € ˜ | TFTP Æ ˜ † ^ož

o¬ F å †o- 1 y o TFTP Æ ˜ w ’ ò ï € N ˜ | syslog ÿ) £ož

’ò TFTP ï€ Ü g † ^ ¯ Ê q •) £ 8 ož
tftp-server topdir directory

… ¥ x X no ¥ ” ¨ , W 2 ï € ˜ | TFTP Æ ˜ ` ~ † ^ož
no tftp-server topdir

Ê Ö Þ . F åož
default tftp-server topdir

o¬ @ ƒ ª ¢o-

@ ƒ	T
directory	TFTP

10 ¯ › ä ù4ì Z p V ¿

10.1 clear rping table all

Ž ” Rping ñ Ä n ¾ož

clear rping table [all | [ping-object owner test-name] | [trace-object owner test-name]]

o¬ @ ƒ ª ¢o- @ ƒ

ffff k w — å › IP ª - 192.168.21.99ož

```
o• SLQJ
5XLMLH SLQJ OHQJWK QWLPHV GDWD IIII VRXUFH V
6HQGLQJ E\WH ,&03 (FKRHV WR WLPHRXW LV VHFRQ
   SUHVV &WUO & WR EUHDN !


6XFFHVV UDWH LV SHUFHQW URXQG WULS PLQ DYJ PD[
ªP GHWDLSQ1QJ
SLQJ OHQJWK QWLPHV GDWD IIII VRXUFH WLP
6HQGLQJ E\WH ,&03 (FKRHV WR WLPHRXW LV VHFRQG
   SUHVV &WUO & WR EUHDN !
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/
5HSO\ IURP E\WHV WLPH PV 77/

6XFFHVV UDWH LV SHUFHQW URXQG WULS PLQ DYJ PD[ P
```

ò• 29 ,yQ‡â [vrf "hH'´ õ© ¬• "È»n˜•• " yd

o¬ à•co- -

o¬UP'Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

10.3 ping ipv6

y 6 IPv6 ª - © k U °V Â` œ ¼ '•®ož ð ð ÉF‡f e S à ? P aA&/ \@ Ð C ÐZ P ?0 Á P “e-Ùï \@ I0Z P ? •€ n_

6XFFHVV UDWH LV SHUFHQW URXQG WULS PLQ DYJ PD[P

ªP GHWDLO SLQJ
5XLMLH SLQJ GHWDLO
6HQGLQJ E\WH ,&03 (FKRHV WR WLPHRXW LV VHFRQGV
SUHVV &WUO & WR EUHDN !
5HSO\ IURP E\WHV WLPH PV
5HSO\ IURP E\WHV WLPH PV
5HSO\ IURP E\WHV WLPH PV
5HSO\ IURP E\WHV WLPH PV
5HSO\ IURP E\WHV WLPH PV

6XFFHVV UDWH LV SHUFHQW URXQG WULS PLQ DYJ PD[PV
2 y ý J ping ipv6 †ož 6) IP ª - 2001::5 k G ƒ G x † 1500 k G ƒ G ƒ 20 k
Ý ž ž • 3 a k D2Hÿàz‡D–./3H| C$€C$•V VûÂ • X…"GW ž30 € 0 á $8S4qÀ• 2H 2H ` o¼! • X…8 € P € ` M` @

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

10.4 show rping detail

ò 0 Rping ’ Îož
show rping detail

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”o• ¶ B % ”o• N M % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y ò 0 — Õ Rping ’ ò + » È ƒ k ï ƒ ˆ ’ Îož

o¬ F å †o- 1 y ò 0 Rping ¦ Â ’ Î

```
5XLMLH VKRZ USLQJ GHWDLO
7RWDO RZQHU QXPEHU
7RWDO WHVW QXPEHU
RZQHU XVHU
  WHVW QDPH WDJHWB VWRUDJH W\SH YRODWLOH
  WHVW QDPH WDJHWB VWRUDJH W\SH QRQ9RODWLOH
RZQHU XVHU
  WHVW QDPH WDJHWB VWRUDJH W\SH SHUPDQHQW
  WHVW QDPH WDJHWB VWRUDJH W\SH UHDG2QO\
```

< † K y

<	ª ¢
Total owner number	ï È ƒ

o¬ u V ª ¢o- -

10.5 traceroute

ª P IPv4 ƒ G R › ª - ñ) ª - ñ Æ à ¼ož

traceroute [ip] [adress [probe number] [source source] [timeout seconds] [ttl minimum maximum]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
address	6) IPv4 ª - ê ¿ dož
number	6 G M y ƒ O k 8 y1~255ož
source	6 † › IPv4 ª - ê › N Mož ¿ k ê › N M ª - g † ò 127.0.0.1 h ª • • › ª -
seconds	6 Ý ž ž • k 8 y1~10 g a hož
minimum maximum	6 Â 4 y Â Ý TTL › k 8 y1~255ož

o¬ Þ . F åo- Þ . Ý ž ž • 3 a k G M y ƒ O 3 k Â 4 y Â Ý TTL ã ð 1 y 255ož

o¬ x X % ”o- ¨ ¯ * ï % ” k Q g Â Î traceroute z ¨ Ô Ó ï % ” k U Y g traceroute ý J ož

o¬ Þ . ´ ðo- 0

1~10 ¨ ¯ * ï %U"‡ k Q O£Ã“=

```
 SUHVV &WUO & WR EUHDN !
7UDFLQJ WKH URXWH WR
                    PVHF   PVHF   PVHF
                      PVHF   PVHF   PVHF
                      PVHF    PVHF    PVHF

                      PVHF    PVHF    PVHF
                      PVHF    PVHF    PVHF
                      PVHF    PVHF    PVHF
                      PVHF    PVHF    PVHF
                      PVHF    PVHF    PVHF
                      PVHF    PVHF    PVHF
                      PVHF    PVHF    PVHF
                      PVHF    PVHF    PVHF
                      PVHF    PVHF     PVHF
                       PVHF    PVHF    PVHF
                        PVHF    PVHF    PVHF
                        PVHF    PVHF    PVHF
                        PVHF    PVHF    PVHF
                       PVHF    PVHF    PVHF
```

R µ ÈçUY0ñkR›ª-}˜| IP ª- 202.108.37.42 ÑkàÌƒG CÆ 4„?à¼g1
l17hkw à¼ 4 ßë4{žož
3yç … ¿d †ÿož

```
5XLMLH WUDFHURXWH ZZZ LHWI RUJ
7UDQVODWLQJ ZZZ LHWI RUJ >2.@
 SUHVV &WUO & WR EUHDN !
7UDFLQJ WKH URXWH WR
                    PVHF   PVHF   PVHF
                      PVHF   PVHF   PVHF
                      PVHF   PVHF   PVHF
                       PVHF  PVHF   PVHF
                      PVHF   PVHF   PVHF
                       PVHF  PVHF   PVHF
                      PVHF   PVHF   PVHF
                       PVHF   PVHF   PVHF
                       PVHF   PVHF   PVHF
                       PVHF   PVHF   PVHF
                       PVHF   PVHF   PVHF
                       PVHF   PVHF   PVHF
                       PVHF   PVHF   PVHF
                       PVHF   PVHF   PVHF
```

P V H F P V H F P V H F
P V H F P V H F P V H F

P V H F P V H F P V H F

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

10.6 traceroute ipv6

ª P IPv6 ƒ G R › ª - ñ) ª - ñ Æ à ¼ož

traceroute [ipv6] [address [probe number] [timeout seconds] [ttl minimum maximum]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
address	6) IPv6 ª - ê ¿ dož
number	6 G M y ƒ O k 8 y1~255ož

OŽ

P V H F P V H F P V H F
P V H F P V H F P V H F

R µ È ç U Y 0 ñ k R › ª - } ˜ | IP ª - 3004::1 Ñ k à Ì ƒ G C Æ 4 „ ? à ¼ g1 l4 h k
c ž Ë ß 4 ñ ¥ à ¼ ñ 0 Ë ž •ož
2 y ç à Ì î ? à ¼ * traceroute ipv6 † ÿož

5 X L M L H W U D F H U R X W H L S Y
S U H V V & W U O & W R E U H D N !
7 U D F L Q J W K H U R X W H W R
P V H F P V H F P V H F
P V H F P V H F P V H F
P V H F P V H F P V H F

P V H F P V H F P V H F

R µ È ç U Y 0 ñ k R › ª - } ˜ | IP ª - 3004::1 Ñ k à Ì ƒ G C Æ 4 „ ? à ¼ g1 l5 h k
w à ¼ 4 ß ë 4 { žož

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11 TCP

11.1 ip tcp keepalive

¥ x X Û • o TCP ‘ t ož

ip tcp keepalive [interval num1] [times num2] [idle-period num3]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interval num1	G ‘ t † ž • • œ k % y © a k H › 8 © 1 ñ 120 k Þ . › © 75 aož
times num2	G ‘ t †) ƒ k H › 8 © 1 ñ 10 k Þ . › © 6ož
idle-period num3	q ~ ž • k / + € Z Ä g Î € G † ž • x † k % y © a k H › 8 © 60 ñ 1800 k Þ . › © 15 ã Uož

o¬ Þ . F åo- ¼ {ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- ò ç TCP e È = 3 + € © k ¨ 3 o W • k U Y • o ‘ t ož
• — ï • o ‘ t k ž • • œ k) ƒ y q ~ ž • C … Þ . › kTCP ¨ 15 ã U Ä Z Ä v ñ + € G † k • ÷ G ‘ t † k ? œ 75 a G %²) k Ò G 6) k ò ç Z Ä v ñ + • G ` ~ TCP † k <
• TCP N — | k K y TCP Nož
¥ x X Ç ã Æ ˜ € y ï € k + ñ Ä TCP N C ÿ |ož

o¬ F å †o- 1 y ¨ — Õ • o TCP ‘ t k q ~ ž • © 3 ã U k G ‘ t † ž • • œ © 60 a k ò ç Ò G 4) ‘ t † k Z Ä v ñ + • G ` ~ TCP † k < • TCP N — |ož
5 X L M L H F R Q I L J L S W F S N H H S D O L Y H L Q W H U Y D O W L P H V L G O H S H U L R

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.2 ip tcp mss

— å TCP N MSS Â Ý ›ož

ip tcp mss max-segment-size

Ê Ö Þ . F åož

no ip tcp mss

o¬ @ ƒ ª ¢o-

@ ƒ	T
max-segment-size	MSS ’ ›ož % y - k H › 8 68-10000ož ó • … ÿ G MTU ‹ ‘ ± ñ MSSož

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ip tcp mss • < © ’ ò / 1 • y TCP N MSS Â Ý ›ož ` ~ • • y N # Œ MSS › Ý
F å ›ož ò ç } × 4 N Â Ý MSS › k U Y F å ¥ x X k%² " Õ Ñ ¬ } F åož ó • … ÿ G MTU
‹ ‘ ± ñ MSS k ò ñ P y
IPv4 TCP y MSS = + € IP ª - + • ß M IP MTU - 20 - IP Ù B - 20 - TCP Ù Bož
IPv6 TCP y MSS = + € IPv6 ª - + • è ¬ MTU - 40 - IPv6 Ù B - 20 - TCP Ù Bož
ò ç ¥ N u 4 î ? # ¾ k; " MSS } × > # ¾ 4 - + ÷ e x † ›ožò MD5 # ¾ } × > 20 - k MD5
¾ x † 18 - k + ÷ e 20 -ož
ò ç ï F å 4 MSS k Ž ÿ | MSS © R ÿ G MTU ‹ ‘ ± ñ MSS y ï F å MSS H û 4 ›ož

o¬ F å †o- 1 y — å TCP N MSS ’ › 1300 -ož

```
5 X L M L H  F R Q I L J   L S  W F S  P V V
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.3 ip tcp path-mtu-discovery

ø • TCP è ¬ MTU G ë ož

ip tcp path-mtu-discovery [age-timer minutes | age-timer infinite]

¼ { TCP è ¬ MTU G ë ož

no ip tcp path-mtu-discovery

o¬ @ ƒ ª ¢o-

@ ƒ	T
age-timer minutes	TCP ¨ G ë PMTU e k M • g M y ž • • œož% y ã U k H › 8 10-30ož Þ . › 10ož
age-timer infinite	TCP ¨ G ë PTMU e k M • M yož

o¬ Þ . F åo- ¼ {ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- TCP è ¬ Â Ý n ÿ % « G ë © 7 RFC1191 ë k U Y U ä à Ì k ! ï äož ¢ ï …
TCP Û O n ÿ Ý ² ƒ G ž k ¥ U Y … n ÿ Å ± ñ ¢ ª U ož
7 RFC1191 T k TCP ¨ G ë PMTU e k œ%² < ž • U Y … ¾ Ý MSS Û M y • PMTUož ž •
• œ < © … @ ƒ age-timer Û 6 ož¢ — Õ G ë PMTU A TCP N € # Œ ß Û MSS 4 ž k— Õ < k
7 F å ž • • œ k > : ¡ G ë ¾ Ý PMTUož + ñ PMTU ñ MSS › k ê ñ ï 2 ž ˜ k
M y i õ k 2ož 2 ž ˜ k … age-timer infinite @ ƒož

o¬ F å †o- 1 y • o PMTU G ë ož

```
5 X L M L H  F R Q I L J   L S  W F S  S D W K  P W X  G L V F R Y H U \
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

no ip tcp synwait-time

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	SYN † Ý ž ž •ož % y a k H › 8 5-300 k Þ . › 20ož

o¬ Þ . F åo- Þ . Ý ž ž • 20 a

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç à Ì ¨ SYN x à k × 5 SYN Ý ž ž • U Y … 2%² ? Ï › ƒ ô k x + Ò SYN x à ñ | çož ¨ — Õ Ù ¬ L • y N ž k × 5 SYN Ý ž ž • U Y × 5 ï ^ - ž • k ò telnetož ò ç à Ì A û [- U Y ¢ Í Ý ž ž •ož

o¬ F å †o- 1 y — å • y N SYN † Ý ž ž • 10 aož

5 X L M L H F R Q I L J L S W F S V \ Q Z D L W W L P H

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.6 ip tcp window-size

— å TCP v M Ý 4ož

ip tcp window-size size

Ê Ö Þ . ›ož

no ip tcp window-size

o¬ @ ƒ ª ¢o-

@ ƒ	T
size	v M Ý 4ož % y © - k H › 8 128-(65535 << 14) k Þ . › © 65535ož

o¬ Þ . F åo- Þ . › © 65535 -

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- TCP N v Ù Ï Û Ù R + € N v ñ ƒ G k ? ƒ G e Ò k t • i ~ ¯ Hož‰² " Õ Ñ k TCP v M
› F ¥ N v Ù Ï q ~ q • Ý 4ož + 9 k ! A û Ýo• Ä Ý O ƒ G N k Í Ý v M U Y ª K U ä TCP
n ÿ Å ož
ò ç v M Ý 9 65535 - k • o v M ý Ý ož

o¬ F å †o- 1 y — å v M Ý 4 16386 -ož
5 X L M L H F R Q I L J L S W F S Z L Q G R Z V L] H

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.7 service tcp-keepalives-in

• o TCP Æ ˜ € ‘ t ož
service tcp-keepalives-in [interval] [garbage]

¼ { TCP Æ ˜ € ‘ t
no service tcp-keepalives-in

o¬ @ ƒ ª ¢o-

@ ƒ	T
interval	G ‘ t † ž • • œ k % y © a k H › 8 © 1 ñ 65535 k Þ . › © 60 a
garbage	‘ t † ` k%² - — | ƒ G k ó • ` kož

o¬ Þ . F åo- ¼ { TCP Æ ˜ € ‘ t

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Ä ž ˜ TCP Æ ˜ e È = 3 ï € © k ¨ 3 o W • k < ¬ } … TCP ‘ t ož
ò ç Ò G 4) ‘ t † k Z Ä v ñ + • G ` ~ TCP † k < • TCP N — | k K y TCP
Nož

o¬ F å †o- 1 y • o TCP Æ ˜ € ‘ t k G ‘ t † ž • • œ © 10 a k ‘ t † ` k%² - — | ƒ Gož
5 X L M L H F R Q I L J V H U Y L F H W F S N H H S D O L Y H V L Q J D U E D J H

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.8 service tcp-keepalives-out

• o TCP ï € ‘ t ož
service tcp-keepalives-out [interval] [garbage]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interval	G ‘ t † ž • • œ k % y © a k H › 8 © 1 ñ 65535 k Þ . › © 60 a
garbage	‘ t † ` k%² - — | ƒ G k ó • ` kož

o¬ Þ . F åo- ¼ { TCP ï € ‘ t

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- TCP ï € U Y … ‘ t M y Æ ˜ © k ¨ 3 o W • ož
ò ç Ò G 4) ‘ t † k Z Ä v ñ + • G ` ~ TCP † k < • TCP N — | k K y TCP
Nož

o¬ F å †o- 1 y • o TCP ï € ‘ t k G ‘ t † ž • • œ © 10 a k ‘ t † ` k%² - — | ƒ Gož
5 X L M L H F R Q I L J V H U Y L F H W F S N H H S D O L Y H V R X W J D U E D J H

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

11.9 show ipv6 tcp connect

ª P © Ï ¢ ù IPv6 TCP N Â Î ’ Îož

show ipv6 tcp connect [local-ipv6 X:X:X:X::X] [local-port num] [peer-ipv6 X:X:X:X::X] [peer-port num]

ª P © Ï ¢ ù IPv6 TCP N Ï ‹ ’ Îož

show ipv6 tcp connect statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
local-ipv6 X:X:X:X::X	Î ª IPv6 ª -
local-port num	Î ª € M
peer-ipv6 X:X:X:X::X	+ € IPv6 ª -
peer-port num	+ € € M
statistics	ò 0 IPv6 TCP N Ï ‹ ’ Î

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 © Ï ¢ ù IPv6 TCP N Â Î ’ Îož

```
5XLMLH VKRZ LSY WFS FRQQHFW
1XPEHU /RFDO $GGUHVV )RUHLJQ $GGUHVV 6WDWH 3URFH
/,67(1 UJ VVKG
/,67(1 UJ WHOQHWG
(67$%/,6+(' UJ WHOQHWG
```

< † K y

<	ª ¢
Number	~ Zož
Local Address	Î ª ª - € M Z k Â e%² È Z e µ ƒ © € M Zož
Foreign Address	€ ª - € M Z k Â e%² È Z e µ ƒ © € M Zož

State TCP N ¢ ù Ù Á k Ä 11 _ U Ù Á y
CLOSE ' y N] • • g † P 5 Qs=î¬ G’] y Î € v ß
LISTEN y ! n Ù Á
SYNSENT ySYN †] G ß k) W ô ‰ <
SYNRCVD ySYN †] N v ñ k) W ô ‰ <
ESTABLISHED y N] • y
FINWAIT1 y Î €] Æ G ß FIN †
FINWAIT2 y Î € G ß FIN †] Æ t G •
CLOSEWAIT y Î € v ñ 4 + € FIN †
LASTACK y Î € v ñ 4 + € FIN † k À @ŒÂ ÃkÀ¡• É

ª P IPv6 TCP N è ¬ MTUož

show ipv6 tcp pmtu [local-ipv6 X:X:X:X::X] [local-port num] [peer-ipv6 X:X:X:X::X] [peer-port num]

o¬ @ ƒ ª ¢o- úÐ

d ` !úÐ

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 © Ï ¢ ù IPv6 TCP € M … Õ Ñož

```
5XLMLH VKRZ LSY  WFS SRUW
7&3 FRQQHFWLRQV RQ SRUW
1XPEHU  /RFDO $GGUHVV )RUHLJQ $GGUHVV    6WDWH
                                    (67$%/,6+('
7RWDO

7&3 FRQQHFWLRQV RQ SRUW
1XPEHU  /RFDO $GGUHVV )RUHLJQ $GGUHVV    6WDWH
7RWDO
```

< † K y

<	ª ¢
Number	~ Z
Local Address	Î ª ª - € M Zož
Foreign Address	€ ª - € M Zož
State	TCP N ¢ ù Ù Á k Ä 11 _ U Ù Á y CLOSED: N] • • LISTEN y ! n Ù Á SYNSENT ySYN †] G ß k) W ô ‰ < SYNRCVD ySYN †] N v ñ k) W ô ‰ < ESTABLISHED y N] • y FINWAIT1 y Î €] Æ G ß FIN † FINWAIT2 y Î € G ß FIN †] Æ t G • CLOSEWAIT y Î € v ñ 4 + € FIN † LASTACK y Î € v ñ 4 + € FIN † k À e Î € G ß 4 \ FIN ¨ ‘•FI

o¬ u V ª ¢o- -

11.12 show tcp connect

ª P © Ï ¢ ù IPv4 TCP N Â Î ' Îož

show tcp connect [local-ip a.b.c.d] [local-port num] [peer-ip a.b.c.d] [peer-port num]

ª P © Ï ¢ ù IPv4 TCP N Ï ‹ ' Îož

show tcp connect statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
local-ip a.b.c.d	Î ª IP ª -
local-port num	Î ª € M
peer-ip a.b.c.d	+ € IP ª -
peer-port num	+ € € M
statistics	ò 0 IPv4 TCP N Ï ‹ ' Î

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 © Ï ¢ ù IPv4 TCP N Â Î ' Îož

```
5XLMLH VKRZ WFS FRQQHFW
1XPEHU /RFDO $GGUHVV )RUHLJQ $GGUHVV 6WDWH 3URFH
/,67(1 UJ VVKG
/,67(1 UJ WHOQHWG
(67$%/,6+(' UJ WHOQHWG
```

< † K y

<	ª ¢
Number	~ Zož
Local Address	Î ª ª - € M Z k È Z e µ ƒ © € M Z k A ò “1.1.1.1:23” “23” © € M Zož
Foreign Address	€ ª - € M Z k È Z e µ ƒ © € M Z k A ò “1.1.1.1:23” “23” © € M Zož

State	TCP N ¢ ù Ù Á k Ä 11 _ U Ù Á y CLOSE ' y N] • • LISTEN y ! n Ù Á SYNSENT ySYN †] G ß k) W ô ‰ < SYNRCVD ySYN †] N v ñ k) W ô ‰ < ESTABLISHED y N] • y FINWAIT1 y Î €] Æ G ß FIN † FINWAIT2 y Î € G ß FIN †] Æ t G • CLOSEWAIT y Î € v ñ 4 + € FIN † LASTACK y Î € v ñ 4 + € FIN † k À e Î € G ß 4 \ FIN † CLOSING y Î € G ß FIN † k ¨ + € › • ¥ FIN † ACK † ñ Û $ ù v ñ 4 + € FIN † TIMEWAIT yÎ € G FIN † t G • 4 kw Î € -] Æ G • 4 N v ñ FIN †
Process name	i d f

2 y ò 0 © Ï ¢ ù IPv4 TCP N Ï ‹ ' Îož

```
5XLMLH VKRZ WFS FRQQHFW VWDWLVWLFV
6WDWH &RXQW

(67$%/,6+('
6<1B6(17
6<1B5(&9
),1B:$,7
),1B:$,7
7,0(B:$,7
&/26('
&/26(B:$,7
/$67B$&.
/,67(1
&/26,1*
7RWDO
```

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

11.13 show tcp parameter

ª P © Ï ¢ ù TCP @ ƒ ’ Î

show tcp parameter

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 © Ï ¢ ù tcp @ ƒ ’ Î

```
5XLMLH VKRZ WFS SDUDPHWHU
+DVK WDEOH LQIRUPDWLRQ
  (VWDEOLVKHG KDVK EXFNHW VL]H
  %LQG KDVK EXFNHW VL]H
0HPH L HPH f+ ð¢€ `°! Að Â`°p0
```

```
2USKDQ VRFNHW LQIRUPDWLRQ
  0D[ RUSKDQV
  0D[ RUSKDQ UHWULHV
  &XUUHQW RUSKDQV
```

< † K y

<	ª ¢
Hash table information	TCP N • e n @ ƒ ’ Î
Memory information	TCP N v G Ù @ ƒ ’ Î
SYN specific information	TCP Æ € N Š n , ¼ @ ƒ ’ Î
Timewait specific information	TIMEWAIT Ù Á TCP N @ ƒ ’ Î
Keepalive information	TCP ‘ t ž U @ ƒ ’ Î
MTU probing	MTU M y , ¼ @ ƒ ’ Î
FIN specific information	TCP N ¼ { , ¼ @ ƒ ’ Î
Orphan socket information	Ì À } • ¼ û TCP N @ ƒ ’ Î

o¬ U P ’ Îo- -

11.14 show tcp pmtu

ª P IPv4 TCP N è ¬ MTUož

show tcp pmtu [local-ip a.b.c.d] [local-port num] [peer-ip a.b.c.d] [peer-port num]

o¬ @ ƒ ª ¢o-

@ ƒ	T
local-ip a.b.c.d	Î ª IP ª -
local-port num	Î ª € M
peer-ip a.b.c.d	+ € IP ª -
peer-port num	+ € € M

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 IPv4 TCP N è ¬ MTUož

```
5XLMLH VKRZ WFS SPWX
1XPEHU /RFDO $GGUHVV )RUHLJQ $GGUHVV 3078
```

< † K y

<	ª ¢
Number	~ Z
Local Address	Î ª ª - € M Zož
Foreign Address	€ ª - € M Zož
State	TCP N ¢ ù Ù Á k Ä 11 _ U Ù Á y CLOSED: N] • • LISTEN y ! n Ù Á SYNSENT ySYN †] G ß k) W ô ‰ < SYNRCVD ySYN †] N v ñ k) W ô ‰ < ESTABLISHED y N] • y FINWAIT1 y Î €] Æ G ß FIN † FINWAIT2 y Î € G ß FIN †] Æ t G • CLOSEWAIT y Î € v ñ 4 + € FIN † LASTACK y Î € v ñ 4 + € FIN † k À e Î € G ß 4 \ FIN † CLOSING yÎ € G ß FIN † k¨ + € › • ¥ FIN † ACK † ñ Û $ ù v ñ 4 + € FIN † TIMEWAIT y Î € G FIN † t G • 4 k w Î € -] Æ G • 4 N v ñ FIN †

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

11.16 show tcp statistics

ª P © Ï ¢ ù TCP Ï ‹ ’ Î k m † N v ’ Î k) W ô ’ Î k time-wait N ’ Î

show tcp statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 2

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 © Ï ¢ ù tcp Ï ‹ ' Î

```
5XLMLH VKRZ WFS VWDWLVWLFV
7&3 3DFNHWV
  5HFHLYHG
  (UURUV      FKHFNVXP
7KUHH ZD\ KDQGVKDNH
  5HTXHVW TXHXH RYHUIORZ
  $FFHSW EDFNORJ IXOO
  :HE DXWKHQWLFDWLRQ OLPLW SHU XVHU
  )DLOHG WR DOORF PHPRU\ IRU UHTXHVW VRFN
  )DLOHG WR FUHDWH RSHQ UHTXHVW FKLOG
  6<1 $&. UHWUDQVPLWV
  7LPHRXWHG UHTXHVWV
7LPH ZDLW
  7LPH ZDLW EXFNHW WDEOH RYHUIORZ
```

< † K y

<	ª ¢
TCP Packets	TCP N v ñ 3 o † k j ¨ †
Three way handshake	) W ô i ' Î k m v ñ N ¬ L) ƒ k • Æ ˜ € ï € • y N) ƒ k 9 WEB • š ' ò -) W ô â Â) ƒ k Ä á ò — c ë • TCP ì N) ƒ k — c ë • ÿ N) ƒ k † M n) ƒ Y C † M n Ý ž - N Ì • y) ƒ ož
Time-wait	TIMEWAIT Ù Á N ' Î

o¬ U P ' Îo- -

12 Æ] IPv4/v6 ¼ Ã

12.1 clear ip ref packet statistics

Ž ” IPv4 ½ ô ¢ ù † Ï ‹ ’ Îož

clear ip ref packet statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y Ž ” IPv4 ½ ô ¢ ù † Ï ‹ ’ Îož

5 X L M L H F O H D U L S U H I S D F N H W V W D W L V W L F V

o¬ U P ’ Îo- -

o¬ u V ª ¢o-

12.2 clear ipv6 ref packet statistics

Ž ” IPv6 ½ ô ¢ ù † Ï ‹ ’ Îož

clear ipv6 ref packet statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y Ž ” IPv6 ½ ô ¢ ù † Ï ‹ ’ Îož

```
5XLMLH FOHDU LSY UHI SDFNHW VWDWLVWLFV
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o-

12.3 show ip ref adjacency

ª P Ô > N - µ ’ Î ê ¢ ù ñ Ä > N - µ ’ Îož

show ip ref adjacency [glean | local | ip-address | interface interface_type interface_number | discard | statistics]

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
glean	¤ ` > N - µ
local	Î ª > N - µ
ip-address	> N %² é IP
interface_type	6 N M • º
interface_number	6 N M Ú Z
discard	ª P ’ > N - µ
statistics	Ï ‹ ’ Î

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X U Y ª P ¢ ù IPv4 ½ ô > N n ’ Î k U Y 6 ª P ¤ ` > No• Î ª > No• 6 IP + • > No• 6 N M ¼ û > N C ñ Ä > N - µ , ¼ ’ Îož

o¬ F å †o- 1 y ª P ñ > N n ñ Ä > N ’ Îož

```
5XLMLH VKRZ LS UHI DGMDFHQF\
LG VWDWH W\SH UIFW FKJ LS LQWHUIDFH OLQNOD\H
  XQUHVROYHG PFDVW
  UHVROYHG IRUZDUG *LJDELW(WKHUQHW
  UHVROYHG IRUZDUG *LJDELW(WKHUQHW )
  XQUHVROYHG JOHDQ *LJDELW(WKHUQHW
  XQUHVROYHG ORFDO /RFDO
```

ª P È ç _ < T y

<	ª ¢
id	> N ö œ
state	> N Ù Á unresolve y Ì † ä resolved y] † ä
type	> N • º local y Î ª > N forward y ô G > N discard y ’ > N glean y ¤ ` > N mcast y Á n > N
rfct	> N t – ‹ *ƒ*
chg	> N © k ¨ J e
ip	> N + • IP ª -
interface	ß N M
linklayer	8 C ã

o¬ U P ’ Îo- -

o¬ u V ª ¢o-

12.4 show ip ref exact-route

ª P IP † G ä ô G è ¬ož

show ip ref exact-route source_ipaddress dest_ipaddress

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
source_ipaddress	† › IP ª -
dest_ipaddress	†) IP ª -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * ¥ x X k 6 IP † › IP ª -) IP ª - k U Y ª P ß Ô † ô G è ¬ož

o¬ F å †o- 1 y ò 0 R 192.168.217.74 ñ 192.168.13.1 ô G è ¬ož

```
5XLMLH VKRZ LS UHI H[DFW URXWH
                !
LG VWDWH W\SH UIFW FKJ LS LQWHUIDFH OLQNOD\H
  UHVROYHG IRUZDUG *LJDELW(WKHUQHW &
```

ª P È ç _ < T y

<	ª ¢
id	> N ö œ
state	> N Ù Á unresolve y Ì † ä resolved y] † ä
type	> N • º local y Î ª > N forward y ô G > N discard y ’ > N glean y ¤ ` > N mcast y Á n > N
rfct	> N t – ‹ *f*
chg	> N © k ¨ J e
ip	> N + • IP ª -
interface	ß N M
linklayer	8 C ã

o¬ U P ’ Îo- -

o¬ u V ª ¢o-

12.5 show ip ref packet statistics

ª P IPv4 ½ ô ¢ ù † Ï ‹ ’ Îož

show ip ref packet statistics

o¬ @ *f* ª ¢o-

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P IPv4 ½ ô ¢ ù † Ï ‹ ’ Îož

```
5XLMLH VKRZ LS UHI SDFNHW VWDWLVWLF
UHI SDFNHW VWDWLVWLF
    EDG KHDG
    ORRNXS ILE IDLO
    ORFDO DGM
    JOHDQ DGM
    IRUZDUG
    UHGLUHFW
    WWO H[SLUDWLRQ
    QR LS URXWLQJ
```

ª P È ç _ < T y

<	ª ¢
bad head	ã j ¨ † ƒ)
lookup fib fail	½ ô # è â Â † ƒ)
local adj	F ñ Î ª > N † ƒ)
glean adj	F ñ M ü > N † ƒ)
forar	F ñ ô G > N † ƒ) F ñ ô G > N5‡ † ƒ)

-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P IPv4 ½ ô † ä ’ Îož

```
5XLMLH VKRZ LS UHI UHVROYH OLVW
, 3                UHVBVWDWH IODJV LQWHUIDFH
                   XQUHV          *LJDELW(WKHUQHW
```

<	ª ¢
IP	IP ª -
res_state	unres y Ì † ä kres y † ä
flags	0 y > N — ¼ k 1 y > N , ¼
interfae	N M d f

o¬ U P ’ Îo- -

o¬ u V ª ¢o-

12.7 show ip ref route

ª P ¢ ù IPv4 ½ ô ñ Ä è ’ Îož

show ip ref route [default | ip mask | statistics]

o¬ @ ƒ ª ¢o-

@ ƒ	T
default	6 ó • è
ip	6 è) IP
mask	6 è Q A
statistics	Ï ‹ ’ Î

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- U Y ª P ¢ ù IPv4 ½ ô è ’ Î k U Y 6 ª P ó • è o• 6 IP/MASK F è o• ñ Ä è ’ Îož

o¬ F å †o- 1 y ª P ¶ B ½ ô n ñ Ä è ' Îož

```
5XLMLH VKRZ LS UHI URXWH
&RGHV      GHIDXOW URXWH
          ]HUR URXWH
 LS PDVN          ZHLJKW  SDWK LG      QH[W KRS        LQWHUIDFH
                                          /RFDO
                                          /RFDO
                                          *LJDELW(WKHUQHW
                                          *LJDELW(WKHUQHW
                                          /RFDO
                                          *LJDELW(WKHUQHW
```

ª P È ç _ < T y

<	ª ¢
ip/mask	) IP ª - y Q A x †
path-id	> N « – ö œ
weight	è Ó M
next_hop	%² é
interface	ÿ ß N M

o¬ U P ' Îo- -

o¬ u V ª ¢o-

12.8 show ipv6 ref adjacency

ª P IPv6 ½ ô > N , ¼ ' Îož

show ipv6 ref adjacency [glean | local | ipv6-address | interface interface_type interface_number | discard | statistics]

o¬ @ ƒ ª ¢o-

@ ƒ	T
glean	ª P ¤ ` > N - µ
local	ª P Î ª > N - µ
ipv6-address	ª P Ô ª -(x:x:x:x::x) > N ' Î
interface_type	6 N M • º
interface_number	6 N M Ú Z
discard	ª P ' > N - µ

statistics	ª P ñ Ä • º > N Ï ‹ ’ Î

show ipv6 ref exact-route source-ipv6-address destination-ipv6-address

o¬ @ ƒ ª ¢o-

@ ƒ	T
source-ipv6-address	› IPv6 ª -
destination-ipv6-address	) IPv6 ª -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ª P † › ª - 2001:db8:1::1 k) ª - 3001:db8:2::2 Ž ô G è ¬ož

```
5XLMLH VKRZ LSY H[DFW URXWH GE GE
GE ! GE
,' VWDWH W\SH UIFW FKJ LS LQWHUIDFH OLQNOD\HU KH
XQUHVROYH JOHDQ *LJDELW(WKHUQHW
```

<	ª ¢
id	> N - µ ö œ
state	> N - µ Ù Á
type	> N - µ • º local y Î ª > N forward y ô G > N discard y ’ > N glean y ¤ ` > N mcast y Á n > N
rfct	> N - µ è – ‹ ƒ
chg	0 y > N - µ ¨ > N J e 1 y > N - µ ¨ N J e
ip	> N IPv6 ª -
interface	> N - µ ¼ û Ò ò N M
linklayer(header data)	8 C ã Ê - ’ Î

12.10 show ipv6 ref packet statistics

ª P IPv6 ½ † Ï ‹ ’ Îož

show ipv6 ref packet statistics

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

>DE092E09B404F06FAD>Tw 736062DTf ( )Tj -0.0028 Tc 7.452 Tw 9 0 0 9

Ú ` Ÿ4¡ IP CÃ+ Q ¸ –5×,Ì G Y • È Ù À ¹ ß0´8V Ö

1. RIP
2. OSPFv2
3. OSPFv3
4. RIPNG
5. NSM
6. #A, ´ G

1 RIP

1.1 auto-summary

o RIP è M È ož
auto-summary

¼{ è M È ož
no auto-summary

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . o M È ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- RIP è M È k < © ¢ ÿ à è r Þ Ä • à Ì ž k 1 M È è Ä • à Ì è ož RIPv1 y RIPv2 Þ .
Õ Ñ 1 g è M Èož
RIP è M È k U ä 4 à Ì u Ý Å y Ä | Åož ò ç Ä M È è ¨ k ¨ è n 1 0 ñ m ¨
M È è Ä ÿ è k ý U Y Ý Ý Ý 4 è n • %ož
* s M È è k A * s % Þ ? Ú è 1 ¾ Ä | ä k } Ä Y œ ª y

- ¢ ò RIP ƒ G € ž k M È è k ± ñ i ¯ Ô ò z
- ¢ ò RIP ƒ G € ž k ` ~ ÿ è 1 t ¿ k × 5 4 Ô ò ž • z
- Ä ž U e È ñ À } ÿ à è k ò à Þ Q 0 ñ M È e à Ì è k ž ¬ } ¼ { è M È ož
  x Q Ä F å RIPv2 ž k õ U Y ¼ { è M È kRIPv1 È © • è M Èož

Ý à è 8 A Ä • à Ì ¾ Ý k ñ Y ¥ x X + Ý à è — |ož

o¬ F å †o- 1 y ¼ { RIPv2 è M Èož

```
5 X L M L H F R Q I L J  U R X W H U  U L S
5 X L M L H F R Q I L J  U R X W H U  Y H U V L R Q
5 X L M L H F R Q I L J  U R X W H U  Q R D X W R V X P P D U \
```

o¬ à • co- … show ip rip database U Y ò 0 ñ F å ü ` è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.2 default-information originate

¨ RIP i L D ÿ%² Ú Þ . è
default-information originate [always] [metric metric-value] [route-map map-name]

H *ƒ* ÿ è Þ . è ož
no default-information originate [always] [metric] [route-map map-name]

o¬ @ *ƒ* ª ¢o-

@ *ƒ*	T
always	¥ ¼ p … RIP — Ú ^ D ÿ Þ . è k ’ Î ª © k ¨ Þ . è ož
metric metric-value	Þ . è ì ÷ O † › kmetric-value H › 8 y1-15ož
route-map map-name	¼ û route-map d k Þ . Z Ä ¼ û route-map

o¬ Þ . F åo- Þ . Z Ä 6 D ÿ Þ . è z D ÿ Þ . è metric › Þ . 1ož

o¬ x X % ”o- è i F å % ”

o¬ Þ . ´ ðo- 14

o¬ … ™Â =úÐ

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.4 distance

— å RIP è ' ò å Yož
distance distance [ip-address wildcard]

Ê Ö Þ . — åož
no distance [distance ip-address wildcard]

o¬ @ ƒ ª ¢o-

@ ƒ	T
distance	— å RIP è ' ò å Y k1-255 $ • … ƒ
ip-address	è Û › IP ª - ù Ö
wildcard	# IP ª - A û A Ô y k0 n P ¤ G F k1 n Ÿ A ûož

o¬ Þ . F åo- ' ò å Y Þ . 120ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X — å RIP è ' ò å Yož
U Y … 4 x X ë • Ú Ú k › ª - ù Ö ' ò å Y k ¢ RIP è › ª - ¨ ? ù Ö 8 Ä k é • , • ' ò å Y k k é ¥ è • RIP — å ' ò å Yož

o¬ F å †o- 1 y F å RIP è ' ò å Y 160 k 6 R 192.168.12.1 . ñ è ' ò å Y 123ož

```
5 X L M L H F R Q I L J U R X W H U U L S
5 X L M L H F R Q I L J U R X W H U G L V W D Q F H
5 X L M L H F R Q I L J U R X W H U G L V W D Q F H
```

o¬ à • co- … show ip rip U Y ò 0 ¢ ù F å ' ò å Y

o¬ U P ' Îo- 1 y F å Q A j ¨ož

```
, Q Y D O L G P D V N Y D O X H
```

o¬ o • j ¨o- 1 y ¥ x X F å 4 j ¨ Q A

o¬ u V ª ¢o- -

1.5 distribute-list in

O ò è ¾ • Ô ò k Y ë è ¡ož

distribute-list { [access-list-number | name] | prefix prefix-list-name [gateway prefix-list-name] | [gateway prefix-list-name] } in [interface-type interface-number]

í ” O ò è ¾ • Ô ò k Y ë è ¡ož

no distribute-list { [access-list-number | name] | prefix prefix-list-name [gateway prefix-list-name] | [gateway prefix-list-name] } in [interface-type interface-number]

o¬ @ ƒ ª ¢o-

@ ƒ	T
access-list-number | name	6 ˜ | ç nož Q Ä ˜ | ç n ª • è k õ U Y t N vož
prefix prefix-list-name	… ù Ö ç n Û ¡ è ož
gateway prefix-list-name	… ù Ö ç n Û ¡ è ›ož
interface-type interface-number	¥ ã b ç n k Q • ¨ 6 N Mož

o¬ Þ . F åo- Þ . Z Ä # ã b ç nož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4 ! Í N v î ? 6 è k U Y * F å è ã b O ò ç n k + ñ Ä N v ñ è ¾ • † g Ô òož ò ç Z 6 N M k < + ñ Ä N M N v è ¾ • † g Ô òož

o¬ F å †o- 1 yRIP + R Fastethernet 0/0 € M N v è g O ò Ô ò k Q ª • N v 172.16 • ã è ož

o¬ U P ’ Îo-

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.6 distribute-list out

O ò è ¾ • * s k Y ë è ¡ož
distribute-list { [access-list-number | name] | prefix prefix-list-name } out [interface | [connected | ospf process-id | rip | static]]

í ” O ò è ¾ • * s k Y ë è ¡ož
no distribute-list { [access-list-number | name] | prefix prefix-list-name } out [interface | [connected | ospf process-id | rip | static]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
access-list-number | name	6 ˜ | ç nož Q Ä ˜ | ç n ª • è k õ U Y t G ož
prefix prefix-list-name	… ù Ö ç n Û ¡ è ož
Interface	è ¾ • * s O ò Q • ¨ 6 N Mož
connected	è ¾ • * s O ò Q • ¨ R + – µ è ož
ospf process-id	è ¾ • * s O ò Q • ¨ R ospf – µ è kprocess-id 6 À } î ospf †ož
rip	è ¾ • * s O ò Q • ¨ rip è ož
static	è ¾ • * s O ò Q • ¨ R ² Á – µ è ož

o¬ Þ . F åo- Þ . Z Ä O ò è ¾ • * sož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ¥ x X æ ` ~ U # @ ƒ k è ¾ • * s O ò + ñ Ä N M Ü • z ò ç æ N M # ¾ k è ¾ • * s O ò Q + 6 N M Ü • z ò ç æ ¿ è i @ ƒ k é è ¾ • * s O ò Q + 6 è i Ü • ož

o¬ F å †o- 1 yRIP è i Q + Ù * s 192.168.12.0/24 è ož

```
5XLMLH FRQILJ URXWHU ULS
5XLMLH FRQILJ URXWHU QHWZRUN
5XLMLH FRQILJ URXWHU QHWZRUN
5XLMLH FRQILJ URXWHU GLVWULEXWH OLVW RXW
```

```
5XLMLH FRQILJ URXWHU  YHUVLRQ
5XLMLH FRQILJ  DFFHVV OLVW  SHUPLW
```

o¬ à • co- + € — Õ … show ip route rip 0 ¡ © k Ä ÿ |ož

o¬ U P ’ Îo- 1 ygateway ¡ ó • 9

1.8 graceful-restart

F å — Õ RIP i £ M o(Graceful Restart kGR) ož
graceful-restart [grace-period grace-period]

Ê Ö ó • F åož
no graceful-restart [grace-period]

o¬ @ ƒ ª ¢o-

@ ƒ	T
graceful-restart	o i £ M o(Graceful Restart kGR) .
grace-period	ª ” F å grace-period

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.9 ip rip authentication key-chain

o RIP • š k w 6 RIP • š ñ … % W ož
ip rip authentication key-chain name-of-keychain

í ” 6 % W ož
no ip rip authentication key-chain

o¬ @ ƒ ª ¢o-

@ ƒ	T
name-of-keychain	% W d k 6 RIP • š ñ … % W ož

o¬ Þ . F åo- Þ . Ì ¼ û % W ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç % W ¨ N M F å 6 4 k ¬ … key chain ¶ B F å x X g ¥ % W # k k é 1 U - RIP
ƒ G • š â Âož
RIPv1 u 4 RIP ƒ G • š k Q Ä RIPv2 u 4ož

o¬ F å †o- 1 yfastEthernet 0/1 N M o RIP • š k ¼ û % W ripchain y

```
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI )DVW(WKHUQHW LS ULS DXWKHQWLFDWLRQ NH\ F
```

2 y … key chain # ¥ % W y

```
5XLMLH FRQILJ NH\ FKDLQ ULSFKDLQ
5XLMLH FRQILJ NH\FKDLQ NH\
5XLMLH FRQILJ NH\FKDLQ NH\ NH\ VWULQJ +HOOR
```

o¬ à • co- show ip rip interface ò 0 , ¼ F åož

o¬ U P ’ Îo- -

o¬ o • j ¨o- 1 y F å md5 • š ž ˜ k Z Ä i ¯ F å key-chainož

o¬ u V ª ¢o- -

1.10 ip rip authentication mode

RIP • š % ”ož
ip rip authentication mode { text | md5 }

Ê Ö Þ . RIP • š % ”ož
no ip rip authentication mode

o¬ @ ƒ ª ¢o-

@ ƒ	T
text	RIP • š % ” ¢ † • šož
md5	RIP • š % ” MD5 • šož

o¬ Þ . F åo- Þ . ¢ † • š % ”ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ F å RIP • š ž k ñ Ä ¬ } + N A E RIP è ’ Î — Õ k ñ F å RIP • š % ” · À%² k k é RIP ƒ G A E 1 â Âož
ò ç J ¢ † • š k x Ì F å ¢ † • š … k ê ñ Ì F å ¼ û % W k 4 ž w k Ä • š g G ÿož c ý k
ò ç J MD5 • š k x Ì F å ¼ û % W k - k Ä • š g G ÿož
RIPv1 u 4 RIP ƒ G • š k Q Ä RIPv2 u 4ož

o¬ F å †o- 1 yfastEthernet 0/1 N M RIP • š % ” — MD5ož

```
5 X L M L H F R Q I L J L Q W H U I D F H I D V W ( W K H U Q H W
5 X L M L H F R Q I L J L I ) D V W ( W K H U Q H W L S U L S D X W K H Q W L F D W L R Q P R G H
```

o¬ à • co- show ip rip interface ò 0 , ¼ F å

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.11

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ª • N M N v RIP ƒ G

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç } W 2 î N M N v RIP ƒ G k ¨ ¥ N M N M % ” … ¥ x X no ¥ ” F åož x X N • 9 F å 4 4 x X N Mož U … ¥ x X default ¥ ” Ê Ö N M N v RIP ƒ G ož

o¬ F å †o- 1 yfastEthernet 0/1 N M W 2 N v RIP ƒ G ož

```
5 X L M L H F R Q I L J L Q W H U I D F H I D V W ( W K H U Q H W
5 X L M L H F R Q I L J L I ) D V W ( W K H U Q H W Q R L S U L S U H F H L Y H H Q D E O H
```

o¬ à • co- … show ip rip interface Û ò 0 ¥ N M v F å Ù Á

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.14 ip rip receive version

RIP ¨%² N M 1 N v „ Í Î RIP ƒ G .

ip rip receive version [1] [2]

Ê Ö Þ . F åož

no ip rip receive version

o¬ @ ƒ ª ¢o-

@ ƒ	T
1	Q N v RIPv1 ƒ G ož
2	Q N v RIPv2 ƒ G ož

o¬ Þ . F åo- Þ . g H Đ 9 version x X F åož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X F å È ç k U Y ~ $ vesion x X Þ . F åož ¥ x X Q § € Î N M N v RIP † g k U Y ª
• ¥ N M c ž N v RIPv1 y RIPv2 ƒ G ož 4 x X F å ž k @ ƒ é N v g H Ð 9 version F åož

o¬ F å †o- 1 y … fastEthernet 0/1 N M U Y N v RIPv1 y RIPv2 ƒ G ož

```
5 X L M L H F R Q I L J L Q W H U I D F H I D V W ( W K H U Q H W
5 X L M L H F R Q I L J L I ) D V W ( W K H U Q H W L S U L S U H F H L Y H Y H U V L R Q
```

o¬ à • co- … show ip rip interface ê show ip rip Û ò 0 N M N v RIP † Í Î Z Ù Á

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.15 ip rip send enable

ª • RIP ¨%² 6 N M G RIP ƒ G .
ip rip send enable

W 2 RIP ¨%² 6 N M G RIP ƒ G ož
no ip rip send enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ª • N M G RIP ƒ G

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç } W 2 î N M G RIP ƒ G k ¨ ¥ N M N M % ” … ¥ x X no ¥ ” F åož x X N • 9 F å 4
4 x X N Mož U … ¥ x X default ¥ ” Ê Ö N M G RIP ƒ G ož

o¬ F å †o- 1 y … fastEthernet 0/0 N M W 2 G RIP ƒ G ož

```
5 X L M L H F R Q I L J L Q W H U I D F H I D V W ( W K H U Q H W
```

5XLMLH FRQILJ LI)DVW(WKHUQHW QR LS ULS VHQG HQDEOH

o¬ à • co- … show ip rip interface Û ò 0 ¥ N M G F å Ù Á

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.16 ip rip send supernet-routes

ª • RIP ¨%² 6 N M G RIP Ý à è ož
ip rip send supernet-routes

W 2 RIP ¨%² 6 N M G RIP Ý à è ož
no ip rip send supernet-routes

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ò 0 ¥₹NPM ù´ Ü o¬ u Y ‡ ˆÇ@ps=Â ðÆúÀfð§ð¶ ª†úÐ ”s2Àh q „2© ÷@ý Þ6 0 Ô t• 98R 4 4 Ñ q „6 Q&úÀgPU‘I „NNJ¥• Ô

1.18 ip rip split-horizon

o RIP J u ã ož
ip rip split-horizon [poisoned-reverse]

¼ { RIP J u ã ož
no ip rip split-horizon [poisoned-reverse]

o¬ @ ƒ ª ¢o-

@ ƒ	T
poisoned-reverse	o k @ Å " ô J u ã

o¬ Þ . F åo- o k @ Å " ô J u ã

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Ú V — Õ N ¨ IP z n • º à Ì kA g å Y g O è # ‘ ž k < Ä · } J J u ã Ñ ò Y 9 ² è ê
è ¥ èož J u ã U Y … 2 — Õ 1 î ? è ’ Î R . ñ ? è ’ Î N M * s ß > k _ g i 4 Ú
— Õ $ • è ’ Î A Eož
À ò + 9 ³ z n Ú è ˜ | à Ì g ò l Ðo• X.25 à Ì hk J u ã U - è B ã — Õ . ñ ¶ B è ’ Îož
¨ _ Õ Ñ k U ¬ } ¼ { J u ã ož ò ç % ² N M F å 4) IP ª - k - ¬ } h Þ J u ã | Êož
ò ç F å 4 poisoned-reverse @ ƒ k 1 o k @ Å " ô J u ã k — Õ Q À k 1 è ’ Î R . ñ ? è
’ Î N M * s ß > k x © 1 è ’ Î † O › — å U ož
RIP è # ‘ K 9 å Y g O è # ‘ k ¨ Ž • } h Þ J u ã | Êož ò ç G % ² N M © k o 4
J u ã k U Y show ip rip x X g î •ož P Ù * neighbor x X # > D k 1 k I ñ RIP J u ã
§ €ož

o¬ F å †o- 1 yfastEthernet 0/1 N M ¼ { RIP J u ã ož

```
5 X L M L H F R Q I L J L Q W H U I D F H I D V W ( W K H U Q H W
5 X L M L H F R Q I L J L I ) D V W ( W K H U Q H W Q R L S U L S V S O L W K R U L ] R Q
```

o¬ à • co- … show ip rip interface 0 J u ã © k F å è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.19 ip rip summary-address

¨ î N M F å RIP N M ´ M üož

ip rip summary-address ip-address ip-network-mask

¼ { 6 ª - ê ÿ à M üož

no ip rip summary-address ip-address ip-network-mask

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	} t M ü IP ª -
ip-network-mask	6 IP ª - g è M ü ÿ à Q A

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.20 ip rip triggered

o 7 ¬ e è RIP ‡ G ý J ož
ip rip triggered

¼ { RIP ‡ G ý J ož
no ip rip triggered

F å 7 ¬ e è RIP ‡ G ý J M n ž •
ip rip triggered retransmit-timer timer

Ê Ö 7 ¬ e è RIP ‡ G ý J M n ž •
no ip rip triggere d retransmit-timer

F å 7 ¬ e è RIP ‡ G ý J M n) ƒ
ip rip triggered retransmit-count count

Ê Ö 7 ¬ e è RIP ‡ G ý J M n) ƒ
no ip rip triggered retransmit-count

o¬ @ ƒ ª ¢o-

@ ƒ	T
retransmit-timer timer	F å M n Update Requesto•Update Response † ž • • œ k Þ . 5 a k H › 8 y1-3600
retransmit-count count	F å Update Requesto•Update Response † Â Ý M n) ƒ k Þ . 36) k H › 8 y1-3600

o¬ Þ . F åo- Þ . Ì o RIP ‡ G ý J

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- RIP ‡ G ý J gTRIP k Triggered RIP h © RIP # ‘ ¨ z ¿ à gWAN kWide Area Network h ý J k } • 9 7 ¬ e èož
¢ o 4 RIP ‡ G ý J k RIP # ‘ Ç ž G è ¾ • k Q ¨ Y 7 ^ G ÿ ž ˜ RIP õ k g z ¿ à N

M G è ¾ • y

z ¢ N v ñ è ¬ L †ož

z RIP è ’ Î G ÿ J ož

z ¢ N M Ù Á J ož

z ¢ è — Õ o ož

9 H ƒ 4 RIP ž ¾ • k œ 4 ¬ } J G • y M G Ñ ò Û ‘ š ¾ • † ¨ z ¿ à è G y N vož U Y
… retransmit-timer y retransmit-count 6 ¬ L y ¾ • † M n • œ y Â Ý M n) ƒož
¨ Y _ Õ Ñ ª • o ¥ y A. N M N ¨%² > D zB. ¨ Ú > D x © Y % n • ” A ;ož • ‘ ¨
PPPo• l Ðo•X.25 ˆ e è C # ‘ o ¥ z
• ‘ ¨ F å ¥ N M o k @ Å " ô J u ã k k é U k ß ë — | è ’ Î ; ˆ ë » z
· À } ‘ š c%² e è ñ Ä è — Õ C o 4 ¥ k k é 1 - ¥ â | k — c 3 G A ; è ’ Î z
o ¥ ž k ¬ ‘ š e è € RIP F å%² k ò yRIP • š k N M u 4 RIP # ‘ Í Î ˆ z
ò ç N M o 4 ¥ k é — – © k o › ª - û à g validate-update-source h k + ¥ N M † C
g › ª - û àož

o¬ F å †o- 1 y o RIP ‡ G ý J k w 6 Update Requesto•Update Response † M n • œ 10s k Â Ý M n)
ƒ 18ož

```
5 X L M L H F R Q I L J L Q W H U I D F H I D V W ( W K H U Q H W
5 X L M L H F R Q I L J L I ) D V W ( W K H U Q H W L S U L S W U L J J H U H G
5 X L M L H F R Q I L J L I ) D V W ( W K H U Q H W L S U L S W U L J J H U H G U H W U D Q V P L W
5 X L M L H F R Q I L J L I ) D V W ( W K H U Q H W L S U L S W U L J J H U H G U H W U D Q V P L W
```

o¬ à • co- Show running-config ò 0 © k F å è

o¬ U P ’ Îo- 1 y U P • o triggered Ä U k § € è .

```
: D U Q L Q J 7 K H F R Q I L J X U D W L R Q V I R U 7 U L J J H U H G 5 , 3 S H H U V K D O O E H V D
O H D U Q L Q J
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.21 ip rip v2-broadcast

ª • RIP version 2 † Y z n ò ³ Ú n • ” ¨ N M G †ož
ip rip v2-broadcast

Ê Ö Þ . F åož

no ip rip v2-broadcast

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . g H Ð 9 version x X F åož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X F å È ç k U Y ~ $ vesion x X Þ . F åož ¥ x X Q § € Î N M G RIP † g k U Y ª • ¥ N M c ž G RIPv1 y RIPv2 ƒ G ož 4 x X F å ž k @ ƒ é N v g H Ð 9 version F åož

o¬ F å †o- 1 y … fastEthernet 0/1 N M Y z n G RIPv2 †ož

5 X L M L H F R Q I L J L Q W H U I D F H I D V W (W K H U Q H W
5 X L M L H F R Q I L J L I) D V W (W K H U Q H W L S U L S Y E U R D G F D V W

o¬ à • co- … show ip rip interface Û ò 0 F å © k è

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.22 neighbor

RIP > D IP ª -ož
neighbor ip-address

í ” > D #ož
no neighbor ip-address

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	> D IP ª -ož • ¥ © Î ª — Õ + à Ì ª -ož

o¬ Þ . F åo- Þ . Z Ä # > Dož

o¬ x X % ”o- è i F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- RIPv1 Þ . … IP z n ª - g255.255.255.255 h * s è ' Î k RIPv2 Þ . … Á n ª - g224.0.0.9 h * s
è ' Îož ò ç e È z n à ê ³ z n Ú è ˜ | à ¶ B — Õ k ® U N v ñ è ' Î k U Y è i F å
x X passive-interface 1 , • N M — å t N M k À e Q # î ? > D U Y N v ñ è ' Îož ¥ x X k
§ € RIP ' Î † N vož — å 4 passive K Å N M k M o e - k G ¬ L †ož

o¬ F å †o- 1 y # RIP Q g > D 192.168.1.2 * s è ' Îož

```
5 X L M L H F R Q I L J U R X W H U U L S
5 X L M L H F R Q I L J U R X W H U S D V V L Y H L Q W H U I D F H G H I D X O W
5 X L M L H F R Q I L J U R X W H U Q H L J K E R U
```

o¬ à • co- Show running-config ò 0 © k F å è

o¬ U P ' Îo- 1 y , c F å] Æ ¨ož

```
6 W D W L F Q H L J K E R U F R Q I L J X U D W L R Q H [ L V W V
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.23 network

RIP è i } * s à Ì ç nož
network network-number [wildcard]

í "] # à Ìož
no network network-number [wildcard]

o¬ @ ƒ ª ¢o-

@ ƒ	T
network-number	+ à Ì à Ì Zož ¥ à Ì Z À • à Ì Z k IP ª - K 9 ¥ À à Ì ñ Ä N M C U G y N v RIP ƒ G ož
wildcard	# IP ª - A û A Ô y k0 n P ¤ G F k1 n Ÿ A ûož

o¬ Þ . F åo- -

o¬ x X % "o- è i F å % "ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ï U Y c ž F å network-number y wildcard @ ƒ k … J ¨ ¥ ª - 8 Ä N M ª - @ RIP gož
ò ç Ì F å wildcard @ ƒ kRGOS 1 ó • 7 Á Ä • ª - 8 Û Ô ò k… J ¨ ¥ Ä • ª - 8 Ä N M ª - @
RIP gož
Q Ä N M ª - J ¨ RIP # à Ì ç n k¥ N M õ U Y + Ù G RIP è ¾ • † kw N v RIP è ¾ •
†ož

o¬ F å †o- 1 y ª • J ¨ 192.168.12.0/24 y 172.16.0.0/24 8 Ä N M ª - @ RIP g y

```
5 X L M L H F R Q I L J U R X W H U U L S
5 X L M L H F R Q I L J U R X W H U Q H W Z R U N
5 X L M L H F R Q I L J U R X W H U Q H W Z R U N
```

o¬ à • co- Show running-config ò 0 © k F å è k - U Y … show ip rip interface ò 0 N M © k] Æ µ ñ RIP i
ož

o¬ U P ’ Îo-

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.24 offset-list

Í N v ê G RIP è metric ›ož
offset-list { access-list-number | name } { in | out } offset [interface-type interface-number]

í ” 6 offset ç nož
no offset-list { access-list-number | name } { in | out } offset [interface-type interface-number]

o¬ @ ƒ ª ¢o-

@ ƒ	T
access-list-number | name	6 ˜ | ç n
In	• acl + N v è metric g “ w
Out	• acl + G è metric g “ w
Offset	“ w metric J › k H › 8 y0-16
interface-type	• acl ñ 6 N M
interface-number	6 N M Ú Z

o¬ Þ . F åo- Þ . Z Ä 6 offset

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 3 î Ú RIP è c ž á 6 N M offset-list Y C Ì 6 N M ¶ B offset-list k é ¥ RIP è 1 k Í 6 N M offset-list metric ›ož

o¬ F å †o- 1 y ¨ acl 7 6 8 Ä RIP è õ k + metric Í 7ož

5 X L M L H F R Q I L J U R X W H U R I I V H W O L V W R X W

2 y * fastethernet0/1 . ¨ acl 8 6 8 Ä RIP è õ k + metric Í 7ož

5 X L M L H F R Q I L J U R X W H U R I I V H W O L V W L Q I D V W H W K H U Q H W

o¬ à • co- … show ip rip database Û ò 0 N M Û è © k Ä Í ¥ x X + • — å ›

o¬ U P ' Îo- 1 y N M ¨ ê 5 N M ³ což

, Q W H U I D F H L V L Q Y D O L G

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.25 output-delay

w J RIP ¾ • † G • žož
output-delay delay

H ƒ + ¾ • † G • ž — åož
no output-delay

o¬ @ ƒ ª ¢o- @ ƒ

o¬ F å †o- 1 y — å ñ Ä N M passive % ” k À e — å ethernet0/1 ³ passive % ”

```
5XLMLH FRQILJ URXWHU SDVVLYH LQWHUIDFH GHIDXOW
5XLMLH FRQILJ URXWHU QR SDVVLYH LQWHUIDFH HWKHUQHW
```

o¬ à • co- … show ip rip ê ñ show ip rip interface Û ò 0 † y N M t M F å

o¬ U P ’ Îo- 1 y N M ¨ ê 5 N M ³ což

```
,QWHUIDFH LV LQYDOLG
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.27 redistribute

F å M ã b Ù B è ’ Îož

redistribute { connected | ospf process-id | static } [match { internal | external [1 | 2] | nssa-external [1 | 2] }] [metric metric-value] [route-map route-map-name]

H *ƒ* M ã b Ù B è ož

no redistribute { connected | ospf process-id | static } [match { internal | external [1 | 2] | nssa-external [1 | 2] }] [metric metric-value] [route-map route-map-name]

o¬ @ *ƒ* ª ¢o-

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X 1 Ù B è ’ Î M ã b ñ RIP ož
è M ã b ž k 1%² è # ‘ O † ô E è P%² _ è # ‘ O † © Z Ä · } k œ c è # ‘ ñ J
O † ‹ ‘ • c © ¶ c ožRIP O † ‹ ‘ © Â 9 é ƒ kOSPF © Â 9 k ! k œ 4 [‹ ‘ ß Û O † © Z
Ä U A Å ož x © è M ã b ž k A · À } — å%² » « Å O † k k é è M ã b 1 â Âož
F å M ã b ospf è ž k k match @ ƒ ž k ó • ª • M ã b ñ Ä ÿ • º ospf è z

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- %² RIP è i k 5 } #%² à Ì Zož ò ç ‘ 5 ¿ è g Á è # ‘ k ¬ } ¨ ‘ 5 N M F å async default routing ož

o¬ F å †o- 1 y ë • RIP è i k µ è i F å % ”ož

```
5XLMLH FRQILJ URXWHU ULS
5XLMLH FRQILJ URXWHU
```

o¬ à • co- … show ip rip ò 0 † © k ë • è k è é k Ä + • ’ Î ÿ ß

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.29 show ip rip

ª P RIP è # ‘ i Â Î ’ Îož
show ip rip

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”o• ¶ B F å % ”o• è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- U 9 ½ , ª P RIP è # ‘ i ‹ ž ˜o• è ã Go• è M ã b Ù Áo• N M rip Í Îo• rip N M à Ì 8 o•metric distance ˆož

o¬ F å †o- 1 y ª P RIP è # ‘ i Â Î ’ Î k ò ¾ • ž •o• ’ ò å Y ˆož

```
5XLMLH VKRZ LS ULS
5RXWLQJ 3URWRFRO LV ULS
6HQGLQJ XSGDWHV HYHU\ VHFRQGV
,QYDOLG DIWHU VHFRQGV IOXVKHG DIWHU VHFRQGV
2XWJRLQJ XSGDWH ILOWHU OLVW IRU DOO LQWHUIDFH LV QRW VHW
```

```
,QFRPLQJ XSGDWH ILOWHU OLVW IRU DOO LQWHUIDFH LV  QRW VHW
'HIDXOW UHGLVWULEXWLRQ PHWULF LV
5HGLVWULEXWLQJ  FRQQHFWHG
'HIDXOW YHUVLRQ FRQWURO  VHQG YHUVLRQ   UHFHLYH YHUVLRQ
,QWHUIDFH            6HQG  5HFY
)DVW(WKHUQHW
)DVW(WKHUQHW
5RXWLQJ IRU 1HWZRUNV



'LVWDQFH  GHIDXOW LV
*UDFHIXO UHVWDUW HQDEOHG
  5HVWDUW JUDFH SHULRG   VHFV
  &XUUHQW 5HVWDUW UHPDLQLQJ WLPH   VHFV
```

< † K y

<	ª ¢
Sending updates	† ¾ • ž •
Invalid	â | ž •
flushed	ó • ž •
Outgoing update filter list for all interface	+ ñ Ä ÿ ß è g ¡
Incoming update filter list for all interface	+ N v ñ Ä è g ¡
Default redistribution metric	ó • F å M ã G † O
Redistributing	M ã G # ‘
Default version control	† ó • g RIP # ‘ Í Î
5 R X W L Q J I R U 1 H W Z R U N V	RIP g Ù * s è à <
Distance	† ’ ò å Y
Graceful-restart	GR © k • o
Restart grace period	GR ž •
Current Restart remaining time	þ • GR ž •

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

1.30 show ip rip database

ª P RIP è ƒ G € è M È ’ Îož

show ip rip database [network-number network-mask] [count]

o¬ @ ƒ ª ¢o-

@ ƒ	€T€ €žP‰ Ï o ÄhM‰å ,fB qqfóy '@ R X QT H&ŠPiFóy €žP‰áp»wor434f 119283/
network-number	è ' Î ÿ à Zož
network-mask	ÿ à Q Aož ò ç à Ì Z — k ÿ à Q A · À 6
count	ª P RIP ƒ G € è Ï ‹ ' Î d }

o¬ x X % ”o- Ô Ó % ”o• ¶ B F å % ”o• è i F å % ”ož

o¬ Þ . ´ ðo- 14

f 118.26 674.04 0.24 1 6 re 5 271 742.68 6.24 re 1g 1 T2 9 f 0 Tc T*93 Td (f 1)06924 0 T0 9E>Tj /T4609E508A74084D/TT807C00410>10

auto-summary	M È e è
directly connected	+ è
redistributed	M ã G Û è
database	Rip \ è ƒ G €
All	ñ Ä è ‹ ƒ
Valid	Ä	è ‹ ƒ
Invalid	—	è ‹ ƒ

o¬ U P ’ Îo-

o¬ u V ª ¢o- -

1.31 show ip rip external

ª P RIP M ã b Ù B è ’ Îož

show ip rip external [connected | ospf process-id | static]

o¬ @ ƒ ª ¢o-

@ ƒ	T
connected	ª P M ã b + è ož
ospf process-id	ª P M ã b OSPF è ožprocess-id OSPF i Z k H › 8 1-65535
static	ª P M ã b ² Á è ož

o¬ x X % ”o- Ô Ó % ”o• ¶ B F å % ”o• è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-

o¬ F å †o- 1 y ª P RIP M ã b + è ’ Îož

```
>VWDWLF@            PHWULF
    QKRS          LI
>VWDWLF@            PHWULF
    QKRS          LI
3URWRFRO RVSI   URXWH
>RVSI@             PHWULF
    QKRS             LI
>RVSI@             PHWULF
    QKRS             LI
```

<†Ky

<	ª ¢
Protocol connected route	MãG è •º
connected	MãG è
metric	MãGè †O
nhop	MãGè %² é

```
)DVW(WKHUQHW     LV XS  OLQH SURWRFRO LV XS
5RXWLQJ 3URWRFRO  5,3
```

Authentication mode	• š % ”
Authentication key-chain	• š … key-chain
Authentication text-password	• š …
Default-information	ó • † O k ó • è ˆ ’ Î
IP interface address	N M ip ª -

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

1.33 show ip rip peer

ª P RIP > D ’ Îož

show ip rip peer [ip-address]

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	6 RIP > D ª -

o¬ x X % ”o- Ô Ó % ”o• ¶ B F å % ”o• è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- RIP . ñ RIP è ’ Î ›(RIP è ¾ • † › ª -) “ £ 4 d } ’ Î k Y • Ž ï ! O k ? è ’ Î › t f RIP > D ’ Îož

¥ x X 9 ª P RIP > D ’ Î k 3 ¨ RIP > D k é ª P ` ~ ’ Îož

o¬ F å †o- 1 y ª P RIP > D ’ Îož

```
5XLMLH VKRZ LS ULS SHHU
3HHU
 /RFDO DGGUHVV
 ,QSXW LQWHUIDFH *LJDELW(WKHUQHW
 3HHU YHUVLRQ 5,3Y
 5HFHLYHG EDG SDFNHWV
 5HFHLYHG EDG URXWHV
 %)' VHVVLRQ VWDWH XS
```

< † K y

<	ª ¢
Peer	> D ip ª -
Local address	Î ª ª -

Input interface	, N M
Peer version	> D RIP Í Î Z
Received bad packets	R > D v ñ j ¨ †
Received bad routes	v ñ j ¨ è
BFD session state	BFD k ¢ Ù Á

ò • 29 , y Q ‡ â [BFD " h H ' ´ õ © ¬ • " È » n ˜ • • " y d

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

1.34 timers basic

² … RIP ž Uož
timers basic update invalid flush

Ê Ö Þ . F åož
no timers basic

o¬ @ ƒ ª ¢o-

@ ƒ	T
update	è ¾ • ž • k Y a ‹ož update # 4 — Õ G è ¾ • † u Ê k ? N v ñ ¾ • † k invalid y flush ž U < Ö yož Þ . ? œ 30 a G %²) è ¾ • †ož
invalid	è — | ž • k Y a ‹ k R Â %²) Ä | ¾ • † • ÷ ‹ žož invalid # 4 è n è œ Z Ä ¾ • ò J — | ž •ož è — | ž • 5 • ¥ è ¾ • ž • • k ò ç ¨ è — | ž • Ä Z Ä N v ñ ` ~ ¾ • † k , • è 1 J — | k µ invalid Ù Á z invalid ž • Ä N v ñ è ¾ • † k ž U k Ö yožInvalid Þ . ž • 180 aož
flush	è Ž ” ž • k Y a ‹ k R RIP è µ invalid Ù Á • ÷ ‹ žožflush ž • ñ Ê k Ô 9 invalid Ù Á è 1 t Ž ” ß è nožFlush Þ . ž • 120 aož

o¬ Þ . F åo- Þ . Õ Ñ k ¾ • ž • 30 a k — \| ž • 180 a k Ž ” ž • 120 aož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * ² … Y ž U k U k ½ è # ' v • ž • Y C { ž Ê Ö ž •ož N ¨ c%² à Ì — Õ kRIP ž U ›%² }%² ož%² " • ' + RIP ž U g ² … k ” ³ Ä ¢ G ¬ Ložž

X validate-update-source ož

o¬ F å †o- 1 y ¼ { ¾ • † › ª - à šož

5 X L M L H F R Q I L J U R X W H U U L S
5 X L M L H F R Q I L J U R X W H U Q R Y D O L G D W H X S G D W H V R X U F H

o¬ à • co- … show running-config ò 0 F å © k è

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

1.36 version

… — Õ RIP Í Î Zož
version { 1 | 2 }

Ê Ö Þ . F åož
no version

o¬ @ ƒ ª ¢o-

@ ƒ	T
1	# RIP Í Î Z 1ož
2	# RIP Í Î Z 2ož

o¬ Þ . F åo- Þ . U Y N v RIPv1 y RIPv2 è ¾ • † k x Q G RIPv1 è ¾ • †ož

o¬ x X % "o- è i F å % "ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 9 # … — Õ RIP g Í Î Zož U Y ip rip receive versiono•ip rip send version x X k + ? N
M Ô ò „ Í Î RIP † g M • #ož

o¬ F å †o- 1 y 1 RIP Í Î Z — å 2ož

o¬‹ {à7•†=o- … sh ip @F•´`žp Í Î

o¬ U P ’ Îo- -

o¬ o • j ¨o- 1 y 1 Î € RIP † — å è version 1 k ò + € G Û © version 2 † k - è † ä â Â

o¬ u V ª ¢o- -

2 OSPFv2

2.1 area

F å 6 ¿ož
area area-id

í ” 6 OSPF ¿ož
no area area-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
area-id	OSPF ¿ Zož ¿ Z U Y ©%² ò … ƒ › k - U Y ©%² IP ª -ož

o¬ Þ . F åo- Z Ä F å OSPF ¿ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ï U Y … Î x X no ¥ ” k Ž ” 6 OSPF ¿ F å w í ” ¥ ¿ k , Ž ” area authentication o•
area default-cost o•area filter-list o•area nssa ˆ Â 9 ¿ F å x Xož
¨ ò Õ Ñ k ï — c Ž ” OSPF ¿ F å y
› ! p ¨ } Ž ” t ¿ ñ Ä F å k x ¨ Z e è F åož 4 ž · Á…o• Â ñb ` Z€¥ ¶P®€‘•´`žVùàƒ@yàkp¼ Vo@pÀ ®€‘•´`žQp}U¡ù

2.2 area authentication

o OSPF ¿ • šož

area area-id authentication [message-digest]

¼ { OSPF ¿ • šož

no area area-id authentication

o¬ @ ƒ ª ¢o-

@ ƒ	T
area-id	6 } o OSPF • š ¿ Zož ¿ Z U Y ©%² ò … ƒ › k - U Y ©%² IP ª -ož
message-digest	J MD5 gmessage digest 5 h • š % ”ož

o¬ Þ . F åo- Z Ä J OSPF ¿ • šož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- RGOS ÷ ^ U Y u 4 _ • š • º y

1. • º o k } L • š k ¢ Z Ä ¥ x X o OSPF • š kOSPF ƒ G • š • º o z
2. • º p k ¢ † • š % ” k F å ¥ x X ž k Z Ä … message-digest # ¾ z
3. • º q k MD5 • š % ” k F å ¥ x X ž k … message-digest # ¾ož

%² OSPF ¿ ñ Ä è — Õ k · À J c%² _ • š • ºož ò ç o 4 • š k · À ¨ Ä N > D N M F å • š M Xož N M F å x X ip ospf authentication-key U Y F å ¢ † • š M X z N M F å x X ip ospf message-digest-key U Y F å MD5 • š M Xož

o¬ F å †o- 1 yOSPF è i ¿ 0 g ã t ¿ h J MD5 • š k • š M X backboneož

```
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI )DVW(WKHUQHW LS DGGUHVV
5XLMLH FRQILJ LI )DVW(WKHUQHW LS RVSI PHVVDJH GLJHVW NH\ F
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU QHWZRUN DUHD
5XLMLH FRQILJ URXWHU DUHD DXWKHQWLFDWLRQ PHVVDJH GLJHVW
```

o¬ à • co- 1 y … show ip ospf x X U Y ò 0 ñ F å • š • ”ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.3 area default-cost

* s Ë Stub ¿ ê ñ NSSA Þ . è 0 Ë › gOSPF O † › hož
area area-id default-cost cost

Ê Ö Þ . F åož
no area area-id default-cost

o¬ @ ƒ ª ¢o-

@ ƒ	T
area-id	Stub ¿ ê NSSA ¿ Zož
cost	h µ Stub ¿ ê ñ NSSA Þ . M ü è 0 Ë › k H › 8 y 0-16777215ož

o¬ Þ . F åo- Þ . 1ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X Q Ä ¨ Stub ¿ ABR ê NSSA ¿ ABR/ASBR F å õ ÿ |ož
Stub ¿ ABR ê NSSA ¿ ABR/ASBR — Õ ª • ¨ Stub ê ñ NSSA ¿ * s%² n P Þ . è
LSA k ï U Y * area default-cost x X “ w * s LSA 0 Ë ›ož

o¬ F å †o- 1 y 1 Þ . M ü è 0 Ë › — å 50ož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU QHWZRUN DUHD
5XLMLH FRQILJ URXWHU QHWZRUN DUHD
5XLMLH FRQILJ URXWHU DUHD VWXE
5XLMLH FRQILJ URXWHU DUHD GHIDXOW FRVW
```

o¬ • € p Â s M ˆÇ@qs=Â ðÆúÀHP• @’ä’ Î ñ ˆÁÂ ðÇ– y 1 Þ ³ ð Â«ÃÛÂ ðÂ0Ñ0n Ÿ Stub

o¬ o • j ¨o- 1 y ¨ ³ Stub ê ñ NSSA ¿ Þ Ù ¿ F å ¥ x Xož
2 y ¨ ã t ¿ F å ¥ x Xož

o¬ u V ª ¢o- -

2.4 area filter-list

ABR — å k ¡ c ¿ $ • Ä è , ; .ož
area area-id filter-list { access acl-name| prefix prefix-name} { in | out }

H ¿ ¡ F å
no area area-id filter-list { access acl-name | prefix prefix-name} { in | out }

o¬ @ ƒ ª ¢o-

@ ƒ	T
area-id	¿ Zož
access acl-name	¼ û ACL
prefix prefix-name	¼ û prefix list
in | out	— å ¥ Ú ^ • 9 µ | G ß ¥ è

o¬ Þ . F åo- Ì o ABR ¡

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X Q ¨ ABR g ¿ è — Õ h g F åož
¢ ¬ } ¨ ¥ ABR F å c ¿ $ • è . ¡ Ú ^ ž k … Î x Xož

o¬ F å †o- 1 y 1 F å area 1 Q . ñ K 9 172.22.0.0/8 8 Ä • è ož

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ DFFHVV OLVW SHUPLW
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU DUHD ILOWHU OLVW DFFHVV LQ
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.5 area nssa

1%² OSPF ¿ — å NSSAož

area area-id nssa [no-redistribution] [default-information-originate [metric value] [metric-type type]] [no-summary] [translator [stability-interval seconds | always]]

í ” NSSA ¿ ê NSSA ¿ F åož

no area area-id nssa [no-redistribution] [default-information-originate [metric value] [metric-type type]] [no-summary] [translator [stability-interval | always]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
area-id	NSSA ¿ ¿ Zož
no-redistribution	¢ ¥ è — Õ ©%² NSSA ABR ž k ò ç ï Q Ý M ã b x X 1 è ’ Î - µ ¯ * • ò • µ NSSA • ž k U Y # ¥ # ¾ož
default-information-originate	D ÿ Þ . • º 7 LSA µ NSSA • k ¥ # ¾ Q ¨ NSSA ABR ê ñ ASBR Ä |ož
metric value	— å D ÿ Þ . LSA † O ›ožmetric H › 8 0-16777214 k Þ . › 1ož
metric-type type	— å D ÿ Þ . LSA è • ºož type H › 1 ê 2ož n P N-1 z2 n P N-2ož Þ . › 2
no-summary	Š 2 NSSA è — Õ(ABR) G summary LSAs gType-3 LSA hož
translator	F å NSSA è — Õ(ABR) ô E ñož
stability-interval seconds	F å NSSA è — Õ(ABR) ô E ñ J ³ ô E ñ e ‘ 4 l • œož % y y aož Þ . › 40ož H › 8 y0- 2147483647 ož
always	F å ¢ ù NSSA è — Õ(ABR) È © • ô E ñ …)ož Þ . Õ # ô E ñož

o¬ Þ . F åo- Z Ä # NSSA ¿ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- @ ƒ default-information-originate Û D ÿ ó • Type-7 LSA k ¥ # ¾ ¨ NSSA ABR y ASBR Ä ? [ð k ¨ ABR — – è n © k ¨ Þ . è k C k D ÿ Type-7 LSA Þ . è k ¨ ASBR (c ž - © ABR) ¢ è n ¨ Þ . è k õ k D ÿ Type-7 LSA Þ . è ož

@ ƒ no-redistribution ¨ ASBR … ± OSPF * redistribute x X – µ ¿ Ù B è G b ñ NSSA ož

¥ # ¾ * o 9 NSSA è — Õ ˜ © ASBR A © ABR ž ˜ k U Y Š 2 Ù B è ' Î µ NSSAož
4 %² 5 × 5 G ñ NSSA ¿ e è Ù Á z n gLSA h ƒ O k U Y ¨ ABR F å no-summary K
Å k W 2 ABR g NSSA ¿ Ä G summary LSAs gType-3 LSA hož
P Ù area default-cost ¨ N ¨ ¥ NSSA ¿ ABR/ASBR ož¥ x X F å ABR/ASBR G ñ NSSA
¿ Þ . è 0 Ë ›ož Þ . Õ Ñ k G ñ NSSA Þ . è 0 Ë › 1ož
ò ç%² NSSA ¿ Ä g ê ñ Y h ABR kÞ . Õ Ñ k# è — Õ ö œ Â Ý ABR — Õ • Type-7
ô Type-5 ô E ñ z ò ç e È ¢ ù — Õ È © • Type-7 ô Type-5 ô E ñ ABR k … translator always
@ ƒož
ò ç ¢ ù — Õ ô E ñ …) t ¿ ABR H W k ¨ stability-interval ž • Ä 1 Ð Ò ' 4 ô E k ò ç ¨ <
ž • Ä Z Ä M • è ô E ñ k stability-interval ñ Ê e Type-7 ô E Type-5 LSA 1 R ^ ¿ t Ž ”ož
… 2 è ê è k Type-7 M ü ÿ è Type-5 LSA 1 ¨ ¢ ù — Õ â > ô E ñ …) e y / t Ž ” kò — ¬ ^ -
stability-interval ñ Êož
c%² NSSA ¿ k • ' N ¨%² V ABR F å translator always @ ƒož
¨ Type-7 ô Type-5 ž ˜ k • ÿ è Type-5 LSA ó • Ð Type-7 LSA ô G ª -(FA)ož

o¬ F å †o- 1 y 1 ¿ 1 — å NSSA ¿ k ñ Ä K 9 ¥ ¿ è — Õ C · À F åož

```
5 X L M L H  F R Q I L J  U R X W H U  R V S I
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                    D U H D
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                    D U H D
5 X L M L H  F R Q I L J  U R X W H U  D U H D  Q V V D
```

o1¬ à • co- ..y 1 sh‰wÐip ospf

area-id	6 } h µ M ü è OSPF ¿ Zož ¿ Z U Y ©%² ò … *f* › k- U Y ©%² IP ª -ož
ip-address net-mask	# M ü è à <ož
advertise | not-advertise	# © k } ¸ b ¥ M ü è
cost cost	— å M ü è † O › k H › 8 y0-16777215 ož

o¬ Þ . F åo- Þ . Z Ä F å ¿ • M ü è ož
Þ . ¸ b F å M ü 8 ož
M ü è ó • † O › © k Ã RFC1583 Ä ¼ k ò ç F å 4 Ã RFC1583 % ” k ó • † O › © t M ü è cost Â 4 › k k é ó • † O › © t M ü è cost Â Ý ›ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X Q ¨ ABR ü g Ä | k Û 1%² ¿ Ú è ` w ê M ü è%² Ú è k À e * s ñ ¿ ¿ >ož
è ’ Î ` w g Q G ÿ ¨ ¿ k ¿ Ä B è — Õ 0 ñ C © À } è ’ Î k x ¿ ¿ — Õ
Q 0 ñ%² Ú M ü è ož w U Y * — å advertise y not-advertise # ¾ Û Ð © k ¸ b M ü 8 k Ü
ñ I U y ¡ • k Þ . © g Ù ¸ bož U Y * cost # ¾ Û — å M ü è † O ›ož
U Y # Ú ¿ è M ü x X k ý … OSPF è ¿ è 1 ± ñ • k Ô ð © à Ì • % Ý ž k k U ä à
Ì ô G Å ož
¢ F å 4 Ú Ú M È k w ¾) + N Ä m ¼ © ž ˜ k è © ÿ G Â x F = é G t M È area range ož

o¬ F å †o- 1 y 1 ¿ 1 è M ü è%² Ú è 172.16.16.0/20ož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU QHWZRUN DUHD
5XLMLH FRQILJ URXWHU QHWZRUN DUHD
5XLMLH FRQILJ URXWHU DUHD UDQJH
```

o¬ à • co- -

o¬ U P ’ Îo- 1 y] Ä c ¿ F å 4 ¥ area rangeož

```
263) 7KLV UDQJH LQ GLIIHUHQW DUHD
```

o¬ o • j ¨o- 1 y] Ä c ¿ F å 4 ¥ area range

o¬ u V ª ¢o- -

2.7 area stub

1%² OSPF ¿ — å ; ¿ ê ¶ ; ¿ož
area area-id stub [no-summary]

í ” ; ¿ ê ¶ ; ¿ F åož
no area area-id stub [no-summary]

o¬ @ ƒ ª ¢o-

@ ƒ	T
area-id	Stub ¿ ¿ Zož
no-summary	Š 2 ABR ª ; ¿ G à Ì d } e è * s ₭4 ž ; ¿ U f ¶ ; ¿ožQ Ä ABR õ ¬ } F å ¥ @ ƒ ož

o¬ Þ . F åo- Þ . Z Ä # ; ¿ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- OSPF ; ¿ Ä ñ Ä è — Õ C · À ü g area stub x Xož ABR Q g ; ¿ G _ e è Ù Á T (LSA) y 1 h • º 1 k è — Õ LSA z2 h • º 2 k à Ì LSA z3 h • º 3 k à Ì d } LSAož R è n … † 0 k ; ¿ è — Õ Q . ñ OSPF è ¿ Ä B è k , ABR ABR9020 Tc 297052036B>373<0515072C01267>Tj /TT9D>TwT

2 y 1 NSSA ¿ F å Stub ¿ ž U P j ¨ož

7 K H D U H D L V F R Q I L J X U H G D V 1 6 6 $ D U H D D O U H D G \

o¬ o • j ¨o- 1 y ã t — å Stub ¿ož

2 y 1 NSSA ¿ F å Stub ¿ ž U P j ¨ož

o¬ u V ª ¢o- -

2.8 area virtual-link

OSPF Z ' e èož

area area-id virtual-link router-id [authentication [message-digest | null]] [dead-interval { seconds | minimal hello-multiplier multiplier sa /TT3T 0.|

o¬ F å †o- 1 y Y ¿ 1 • ' ¿ k > D 2.2.2.2 • y Z ' e èož

```
5 X L M L H  F R Q I L J  U R X W H U  R V S I
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                    D U H D
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                     D U H D
5 X L M L H  F R Q I L J  U R X W H U  D U H D  Y L U W X D O  O L Q N
```

2 y Y ¿ 1 • ' ¿ k > D 1.1.1.1 • y Z ' e èož ¥ Z ' e è N 4 ¿ 10 y ã t ¿ k Z ' e è
J OSPF † • š k • š • ” MD5ož

```
5 X L M L H  F R Q I L J  U R X W H U  R V S I
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                     D U H D
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                     D U H D
5 X L M L H  F R Q I L J  U R X W H U  D U H D  D X W K H Q W L F D W L R Q  P H V V D J H  G L J H V W
5 X L M L H  F R Q I L J  U R X W H U  D U H D  Y L U W X D O  O L Q N  P H V V D J H  G L J H V
```

3 y Y ¿ 1 • ' ¿ k > D 1.1.1.1 • y Z ' e è k w ¨ Z e è o Fast Hello k — å + ƒ 3ož

```
5 X L M L H  F R Q I L J  U R X W H U  R V S I
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                     D U H D
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                     D U H D
5 X L M L H  F R Q I L J  U R X W H U  D U H D  Y L U W X D O  O L Q N  G H D G  L Q W H U Y D
```

o¬ à • co- 1 y … show ip ospf virtual-links x X U Y ò 0 ñ F å Z e è ' Îož

o¬ U P ' Îo- 1 y ¨ ã t F å Z e è ž k U P j ¨ož

```
< R X  F D Q  W  F R Q I L J X U H  Y L U W X D O  O L Q N  W U D Q V L W  W R  E D F N E R Q H
```

2 y ª Stub ê NSSA ¿ F å Z e è ž k U P j ¨ož

```
$ U H D  L V  D  V W X E  R U  Q V V D  V R  Y L U W X D O  O L Q N V  D U H  Q R W  D O O R Z H G
```

o¬ o • j ¨o- 1 y ¨ ã t F å Z e è ž k U P j ¨ož
2 y ª Stub ê NSSA ¿ F å Z e è ž k U P j ¨ož

o¬ u V ª ¢o- -

2.9 auto-cost

— å ÿ è N M W _ @ ð › k 9 ‹ ' N M cost ›ož
auto-cost reference-bandwidth ref-bw

Ê Ö Þ . ›ož

no auto-cost reference-bandwidth

o¬ @ ƒ ª ¢o-

@ ƒ	T
ref-bw	@ ð k ! ›ož Y Mbps % y k 8 : 1-4294967

o¬ Þ . F åo- Þ . 100Mbpsož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Þ . Õ Ñ kOSPF N M cost › ˆ 9 W _ @ ð ›/ N M k !ož
… auto-cost x X W _ @ ð ›ož Þ . › 100Mbpsož
… bandwidth x X — å N M k !ož
Ù _ Á º ¿ è OSPF N M cost Þ . › y
64K g ¿ è kcost 1562 z
E1 ¿ è kcost 48 z
10M Y ß à kcost 10 z
100M Y ß à k cost 1ož
ò ç x X ip ospf cost — å 4 N M cost k é 1 ~ $ W _ ‘ ß costož

o¬ F å †o- 1 y 1 @ ð k ! — å 10Mož

```
5 X L M L H  F R Q I L J  U R X W H U  R V S I
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N  D U H D
5 X L M L H  F R Q I L J  U R X W H U  D X W R  F R V W  U H I H U H Q F H  E D Q G Z L G W K
```

o¬ à • co- 1 y … show ip ospf interface x X U Y ò 0 ñ F å @ ð W A © k ÿ |ož

o¬ U P ’ Îo- 1 y w J N M W _ ž U Pož

```
 2 6 3 )  5 H I H U H Q F H  E D Q G Z L G W K  L V  F K D Q J H G
       3 O H D V H  H Q V X U H  U H I H U H Q F H  E D Q G Z L G W K  L V  F R Q V L V W H Q W  D F U R V
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.10 capability opaque

o Opaque LSA Ô ò ož
capability opaque

W Opaque LSA Ô ò ož
no capability opaque

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . u 4 Opaque LSA Ô òož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y W Opaque LSA Ô ò ož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU QR FDSDELOLW\ RSDTXH
```

o¬ à • co- 1 y … show ip ospf x X U Y ò 0 ñ F å Opaque LSA Ô ò ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.11 clear ip ospf process

Ž ” w M o OSPF †ož
clear ip ospf [process-id] process

o¬ @ ƒ ª ¢o-

@ ƒ	T
process-id	OSPF i Z OSPF †ož OSPF †ož

o¬ x X % ”o- Ô Ó % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- Ö y … OSPF i k ñ Ä > D M • • y k + … # ‘ § € û Ýož
ü g 4 x X ž k k } L ï G •ož

o¬ F å †o- 1 y Ž ” w M o OSPF † 1

```
5XLMLH FOHDU LS RVSI SURFHVV
```

o¬ U P ’ Îo- 1 y M o ¨ † žož

```
263) 1R URXWHU SURFHVV
```

o¬ u V ª ¢o- -

2.12 compatible rfc1583

¢ ¨ Ú Ú è ¬ ñ c%² AS Ù B) ª ž k · À G Â i è ¬ k ¥ x X © G J RFC1583 … i ¯ • éož
compatible rfc1583

H ƒ J RFC1583 • é
no compatible rfc1583

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . © J RFC1583 • éož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y … rfc 2328 • é Û G Â „ è ož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU QR FRPSDWLEOH UIF
```

o¬ à • co- 1 y … show ip ospf x X U Y ò 0 © k J RFC1583 • éož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.13 default-information originate

D ÿ%² Ú Þ . è h µ OSPF è ¿ož

default-information originate [always] [metric metric] [metric-type type] [route-map map-name]

¼ { Þ . è ož

no default-information originate [always] [metric] [metric-type] [route-map map-name]

o¬ @ ƒ ª ¢o- @ ƒ

default-metric — åož

OSPF Ä _ Ù B è k • º 1 Ù B è è O † k w J k ò • º 2 Ù B è è O † © ¡ Jož ñ%²

) ö à Ì ¨ Ú w g è ¬ k c ý è O † k • º 1 k A • º 2 i ¯ ´ ä k ñ Y show ip route Q ª P • º 1 ; Ú è ož

¥ x X D ÿ © 5 • LSA Þ . è k k r d ñ NSSA ¿ož 3 e È ¨ NSSA ¿ D ÿ%² Ú Þ . è k ¬ … area nssa default-information-originate x Xož

Stub ¿ è — Õ © U Y D ÿ Ù B Þ . è ož

ñ ¼ û route-map set metric H › 8 0-16777214 k ò ç Ý ß ¥ 8 k 1 — c – µ è ož

o¬ F å †o- 1 yOSPF D ÿ%² Ú Ù B Þ . è k h µ ñ OSPF è ¿ k • º — å 1 k O † › — å 50ož

```
5 X L M L H  F R Q I L J  U R X W H U  R V S I
5 X L M L H  F R Q I L J  U R X W H U  Q H W Z R U N                    D U H D
5 X L M L H  F R Q I L J  U R X W H U  G H I D X O W  L Q I R U P D W L R Q  R U L J L Q D W H  D O Z D \ V  P
```

o¬ à • co- 1 y … show ip ospf database x X U Y ò 0 © k – µ Þ . è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.14 default-metric

— åOSPF M ã b è Þ . O † ›ož

default-metric metric

Ê Ö Þ . F åož

no default-metric

o¬ @ ƒ ª ¢o-

@ ƒ	T
metric	# OSPF M ã b è Þ . O † › k H › 8 y1-16777214 ož

o¬ Þ . F åo- Þ . Ì F åož

o¬ x X % ”o- è i F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- default-metric x X · À redistribute è i F å x X F ` … k U Y “ w ñ Ä M ã b è ì ÷ O †
›ož
default-metric x X — å k+ Y default-information originate • ” h µ OSPF è ¿ Ù B è Ü • ož

o¬ F å †o- 1 y 1 OSPF M ã b è ì ÷ † O › — 50ož

```
5 X L M L H  F R Q I L J   U R X W H U  U L S
5 X L M L H  F R Q I L J  U R X W H U   Q H W Z R U N
5 X L M L H  F R Q I L J  U R X W H U   Y H U V L R Q
5 X L M L H  F R Q I L J  U R X W H U   H [ L W
5 X L M L H  F R Q I L J   U R X W H U  R V S I
5 X L M L H  F R Q I L J  U R X W H U   Q H W Z R U N                    D U H D
5 X L M L H  F R Q I L J  U R X W H U   G H I D X O W  P H W U L F
5 X L M L H  F R Q I L J  U R X W H U   U H G L V W U L E X W H  U L S  V X E Q H W V
```

o¬ à • co- 1 y … show ip ospf database x X U Y ò 0 M ã b è † O ›ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.15 discard-route

ª • discard è • ñ þ ¶ è nož
discard-route { internal | external }

W 2 discard è • ñ þ ¶ è nož
no discard-route { internal | external }

o¬ @ ƒ ª ¢o-

@ ƒ	T
internal	ª • • • è M ü x X area range ÿ è discard è ož
external	ª • • Ù B è M ü x X summary-address ÿ è discard è ož

o¬ Þ . F åo- Þ . Õ Ñ ª • • discard è ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¨è MüžkMüe 8 ÄU Ýßè n Ž àÌ8 kòçƒGGªMü8 Ä ¨ àÌk
1ÄU Gÿè êèê Mè —Õ Ôò¿ ož Š2 _ÕÑ Gÿk¬}¨ ABR ê ASBR • %²Ú
discard è ñè nož¥è ÿèkH•@•F°§@Fàvæùà

o¬ F å †o- 1 yW2• area range ÿè discard è ož

```
5XLMLH FRQILJ•`0P €p€P0 `0•0@0
5XLMLH FRQILJ URXWHU `0 0pÀ``@Pp P €p€0À p€P @ð0
```

o¬ à• co- 1 y … show ip route x X U Y ò 0 © k• discard è ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.16 distance ospf

—å c•º OSPF è +• ’ò å Yož
distance { distance | ospf { [intra-area distance] [inter-area distance] [external distance] } }

Ê Ö Þ . F åož
no distance [ospf]

o¬ @ƒª ¢o-

@ƒ	T
distance	—åè ’ò å Y k H › 8 y1-255ož
intra-area distance	—å Äè ’ò å Y k H › 8 y1-255 ož
inter-area distance	—å •è ’ò å Y k H › 8 y1-255 ož
external distance	—å Ù B è ’ò å Y k H › 8 y1-255 ož

o¬ Þ . F åo- Þ . 110 z
Äè ’ò å Y y Þ . 110 z
•è ’ò å Y y Þ . 110 z
Ù B è ’ò å Y y Þ . 110ož

o¬ x X % ”o- OSPF è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-

o¬ F å †o- 1 y F å OSPF Ù B è ’ ò å Y 160

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU GLVWDQFH RVSI H[WHUQDO
```

o¬ à • co- 1 y … show ip route x X U Y ò 0 ospf è ’ ò å Yož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.17 distribute-list in

F å + v ñ LSA ‹ ‘ ß è g ¡ož

distribute-list { [access-list-number | name] | prefix prefix-list-name [gateway prefix-list-name] | route-map route-map-name | [gatewJ /TT0 1 Tf -96 628 0 01 Tf 0.00F4026 Tc 0.28 0 Td [(rou)-6(t)11(w)-2p-n

¶ Ò õ ¹ ‡ ¾ g Ÿ â õ ¹ LSA ™ 8 ¾ d Ù ® " ´ ò G ‘ } ABR h " ¶ Ò • Ty

ABR h ° area filter-list g area rang

5 X L M L H F R Q I L J D F F H V V O L V W S H U P L W

5 X L M L H F R Q I L J U R X W H U R V S I

5 X L M L H F R Q I L J U R X W H U G L V W U L E X W H O L V W L Q H W K H U Q H W

o¬ à • co- 1 y … show ip route x X U Y ò 0 è © k t 3 G ¡ož

o¬ U P ’ Îo- 1 y F å 4 — | N Mož

, Q W H U I D F H L V L Q Y D O L G

2 y F å 4 — | ACL d ož

$ & / Q D P H D E F D F O L V L Q Y D O L G

3 y ª • ¡ Î † - µ è ož

' L V W U L E X W H O L V W R I R V S I Y L D R V S I Q R W D O O R Z H G

o¬ o • j ¨o- -

o¬ u V ª ¢o- - 2f!€ À "2 Ûà ðÀ P P) ™ • yredistribuæ ¡ MXóž è k • w

distribute-list { [access-list-number | name] | prefix prefix-list-name } out [connected | ospf process-id | rip | static]

H *f* ¡ M ã b è ož
no distribute-list { [access-list-number | name] | prefix prefix-list-name } out [connected | ospf process-id | rip | static]

o¬ @ *f* ª ¢o-

@ *f*	T
access-list-number | name	… acl ¡ • é
prefix prefix-list-name	… prefix-list ¡ • é
connected	¡ + è
ospf process-id	¡ OSPF è
rip	¡ RIP è
static	¡ ² Á è

o¬ Þ . F åo- Þ . — F å k / ¶ * ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- distribute-list out redistribute route-map x X • w k + R ¿ U # ‘ M ã b ñ OSPF è g ¡ k x Î ï ü g è M ã b k%² " redistribute x X F ` … ožACL ¡ • é y prefix-list ¡ • é ¨ ¥ F å » k / 3 + î%² Û › è … ACL ¡ • é k é Ç F å prefix-list g ¡ož

o¬ F å †o- 1 y + M ã b ² Á è g ¡

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU UHGLVWULEXWH VWDWLF VXEQHWV
5XLMLH FRQILJ URXWHU GLVWULEXWH OLVW RXW VWDWLF
5XLMLH FRQILJ URXWHU GLVWULEXWH OLVW SUHIL[ MMM RXW VWDWLF
 $FFHVV OLVW ILOWHU H[LVWVk SOHDVH GH FRQILJ ILUVW
```

o¬ à • co- 1 y … show ip ospf database x X U Y ò 0 M ã b è © k t 3 G ¡ož

o¬ U P ’ Îo- 1 y M ã b ¡ ª • gateway @ *f* ož

```
*DWHZD\ QRW DOORZHG ZLWK 287 LQ GLVWULEXWH OLVW FPG
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.19 enable mib-binding

1 MIB Ç ñ 6 OSPFv2 i ož

enable mib-binding

Ê Ö Þ . Ç ož

no enable mib-binding

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- MIB Ç ¨ i Z Â 4 OSPFv2 i ož

o¬ x X % ”o- è i F å % ”

o¬ Þ . ´ ðo- 14

retransmit [IfTxRetransmit | Vi rtIfTxRetransmit] | state-change [

	NssaTranslatorStatus Change	NSSA ô E ñ Ù Á J
	RestartStatusChange	Î Ñ GR Ù Á J
	VirtIfStateChange	Z ' N M Ù Á J
	VirtNbrRestartHelperStatusChange	Z ' > D GR i Ù Á J
	VirtNbrStateChange	Z ' > D Ù Á J

o¬ Þ . F åo- Þ . © ¼ { ¶ B traps • ¼ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- OSPFv2 i) ù u 4 G 16 _ TRAP ’ Î k ã 4 _ • ºož
Î x X + • I snmp-server x X ’ ò k · À ¯ ø • F å • ¼ snmp-server enable traps ospf k Ç F å
enable traps Y e k + • ospf trap õ Ü 3 G G ož
Î x X I i Ç MIB ’ ò k ª • c i c ž ø • TRAP • ¼ož

o¬ F å †o- 1 y ø • OSPFv2 i 100 ¶ B TRAP • ¼ y

```
5 X L M L H F R Q I L J U R X W H U R V S I
5 X L M L H F R Q I L J U R X W H U H Q D E O H W U D S V
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.21 graceful-restart

o OSPF Restarter k — å M o u Êož

graceful-restart [grace-period grace-period | inconsistent-lsa-checking

2.22 graceful-restart helper

o OSPF GR helper k — å , ¼ Ñ òož
graceful-restart helper disable

& Ð OSPF GR helper ož
no graceful-restart helper disable

F å OSPF GR helper " ÷ J y • ”ož
graceful-restart helper { strict-lsa-checking | internal-lsa-checking }

H ƒ F å OSPF GR helper " ÷ J y • ”ož
no graceful-restart helper { strict-lsa-checking | internal-lsa-checking }

o¬ @ ƒ ª ¢o-

@ ƒ	T
disable	W 2 — Õ • ü — Õ ü ¿ U — Õ ü g i £ M oož
strict-lsa-checking	GR Helper Ê • * ò types 1-5 k 7 LSA J î • à Ì © k G ÿ J k ò ç à Ì G ÿ J k 1 ß GR Helperož
internal-lsa-checking	GR Helper Ê • * ò types 1-3 LSA J î • à Ì © k G ÿ J k ò ç à Ì G ÿ J k 1 ß GR Helperož

o¬ Þ . F åo- o GR Help ož
— Õ µ GR Helper e k Þ . ò LSA J ož

o¬ x X % ”o- è i F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X 9 F å — Õ GR Help k ¢ > D — Õ ‘ i £ M o ž k 1 G Grace-LSA * s ¿ ñ Ä > D — Õ kò ç Î — Õ … GR Help k¨ v ñ Grace-LSA ž kk è GR Helper kü > D è i £ M oož disable GR Helper e ``ð

```
5XLMLH FRQILJ URXWHU    QR JUDFHIXO UHVWDUW KHOSHU GLVDEOH
5XLMLH FRQILJ URXWHU    JUDFHIXO UHVWDUW KHOSHU VWULFW OVD FK
```

o¬ à • co- 1 y … show ip ospf x X U Y ò 0 ñ F å GR Helper y g Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.23 ip ospf authentication

F å N M • š • ”ož
ip ospf authentication [message-digest | null]

1 • š • ” Ê Ö Þ .ož
no ip ospf authentication
`

o¬ @ ƒ ª ¢o-

@ ƒ	T
message-digest	¥ # ¾ n P ¨ ¥ N M g MD5 % • šož
null	¥ # ¾ n P g • šož

o¬ Þ . F åo- Þ . N M Z Ä — å • š • ” k 4 ž N M J © ñ ¨ ¿ • š • ºož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç x X e µ æ ` ~ # ¾ n P g ¢ † • š. h Þ ¨ F å • š • ” ž … no # ¾ 1 • š • ” Ê Ö Þ . › ž k Ž © k • š © ¥ N M ñ ¨ • — å • š • ” Ð k ò ç 1 • š • ” — å null k é ò — å • š k ¢ N M • š • ” y N M ñ ¨ ¿ • š • ” C — å ž k i ¯ J N M • š • ”ož

o¬ F å †o- 1 y — å fastEthernet 0/1 € M OSPF • š • º MD5 • šož

```
5XLMLH FRQILJ    LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI )DVW(WKHUQHW        LS DGGUHVV
5XLMLH FRQILJ LI )DVW(WKHUQHW        LS RVSI DXWKHQWLFDWLRQ PHVV
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.24 ip ospf authentication-key

F å OSPF ¢ † • š % Wož
ip ospf authentication-key [0 | 7] key

í ” ¢ † • š % Wož
no ip ospf authentication-key

o¬ @ ƒ ª ¢o-

@ ƒ	T
0	6 % W Y ¢ † ª P
7	6 % W Y % † ª P
key	% W k Â Ú U Y 8 … Á èož

o¬ Þ . F åo- Þ . Z Ä F å • š % Wož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ip ospf authentication-key x X F å % W k 1 t V µ ñ Ä OSPF ãož œ 4 % W %² k V + N N — Õ © • y OSPF > D ¼ © k ¢ À - g è ’ Î A Eož
c N M % W U Y F å %² ý k x ñ Ä N ¨ c%² Ò ò à < è — Õ k · À F å%² ý % Wož
%² OSPF ¿ © k o • š k è i F å x X area authentication g F åož
¨ N M - U Y % Þ o • š k … N M % ” F å x X ip ospf authentication g F å k ¢ ¿ • š y
N M • š C F å ž i ¯ H N M • š • ºož

o¬ F å †o- 1 y — å fastEthernet 0/1 € M OSPF • š % W ospfauthož

```
5 X L M L H  F R Q I L J  L Q W H U I D F H  I D V W H W K H U Q H W
5 X L M L H  F R Q I L J  L I  ) D V W ( W K H U Q H W  L S  D G G U H V V
5 X L M L H  F R Q I L J  L I  ) D V W ( W K H U Q H W  L S  R V S I  D X W K H Q W L F D W L R Q  N H \  P
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.25 ip ospf cost

— å OSPF N M G %² ƒ G 0 Ë gOSPF N M cost hož

ip ospf cost cost

Ê Ö Þ . ›ož

no ip ospf cost

o¬ @ ƒ ª ¢o-

@ ƒ	T
cost	OSPF N M 0 Ë › k H › 8 y0-65535 ož

o¬ Þ . F åo- OSPF N M cost „2Q „ ,‰Â ù ’X Ge T

o¬ à • co- … show ip ospf interface x X U Y ò 0 , • N M cost F å

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.26 ip ospf database-filter all out

— å N M g Ù ý • LSA † k / ¨ ¥ N M G LSA ¾ • †.
ip ospf database-filter all out

Ê Ö ó • ›.
no ip ospf database-filter

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ¥ t ¼ { k U Y ¨ ¥ N M G ` ~ LSA ¾ • †ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- } Š 2 ¨ î N M G LSA ¾ • † ž k U Y ¨ ¥ N M ø • ¥ k ø • ¥ e k Î — Õ 1 g > D
* s LSA ¾ • † k x Q À c > D • y > N ¼ © w N v > D G Û LSA ’ Îož

o¬ F å †o- 1: Š 2 LSA ¾ • 1 † ¨ fastEthernet 0/1 N M G ož

```
5 X L M L H  F R Q I L J  L Q W H U I D F H  I D V W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  ) D V W ( W K H U Q H W  L S  D G G U H V V
5 X L M L H  F R Q I L J  L I  ) D V W ( W K H U Q H W  L S  R V S I  G D W D E D V H  I L O W H U  D O O
```

o¬ à • co- F å e … show ip ospf interface x X U Y ò 0 , • N M (Ä Database-filter all out K Å

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.27 ip ospf dead-interval

— å OSPF î • 6 N M > D 8 @ ž •.

ip ospf dead-interval { seconds | minimal hello-multiplier multiplier }

Ê Ö Þ . F åož

no ip ospf dead-interval

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	# î • > D 8 @ ž • k Y a % y k H › 8 y0-2147483647 ož
minimal	o Fast Hello k 1 8 @ ž • — å 1sož
hello-multiplier multiplier	Fast Hello k ? a U G Hello †) ƒož H › 8 y3-20ož

o¬ Þ . F åo- dead-interval Þ . hello-interval 4 •ož

Þ . Ì o Fast Hello ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- OSPF 8 @ ž • m ¨ Hello † Äož ò ç OSPF ¨ 8 @ ž • Ä k Z Ä v ñ > D G Hello † k < s

> D — | w R > D n í ” ¥ > D “ £ož 8 @ ž • Þ . hello † ž • • œ 4 • k ò ç “ w 4 hello ž • •

œ k k “ w 8 @ ž •ož

¥ x X U Y ô W “ w OSPF î • > D 8 @ ž • k x © · À ã]$ áož Ä µ · À h Þ y

†%² µ y 8 @ ž • • œ k 4 9 hello † ž • • œ z

t 0 Tw 4.747 0 Td [illegible]

```
5XLMLH FRQILJ LI )DVW(WKHUQHW LS RVSI GHDG LQWHUYDO
```

2 y o fastEthernet 0/1 N M Fast Hello k F å hello-multiplier 3ož

```
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI )DVW(WKHUQHW LS DGGUHVV
5XLMLH FRQILJ LI )DVW(WKHUQHW LS RVSI GHDG LQWHUYDO PLQLPD
```

o¬ à • co- 1 y ü g show ip ospf interface x X U Y ò 0 , • € M F å > D 8 @ ž • • œ

o¬ U P ' Îo- -

o¬ o • j ¨o- 1 y c%² ¿ c € M • ñ F å > D 8 @ ž • • œ c

o¬ u V ª ¢o- -

2.28 ip ospf disable all

6 N M Ç D ÿ ospf †ož

ip ospf disable all

Ê Ö ó • Ù Áož

no ip ospf disable all

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- N M ª • D ÿ ospf †

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- F å ¥ x X N M 1 ¿ 4 network area © k F k F å ¥ x X e k / … N M K 9 ¥ network k - 1 Ç D ÿ ospf ƒ G ož œ 4 k N v y G ` ~ OSPF † k - @ OSPF ‹ ‘ož

o¬ F å †o- 1: — å N MFastEthernet 0/1 ¨ D ÿ OSPF †

```
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI )DVW(WKHUQHW LS DGGUHVV
5XLMLH FRQILJ LI )DVW(WKHUQHW LS RVSI GLVDEOH DOO
```

o¬ à • co- -

o¬ U P ’ Îo- 1 y … show ip ospf interface x X U Y ò 0 N M © k µ ospf gož

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.29 ip ospf hello-interval

— åOSPF G Hello † ž • • œ.
ip ospf hello-interval seconds

Ê Ö Þ . F åož
no ip ospf hello-interval

o¬ @H[illegible]

o¬ U P ’ Îo- -

o¬ o • j ¨o- 1 y c%² ¿ c € M F å Hello † ž • • œ což

o¬ u V ª ¢o- -

2.30 ip ospf message-digest-key

F å OSPF † MD5 • š % W.
ip ospf message-digest-key key-id md5 [0 | 7] key

í ”] F å OSPF † MD5 • š % Wož
no ip ospf message-digest-key key-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
key	% W k Â Ú U Y 16 … Á èož
0	6 % W Y ¢ † ª P
7	6 % W Y % † ª P
key-id	% W ö œ … k R1 ñ 255ož

o¬ Þ . F åo- Þ . Z Ä F å MD5 % Wož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ip ospf message-digest-key x X F å % W k 1 t V µ ñ Ä OSPF ãož œ 4 % W %² k V + N N — Õ © • y OSPF > D ¼ © k ¢ À - g è ’ Î A Eož
c N M % W U Y F å %² ý k x ñ Ä N ¨ c%² Ò ò à < è — Õ k · À F å%² ý % Wož > D è — Õ , c % W ö œ + • % W · À%² ýož
%² OSPF ¿ © k o • š k … è i F å x X area authentication g F åož ¨ N M - U Y % Þ o • š k … N M % ” F å x X ip ospf authentication g F å k ¢ ¿ • š y N M • š C F å ž i ¯ H N M • š • ºož
RGOS ÷ ^ u 4 u • ª g MD5 • š % W “ w k “ w • ¥ 8 ²%² ¯ e í ” = éož ¢ Í %² è — Õ OSPF MD5 • š % W ž k ¥ è — Õ k • ¿ è — Õ Z Ä • % W kœ 4 k ã ð c % W G Ú a OSPF † k + ñ G • > D] Æ F å 4 • % Wož ˆ ñ Ä è — Õ F å 4 • % W e k < U Y í ” › % W 4ož

o¬ F å †o- 1 yfastEthernet 0/1 € M Í 4%² • OSPF • š % W k % W Z 5 k % W hello5ož
5 X L M L H F R Q I L J L Q W H U I D F H I D V W (W K H U Q H W

```
5XLMLH FRQILJ LI )DVW(WKHUQHW      LS DGGUHVV
5XLMLH FRQILJ LI )DVW(WKHUQHW      LS RVSI DXWKHQWLFDWLRQ PHVV
5XLMLH FRQILJ LI )DVW(WKHUQHW      LS RVSI PHVVDJH GLJHVW NH\
5XLMLH FRQILJ LI )DVW(WKHUQHW      LS RVSI PHVVDJH GLJHVW NH\   P
```

2:ˆñÄ >DCÍ 4• %WekBè —ÕC¬}í”› %Wož

```
5XLMLH FRQILJ   LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI )DVW(WKHUQHW      QR LS RVSI PHVVDJH GLJHVW NH
```

o¬ à•co- -

o¬ UP’Îo- 1 yí”ÌFå %Wož

```
263) .H\   GRHV QRW H[LVW
```

2yMÖFå]Få %Wož

```
263) .H\   DOUHDG\ H[LVWV
```

3y%† xk1tì• 16 …ož

```
263) :DUQLQJ 7KH SDVVZRUG NH\ ZLOO EH WUXQFDWHG WR   FKDUDF
```

o¬ o•j¨o- -

o¬ uVª¢o- -

2.31 ip ospf mtu-ignore

¿ ¥NM¨vñƒG€T †e+ mtu ûà.

ip ospf mtu-ignore

Ê ÖÞ.Fåož

no ip ospf mtu-ignore

o¬ @ƒª¢o-

@ƒ	T
-	-

o¬ Þ.Fåo- Þ. + mtu gûàož

o¬ xX%”o- NMFå%”ož

o¬ Þ.´ðo- 14

o¬ … 6-o- OSPF ¨vñƒG€T †žkûà>D NM MTU y \NM MTU ©k,ckòçvñ ƒG€T

† 6 P N M MTU Ý 9 N v N M MTU k ; " > N ¼ © 1 t • y k 4 ž U Y * ¼ { MTU
û à Û † Ðož

o¬ F å †o- 1 y 1 fastEthernet 0/1 MTU û à ¼ {ož

```
5 X L M L H  F R Q I L J   L Q W H U I D F H  I D V W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  ) D V W ( W K H U Q H W       L S  R V S I  P W X  L J Q R U H
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.32 ip ospf network

— N M OSPF à Ì • ºož

ip ospf network { broadcast | non-broadcast | point-to-multipoint [non-broadcast] | point-to-point }

Ê Ö Þ . F åož

no ip ospf network

o¬ @ ƒ ª ¢o-

@ ƒ	T
broadcast	1 N M — z n • ºož
non-broadcast	1 N M — NBMA • ºož
point-to-multipoint	1 N M — P2MP • ºož
[non-broadcast]	ò ç N M À Õ z n k ¬ ` k non-broadcast @ ƒož
point-to-point	1 N M — P2P • ºož

o¬ Þ . F åo- z n • º y Y ß à / x z

P2P • º yPPPo•SLIP o• l Ð µ ñ µ ÿ N Mo•X.25 µ ñ µ ÿ N M / x z

NBMA • º y l Ð g µ ñ µ ÿ N M ” Ù ho•X.25 / x g µ ñ µ ÿ N M ” Ù h z

Þ . Z Ä N M P2MP

P2P •º} L N M 1 + 1 ; ûož
NBMA •º} L ¶ à Ù N k ñ Ä ; û è — Õ · À Ü + N * ’ož
P2MP •º— } Lož

o¬ F å †o- 1 y 1 l Ð N M — P2P •º k ` 1 + 1 ; û ož

```
5XLMLH FRQILJ LQWHUIDFH 6HULDO
5XLMLH FRQILJ 6HULDO LS DGGUHVV
5XLMLH FRQILJ 6HULDO HQFDSVXODWLRQ IUDPH UHOD\
5XLMLH FRQILJ 6HULDO LS RVSI QHWZRUN SRLQW WR SRLQW
```

2 y 1 l Ð N M — NBMA •º k `¶ à Ù Nož

```
5XLMLH FRQILJ LQWHUIDFH 6HULDO
5XLMLH FRQILJ 6HULDO LS DGGUHVV
5XLMLH FRQILJ 6HULDO HQFDSVXODWLRQ IUDPH UHOD\
5XLMLH FRQILJ 6HULDO LS RVSI QHWZRUN QRQ EURDGFDVW
5XLMLH FRQILJ 6HULDO H[LW
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU QHLJKERU SULRULW\ SROO LQWHUY
```

o¬ à • co- 1 y … show ip ospf interface x X U Y ò 0 ñ F å à Ì • ºož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.33 ip ospf priority

F å N M OSPF i ¯ Ó ›
ip ospf priority priority

Ê Ö Þ . F åož
no ip ospf priority

o¬ @ ƒ ª ¢o-

@ ƒ	T
priority	— å N M OSPF i ¯ Ó › k H › 8 y0-255 ož

o¬ Þ . F åo- i ¯ Ó › Þ . 1ož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo-

x X # ž • Ä k Z Ä ± ñ > D G • k 1 M • G LSUož
4 9 ² · } M n k¨ g ¿ è ê Z ' e è kU Y 1 M n ž • — å ± Ý%² µož Z ' e è LSU † M n
ž • • œ area virtual-link x X æ š retransmit-interval ¼ p g #ož

o¬ F å †o- 1 y 1 fastEthernet 0/1 N M LSU † M n ž • — 10 ož

```
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI )DVW(WKHUQHW LS RVSI UHWUDQVPLW LQWHUYDO
```

o¬ à • co- 1 y … show ip ospf interface x X U Y ò 0 ñ F å M n ž • • œož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.35 ip ospf source-check-ignore

F å ¨ µ + µ e è + v ñ † g › ª - û àož
ip ospf source-check-ignore

¥ ” Ê Ö Þ . F åož
no ip ospf source-check-ignore

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . µ + µ e è g › ª - û àož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * o Õ Ñ kOSPF v ñ † › ª - y N v N M k ¨ c%² à <ož ¨ µ + µ e è k e è € ª - ©
Þ y — å kU Y } L ¨ c%² à < k ¨ _ « ° k 9 µ + µ e è # Œ i k s = + € ª - ' Î k
œ 4 OSPF k ò † › ª - © k < © # Œ ž + € * s ª - k 3 © é • † ³ c w ' ¥ †ož Ô ð
k + 9 unnumbered N M k OSPF ÷ Ä g ª - û àož
x ¨ î ? • « ° kU k ß ë › ª - ò µ ñ k - OSPF û à â Â k A ò µ + µ e è k # Œ +
€ ª - — c B Hož ¨ _ « ° k ¬ } ¼ { › ª - û à kY ‘ š OSPF > D 3 o • y

o¬ F å †o- 1 y Y F å † ÿ k 1 ¼ { + µ + µ e è › ª - û àož

```
5XLMLH FRQILJ LQWHUIDFH VHULDO
5XLMLH FRQILJ LI )DVW(WKHUQHW LS RVSI VRXUFH FKHFN LJQRUH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.36 ip ospf transmit-delay

OSPF N M n ÿ LSU † • ž.

ip ospf transmit-delay seconds

Ê Ö Þ . F åož

no ip ospf transmit-delay

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	# OSPF N M n ÿ LSU † • ž k Y a % y k H › 8 y1-65535ož

o¬ Þ . F åo- Þ . 1 aož

o¬ x X % ”o- N M F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¨ n ÿ LSU † $ ù k ¥ † ñ Ä LSAs g e è Ù Á T h Age < 1 Í kÍ O ÿ G ¥ N M F å x X

ip ospf transmit-delay #ož — å ¥ @ ƒ · À ð Y ñ ¥ N M G y ¿ è n n ž • k + 9 z , ¿ è k N M

n ÿ • ž • ¥ — å ± Ý ?ož Z ' e è LSU † n ÿ • ž k area virtual-link x X æ š transmit-delay ¼ p g #ož

RGOS ÷ ^ + Age ñ 3600 LSA k 1 g M n ê ¬ L M n k ò ç Z Ä ± ñ C ž ó • k Ý ž LSA 1 R e è Ù Á ƒ G € Ž ”ož

o¬ F å †o- 1 y 1 fastEthernet 0/1 n ÿ • ž — 10ož

```
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI )DVW(WKHUQHW LS RVSI WUDQVPLW GHOD\
```

o¬ à • co- 1 y … show ip ospf interface x X U Y ò 0 ñ F å † G • ž •ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.37 log-adj-changes

— å © k “ £ > N Ù Á J ™ º.
log-adj-changes [detail]

¼ { “ £ > N Ù Á J ™ º..
no log-adj-changes [detail]

o¬ @ ƒ ª ¢o-

@ ƒ	T
detail	“ £ ¶ B Ù Á J ’ Î

o¬ Þ . F åo- Þ . ¥ ø • k k detail @ ƒ k Q “ £ Y 4 • 7 ^ ™ º ’ Î y
> N Ù Á ñ Full Ù Á z
> N Ù Á Y • Full Ù Á z
> N Ù Á ñ Down Ù Á z
> N Ù Á Y • Down Ù Áož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ø • > D Ù Á J ™ º “ £ož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU ORJ DGM FKDQJHV GHWDLO
```

o¬ à • co- 1 y … show ip ospf x X U Y ò 0 ñ F å ™ º “ £ • ¼ Ù Áož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.38 max-concurrent-dd

F å 9 — å ¢ ù OSPF † c ž w G A ; g G Ü ê N I h > D Â Ý ƒ)ož
max-concurrent-dd number

Ê Ö ó • F åož
no max-concurrent-dd

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	6 w G A ; > D Â Ý ƒ) 8 1-65535

o¬ Þ . F åo- Þ . 5ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ è — Õ Ú > D c ž A E ƒ G k ¿ Å I ñ § € ž k F å ¥ x X k U ’ ò ? OSPF † ª • c ž w G A ; g G Ü ê N I h > D Â Ý ƒ)ož

o¬ F å †o- 1 y 1 w G A ; g G Ü ê N I h > D Â Ý ƒ) — å 4 k ¥ F å | ç © Ý O > D A ; i k Î — Õ Â Ý ª • c ž G Ü 4 > D A ; k w Â Ý ª • c ž N I 4 > D G Ü A ; k / Î — Õ Â Ú U Y c ž 8 > D g A ;ož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU PD[ FRQFXUUHQW GG
```

o¬ à • co- 1 y ü g show ip ospf x X U Y 0 ñ + • Â Ý ª • A ; ƒož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.39 max-metric

F å g OSPF # ‘ è — Õ * s Â Ý † O k Y ... ¿ è — Õ ¨ SPF ‹ ‘ ï ¯ 1 ¥ — Õ • n ÿ - µ.

max-metric router-lsa [external-lsa [max-metric-value]] [include-stub] [on-startup [seconds]] [summary-lsa [max-metric-value]]

H *f* * s Â Ý † Oož

no max-metric router-lsa [external-lsa [max-metric-value]] [include-stub] [on-startup [seconds]] [summary-lsa [max-metric-value]]

o¬ @ *f* ª ¢o-

à Ì ¿ — Õ # + Õ a è ¬ n ÿ v Oož
¨ › Í Î OSPF ë gRFC 1247 ê ¾ • Í Î h k LSA Â Ý † O g0xFFFF h links @ SPF ‹ ‘ k
/ Z Ä v O G ª ÿ è ? LSAs è — Õož

o¬ F å †o- 1 y F å • Ñ e * s Â Ý † O 100 a y

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU PD[ PHWULF URXWHU OVD RQ VWDUWXS
```

o¬ à • co- 1 y … show ip ospf x X U Y ò 0 ñ F å max-metric ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.40 neighbor

OSPF > D.
neighbor ip-address [poll-interval seconds] [priority priority] [cost cost]

í ” 6 > Dož
no neighbor ip-address [poll-interval] [priority] | [cost]

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	> D N M IP ª -ož
poll-interval seconds	> D ö ¤ ž • • œ k Y a % y k H › 8 y0-2147483647 ož Q Ä NBMA • º u 4 ¥ @ ƒož
priority priority	> D i ¯ Ó › k H › 8 y0-255ož Q Ä NBMA • º u 4 ¥ @ ƒož
cost cost	ñ ? > D ñ } Ë k — Þ . › k H › 8 y0-65535 ož Q Ä P2MP • º u 4 ¥ # ¾ož

o¬ Þ . F åo- Þ . Z Ä # > D z
> D ö ¤ ž • • œ y Þ . 120 a z
³ z n à Ì > D i ¯ Ó › y Þ . 0ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ip-address y wildcard @ ƒ # kª • %² Ú x X < U Y 1 Ú N M ¼ û ñ%² OSPF ¿ož} ¨%²
N M g OSPF k · À 1 ¥ N M IP ª - , ¨ network area # IP ª - 8 Äož ò ç network area
IP ª - 8 k Q , N M) IP ª - k ¥ N M 1 k g OSPFož
¢ N M ª - c ž Ú OSPF i network x X # IP ª - 8 , F ž k 7 Á Â i F • ” k G N M
@ OSPF iož

o¬ F å †o- 1 y # 3 ¿ y 0 k 1 k 172.16.16.0ož 1 IP ª - J ¨ 192.168.12.0/24 8 Ä N M # ñ ¿ 1 k 1 IP ª
- J ¨ 172.16.16.0/20 8 Ä N M # ñ ¿ 172.16.16.0 k 1 ¿ • N M # ñ ¿ 0ož

```
5 X L M L H F R Q I L J U R X W H U R V S I
5 X L M L H F R Q I L J U R X W H U Q H W Z R U N D U H D
5 X L M L H F R Q I L J U R X W H U Q H W Z R U N D U H D
5 X L M L H F R Q I L J U R X W H U Q H W Z R U N D U H D
```

o¬ à • co- 1 y … show ip ospf interface x X U Y ò 0 ñ F å network à < ñ m N M µ ospf # ‘ g z
2 y … show ip ospf database x X U Y ò 0 LSA ’ Î ÿ è N M + • ’ Îož

o¬ U P ’ Îo- 1 y — | IP ª -/ Q A Á `ož

```
2 6 3 ) , Q Y D O L G D G G U H V V P D V N F R P E L Q D W L R Q
```

o¬ o • j ¨o-

o¬ u V ª ¢o- -

2.42 overflow database

F å ¢ ù OSPF † ñ u 4 LSA Â Ý ƒ)ož
overflow database number [hard | soft]

Ê Ö Þ . F åož
no overflow database

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	LSA Â Ý ƒ) k H › 8 < 1-4294967294>
hard	LSA Ý ¥ ƒ) ž k ¼ { ¥ OSPF †
soft	LSA Ý ¥ ƒ) ž k G ß Š s

o¬ Þ . F åo- Þ . ’ ò ¢ ù OSPF † ñ u 4 LSA Â Ý ƒ)ož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 3 Ý 6 ƒ) ¬ } ¼ { OSPF ž k hard @ ƒ k 3 ¬ ¼ { OSPF k Q ¬ Š s ž k soft @ ƒ

o¬ F å †o- 1 y F å ¢ LSA Ý 10 Ú ž k ¼ { OSPF 10 †ož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU RYHUIORZ GDWDEDVH KDUG
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.43 overflow database external

F å

w 1 Ž ” Î ª ÿ è external-LSAož ¢ Æ wait-time ž • e k — Õ Ê Ö 3 o Ù Á k w M • ú external-LSAož
¨ … ¥ ž · À ‘ š OSPF t ¿ y ¯ * ¿ ñ Ä — Õ F å , c max-dbsize › k k é U – Ü ò
ë » y
… à e è Ù Á ƒ G € — c è%² k > D — c ñ Full Ù Á z
j ¨ è k , ê è Õ Ñ z
È ¯ AS-External-LSA M nož

o¬ F å †o- 1 y F å external lsa Â Ý ƒ) 10 k Ý é J overflow Ù Á k : ¡ R overflow Ù Á Ê Ö ñ ž • • œ 3 aož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU RYHUIORZ GDWDEDVH H[WHUQDO
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.44 overflow memory-lack

ª • ¨ Ä á ž OSPF µ OVERFLOW Ù Áož
overflow memory-lack

¼ { Ä á ž OSPF µ OVERFLOW Ù Áož
no overflow memory-lack

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Ä á Õ Ñ OSPF ª • µ OVERFLOW Ù Áož

o¬ x X % ”o- è i F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- OSPF µ OVERFLOW Ù Á } © ’ • ñ Ù B è k ¥ g Ü Ä | ‘ š Ä Ç Í xož
• o ¥ k ¨ OSPF µ OVERFLOW Ù Á ’ • ñ Ù B è k U k – Ü … à ß ë è ê è ë »ož
4 × 5 ß ë _ ë » D ÿ kOSPF k ÿ è%² Ú 6 g NULL M Þ . è k R ò ‘ z _ ë » D ÿ " ä k

¥ è ¨ OVERFLOW Ù Á 1%² + ¨ož

ï U Y … clear ip ospf process x X M • Ö y OSPF g k Ž ” OSPF OVERFLOW Ù Áož

…

t NMêñ6 àÌNM IP ª- t ª-ož

o¬ F å †o- 1 y 1 N M fastEthernet 0/1 — å t N M k 6 ¥ N M IP 1.1.1.1 t IP ª-ož

```
5XLMLH FRQILJ URXWHU RVSI
5XLMLH FRQILJ URXWHU SDVVLYH LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ URXWHU SDVVLYH LQWHUIDFH IDVW(WKHUQHW
```

o¬ à • co- 1 yshow ip ospf interface ò 0 + • Ù Áož

o¬ U P ' Îo- 1 y 6 4 — | N Mož

```
,QWHUIDFH LV LQYDOLG
```

o¬ o • j ¨o-

o¬ u V ª ¢o- -

2.46 redistribute

M ã b Ù B è ' Îož

redistribute { connected | ospf process-id | rip | static } [match { internal | external [1 | 2] | nssa-external [1 | 2] }] [metric metric-value] [metric-type { 1 | 2 }] [route-map route-map-name] [subnets] [tag tag-value]

no redistribute { connected | ospf process-id | rip | static } [match { internal | external [1 | 2] | nssa-external [1 | 2] }] [metric metric-value] [metric-type { 1 | 2 }] [route-map route-map-name] [subnets] [tag tag-value]

o¬ @ ƒ ª ¢o-

@ ƒ	T
connected	R + è M ã b
ospf process-id	R ospf M ã b k* process-id 6 À } î ospf † kH › 8 y 1-65535
rip	R rip M ã b
static	R ² Á è M ã b
match	Q S + F å M ã b OSPF è ž … k 9 ¡ Ô è g M ã b k ó • Ù Á ª • ñ Ä OSPF è g M ã b z
metric metric-value	— å OSPF external LSA metric k* metric-value 6 metric Ý 4 kH › 8 y0-16777214
metric-type { 1 | 2 }	— å Ù B è • º E-1 ê E-2
route-map route-map-name	— å M ã b ¡ • é
subnets	U M ã b ³ ö Õ • à Ì

tag tag-value	— å M ã b ñ OSPF Ä è tag › k H › 8 y0-4294967295

o¬ Þ . F åo- Þ . Õ Ñ u 4 M ã b F åož
3 F å M ã b OSPF k é M ã b ¥ † ñ Ä ÿ • º è z
¿ U Õ Ñ k M ã b ¥ • º ñ Ä è z
metric-type Þ . E-2 v
Þ . ¼ û route-mapož

o¬ x X % ”o- è F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- F å ¥ x X e k ¥ è — Õ 1 J ASBR k 1 , • è ’ Î - µ OSPF ¿ Ä k w Y type-5 LSA z n ñ ¿ Ä ¿ U OSPF è — Õož
F å M ã b ospf è ž k k match @ ƒ ž k ó • ª • M ã b ñ Ä ÿ • º ospf è z ò e †%²) F å match @ ƒ • ì ÷ match @ ƒ k M ã b ž Q ª • F ÿ • º è g M ã b z.. no x X Ê Ö match @ ƒ ó • ›ož @ 0 † ª ¢ož
F å M ã b ž k F å route-map ¡ ž k route-map match • é © S + M ã b = ÷ @ ƒ g F z + 9 M ã b OSPF è k Q Ä M ã b è á F å match ê level • é k õ Ç g route-map î •ož ñ ¼ û route-map set metric H › 8 • ¢ <0-16777214> k ò ç Ý ß ¥ 8 k 1 — c – µ è ož
redistribute x X no ¥ ” F å • é ò y
1. ò ç no x X 6 î ? @ ƒ k é 1 ? @ ƒ Ê Ö Þ . F å z
2. ò ç no x X 6 ` ~ @ ƒ k é 1 … x X í ”ož

o¬ F å †o- -

o¬ à • co- 1 y … show ip ospf database x X U Y ò 0 – µ 4 ñ F å è ’ Îož

o¬ U P ’ Îo- 1 y ª • M ã b Î † è ož

```
5HGLVWULEXWLRQ RI RVSI YLD RVSI QRW DOORZHG
```

2 y N M ã b Ä • à <ož

```
2QO\ FODVVIXO QHWZRUNV ZLOO EH UHGLVWULEXWHG
```

o¬ o • j ¨o- c%² ospf † g M ã G

o¬ u V ª ¢o- -

2.47 router ospf

ë • OSPF è i w µ OSPF è F å % ”ož

router ospf

í ”] # OSPF è iož

no router ospf process-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
process-id	OSPF i Zož Ì F å i Z ž k n P F å i 1ož

o¬ Þ . F åo- Þ . ¨ OSPF è iož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- RGOS10.1 ¨ = ë Â E Í 4 i Z @ ƒ ký J Ú † OSPFož c OSPF † • , ; Þ y k U Y w • © Þ y g è # ‘ož

o¬ F å †o-

o¬ à • co- ü g show ip ospf U Y 0 ñ + • i Z ospf † © k ë • è ož

o¬ U P ’ Îo- 1 y — c ã F ñ router-id é , • ospf i — c o

2 6 3) 1 2 5 7 5 , ' 2 6 3) S U R F H V V I D L O H G W R D O O R F D W H X Q L T X H U R X W H U

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.48 router ospf max-concurrent-dd

F å 9 — å ñ Ä OSPF è i c ž w G A ; g G Ü ê N I h > D Â Ý ƒ)ož

router ospf max-concurrent-dd number

Ê Ö Þ . F åož

no router ospf max-concurrent-dd

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	w G A ; > D Â Ý ƒ) 8 1-65535

o¬ Þ . F åo- Þ . 10ož

o¬ x X % ”o- ¶ B F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- ¢ è — Õ Ú > D c ž A E ƒ G k ¿ Å I ñ § € ž k F å ¥ x X k U ’ ò ñ Ä OSPF † ª • c ž w G A ; g G Ü ê N I h > D Â Ý ƒ)ož

o¬ F å †o- 1 y 1 ñ Ä OSPF † w G A ; g G Ü ê N I h > D Â Ý ƒ) — å 4 k ¥ F å | ç © Ý O > D A ; i k Î — Õ Â Ý ª • c ž G Ü 4 > D A ; k w Â Ý ª • c ž N I 4 > D G Ü A ; k / Î — Õ Â Ú U Y c ž 8 > D g A ;ož

5 X L M L H F R Q I L J U R X W H U R V S I P D [F R Q F X U U H Q W G G

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

2.49 router-id

å ¥ è — Õ IDož

router-id router-id

í ” ñ — å Router ID k Ê Ö … Þ . Router IDož

no router-id

o¬ @ ƒ ª ¢o-

@ ƒ	T
router-id	} — å è — Õ ID k Y IP ª - ¥ ” n P

o¬ Þ . F åo- OSPF è i # ñ Ä › ê gloopback h N M IP ª - Â Ý • è — Õ ö œ z ò ç Z Ä F å IP ª - › ê gloopback h N M k ; " OSPF 1 # H ñ Ä Ò ò N M IP ª - Â Ý • è — Õ ö œož

o¬ x X % ”o- è i F å % ”ož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- U Y F å ` ~%² IP ª - • ¥ è — Õ è — Õ ö œ kx © ? V è — Õ è — Õ ö œ · À Š%²ožh Þ
9 w J e k # ‘ Ä B k Ÿ Ý O Ô ò k ñ Y ™ š Þ w J è — Õ ö œ k “ w è — Õ ö œ ž k U P © k G
} “ wož • ‘ ¨ ÿ è LSA $ ù ¯ — å ñ 6 router-idož

o¬ F å †o- 1 y “ w è — Õ router-id 0.0.0.36ož
5 X L M L H F R Q I L J U R X W H U R V S I
5 X L M L H F R Q I L J U R X W H U U R X W H U L G

o¬ à • co- ü g show ip ospf x X U Y 0 ñ + • ospf † Router-IDož

o¬ U P ’ Îo- 1 y F å Router-ID 0.0.0.0 U P ¥ q • k - OSPF i 2 gož
2 6 3) U R X W H U L G V H W W R S U R F H V V Z L O O Q R W U X Q
2 y F å router-id

```
63) DOJRULWKP ODVW H[HFXWHG          DJR
63) DOJRULWKP H[HFXWHG  WLPHV
L63) DOJRULWKP H[HFXWHG  WLPHV1XPEHU RI /6$  &KHFNVXP [  EI
$UHD  166$
1XPEHU RI LQWHUIDFHV LQ WKLV DUHD LV
1XPEHU RI IXOO\ DGMDFHQW QHLJKERUV LQ WKLV DUHD LV
1XPEHU RI IXOO\ DGMDFHQW YLUWXDO QHLJKERUV WKURXJK WKLV DUHD
$UHD KDV QR DXWKHQWLFDWLRQ
63) DOJRULWKP ODVW H[HFXWHG          DJR
63) DOJRULWKP H[HFXWHG  WLPHV
L63) DOJRULWKP H[HFXWHG  WLPHV
1XPEHU RI /6$  &KHFNVXP [
166$ 7UDQVODWRU 6WDWH LV GLVDEOHGk6WDELOLW\ ,QWHUYDO H[SLUH
```

<†Ky

External LSA database limit	external-LSA ƒ O ’ òož
Exit database overflow state interval	î • Y • overflow Ù Á ž •ož
Database overflow state	¢ ù OSPF i © k Ô 9 overflow Ù Áož
Number of LSA originated	ÿ è LSA ƒ Oož
Number of LSA received	N v ñ LSA ƒ Oož
Log Neighbor Adjency Changes	> D Ù Á J “ £ • ¼ © k ø •ož
Number of areas attached to this router	¥ è — Õ ¿ È ƒož
Area type	¿ • º k › Ä Default k Stub kNSSAož
Number of interfaces in this area	K 9 ¥ ¿ N M ƒ)ož
Number of fully adjacent neighbors in this area	K 9 ¥ ¿ Full > D ƒ Oož
Number of fully adjacent virtual neighbors through this area	K 9 ¥ ¿ Full Z e N > D ƒ O zQ Ä ¨ ³ ã t ó • • º ¿ Ä |ož
Area authentication	¿ • š • ”ož
SPF algorithm last executed	) SPF ‹ ‘ ñ) ù ñ Æ ž •ož
SPF algorithm executed times	SPF ‹ ‘) ƒož
Number of LSA	K 9 ¥ ¿ LSA È ƒ Oož
Checksum Sum	¥ ¿ LSA û à y È yož
NSSA Translator State	© k 1 NSSA LSA ô E External LSA zN + NSSA k w © ABR OSPF i Ä |ož
BFD enabled	n P o OSPF BFD û

ò • 29 , y Q ‡ â [BFD,VRF " h H ' ´ õ © ¬ • " È » n ˜ • • " y d

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.51 show ip ospf border-routers

ª P ñ ABR/ASBR OSPF Ä B è nož

show ip ospf [process-id] border-routers

o¬ @ ƒ ª ¢o-

@ ƒ	T
process-id	ospf i Z

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- • ¥ x X k U Y ª P Î ª è — Õ ñ ABR ê ASBR è — Õ OSPF Ä B è ož OSPF Ä B è n c 9

show ip route ª P è n kOSPF Ä B è n) ö ª - OSPF è — Õ ö œ k ò ©) ö à Ìož

o¬ F å †o- 1 y ª P ñ ABR/ASBR OSPF Ä B è nož

```
5XLMLH VKRZ LS RVSI ERUGHU URXWHUV
263) LQWHUQDO 5RXWLQJ 7DEOH
&RGHV L ,QWUD DUHD URXWH , ,QWHU DUHD URXWH
L > @ YLD )DVW(WKHUQHW $%5 $6%5 $UHD VHOH
```

< † K y

<	ª ¢
Codes	è •º W A #ož i n P ¿ Ä B è k I n P ¿ $ • è ož
I	n P ¥ è ¿ Ä B è ož
1.1.1.1	ª P è — Õ OSPF ö œ …ož
[2]	ª P ñ ¥ è — Õ 0 Ë gcost hož
via 10.0.0.1	ª P ñ è — Õ %² é à ¼ož
FastEthernet 0/1	ª P ñ è — Õ N Mož
ABR, ASBR	ª P è — Õ •º k Ä ABR y ASBR _ k U Y c ž © ABR y ASBRož
Area 0.0.0.1	ª P . ñ ¥ è ¿ož
select	¢ Ä Ú Ú è ¬ ñ ASBR ž kselect n P ¢ ù # + Â i è ¬ož

self-originate	ªP Î è —Õ \ÿè e è Ù Á T 'Îož
max-age	ªP] ñ ï ž• LSA
router	ªP OSPF è —Õ e è Ù Á T 'Îož
network	ªP OSPF à Ì e è Ù Á T 'Îož
summary	ªP OSPF d } e è Ù Á T 'Îož
asbr-summary	ªP ¼9 ASBR d } e è Ù Á T 'Îož
external	ªP OSPF Ù B e è Ù Á T 'Îož
nssa-external	ªP OSPF † •Ù B e è Ù Á T 'Îož
opaque-area	ªP † • LSA
opaque-as	ªP † %² • LSA
opaque-link	ªP †, • LSA
database-summary	ªP OSPF e è Ù Á ƒ G € _ _ LSA Ï ‹ 'Îož
detail	ªP OSPF ñ Ä LSA ¦ Â 'Îož
brief	ªP 6 •º LSA d } 'Îož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ OSPF e è Ù Á ƒ G € ® Ý ž k ã ¾ ªP © ã · } ož 3 G ª … ? x X k Ä 9 OSPF { ž L ”ož

o¬ F å †o- 1 yshow ip ospf database x X ªP È ç

```
5XLMLH  VKRZ LS RVSI GDWDEDVH
263) 5RXWHU ZLWK ,'          3URFHVV ,'
5RXWHU /LQN 6WDWHV  $UHD
/LQN ,'       $'9 5RXWHU     $JH  6HT       &N6XP  /LQN FRXQW
                              [       [ I
                              [       [  DF
1HWZRUN /LQN 6WDWHV  $UHD
/LQN ,'       $'9 5RXWHU     $JH  6HT       &N6XP
                              [       [
6XPPDU\ /LQN 6WDWHV  $UHD
/LQN ,'       $'9 5RXWHU     $JH  6HT       &N6XP  5RXWH
                              [       [  G
                              [     F  [ HFE
5RXWHU /LQN 6WDWHV  $UHD        >166$@
/LQN ,'       $'9 5RXWHU     $JH  6HT       &N6XP  /LQN FRXQW
                              [       [  D
6XPPDU\ /LQN 6WDWHV  $UHD        >166$@
/LQN ,'       $'9 5RXWHU     $JH  6HT       &N6XP  5RXWH
                              [       [  D
```

```
                                [        [EE G
166$ H[WHUQDO /LQN 6WDWHV  $UHD       >166$@
/LQN ,'   $'9 5RXWHU   $JH  6HT      &N6XP  5RXWH        7DJ
                          [        [   F (
                          [        [    (
$6 ([WHUQDO /LQN 6WDWHV
/LQN ,'   $'9 5RXWHU   $JH  6HT      &N6XP  5RXWH        7DJ
                          [      D  [    (
                          [      D  [    (
```

< † K y

<	ª ¢
OSPF Router with ID	ª P OSPF e è Ù Á ƒ G € è — Õ ö œ … Î OSPF + • i Z
Router Link States	n P Y Ä è — Õ e è Ù Á T ' Îož
Net Link States	n P Y Ä à Ì e è Ù Á T ' Îož
Summary Net Link States	n P Y Ä d } à Ì e è Ù Á T ' Îož
NSSA-external Link States	n P Y Ä † • ^ ¿ Ù B e è Ù Á T ' Î
AS External Link States	n P Y Ä † < • ^ ¿ Ù B e è Ù Á T ' Îož
Link ID	e è ö œož
ADV Router	* s ¥ e è Ù Á T è — Õ ö œož
Age	ª P ¥ e è Ù Á T ¨ ž •ož
Seq#	ª P ¥ e è Ù Á T ~ Z k 9 y ï ê M Ö LSAož
Cksum	ª P ¥ e è Ù Á T û à yož
Link-Count	ª P è — Õ e è Ù Á T ' Î e è ƒ O
Route	ª P 4 LSA m è ' Î
Tag	ª P ¥ e è Ù Á T ö “ož

2 yshow ip ospf database asbr-summary x X ª P È ç

```
5XLMLH  VKRZ LS RVSI GDWDEDVH DVEU VXPPDU\
263) 5RXWHU ZLWK ,'          3URFHVV ,'
$6%5 6XPPDU\ /LQN 6WDWHV  $UHD
/6 DJH
2SWLRQV  [   _ _ _ _ _ _(_
/6 7\SH  $6%5 VXPPDU\ /6$
/LQN 6WDWH ,'        $6 %RXQGDU\ 5RXWHU DGGUHVV
$GYHUWLVLQJ 5RXWHU
/6 6HT 1XPEHU
&KHFNVXP  [EH F
```

```
/HQJWK
1HWZRUN 0DVN
726      0HWULF
```

< † K y

<	ª ¢
OSPF Router with ID	ª P Y ’Î + • è — Õ ö œ … Î OSPF + • ¡ Z
AS Summary Link States	n P Y ª P © AS d } e è T ’Îož
LS age	ª P ¥ e è Ù Á T ¨ ž •ož
Options	# ¾ož
LS Type	ª P ¥ e è Ù Á T • ºož
Link State ID	ª P ¥ e è Ù Á T e è ö œož
Advertising Router	ª P ¥ e è Ù Á T * s è — Õož
LS Seq Number	ª P ¥ e è Ù Á T ~ Zož
Checksum	ª P ¥ e è Ù Á T û à yož
Length	ª P ¥ e è Ù Á T x † k Y - % yož
Network Mask	ª P ¥ e è Ù Á T + • è à Ì Q Aož
TOS	TOS › k) ù Q 0ož
Metric	ª P ¥ e è Ù Á T + • è O † ›ož

3 y show ip ospf database external x X ª P È ç

```
5XLMLH  VKRZ LS RVSI GDWDEDVH H[WHUQDO
263) 5RXWHU ZLWK ,'          3URFHVV ,'
$6 ([WHUQDO /LQN 6WDWHV
/6 DJH
2SWLRQV  [   _ _ _ _ _ _(_
/6 7\SH  $6 H[WHUQDO /6$
/LQN 6WDWH ,'          ([WHUQDO 1HWZRUN 1XPEHU
$GYHUWLVLQJ 5RXWHU
/6 6HT 1XPEHU       D
&KHFNVXP  [
/HQJWK
1HWZRUN 0DVN
0HWULF 7\SH    /DUJHU WKDQ DQ\ OLQN VWDWH SDWK
726
0HWULF
)RUZDUG $GGUHVV
([WHUQDO 5RXWH 7DJ
```

< † K y

<	ª ¢
OSPF Router with ID	ª P Y ' Î + • è — Õ ö œ … Î OSPF + • i Zožož
Type-5 AS External Link States	n P Y ' Î ^ ¿ Ù B e è Ù Á T ' Îož
LS age	ª P ¥ e è Ù Á T ¨ ž •ož
Options	# ¾ož
LS Type	ª P ¥ e è Ù Á T • ºož
Link State ID	ª P ¥ e è Ù Á T e è ö œož
Advertising Router	ª P ¥ e è Ù Á T * s è — Õož
LS Seq Number	ª P ¥ e è Ù Á T ~ Zož
Checksum	ª P ¥ e è Ù Á T û à yož
Length	ª P ¥ e è Ù Á T x † k Y - % yož
Network Mask	ª P ¥ e è Ù Á T + • è à Ì Q Aož
Metric Type	n P Ù B e è • ºož
TOS	TOS › k) ù Q 0ož
Metric	ª P ¥ e è Ù Á T + • è O † ›ož
Forward Address	ñ ¥) ö à Ì ƒ G v O k 1 t ô G ñ ¥ IP ª -ož ò ç ¥ ª - 0.0.0.0 k é ƒ G v O k t ô G ñ D ÿ ¥ e è Ù Á è — Õož
External Route Tag	Ù B è ö “ k ? Ù B è C Ä 32 A Ô è ö “ož OSPF Î ï … ¥ è ö “ k ¨ ¿ è i è M ã b OSPF è ž k • ñož

4 yshow ip ospf database network x X ª P È ç

```
5XLMLH  VKRZ LS RVSI GDWDEDVH QHWZRUN
263) 5RXWHU ZLWK ,'          3URFHVV ,'
1HWZRUN /LQN 6WDWHV $UHD
/6 DJH
2SWLRQV  [   _ _ _ _ _ _(_
/6 7\SH  QHWZRUN /6$
/LQN 6WDWH ,'            DGGUHVV RI 'HVLJQDWHG 5RXWHU
$GYHUWLVLQJ 5RXWHU
/6 6HT 1XPEHU
&KHFNVXP  [
/HQJWK
1HWZRUN 0DVN      ƒ ƒÀ¨`±±w=ÐW€E€“ &’ @ 0 a"é P v Cv
```

OSPF Router with ID	ª P Y ’Î + • è — Õ ö œ … Î OSPF + • i Zož
Network Link States	n P Y à Ì e è Ù Á T ’Îož
LS age	ª P ¥ e è Ù Á T ¨ ž •ož
Options	# ¾ož
LS Type	ª P ¥ e è Ù Á T • ºož
Link State ID	ª P ¥ e è Ù Á T e è ö œož
Advertising Router	ª P ¥ e è Ù Á T * s è — Õož
LS Seq Number	ª P ¥ e è Ù Á T ~ Zož
Checksum	ª P ¥ e è Ù Á T û à yož
	ª P ¥ e è Ù Á T x † k Y - % yož
	ª P ¥ e è Ù Á T + • à Ì à Ì Q Aož
	ª P ¥ à Ì ñ N è — Õož

D V H U R X W H U

3 U R F H V V , '

D C € P Ð 0 ° 0 0 4 P 0

U Rà

Flag	router ö º
LS Type	ª P ¥ e è Ù Á T • ºož
Link State ID	ª P ¥ e è Ù Á T e è ö œož
Advertising Router	ª P ¥ e è Ù Á T * s è — Õož
LS Seq Number	ª P ¥ e è Ù Á T ~ Zož
Checksum	ª P ¥ e è Ù Á T û à yož
Length	ª P ¥ e è Ù Á T x † k Y - % yož
Number of Links	ª P ¥ è — Õ ¼ û e è ƒož
Link connected to	ª P e è æ ± N k Y C à Ì • ºož
(Link ID)	e è ö œož
(Link Data)	e è ƒ Gož
Number of TOS metrics	TOS › k Q u 4 TOS0ož
TOS 0 Metrics	TOS o O † ›ož

6 yshow ip ospf database summary x X ª P È ç

```
5XLMLH  VKRZ LS RVSI GDWDEDVH VXPPDU\
263) 5RXWHU ZLWK ,'          3URFHVV ,'
6XPPDU\ /LQN 6WDWHV $UHD
/6 DJH
2SWLRQV [ _ _ _ _ _ _(_
/6 7\SH VXPPDU\ /6$
/LQN 6WDWH ,'          VXPPDU\ 1HWZRUN 1XPEHU
$GYHUWLVLQJ 5RXWHU
/6 6HT 1XPEHU
&KHFNVXP [ H
/HQJWK
1HWZRUN 0DVN
726 0HWULF
```

< † K y

<	ª ¢
OSPF Router with ID	ª P Y ' Î + • è — Õ ö œ … Î OSPF + • i Zož
Summary Net Link States	n P Y d } à Ì e è Ù Á T ' Îož
LS age	ª P ¥ e è Ù Á T ¨ ž •ož
Options	# ¾ož
LS Type	ª P ¥ e è Ù Á T • ºož
Link State ID	ª P ¥ e è Ù Á T e è ö œož
Advertising Router	ª P ¥ e è Ù Á T * s è — Õož
LS Seq Number	ª P ¥ e è Ù Á T ~ Zož
Checksum	ª P ¥ e è Ù Á T û à yož

Length	ª P ¥ e è Ù Á T x † k Y - % yož
Network Mask	ª P ¥ e è Ù Á T + • è à Ì Q Aož
TOS	TOS › k) ù Q 0ož
Metric	ª P ¥ e è Ù Á T + • è O † ›ož

7 yshow ip ospf database nssa-external x X ª P È ç

```
5XLMLH  VKRZ LS RVSI GDWDEDVH QVVD H[WHUQDO
263) 5RXWHU ZLWK ,'          3URFHVV ,'
166$ H[WHUQDO /LQN 6WDWHV  $UHD       >166$@
/6 DJH
2SWLRQV  [   _ _ _ _ _ _ _
/6 7\SH  $6 166$ /6$
/LQN 6WDWH ,'          ([WHUQDO 1HWZRUN 1XPEHU )RU 166$
$GYHUWLVLQJ 5RXWHU
/6 6HT 1XPEHU
&KHFNVXP  [   F
/HQJWK
1HWZRUN 0DVN
0HWULF 7\SH    /DUJHU WKDQ DQ\ OLQN VWDWH SDWK
726
0HWULF
166$ )RUZDUG $GGUHVV
([WHUQDO 5RXWH 7DJ
```

< † K y

<	ª ¢
OSPF Routesith ID	ª P Y ' Î + • è — Õ ö œ … Î OSPF + • i Zož
NSSA-extesnal Link States	n P Y ' Î † • ^ ¿ Ù B e è Ù Á T ' Îož
LS age	ª P ¥ e è Ù Á T ¨ ž •ož
Options	# ¾ož
LS Type	ª P ¥ e è Ù Á T • ºož
Link State ID	ª P ¥ e è Ù Á T e è ö œož
Advertising Routes	ª P ¥ e è Ù Á T * s è — Õož
LS Seq Number	ª P ¥ e è Ù Á T ~ Zož
Checksum	ª P ¥ e è Ù Á T û à yož
Length	ª P ¥ e è Ù Á T x † k Y - % yož
Network Mask	ª P ¥ e è Ù Á T + • è à Ì Q Aož
Metric Type	n P Ù B e è • ºož
TOS	TOS › k) ù Q 0ož

Network Mask	ª P ¥ e è Ù Á T + • è à Ì Q Aož

o¬ @ ƒ ª ¢o-

@ ƒ	T
process-id	OSPF i Z
interface-type	6 N M N M • ºož
interface-number	6 N M N M Ú Zož
brief	ª P N M d }ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 4 x X U Y ª P „ ? N M g OSPF k Y C ? N M æ OSPF , ¼ — å ’ Îož

o¬ F å †o- 1 y ª P OSPF ¼ û N M ’ Îož

```
5XLMLH  VKRZ LS RVSI LQWHUIDFH IDVW(WKHUQHW
)DVW(WKHUQHW  LV XS OLQH SURWRFRO LV XS
,QWHUQHW $GGUHVV  ,ILQGH[  $UHD  078
0DWFKLQJ QHWZRUN FRQILJ
3URFHVV ,'  5RXWHU ,'  1HWZRUN 7\SH %52$'&$67 &RVW
7UDQVPLW 'HOD\ LV  VHF 6WDWH '5 3ULRULW\  %)' HQDEOHG
'HVLJQDWHG 5RXWHU ,'  ,QWHUIDFH $GGUHVV
%DFNXS 'HVLJQDWHG 5RXWHU ,'  ,QWHUIDFH $GGUHVV
7LPHU LQWHUYDOV FRQILJXUHG +HOOR 'HDG :DLW 5HWUDQVPLW
+HOOR GXH LQ
1HLJKERU &RXQW LV  $GMDFHQW QHLJKERU FRXQW LV
&U\SW 6HTXHQFH 1XPEHU LV
+HOOR UHFHLYHG  VHQW  '' UHFHLYHG  VHQW
/6 5HT UHFHLYHG  VHQW  /6 8SG UHFHLYHG  VHQW
/6 $FN UHFHLYHG  VHQW  'LVFDUGHG
```

< † K y

<	ª ¢
FastEthernet 0/1 State	¥ à Ì N M Ù Á kUP ª ¢ 3 o W • kDown ª ¢ Ä { žož

Cost	OSPF N M 0 Ëož
Transmit Delay is	OSPF N M n ÿ • žož
State	DR/BDR Ù Á ö œož
Priority	¥ N M i ¯ ´
Designated Router(ID)	¥ N M DR è — Õ ö œ
DR's Interface address	¥ N M DR N M ª -
Backup designated router(ID)	¥ N M BDR è — Õ ö œ
BDR's Interface address	¥ N M BDR N M ª -
Time intervals configured	N M + • Hello kDead kWait kRetransmit ž •
Hello due in	) HELLO G ž •
Neighbor count	> D È ƒ
Adjacent neighbor count	Full > D ƒ O
Crypt Sequence Number	Î N M + • md5 • š ~ Z
Hello received send	v ñ G ß HELLO † Ï ‹ož
DD received send	v ñ G ß DD † Ï ‹ož
LS-Req received send	v ñ G ß LS ¬ L † Ï ‹ož
LS-Upd received send	v ñ G ß LS ¾ • † Ï ‹ož
LS-Ack received send	v ñ G ß LS € • † Ï ‹ož
Discard	t ' OSPF † Ï ‹ož

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

2.54 show ip ospf neighbor

ª P OSPF > D n

show ip ospf [process-id] neighbor [statistics | { [interface-type interface-number] | [neighbor-id] | [detail] }]

o¬ @ ƒ ª ¢o-

@ ƒ	T
process-id	OSPF i Z
detail	ª P > D ¦ Â ' Îož
interface-type interface-number	ª P 6 N M > D ' Îož
neighbor-id	ª P 6 > D ' Îož
statistics	ª P > D Ï ‹ ' Îož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X U Y ª P > D ’ Î k Æ o ¥ x X Û G • OSPF © k] Æ 3 o gož

o¬ F å †o- -

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

2.55 show ip ospf route

ª P OSPF è ož

show ip ospf [process-id] route [count | ip-address mask]

o¬ @ ƒ ª ¢o-

@ ƒ	T
process-id	OSPF i Z
count	ª P _ _ OSPF è Ï ‹ ’ Î
ip-address mask	ª P 6 ù Ö y Q A è ’ Î

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X 9 ª P OSPF è ’ Î kcount # ¾ 9 ª P OSPF è Ï ‹ ’ Îož

o¬ F å †o- 1 y ª P OSPF è ož

```
5XLMLH VKRZ LS RVSI URXWH
263) SURFHVV
&RGHV & FRQQHFWHG ' % DLFVNFXDSU G2 %2-63)
,$ 263) LQWHU DUHD 1 263) 166$ H[WHUQDO W\SH 1 263) 166$ H
( 263) H[WHUQDO W\SH ( 263) H[WHUQDO W\SH
( > @ YLD )DVW(WKHUQHW
% YLD )DVW(WKHUQHW
& > @ LV GLUHFWO\ FRQQHFWHG )DVW(WKHUQHW $UHD
```

< † K y

<	

100.0.0.0/24	è + • ù Öož
[1]	è + • cost
via	è %² é N M

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

2.56 show ip ospf spf

ª P OSPF ¿ è ‹ ') ƒ
show ip ospf [process-id] spf

o¬ @ ƒ ª ¢o-

@ ƒ	T
process-id	OSPF i Z

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¥ x X Û ò 0 OSFP ¿ 30 ã U Ä è ‹ ') ƒ Y C ¢ ù ž • è ‹ ' È) ƒož

o¬ F å †o- 1 y ª P OSPF ¿ è ‹ ') ƒož

```
5XLMLH VKRZ LS RVSI VSI

263) SURFHVV
$UHDBLG PLQBFRXQWV 7RWDOBFRXQWV
```

< † K y

<	ª ¢
Area_id	OSPF ¿ ID
30min_counts	Â 30 ã U ž • Ä kOSPF è ‹ ') ƒ
Total_counts	¢ ù ž • kOSPF è ‹ ' È) ƒ

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

ò 0 DHCPv6 Snooping Ç ƒ G € Á ï ’ Îož

show ipv6 dhcp snooping binding [mac] [vlan vlan-id] [ipv6-address] [interface interface-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac	ª P ¥ MAC ª - + • Ç n ¾
vlan-id	ª P ¥ VLAN + • Ç n ¾
ipv6-address	ª P ¥ IPv6 ª - + • Ç n ¾
interface-id	ª P ¥ Ä ¿ N M + • Ç n ¾

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g 4 x X k U Y ò 0 ¢ ù DHCPv6 Snooping Ç ƒ G € ñ Ä Á ï ’ Îož

o¬ F å †o- 1 y µ © ª P † ÿ y

```
5XLMLH VKRZ LSY GKFS VQRRSLQJ ELQGLQJ
7RWDO QXPEHU RI ELQGLQJV
12 0DF$GGUHVV ,3Y $GGUHVV /HDVH VHF
,QWHUIDFH


G I
*LJDELW(WKHUQHW
```

15.19 show ipv6 dhcp snooping prefix

ò 0 DHCPv6 Snooping ù Ö ƒ G € ï ' Îož

show ipv6 dhcp snooping prefix [mac | vlan vlan-id | ipv6-prefix | interface interface-id]

o¬ @ ƒ ª ¢o- @ ƒ T

mac	ª P ¥ MAC ª - + • ù Ö n ¾
vlan-id	ª P ¥ VLAN + • ù Ö n ¾
ipv6-prefix	ª P ¥ IPv6 ù Ö + • ù Ö n ¾
interface-id	ª P ¥ N M + • ù Ö n ¾

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g 4 x X k U Y ò 0 ¢ ù DHCPv6 Snooping ù Ö ƒ G € ñ Ä ï ' Îož

o¬ F å †o- 1 y µ © ª P † ÿ y

5 X L M L H V K R Z L S Y G K F S V Q R R S L Q J S U H I L [

7 R W D O Q X P E H U R I S U H I L [H V

1 2 0 D F $ G G U H V V , 3 Y 3 U H I L [/ H D V H V H F

, Q W H U I D F H

G I

* L J D E L W (W K H U Q H W

< † K y

<	ª ¢
Total number of prefixes	¢ ù DHCPv6 Snooping ù Ö ƒ G € ù Ö ƒ ož
NO.	“ £ ~ Z
MacAddress	ï MAC ª -ož
IPv6 Prefix	ï IPv6 ù Öož
Lease(sec)	“ £ c ³ ž •ož
VLAN	ï ñ K VLANož
Interface	ï Ä ¿ N µ N M

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

No enough memory	Z Ä á Ü Ä
Admin filter-dhcpv6-pkt	' ò t F å ¡ DHCPv6 † k } n ë ipv6 dhcp snooping filter-dhcp-pkt x X ø • e † ¡ož

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

15.21 show ipv6 dhcp snooping vlan

} ò 0 DHCPv6 Snooping ¢ ù Z Ä ÿ | VLAN F å Õ Ñ k ¬ } ¨ Ô Ó % " ü g 4 x Xož
show ipv6 dhcp snooping vlan

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % "o- Ô Ó % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g 4 x X k U Y ò 0 ¢ ù DHCPv6 Snooping Z Ä ÿ | VLAN F å Õ Ñož

o¬ F å †o- 1 y µ © ò 0 ¢ ù DHCPv6 Snooping Z Ä ÿ | VLAN F å Õ Ñ † ÿ y

```
5 X L M L H  V K R Z  L S Y  G K F S  V Q R R S L Q J  Y O D Q
9 / $ 1  1 D P H          & O R V H G


     9 / $ 1          < ( 6
```

< † K y

<	ª ¢
VLAN	VLAN ID
NAME	VLAN d f
Close	© k ÿ |

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

16.2 show interface arp-check list

ò 0 N M Ž ÿ | ARP Check n ¾ož

show { interface [interface-type interface-number] } arp-check list

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-type	Ä ¿ N M • º z
interface-number	Ä ¿ N M Ú Z z

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g 4 x X k U Y ò 0 ¢ ù IP › ª - Ç ƒ G € F å Õ Ñož

o¬ F å †o- µ © ª P † ÿ y

5 X L M L H F R Q I L J V K R Z L Q W H U I D F H D U S F K H F N O L V W

INTERFACE SENDER MAC SENDER IP POLICY SOURCE

GigabitEthernet 0/1 ') D G G U H V V E L Q G

GigabitEthernet 0/1 ') S R U W V H F X U L W \

GigabitEthernet 0/4 S R U W V H F X U L W \

GigabitEthernet 0/5 ') D G G U H V V E L Q G

GigabitEthernet 0/7 ') $ $ $ L S D X W K P R G H

GigabitEthernet 0/ ') * 6 1

< † K y

<	ª ¢
INTERFACE	N M d f
SENDER MAC	› MAC ª -
SENDER IP	› IP ª -
POLICY SOURCE	“ £ Û ›

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

AxRP@check

17 DAI

17.1 ip arp inspection trust

F å 8 C € M DAI U ' ` Mož
ip arp inspection trust

F å 8 C € M DAI U ' ` Mož
no ip arp inspection trust

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M Ô 9 ' ` Ù Áož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ¢ ¬ } … î N M v ñ ARP † — Ú ^ * DAI ò ž k U Y 1 ¥ N M — å è l ' ` Ù Á k n P é [
¬ } ò 4 N M v ñ ARP † k [© ` c ož

o¬ F å †o- Y F å † ÿ k 1 gigabitEthernet 0/19 N M — å è l ' ` y

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ LQWHUIDFH JLJDELW(WKHUQHW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW LS DUS LQVSHFWLRQ WUXVW
5XLMLH FRQILJ LI *LJDELW(WKHUQHW HQG
```

o¬ à • co- 1 y … show ip arp inspection interface x X k U Y ò 0 € M © k F å è ož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

17.2 ip arp inspection vlan

F å VLAN o DAI ož
ip arp inspection vlan { vlan-id | word }

F å VLAN ¼ { DAI ož
no ip arp inspection vlan { vlan-id | word }

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	n P vlan Ú Z k H › 8 1~4094ož
word	vlan 8 … k ò 1,3-5,7,9-11

o¬ Þ . F åo- ñ Ä VLAN ¼ { DAI † ò ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- } … 4 x X G < • k Ù ¯ ¬ } o ARP-Check ož

И ɨ VLAN شي بى ↑ ɧ И ، ▲ چ ARP o ˝ ɥ ő ↑ ɧ DHCP Snooping TRUST ɧ ص ő б ↑ ɧ
ت بى ع ά˚ خ ˝ ɥ ǎ ¢

o¬ F å †o- Y F å k ò VLAN 1 N v ñ ARP †ož y

5 X L M L H F R Q I L J X U H W H U P L Q D O
5 X L M L H F R Q I L J L S D U S L Q V S H F W L R Q
5 X L M L H F R Q I L J L S D U S L Q V S H F W L R Q Y O D Q
5 X L M L H F R Q I L J H Q G

o¬ à • co- 1 y … show ip arp inspection vlan x X k U Y ª P VLAN © k ø • DAI ò ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

17.3 show ip arp inspection interface

ò 0 € M © k F å è ' ` Ù Áož

show ip arp inspection interface

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- … ¥ x X U Y ò 0 — Õ € M © k F å è DAI ' ` Mož

o¬ F å †o- 1 y ò 0 ñ Ä € M DAI ' ` Ù Á y

```
5XLMLH VKRZ LS DUS LQVSHFWLRQ LQWHUIDFH
,QWHUIDFH 7UXVW 6WDWH

*LJDELW(WKHUQHW 7UXVWHG
'HIDXOW 8QWUXVWHG
```

< † K y

<	ª ¢
Interface	N M d f
Trust State	' ` Ù Á

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

17.4 show ip arp inspection vlan

ª P VLAN © k ø • DAI ò ož

show ip arp inspection vlan [vlan-id | word]

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	n P vlan Ú Z k H › 8 1~4094ož
word	vlan 8 … k ò 1,3-5,7,9-11

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

054009F0>Tj /TT1 1 Tf ( )Tj /TT0 1 Tf000094>Tj /TT0 162D0 Td <08D407D308250694>Tj /TT0 1 Tf ( )Tj 7.175594>Tj /TAA51 Tf -0.0055 -0

18 IP Source Guard

18.1 ip source binding

¨ IP › ª - Ç ƒ G € • ² Á ï ' Îož

ip source binding mac-address { vlan vlan-id } ip-address { interface interface-id | ip-mac | ip-only }

í " + • ² Á ïož

no ip source binding mac-address { vlan vlan-id } ip-address { interface interface-id | ip-mac | ip-only }

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac-address	² Á • ï MAC ª -ož
vlan-id	² Á • ï vlan id k3 © QINQ Ä È D } k 6 © ï Ù C vlan idož
ip-address	² Á • ï IP ª -ož
interface-id	² Á • ï ñ K Ä ¿ N µ Mož
ip-mac	¶ B Ç • º IP+MAC Ç ož
ip-only	¶ B Ç • º N IP Ç ož

o¬ Þ . F åo- Z Ä • ` ~ ² Á ï ª -ož

o¬ x X % "o- ¶ B F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 y * F å 4 x X U Y ª • B ã ï * IP Source Guard y k ¬ } * DHCP • " g Ï%² O òož

2 y Q u 4 ¨ Ä ¿ N µ 2 C A E Mo•AP Mo• / x ÿ N M … ¥ x X g F åož ¿ U • º € M 1 F å â Âož

3 y U Y * F å ¶ B Ç ï " £ k … ± B ã ï U Y ¨ ñ Ä € M M * IP Source Guard yož

ز شمم ا ά ʌ ñ ˧ ٦ أ أن ɦ قم بى ő ٦ خ ¬ ɛ ٪. قم ¢

لحي ا ˝l ñ ˧ ő ñ ˧ˆ Ḡ k̲ ≈ ñ ˧ ا ئج ¢

o¬ F å †o- 1 y µ © — å F å%² ² Á ï ñ Ä ¿ A E M † ÿ y

5 X L M L H F R Q I L J X U H W H U P L Q D O

5 X L M L H F R Q I L J L S V R X U F H E L Q G L Q J Y O D Q L Q W H U I D I

5 X L M L H F R Q I L J H Q G

2 y µ © — å%² ² Á ï ¨ ¶ B 8 Ä ÿ | k w ¡ • º © IP+MAC Ç † ÿ y

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ LS VRXUFH ELQGLQJ YODQ LS PDF
5XLMLH FRQILJ HQG
```

3 y µ © — å%² ² Á ï ¨ ¶ B 8 Ä ÿ | k w ¡ • º © N IP Ç † ÿ y

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ LS VRXUFH ELQGLQJ YODQ LS RQO\
5XLMLH FRQILJ HQG
```

o¬ à • co- 1 y … show ip source binding x X k U Y ò 0 IP › ª - Ç ƒ G €ož

o¬ U P ' Îo- 1 y … no x X í " ² Á F å ž k ÿ µ @ ƒ $ ù F å ž @ ƒ %² k é U P j ¨ož

```
)DLOHG WR H[HFXWH FRPPDQG EHFDXVH RI 1R VXFK ELQGLQJ HQWU\
>PDF LS YODQ*/2%$/@
```

2 y F å ï " £ ž k 3 ÿ µ VLAN w ¨ k é U P j ¨ož

```
)DLOHG WR H[HFXWH FRPPDQG EHFDXVH RI 9/$1 QRW H[LVW
```

3 y F å ï " £ ž k 3 ÿ µ Ä ¿ N M © 8 C A E Mo•AP M ê ñ / x ÿ N M k é U P j ¨ož

```
)DLOHG WR H[HFXWH FRPPDQG EHFDXVH RI &RQILJXUH LV QRW VXSSP
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

18.2 ip verify source

ø • € M IP Source Guard ož

ip verify source [port-security]

¼ { € M IP Source Guard ož

no ip verify source

o¬ @ ƒ ª ¢o-

@ ƒ	T
port-security	F å IP Source Guard g Â 9 IP+MAC yož

o¬ Þ . F åo- ¥ Þ . ¼ {ož

o¬ x X % "o- N M F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-id	I € M IP Source Guard O ò vlan id

2y o IP Sour10e Guard V09N

o¬ Þ . F åo- ¥ Þ . ¼ {ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 y o IP Source Guard € M k * ¥ x X U Y O ò ¥ € M î ? VLAN I IP Source Guard O ò k ? VLAN 8 Ä IP † t ò y ¡ ò © + N y gož

2 y € M ¼ { IP Source Guard e k 6 † Ù VLAN - k t Ž ”ož

3 y u 4 ¨ Ä ¿ N µ 2 C A E Mo•AP Mo• / x ÿ N M

ˆ ɧ ʁ ⸗ ᴮ IP Source Guard л ♠ ʌ. ﻫﻲ VLAN ¢

mac-address	ª P + • mac ï Ç ’ Î z
dhcp-snooping	ª P Á ï Ç ’ Î z
static	ª P ² Á ï Ç ’ Î z
vlan-id	ª P + • vlan ï Ç ’ Î z
interface-id	ª P + • Ä ¿ N µ N M ï Ç ’ Î z

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g 4 x X k U Y ò 0 ¢ ù IP › ª - Ç ƒ G € F å Õ Ñož

o¬ F å †o- 1 y µ © ª P † ÿ y

```
5XLMLH VKRZ LS VRXUFH ELQGLQJ VWDWLF
5XLMLH VKRZ LS VRXUFH ELQGLQJ VWDWLF
7RWDO QXPEHU RI ELQGLQJV
12 0$&$''5(66 ,3$''5(66 /($6( 6(& 7<3( 9/$1 ,17(5)$&

,QILQLWH 6WDWLF *OREDO
,QILQLWH 6WDWLF *LJDELW(W
,QILQLWH 6WDWLF *OREDO
,QILQLWH 6WDWLF *OREDO
```

< † K y

<	ª ¢
Total number of bindings	

ò 0 IP Source Guard ï ¡ n ¾ož

show ip verify source [interface interface-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
interface-id	ª P + • Ä ¿ N M ï ¡ n ¾

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g 4 x X kU Y ò 0 ¢ ù IP › ª - Ç ï “ £ ÿ | Õ Ñož) ù IP Source Guard u 4 “ £ Ù Á , ò y

Inactive-restrict-off k Ç “ £ ñ K N M Z Ä • o IP Source Guard ož

Inactive-not-apply k 9 © Ï j ¨ k — c 1 Ç ï “ £ ô E è ¡ n ¾ož

Active k Ç ï “ £ n ¾ + • ¡ n ¾] Æ ÿ |ož

o¬ F å †o- 1 y µ © ª P † ÿ y

```
5XLMLH VKRZ LS YHULI\ VRXUFH
7RWDO QXPEHU RI ELQGLQJV
12 ,17(5)$&( ),/7(57<3( ),/7(567$786 ,3$''5(66 0$&$
9/$1 7<3(


*OREDO ,3 0$& ,QDFWLYH QRW DSSO\
6WDWLF
*LJDELW(WKHUQHW ,3 21/< $FWLYH
'+&3 6QRRSLQJ
*OREDO ,3 21/< $FWLYH
6WDWLF
*OREDO ,3 0$& $FWLYH
6WDWLF
*LJDELW(WKHUQHW 816(7 ,QDFWLYH UHVWULFW RII
'+&3 6QRRSLQJ
*LJDELW(WKHUQHW ,3 21/< $FWLYH 'HQ\ $OO
```

< † K y

<	ª ¢
NO.	“ £ ~ Z
INTERFACE	Ä ¿ N µ N M
FILTERTYPE	¡ Œ
FILTERSTATUS	Ù Á

IPADDRESS	ï IP ª -
MACADDRESS	ï MAC ª -
VLAN	ï ñ K VLAN
TYPE	ï • º k , DHCP Snooping

19 IPvTF4ource Guard

19.1 ipvTFsource binding

¨ IPvT › ª - Ç ƒ G € • ² Á ï ' Îož

ipv6 source binding mac-address vlan vlan-id ipv6-address { interface interface-id | ip-mac | ip-only }

í " + • ² Á ïož

no ipv6 source binding mac-address vlan vlan-id ipv6-address { interface interface-id | ip-mac | ip-only }

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac-address	² Á • ï MAC ª -ož
Vlan-id	² Á • ï vlan idož
Ipv6-address	² Á • ï IPvT ª -ož
Interface-id	² Á • ï ñ K Ä ¿ N Mož
ip-mac	¶ B Ç • º IPvT+MAC Ç ož
ip-only	¶ B Ç • º N IPvT Ç ož

o¬ Þ . F åo- Z Ä • ` ~ ² Á ï ª -ož

o¬ x X % "o- ¶ B F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 y * F å 4 x X U Y ª • B ã ï * IPvT Source Guard y k ¬ } * DHCPvT • " g Ï%² O òož

2 yQ u 4 ¨ Ä ¿ N µ 2 C A E Mo•AP Mo• / x ÿ N M … ¥ x X g F åož ¿ U • º € M 1 F å â Âož

3 y U Y * F å ¶ B Ç ï " £ k … ± B ã ï U Y ¨ ñ Ä € M * IPvT Source Guard yož

ز شمم ı ά ʌ ñ ˧ ɞ أ أن ɧ قم بى ő ɞ خ ¬ ɛ ٪ قم ¢

طمي

2 y µ © — å%² ² Á ï ¨ ¶ B 8 Ä ÿ | k w ¡ • º © IP+MAC Ç † ÿ y

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ LSY VRXUFH ELQGLQJ YODQ LS PDF
5XLMLH FRQILJ HQG
```

3 y µ © — å%² ² Á ï ¨ ¶ B 8 Ä ÿ | k w ¡ • º © N IP Ç † ÿ y

```
5XLMLH FRQILJXUH WHUPLQDO
5XLMLH FRQILJ LSY VRXUFH ELQGLQJ YODQ LS RQO\
5XLMLH FRQILJ HQG
```

o¬ à • co- 1 y … show ipv6 source binding x X k U Y ò 0 IPv6 › ª - Ç ƒ G €ož

o¬ U P ' Îo- 1 y … no x X í " ² Á F å ž k ÿ µ @ ƒ $ ù F å ž @ ƒ %² k é U P j ¨ož

```
)DLOHG WR H[HFXWH FRPPDQG EHFDXVH RI 1R VXFK ELQGLQJ HQWU\
```

2 y F å ï " £ ž k 3 ÿ µ VLAN w ¨ k é U P j ¨ož

```
)DLOHG WR H[HFXWH FRPPDQG EHFDXVH RI 9/$1 QRW H[LVW
```

3 y F å ï " £ ž k 3 ÿ µ Ä ¿ N µ N M © 8 C A E Mo•AP M ê ñ / x ÿ N M k é U P j ¨ož

```
)DLOHG WR H[HFXWH FRPPDQG EHFDXVH RI &RQILJXUH LV QRW VXSSR
```

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

19.2 ipv6 verify source

ø • € M IPv6 Source Guard ož
ipv6 verify source [port-security]

¼ { € M IPv6 Source Guard ož
no ipv6 verify source

o¬ @ ƒ ª ¢o-

@ ƒ	T
port-security	F å IPv6 Source Guard g Â 9 IPv6+MAC yož

o¬ Þ . F åo- ¥ Þ . ¼ {ož

o¬ x X % "o- N M F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 y* ¥ x X ø • € M IPv6 Source Guard kU Y + ï g Â 9 IPv6 y kê ñ g Â 9 IPv6+MAC yož

2 y N u 4 ¨ Ä ¿ N µ 2 C A E Mo•AP Mo• / x ÿ N M Y C F å ¥ x Xož ¿ U • º N M 1 F å â Âož

ð گ ھ ₁ ضج ß IPv6 Source Gourd Ụ ، ۲ ا ä ļ ˜l ھ ۷ ۱ DHCPv6 Snooping ˜l ⅝ ر ص ¢
ی ᵊ h ی ₫ ₫ ▲ چ ۷ IPv6 Source Gourd Ụ ، ő ِ ڭ ز ä ļ ھ ┼ ۱ ő ợ ِ ˝ ˆ ɾ ḱ ᵊ h ی ا
˜l ļ v̈ ج ط ۱ ¢

o¬ F å †o- 1 y µ © F å Ä ¿ A E M IPv6 Source Guard k N + ï g Â 9 IPv6 y y

```
5 X L M L H  F R Q I L J X U H  W H U P L Q D O
5 X L M L H  F R Q I L J  L Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  * L J D E L W ( W K H U Q H W  L S Y  Y H U L I \  V R X U F H
5 X L M L H  F R Q I L J  L I  H Q G
```

2 y µ © F å Ä ¿ A E M IPv6 Source Guard k + ï g Â 9 IPv6+MAC y y

```
5 X L M L H  F R Q I L J X U H  W H U P L Q D O
5 X L M L H  F R Q I L J  L Q W H U I D F H  * L J D E L W ( W K H U Q H W
5 X L M L H  F R Q I L J  L I  * L J D E L W ( W K H U Q H W  L S Y  Y H U L I \  V R X U F H  S R U W  V H
5 X L M L H  F R Q I L J  L I  H Q G
```

o¬ à • co- 1 y … show ipv6 verify source x X k U Y ò 0 IPv6 Source Guard ï ¡ n ¾ož

2 y … show run x X k U Y ò 0 x X © k F å è ož

o¬ U P ' Îo- 1 y ò ç ¨ DHCPv6 ' ` M q • k é U P j ¨ož

```
) D L O H G  W R  H [ H F X W H  F R P P D Q G  E H F D X V H  R I  6 H F X U L W \  F R Q I L J  F R Q I O L
```

o¬ o • j ¨o- 1 y • o IPv6 Source Gourd k ò F å ` c ï “ £ Û ›ož

o¬ u V ª ¢o- -

19.3 show ipv6 source binding

ò 0 IPv6 › ª - Ç ƒ G € ' Îož

show ipv6 source binding [ipv6-address] [mac-address] [dhcp-snooping] [static] [vlan vlan-id] [interface interface-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
ipv6-address	ª P + • ipv6 ï Ç ’ Î z
mac-address	ª P + • mac ï Ç ’ Î z
dhcp-snooping	ª P Á ï Ç ’ Î z
static	ª P ² Á ï Ç ’ Î z
vlan-id	ª P + • vlan ï Ç ’ Î z
interface-id	ª P + • Ä ¿ N M ï Ç ’ Îož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ü g 4 x X k U Y ò 0 ¢ ù IPv6 › ª - Ç ƒ G € F å Õ Ñož

o¬ F å †o- 1 y µ © ª P † ÿ y

```
5 X L M L H   V K R Z  L S Y   V R X U F H  E L Q G L Q J
7 R W Q X O P E R H E U L Q G L Q J V
1 2       ) L O W H U  7 \ S H   ) L O W H U  6 W D W X V            , 3 Y   $ G G U H V V
0 $ & $ G G U H V V       9 / $ 1  7 \ S H   , Q W H U I D F H

                    , 6 W D W L   6 Q R R S L Q J    * L J D E L W ( W K H U Q H W    p @  0  @!"(2‘CFAV
        , 3 Y   0 $ &     6 W D W L E Y H  V \ V W H O P R E D O R U
  †                   6 W D W L F            * O R E D O
  q      , 3 Y   2 1 / <     $ F W D L Y L H F            * O R E D O
  U           0   F Q 0 ' + & 3 Y À • € Q R À ` S £ Q 0 J W   e P 0 L 0 D E L • W ( W ° K H D p Q H W À 0 0 p @ À 0 • • ã ' + & 3 Zû ™Â
```

IPv6 Address	ï IPv6 ª -
MacAddress	ï MAC ª -
VLAN	ï ñ K VLAN
Type	“ £ • º

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

20 T ¯ » ARP °

20.1 anti-arp-spoofing ip

— å … à ¼arp - áož
anti-arp-spoofing ip ip-address

í ” … à ¼ arp - áož
no anti-arp-spoofing ip ip-address

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip-address	à ¼ IP ª -

o¬ Þ . F åo- ¥ Þ . ÿ |

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 o• ¥ x X — å … à ¼ arp - á k … show anti-arp-spoofing x X ò 0 — åož
2o• ¥ x X N u 4 8 C M F åož

o¬ F å †o- 1 y — å … à ¼arp - á ož

```
5XLMLH FRQILJ LQWHUIDFH IDVW(WKHUQHW
5XLMLH FRQILJ LI DQWL DUS VSRRILQJ LS
```

o¬ à • co- show run ò 0 F å k ¨ ñ F å x Xož
show anti-arp-spoofing ª P N M … à ¼ arp - á ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

20.2 show anti-arp-spoofing

ª P ñ Ä N M … à ¼ arp - á ’ Îož

show anti-arp-spoofing

o¬ @ ƒ ª ¢o-

21 NFPP

21.1 arp-guard attack-threshold

F å ¶ B x à J ¿ k / ¢ † , † Ý x à J ¿ ž ˜ k • ¨ x à g ož
arp-guard attack-threshold {per-src-ip | per-src-mac | per-port} pps

í ” x à J ¿ F å k Ê Ö ñ Þ . F åož
no arp-guard attack-threshold {per-src-ip | per-src-mac | per-port }

Ê Ö Þ . F åož
default arp-guard attack-threshold {per-src-ip | per-src-mac | per-port }

o¬ @ ƒ ª ¢o-

@ ƒ	T
per-src-ip	F å ? › IP ª - x à J ¿ož
per-src-mac	F å ? › MAC ª - x à J ¿ož
per-port	F å ? € M x à J ¿ož
pps	x à J ¿ k % y © ? a † ƒ k H › 8 ©[1,19999] ož

o¬ Þ . F åo- Þ . F å D } , ¼ k À } @ •o¦ F å 6 'o§ ¼ 9 D } , ¼ ~ - T ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- x à J ¿ 4 9 ’ , J ¿ož

o¬ F å †o- 1 yF å ARP x à ¶ B x à J ¿ k Â 9 › IP x à J ¿ 2pps k Â 9 › MAC x à J ¿ 3pps, Â 9 › € M x à J ¿ 50ppsož

```
5 X L M L H F R Q I L J Q I S S
5 X L M L H F R Q I L J Q I S S D U S J X D U G D W W D F N W K U H V K R O G S H U V U F L S
5 X L M L H F R Q I L J Q I S S D U S J X D U G D W W D F N W K U H V K R O G S H U V U F P D F
5 X L M L H F R Q I L J Q I S S D U S J X D U G D W W D F N W K U H V K R O G S H U S R U W
```

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ’ Î

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.2 arp-guard enable

¥ x X Û ¶ B ø • ARP x à ož
arp-guard enable

¼ { ARP x à ož
no arp-guard enable

Ê Ö Þ . F åož
default arp-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ó • ARP x à ø •ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å ¶ B ø • ARP x à ož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS DUS JXDUG HQDEOH
```

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.3 arp-guard isolate-period

¥ x X Û F å ¶ B œ Y ž •ož
arp-guard isolate-period {seconds | permanent }

í ” œ Y ž • F å k Ê Ö ñ Þ . F åož
no arp-guard isolate-period

Ê Ö Þ . F åož
default arp-guard isolate-period

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	œ Y ž • k % y © a k H › 8 © 0 ê ñ[30, 86400] ož
permanent	K ! œ Yož

o¬ Þ . F åo- ¶ B œ Y ž • Þ . › © 0 k / œ Yož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å ARP x à ¶ B œ Y ž • 180 aož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS DUS JXDUG LVRODWH SHULRG
```

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o j ¨o- -

o¬ u V ª ¢o- -

21.4 arp-guard isolate-forwarding enable

¥ x X Û F å ª • œ Y ô G k Ê Ö ñ Þ . F åož
arp-guard isolate-forwarding enable

¼ { œ Y ô G ož
no arp-guard isolate-forwarding enable

Ê Ö Þ . F åož
default arp-guard isolate-forwarding enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ó • ª • œ Y ô Gož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å ª • œ Y ô Gož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS DUS JXDUG LVRODWH IRUZDUGLQJ HQDEOH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.5 arp-guard monitored-host-limit

¥ x X Û F å u 4 Â Ý I ! O Ñ ƒ ož
arp-guard monitored-host-limit number

í ” Â Ý I ! O Ñ ƒ F å k Ê Ö ñ Þ . F åož
no arp-guard monitored-host-limit

Ê Ö Þ . F åož
default arp-guard monitored-host-limit

o¬ @ ƒ ª ¢o-

@ ƒ	T

o¬ Þ . F åo- ! O ž • Þ . › © 600 aož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- y ß x à ñ ž ˜ k ò ç œ Y ž • 0 k 1 + x à ñ g ÷ ^ ! O k Ý ž ! O ž •ož ¨ ÷ ^ ! O i k
¢ œ Y ž • t F å ³ © › ž k 1 + ÷ ^ ! O x à ñ J H F ^ œ Y k w Ý ž — å œ Y ž •ož ! O
ž • ¨ œ Y ž • 0 Õ Ñ õ Ä Þ #ož
ò ç œ Y ž • R ³ © › w è © k 1 + N , ¼ € M x à ñ í ” k ò © g ÷ ^ ! Oož

o¬ F å †o- 1 y F å ARP x à ! O ž • 180 aož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS DUS JXDUG PRQLWRU SHULRG
```

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.7 arp-guard rate-limit

F å ¶ B ’ , J ¿ož

arp-guard rate-limit {per-src-ip | per-src-mac | per-port} pps

í ” ’ , J ¿ F å k Ê Ö ñ Þ . F åož

no arp-guard rate-limit {per-src-ip | per-src-mac | per-port}

Ê Ö Þ . F åož

default arp-guard rate-limit {per-src-ip | per-src-mac | per-port}

o¬ @ ƒ ª ¢o-

@ ƒ	T

o¬ Þ . F åo- Þ . F å D } , ¼ k À } @ •o¦ F å 6 'o§ ¼ 9 D } , ¼ ~ - T oðž

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 yF å ARP x à ¶ B ’ , J ¿ k Â 9 › IP ’ , J ¿ 2pps kÂ 9 › MAC ’ , J ¿ 3pps, Â 9 › € M ’ , J ¿ 50ppsož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS DUS JXDUG UDWH OLPLW SHU VUF LS
5XLMLH FRQILJ QISS DUS JXDUG UDWH OLPLW SHU VUF PDF
5XLMLH FRQILJ QISS DUS JXDUG UDWH OLPLW SHU SRUW
```

o¬ à • co- …

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å … ARP x à Â 9 € M œ Y ô G ' , ož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS DUS JXDUG UDWHOLPLW IRUZDUGLQJ HQDEOH
```

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.9 arp-guard scan-threshold

F å ¶ B þ T J ¿ož
arp-guard scan-threshold pkt-cnt

í " þ T J ¿ F å k Ê Ö ñ Þ . F åož
no arp-guard scan-threshold

Ê Ö Þ . F åož
default arp-guard scan-threshold

o¬ @ ƒ ª ¢o-

@ ƒ	T
pkt-cnt	þ T J ¿ › k % y © ? a † ƒ k H › 8 ©[1,19999] ož

o¬ Þ . F åo- Þ . þ T J ¿ D } , ¼ k À } @ • D } [' ' Î † ož ž • % y © 10 aož

o¬ x X % "o- NFPP F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç 10 a U v ñ + • F å þ T J ¿ Y ARP † ke è C › MAC ª - ¡ ò › IP ª - J kê ñ e è C › MAC ª - y › IP ª - ¡ ò) ö IP ª - • J k < • Ä þ T0ƒ ož

o¬ F å †o- 1 y F å ARP x à ¶ þ T J ¿ 20ppsož

```
5XLMLH FRQILJ QISS
```

5XLMLH FRQILJ QISS DUS JXDUG VFDQ WKUHVKROG

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.10 clear nfpp arp-guard hosts

Ž ” I ! O Ñ k ò ç Ñ t œ Y k ¬ } † ” œ Yož

clear nfpp arp-guard hosts [vlan vid] [interface interface-id] [ip-address | mac-address]

o¬ @ ƒ ª ¢o-

@ ƒ	T
vid	Z ' B ¿ à Zož
interface-id	€ M d fož
ip-address	IP ª -ož
mac-address	MAC ª -ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y VLAN 1 € M g 0/1 ARP x à Ñ † ” œ Yož

5XLMLH FOHDU QISS DUS JXDUG KRVWV YODQ LQWHUIDFH J

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.11 clear nfpp arp-guard scan

Ž ” ARP þ T nož

clear nfpp arp-guard scan

o¬ @ ƒ ª ¢o-

@ ƒ	T

-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y Ž ” ARP x à þ T nož

```
5XLMLH FOHDU QISS DUS JXDUG VFDQ
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.12 clear nfpp define name hosts

Ž ” I ! O Ñ k ò ç Ñ t œ Y k ¬ } † ” œ Yož

clear nfpp define name hosts [vlan vid] [interface interface-id] [ip-address] [mac-address] [ipv6-address]

o¬ @ ƒ ª ¢o-

@ ƒ	T
name	# x à • º d fož
vid	Z ' B ¿ à Zož
interface-id	€ M d fož
ip-address	IP ª -ož
mac-address	MAC ª -ož
ipv6-address	IPv6 ª -ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç k @ ƒ k n P Ž ” ¥ # ã • ñ Ä t ! O Ñož

o¬ F å †o- 1 y Ž ” # • º tcp VLAN 1 € M g 0/1 I ! O Ñož

```
5XLMLH FOHDU QISS GHILQH WFS KRVWV YODQ LQWHUIDFH J
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.13 clear nfpp dhcp-guard hosts

Ž ” ï k / ï † ” œ Yož

clear nfpp dhcp-guard hosts [vlan vid] [interface interface-id] [mac-address]

o¬ @ ƒ ª ¢o-

@ ƒ	T
vid	Z ' B ¿ à Zož
interface-id	€ M d fož
mac-address	MAC ª -ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç k @ ƒ k n P Ž ” ñ Ä t œ Y ïož

o¬ F å †o- 1 y VLAN 1 € M g 0/1 DHCP x à ï † ” œ Yož

5 X L M L H F O H D U Q I S S G K F S J X D U G K R V W V Y O D Q L Q W H U I D F H J

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.14 clear nfpp dhcpv6-guard hosts

Ž ” ï k / ï † ” œ Yož

clear nfpp dhcpv6-guard hosts [vlan vid] [interface interface-id] [mac-address]

o¬ @ ƒ ª ¢o-

@ ƒ	T
vid	Z ' B ¿ à Z
interface-id	€ M d f
mac-address	MAC ª -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç k @ ƒ k n P Ž ” ñ Ä t œ Y ïož

o¬ F å †o- 1 y VLAN 1 € M g 0/1 DHCPv6 x à ï † ” œ Yož

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç k @ ƒ k n P Ž ” ñ Ä t ! O Ñož

o¬ F å †o- 1 y VLAN 1 € M g 0/1 IP x à Ñ † ” œ Yož

```
5 X L M L H  F O H D U  Q I S S  L S  J X D U G  K R V W V  Y O D Q  L Q W H U I D F H  J
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.17 clear nfpp nd-guard hosts

Ž ” I ! O Ñ k ò ç Ñ] t F ^ ’ , k ¬ } † ” ’ ,ož

clear nfpp nd-guard hosts [vlan vid] [interface interface-id]

o¬ @ ƒ ª ¢o-

@ ƒ	T
vid	Z ' B ¿ à Zož
interface-id	€ M d fož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç k @ ƒ k n P Ž ” ñ Ä t ! O Ñož

o¬ F å †o- 1 y VLAN 1 € M g 0/1 IP x à Ñ † ” œ Yož

```
5 X L M L H  F O H D U  Q I S S  Q G  J X D U G  K R V W V  Y O D Q  L Q W H U I D F H  J
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.18 clear nfpp log

Ž q NFPP ™ º Ù Ï ož

clear nfpp log

o¬ @ ƒ ª ¢o-

@ ƒ	T

-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y Ž q NFPP ™ º Ù Ï ož

```
5XLMLH FOHDU QISS ORJ
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.19 cpu-protect sub-interface {manag e|protocol|route} percent

¥ x X Û F å ? _ • º †) „ ç ã Aož
cpu-protect sub-interface {manage|protocol|route} percent percent_vaule

í ” ? _ • º †) „ ç ã A F å k Ê Ö ñ Þ . F å
no cpu-protect sub-interface {manage|protocol|route} percent

Ê Ö Þ . F å
default cpu-protect sub-interface {manage|protocol|route} percent

o¬ @ ƒ ª ¢o-

@ ƒ	T
percent_vaule	ã A k H › 8 © 1 ñ 100ož

o¬ Þ . F åo- ’ ò •(Manage)) Ù Ï ã A 30ož
ô G •(Route)) Ù Ï ã A 25ož
‘ •(Protocol)) Ù Ï ã A 45ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å ’ ò • †) Ù Ï ã A 60ož

5XLMLH FRQILJ FSX SURWHFW VXE LQWHUIDFH PDQDJH SHUFHQW

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.20 cpu-protect sub-interface {man age|protocol|route} pps

¥ x X Û F å ? _ • º † v O k !ož

cpu-protect sub-interface {***manage***|***protocol***|***route***} pps pps_vaule

í ” ? _ • º † v O k ! F å k Ê Ö ñ Þ . F åož

no cpu-protect sub-interface {manage|protocol|route} pps

Ê Ö Þ . F åož

default cpu-protect sub-interface {manage|protocol|route} pps

o¬ @ ƒ ª ¢o-

@ ƒ	T
pps_vaule	’ , J ¿ k % y © ? a † ƒ k H › 8 © 1-100000ož

o¬ Þ . F åo- Þ . F å D } , ¼ k À } @ •o¦ F å 6 'o§ ¼ 9 D } , ¼ ~ - T ož

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å ’ ò • † v O k ! 2000ppsož

5XLMLH FRQILJ FSX SURWHFW VXE LQWHUIDFH PDQDJH SSV

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.21 define

¥ x X Û ë • # x à • ºož
define name

í ” # x à • ºož
no define name

Ê Ö Þ . F åož
default define name

o¬ @ ƒ ª ¢o-

@ ƒ	T
name	# x à • º d fož

o¬ Þ . F åo- -

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ë • • # x à • ºož

o¬ F å †o- 1: ë • # x à tcp

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS GHILQH WFS
5XLMLH FRQILJ QISS GHILQH
```

o¬ à • co- … show nfpp define summary name ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.22 define name enable

¥ x X Û ¶ B • o # • º x à ož

define name enable

¼ { # • º x à ož
no define name enable

Ê Ö Þ . F åož
default define name enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
name	# x à • º d fož

o¬ Þ . F åo- ¼ { # • º x à ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- · À F å 4 match o•rate-limit y attack-threshold $ e k F å õ ÿ | k k é F å â Âož

o¬ F å †o- 1 y F å # x à tcp ¶ B • o x à ož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS GHILQH WFS HQDEOH
```

o¬ à • co- … show nfpp define summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.23 dhcp-guard attack-threshold

F å ¶ B x à J ¿ k / ¢ † , † Ý x à J ¿ ž ˜ k • ¨ x à g ož
dhcp-guard attack-threshold { per-src-mac | per-port } pps

í ” x à J ¿ F å k Ê Ö ñ Þ . F åož
no dhcp-guard attack-threshold { per-src-mac | per-port }

Ê Ö Þ . F åož
default dhcp-guard attack-threshold { per-src-mac | per-port }

o¬ @ ƒ ª ¢o-

@ ƒ	T
per-src-mac	F å ? › MAC ª - x à J ¿ož
per-port	F å ? € M x à J ¿ož
pps	x à J ¿ k % y © ? a † ƒ k H › 8 ©[1,19999] ož

o¬ Þ . F åo- Þ . F å D } , ¼ k À } @ •o¦ F å 6 'o§ ¼ 9 D } , ¼ ~ - T ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å DHCP x à ¶ B x à J ¿ k Â 9 › MAC x à J ¿ 15pps, Â 9 › € M x à J ¿ 200ppsož

5 X L M L H F R Q I L J Q I S S

o¬ Þ . F åo- € M Z Ä F å DHCP x à • ¼ k J ¶ B • ¼ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å ¶ B ø • DHCP x à ož

o¬ … 6 -o- + x à ñ œ Y ž • ã ¶ B œ Y ž • y Â 9 € M œ Y ž • g / B B œ Y ž • bž + 9 î € M kò ç Z Ä F å Â 9 € M œ Y ž • k ; " J ¶ B œ Y ž • z k é k J Â 9 € M œ Y ž • ož

o¬ F å †o- 1 y F å DHCP x à ¶ B œ Y ž • 180 aož

```
5 X L M L H F R Q I L J Q I S S
5 X L M L H F R Q I L J Q I S S G K F S J X D U G L V R O D W H W L P H R X W
```

o¬ à • co- … show nfpp dhcp-guard summary ò 0 F å ' Îož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.26 dhcp-guard monitored-host-limit

¥ x X Û F å u 4 Â Ý I ! O Ñ ƒ ož
dhcp-guard monitored-host-limit number

í " Â Ý I ! O Ñ ƒ F å k Ê Ö ñ Þ . F åož
no dhcp-guard monitored-host-limit

Ê Ö Þ . F åož
default dhcp-guard monitored-host-limit

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	u 4 Â Ý Â Ý I ! O Ñ ƒ k H › 8 1 ñ 4294967295ož

o¬ Þ . F åo- Â Ý I ! O Ñ ƒ ó • 20000 ož

o¬ x X % "o- NFPP F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç I ! O Ñ ƒ] Æ ñ ó • 20000 k 4 ž ' ò t I ! O Ñ Â Ý ƒ) — å è 4 9 20000 k k í "] Ä I ! O Ñ k ò © ø - ' Î %ERROR y The value that you configured is smaller than current monitored hosts 20000 g F å I ! O Ñ ƒ h kplease clear a part of monitored hosts. Û U I ' ò t F å Z Ä ÿ | k ¬ } í " B ã] Æ t ! O Ñož
¢ I ! O Ñ n ž k ø - ™ º % NFPP_DHCP_GUARD-4-SESSION_LIMIT: At tempt to exceed limit of

DHCP 20000 g F å I ! O Ñ ƒ h monitored hosts. U I ’ ò tož

o¬ F å †o- 1 y F å DHCP x à Â Ý I ! O Ñ ƒ 200 ož

```
5 X L M L H F R Q I L J Q I S S
5 X L M L H F R Q I L J Q I S S G K F S J X D U G P R Q L W R U H G K R V W O L P L W
```

o¬ à • co- … show nfpp dhcp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.27 dhcp-guard monitor-period

¥ x X Û F å ! O ž •ož
dhcp-guard monitor-period seconds

í ” å ! O ž • F å k Ê Ö ñ Þ . F åož
no dhcp-guard monitor-period

Ê Ö Þ . F åož
default dhcp-guard monitor-period

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	! O ž • k % y © a k H › 8 ©[180, 86400] ož

o¬ Þ . F åo- ¶ B ! O ž • Þ . › © 600 aož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- y ß x à ñ ž ˜ k ò ç œ Y ž • 0 k 1 + x à ñ g ÷ ^ ! O k Ý ž ! O ž •ož ¨ ÷ ^ ! O i k
¢ œ Y ž • t F å ³ © › ž k 1 + ÷ ^ ! O x à ñ J H F ^ œ Y k w Ý ž — å œ Y ž •ož ! O
ž • ¨ œ Y ž • 0 Õ Ñ õ Ä Þ #ož
ò ç œ Y ž • R ³ © › w è © k 1 + N ,¼ € M x à ñ í ” k ò © g ÷ ^ ! Oož

o¬ F å †o- 1 y F å DHCP x à ! O ž • 180 aož

```
5 X L M L H F R Q I L J Q I S S
```

5XLMLH FRQILJ QISS GKFS JXDUG PRQLWRU SHULRG

o¬ à • co- … show nfpp dhcp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.28 dhcp-guard rate-limit

F å ¶ B ’ , J ¿ož
dhcp-guard rate-limit { per-src-mac | per-port} pps

í ” ’ , J ¿ F å k Ê Ö ñ Þ . F åož
no dhcp-guard rate-limit {per-src-mac | per-port}

Ê Ö Þ . F åož
default dhcp-guard rate-limit { per-src-mac | per-port}

o¬ @ ƒ ª ¢o- @ ƒ

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.29 dhcpv6-guard attack-threshold

o¬ u V ª ¢o- -

21.30 dhcpv6-guard enable

¥ x X Û ø • DHCPv6 … x à ož
dhcpv6-guard enable

¼ { DHCPv6 x à ož
no dhcpv6-guard enable

Ê Ö Þ . F åož
default dhcpv6-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M Z Ä F å DHCPv6 x à • ¼ k J ¶ B • ¼ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

í ” Â Ý I ! O Ñ ƒ F å k Ê Ö ñ Þ . F åož
no dhcpv6-guard monitored-host-limit

Ê Ö Þ . F åož
default dhcpv6-guard monitored-host-limit

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	u 4 Â Ý Â Ý I ! O Ñ ƒ k H › 8 1 ñ 4294967295ož

o¬ Þ . F åo- Â Ý I ! O Ñ ƒ ó • 20000 ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç I ! O Ñ ƒ] Æ ñ ó • 20000 k 4 ž ’ ò t I ! O Ñ Â Ý ƒ) — å è 4 9 20000 k k í ”] Ä I ! O Ñ k ò © ø - ’ Î %ERROR y The value that you configured is smaller than current monitored hosts 20000 g F å I ! O Ñ ƒ h kplease clear a part of monitored hosts. Û U I ’ ò t F å Z Ä ÿ | k ¬ } í ” B ã] Æ t ! O Ñož
¢ I ! O Ñ n ž k ø - ™ º % NFPP_DHCPV6_GUARD -4-SESSION_LIMIT: Attempt to exceed limit of DHCPv6 20000 g F å I ! O Ñ ƒ h monitored hosts. U I ’ ò tož

o¬ F å †o- 1 y F å DHCPv6 x à Â Ý I ! O Ñ ƒ 200 ož

```
5 X L M L H  F R Q I L J  Q I S S
5 X L M L H  F R Q I L J  Q I S S  G K F S  J X D U G  P R Q L W R U H G  K R V W  O L P L W
```

o¬ à • co- … show nfpp dhcpv6-guard summary ò 0 F å ’ Î

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.32 dhcpv6-guard monitor-period

¥ x X Û F å ! O ž •ož
dhcpv6-guard monitor- period seconds

í ” å ! O ž • F å k Ê Ö ñ Þ . F åož

no dhcpv6-guard monitor-period

Ê Ö Þ . F åož

default dhcpv6-guard monitor-period

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	! O ž • k % y © a k H › 8 ©[180, 86400] ož

o¬ @ ƒ ª ¢o-

@ ƒ	T
per-src-mac	+ ? › MAC ª - g ’ ,ož
per-port	

per-src-ip	Â 9 › IP/VID/ € M œ ð Ñ g , ä Ï ‹ož
per-src-mac	Â 9 › MAC/VID/ € M œ ð Ñ g , ä Ï ‹ož
per-port	Â 9 ? † N v Ò ò € M g , ä Ï ‹ož
rate-limit-pps	’ , J ¿ k % y © ? a † ƒ k H › 8 ¤€D[1,19999] ož
attack-threshold-pps	x à J ¿ k % y © ? a † ƒ k H › 8 ¤€D[1,19999] ož

o¬ Þ . F åo- Ao w ÏYG y oz Þ ZGÄ ’ , J ¿ y x à J ¿ F å k ñ Y # x à } ÿ | k · Ä€B G g ’ , J ¿ y x à J ¿ F åož ÀyNk ‡ # x í

o¬ •iEo- o¬ F åBÄHeo- 1

Ê Ö Þ . F åož

default icmp-guard attack-threshold { per-src-ip | per-port }

o¬ @ ƒ ª ¢o-

@ ƒ	T
per-src-ip	F å ? › IP ª - x à J ¿ož
per-port	F å ? € M x à J ¿ož
pps	x à J ¿ k % y © ? a † ƒ k H › 8 ©[1,19999] ož

o¬ Þ . F åo- Þ . F å D } , ¼ k À } @ •o¦ F å 6 'o§ ¼ 9 D } , ¼ ~ - T ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14 2 0 0 1 1 s T

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- + M U6*ñ –úY ž •b£ ±B –úY ž •ey Â € ñoH

monitored hosts 20000 g F å I ! O Ñ ƒ h kplease clear a part of monitored hosts. Û U I ’ ò t F
å Z Ä ÿ | k ¬ } í ” B ã] Æ t ! O Ñož
¢ I ! O Ñ ž kø - ™ º% NFPP_ICMP_GUARD-4-SESSION_LIMIT: At tempt to exceed limit of ICMP
20000 g F å I ! O Ñ ƒ h monitored hosts. U I ’ ò tož

o¬ F å †o- 1 y F å ICMP x à Â Ý I ! O Ñ ƒ 200 ož

```
5 X L M L H F R Q I L J Q I S S
5 X L M L H F R Q I L J Q I S S L F P S J X D U G P R Q L W R U H G K R V W O L P L W
```

o¬ à • co- … show nfpp icmp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.39 icmp-guard monitor-period

¥ x X Û F å ! O ž •ož
icmp-guard monitor-period seconds

í ” å ! O ž • F å k Ê Ö ñ Þ . F åož
no icmp-guard monitor-period

Ê Ö Þ . F åož
default icmp-guard monitor-period

o¬ F å †o- 1

o¬ à • co- … show nfpp icmp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.41 icmp-guard trusted-host

F å ! O U ’ Ñož
icmp-guard trusted-host ip mask

í ” ! O U ’ Ñož
no icmp-guard trusted-host {all | ip mask}

Ž ” ! O U ’ Ñ ož
default icmp-guard trusted-host

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip	IP ª -ož
mask	IP ª - Q Aož
all	y no %² Ü … k í ” ñ Ä U ’ Ñ F åož

o¬ Þ . F åo- Þ . Z Ä — å ` ~ U ’ Ñož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ’ ò t e È + î V Ñ g ! O k / + ¥ Ñ n P ’ ` k é U Y * ¥ x X F åož ¥ U ’ Ñ G ª CPU
ICMP † 1 t ª • G ª CPU k Ÿ ` ~ ’ , y s Š Ô òož * F å Q A U Y ñ + î%² à < ñ Ä
Ñ C g ! Oož
Â Ú u 4 — å 500 Ú U ’ Ñož

o¬ F å †o- 1 y 1.1.1.0/24 à < ñ Ä Ñ F å ICMP x à U ’ Ñož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS LFPS JXDUG WUXVWHG KRVW
```

o¬ à • co- … show nfpp icmp-guard summary ò 0 F å ’ Îož

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.43 ip-guard enable

¥ x X Û ¶ B ø • IP … þ T ož
ip-guard enable

¼ { IP … þ T ož
no ip-guard enable

Ê Ö Þ . F åož
default ip-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ó • IP … þ T ø •ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å ¶ B ø • IP … þ T

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS LS JXDUG HQDEOH
```

o¬ à • co- … show nfpp ip-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

í ” å ! O ž • F å k Ê Ö ñ Þ . F åož
no ip-guard monitor-period

Ê Ö Þ . F åož
default ip-guard monitor-period

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	! O ž • k % y © a k H › 8 ©[180, 86400] ož

o¬ Þ . F åo- ! O ž • Þ . › © 600 aož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- y ß x à ñ ž ˜ k ò ç œ Y ž • 0 k 1 + x à ñ g ÷ ^ ! O k Ý ž ! O ž •ož ¨ ÷ ^ ! O i k
¢ œ Y ž • t F å ³ © › ž k 1 + ÷ ^ ! O x à ñ J H F ^ œ Y k w Ý ž — å œ Y ž •ož ! O
ž • ¨ œ Y ž • 0 Õ Ñ õ Ä Þ #ož
ò ç œ Y ž • R ³ © › w è © k 1 + N ,¼ € M x à ñ í ” k ò © g ÷ ^ ! Oož

o¬ F å †o- 1 y F å IP x à ! O ž • 180 aož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS LS JXDUG PRQLWRU SHULRG
```

o¬ à • co- … show nfpp ip-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.46 ip-guard monitored-host-limit

¥ x X Û F å u 4 Â Ý I ! O Ñ ƒ ož
ip-guard monitored-host-limit number

í ” Â Ý I ! O Ñ ƒ F å k Ê Ö ñ Þ . F åož
no ip-guard monitored-host-limit

Ê Ö Þ . F åož

default ip-guard monitored-host-limit

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	u 4 Â Ý I ! O Ñ ƒ k H › 8 1 ñ 4294967295ož

o¬ Þ . F åo- Â Ý I ! O Ñ ƒ ó • 20000 ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç I ! O Ñ ƒ] Æ ñ ó • 20000 k 4 ž ’ ò t I ! O Ñ Â Ý ƒ) — å è 4 9 20000 k k í ”] Ä I ! O Ñ k ò © ø - ’ Î“%ERROR y The value that you configured is smaller than current monitored hosts 20000 g F å I ! O Ñ ƒ h kplease clear a part of monitored hosts.” Û U I ’ ò t F å Z Ä ÿ | k ¬ } í ” B ã] Æ t ! O Ñož
¢ I ! O Ñ n ž k ø - ™ º % NFPP_IP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of IP 20000 g F å I ! O Ñ ƒ h monitored hosts. U I ’ ò tož

o¬ F å †o- 1 y F å IP x à Â Ý I ! O Ñ ƒ 200 ož

```
5 X L M L H F R Q I L J Q I S S
5 X L M L H F R Q I L J Q I S S LS J X D U G P R Q L W R U H G K R V W O L P L W
```

o¬ à • co- … show nfpp ip-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.47 ip-guard rate-limit

F å ¶ B ’ , J ¿ož
ip-guard rate-limit {p er-src-ip | per-port} pps

í ” ’ , J ¿ F å k Ê Ö ñ Þ . F åož
no ip-guard rate-limit {per-src-ip | per-port}

Ê Ö Þ . F åož
default ip-guard rate-limit {per-src-ip | per-port}

o¬ @ ƒ ª ¢o-

@ ƒ	T
per-src-ip	+ ? › IP ª - g ' ,ož
per-port	+ ? € M g ' ,ož
pps	' , J ¿ › k % y © ? a † ƒ k H › 8 ©[1,19999] ož

o¬ Þ . F åo- Þ . F å D } , ¼ k À } @ •o¦ F å 6 'o§ ¼ 9 D } , ¼ ~ - T ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14 IP ' , J »

o¬ Þ . F åo- Þ . þ T J ¿ D } , ¼ k À } @ •o¦ F å 6 'o§ ¼ 9 D } , ¼ ~ - T ož ž • % y © 10 aož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å IP x à ¶ þ T J ¿ 20ppsož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS LS JXDUG VFDQ WKUHVKROG
```

o¬ à • co- … show nfpp ip-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.49 ip-guard trusted-host

ò ç ’ ò t e È + î V Ñ g ! O k / + ¥ Ñ n P ’ ` k é U Y * ¥ x X F åož
ip-guard trusted-host ip mask

í ” ! O U ’ Ñož
no ip-guard trusted-host {all | ip mask}

Ž ” ! O U ’ Ñož
default ip-guard trusted-host

o¬ @ ƒ ª ¢o-

@ ƒ	T
ip	IP ª -ož
mask	IP ª - Q Aož
all	y no %² Ü … k í ” ñ Ä U ’ Ñ F åož

o¬ Þ . F åo- -

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ’ ò t e È + î V Ñ g ! O k / + ¥ Ñ n P ’ ` k é U Y * ¥ x X F åož ¥ U ’ Ñ G ª CPU
IP † 1 t ª • G ª CPU k Ÿ ` ~ ’ , y s Š Ô òož
Â Ú u 4 — å 500 Ú U ’ Ñož

o¬ F å †o- 1 y 1.1.1.0/24 à < ñ Ä Ñ F å IP x à U ’ Ñož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS LS JXDUG WUXVWHG KRVW
```

o¬ à • co- … show nfpp ip-guard trusted-host ò 0 F å ’ Î

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.50 log-buffer enable

F å ™ º ø - ñ I sož
log-buffer enable

™ º ø - ñ I s k ‘ ¨ Ù k Ê Ö ñ Þ . F åož
no log-buffer enable

Ê Ö Þ . F åož
default log-buffer enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- ó • ™ º ‘ ¨ Ù ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ™ º ÿ ß ñ I sož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS ORJ EXIIHU HQDEOH
```

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.51 log-buffer entries

F å NFPP ™ º Ù Ï Ý 4ož

log-buffer entries number

o ºñ w ƒ Ù ¬ ß u o =ž V o

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.52 log-buffer logs

F å NFPP R ™ º Ù Ï H ™ º ÿ è © Ï ƒ Î , äož
log-buffer logs number_of_message interval length_in_seconds

í ” R ™ º Ù Ï H ™ º ÿ è © Ï ƒ Î , ä F å k Ê Ö ñ Þ . F åož
no log-buffer logs

Ê Ö Þ . F åož
default log-buffer logs

o¬ @ ƒ ª ¢o-

@ ƒ	T
number_of_message	8 0-1024 k0 n P ™ º ¶ B “ £ ¨ Ù Ï k ÿ è © Ï ƒ Îož
length_in_seconds	8 0-86400 g 1 Þ Ћk 0 n P ™ º Ê ñ Ù Ï k ò © y / ÿ è © Ï ƒ Îož number_of_message y length_in_seconds C 0 n P ™ º Ê ñ Ù Ï k ò © y / ÿ è © Ï ƒ Îož number_of_message /length_in_second n P H ™ º ÿ è © Ï ƒ Î , äož

o¬ Þ . F åo- number_of_message Þ . 0 klength_in_seconds Þ . › 0ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å ™ º ÿ è , ä ? 12 a ÿ ß 2 Ú ™ º ’ Îož

o¬ u V ª ¢o- -

21.53 logging

F å NFPP “ £ „ ? VLAN ê € M ™ ºož
logging vlan vlan-range
logging interface interface-id

í ” P “ £ „ ? VLAN ê € M ™ º F å
no logging vlan vlan-range
no logging interface interface-id

Ê Ö Þ . F å
default logging

o¬ @ ƒ ª ¢o-

@ ƒ	T
vlan-range	¬ } “ £ 6 VLAN 8 Ä ™ º ’ Î k ÿ µ ” ò 1-3,5 ož
interface-id	¬ } “ £ 6 € M ™ º ’ Îož

o¬ Þ . F åo- ñ Ä ™ º C “ £ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * ¥ x X U Y + ™ º g ¡ k Q “ £ 6 VLAN 8 ê ñ 6 € M ™ º ’ Îož Ú ™ º ¡ F å © ê
¼ © k / Q ¬ } á ¿ %² Ú ™ º ¡ • é k < • ¥ “ £ ñ ™ º Ù Ï ož

o¬ F å †o- 1 y ’ ò t } L Q “ £ VLAN 1o•VLAN 2o•VLAN 3 y VLAN 5 ™ ºož

```
5 X L M L H F R Q I L J Q I S S
5 X L M L H F R Q I L J Q I S S O R J J L Q J Y O D Q
```

2 y ’ ò t } L Q “ £ € M G 0/1 ™ ºož

```
5 X L M L H F R Q I L J Q I S S
5 X L M L H F R Q I L J Q I S S O R J J L Q J L Q W H U I D F H *
```

o¬ à • co- … show nfpp log summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.54 match

¥ x X Û 6 # x à F † • ºož

match [etype type] [src-mac smac [src-mac-mask smac_mask]] [dst-mac dmac [dst-mac-mask dst_mask]] [protocol protocol] [src-ip sip [src-ip-mask sip-mask]] [src-ipv6 sipv6 [src-ipv6-masklen sipv6-masklen]] [dst-ip dip [dst-ip-mask dip-mask]] [dst-ipv6 dipv6

o¬ à • co- … show nfpp define summary name ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.55 monitored-host-limit

¥ x X Û F å u 4 Â Ý I ! O Ñ ƒož
monitored-host-limit number

í ” Â Ý I ! O Ñ ƒ F å k Ê Ö ñ Þ . F åož
no monitored-host-limit

Ê Ö Þ . F åož
default monitored-host-limit

o¬ @ ƒ ª ¢o-

@ ƒ	T
number	u 4 Â Ý I ! O Ñ ƒ k H › 8 1 ñ 4294967295ož

o¬ Þ . F åo- Â Ý I ! O Ñ ƒ ó • 20000 ož

o¬ x X % ”o- NFPP # • º F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç I ! O Ñ ƒ] Æ ñ ó • 20000 k 4 ž ’ ò t I ! O Ñ Â Ý ƒ) — å è 4 9 20000 k k í ”] Ä I ! O Ñ k ò © ø - ’ Î %ERROR y The value that you configured is smaller than current monitored hosts 20000 g F å I ! O Ñ ƒ h kplease clear a part of monitored hosts. Û U I ’ ò t F å Z Ä ÿ | k ¬ } í ” B ã] Æ t ! O Ñož
¢ I ! O Ñ ž k ø - ™ º % NFPP_DEFINE_GUARD -4-SESSION_LIMIT: Attempt to exceed limit of name(# x à • º d)’s 20000 g F å I ! O Ñ ƒ h monitored hosts. U I ’ ò tož

o¬ F å †o- 1 y F å # x à tcp k Â Ý I ! O Ñ ƒ 500 ož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS GHILQH WFS
5XLMLH FRQILJ QISS GHILQH PRQLWRUHG KRVW OLPLW
```

o¬ u V ª ¢o- -

21.57 nd-guard attack-threshold

F å ¶ B x à J ¿ k / ¢ † , † Ý x à J ¿ ž ˜ k • ¨ x à g ož
nd-guard attack-threshold per-port {ns-na | rs | ra-redirect } pps

í ” x à J ¿ F å k Ê Ö ñ Þ . F åož
no nd-guard attack-threshold per-port {ns-na | rs | ra-redirect }

Ê Ö Þ . F åož
default nd-guard attack-threshold per-port {ns-na | rs | ra-redirect }

o¬ @ ƒ ª ¢o-

o¬ u V ª ¢o- -

21.58 nd-guard enable

¥ x X Û ¶ B ø • ND x à ož
nd-guard enable

¼ { ND x à ož
no nd-guard enable

Ê Ö Þ . F åož
default nd-guard enable

o¬ @ ƒ ª ¢o-

nd-guard rate-limit per-port {ns-na | rs | ra-redirect } pps

í ” ’ , J ¿ F å k Ê Ö ñ Þ . F åož
no nd-guard rate-limit per-port {ns-na | rs | ra-redirect }

Ê Ö Þ . F åož
default nd-guard rate-limit per-port {ns-na | rs | ra-redirect }

o¬ @ ƒ ª ¢o-

nd-guard ratelimit-forwarding enable

¼ { œ Y ô G ' , ož
no nd-guard ratelimi t-forwarding enable

Ê Ö Þ . F åož
default nd-guard ratelim it-forwarding enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . ø • Â 9 € M œ Y ô G ' , ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å … ND x à Â 9 € M œ Y ô G ' , ož

```
5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS QG JXDUG UDWHOLPLW IRUZDUGLQJ HQDEOH
```

o¬ à • co- -

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.61 nfpp

¥ x X 9 µ nfpp F å % ”ož
nfpp

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- -

o¬ x X % ”o- ¶ B F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * 4 x X µ nfpp F å % ” k g nfpp , ¼ F å

o¬ F å †o- 5 X L M L H F R Q I L J Q I S S

o¬ à • co- -

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.62 nfpp arp-guard enable

¥ x X Û ¨ € M ø • ARP x à ož
nfpp arp-guard enable

¼ { € M ARP x à ož
no nfpp arp-guard enable

Ê Ö Þ . F åož
default nfpp arp-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M Z Ä F å ARP x à • ¼ k J ¶ B • ¼ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- € M ARP x à • ¼ i ¯ 9 ¶ B ARP x à • ¼ož

o¬ F å †o- 1 ø • N M G0/1 ARP x à x à ož
5 X L M L H F R Q I L J L Q W H U I D F H *

```
5XLMLH FRQILJ LI  QISS DUS JXDUG HQDEOH
```

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.63 nfpp arp-guard isolate-period

¥ x X Û ¨ € M F å B B œ Y ž •ož
nfpp arp-guard isolate-period {seconds | permanent}

í ” € M œ Y ž • F å k Ê Ö ñ Þ . F åož
no nfpp arp-guard isolate-period

Ê Ö Þ . F åož
default nfpp arp-guard isolate-period

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	œ Y ž • k % y © a k H › 8 © 0 ê ñ[30, 86400] k 0 n P œ Yož
permanent	K ! œ Yož

o¬ Þ . F åo- Þ . Õ Ñ © Z Ä F å B B œ Y ž • k J ¶ B œ Y ž •ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å N M G0/1 ARP x à œ Y ž • 180 aož

```
5XLMLH FRQILJ  LQWHUIDFH *
5XLMLH FRQILJ LI  QISS DUS JXDUG LVRODWH SHULRG
```

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.64 nfpp arp-guard policy

¨ € M F å B B ' , J ¿ y x à J ¿ož
nfpp arp-guard policy {per-src-ip | per-src-mac | per-port } rate-limit-pps attack-threshold-pps

í ” € M ' , J ¿ y x à J ¿ F å k Ê Ö ñ Þ . F åož
no nfpp arp-guard policy { per-src-ip | per-src-mac | per-port }

Ê Ö Þ . F åož
default nfpp arp-guard policy {per-src-ip | per-src-mac | per-port }

o¬ @ ƒ ª ¢o-

@ ƒ	T
per-src-ip	F å ? › IP ª - ' , J ¿ y x à J ¿ož
per-src-mac	F å ? › MAC ª - ' , J ¿ y x à J ¿ož
per-port	F å ? € M ' , J ¿ y x à J ¿ož
rate-limit-pps	' , J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož
attack-threshold-pps	x à J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož

o¬ Þ . F åo- € M Z Ä \ ' , J ¿ y x à J ¿ k J ¶ B ' , J ¿ y ' , J ¿ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- x à J ¿ 4 9 ' , J ¿ož

o¬ F å †o- 1 y F å N M G0/1 ARP x à ' , J ¿ y x à J ¿ k F å Â 9 IP ' , J ¿ 2pps k x à J ¿ 10pps z F å Â 9 MAC ' , J ¿ 3pps k x à J ¿ 10pps z F å Â 9 € M ' , J ¿ 50pps k x à J ¿ 100ppsož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS DUS JXDUG SROLF\ SHU VUF LS
5XLMLH FRQILJ LI QISS DUS JXDUG SROLF\ SHU VUF PDF
5XLMLH FRQILJ LI QISS DUS JXDUG SROLF\ SHU SRUW
```

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ' Îož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.65 nfpp arp-guard scan-threshold

¨ € M F å B B þ T J ¿ož
nfpp arp-guard scan-threshold pkt-cnt

í ” € M þ T J ¿ F å k Ê Ö ñ Þ . F åož
no nfpp arp-guard scan-threshold

Ê Ö Þ . F åož
default nfpp arp-guard scan-threshold

o¬ @ ƒ ª ¢o-

@ ƒ	T
pkt-cnt	þ T J ¿ › k % y © ? a † ƒ k H › 8 ©[1,19999] ož

o¬ Þ . F åo- Z F å Â 9 € M ARP þ Tf9 › k J ¶ B ARP þ Tf9 ›ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å N M G0/1 ARP x à T J ¿ 20ppsož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS DUS JXDUG VFDQ WKUHVKROG
```

o¬ à • co- … show nfpp arp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.66 nfpp define name enable

¥ x X Û • o € M # • º x à ož
nfpp define name enable

¼ { € M # • º x à ož
no nfpp define name enable

Ê Ö Þ . F åož
default nfpp define name enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
name	# x à • º d fož

o¬ Þ . F åo- -

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- · À ¨ ¥ # d k w F å 4 matcho•global-policy $ e k F å õ ÿ | k k é F å â Âož

o¬ F å †o- 1 ø • N M G0/1 # x à tcp x à ož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS GHILQH WFS HQDEOH
```

o¬ à • co- … show nfpp define summary name ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.67 nfpp define name policy

¨ € M F å B B ’ , J ¿ y x à J ¿ož
nfpp define name policy {per-src-ip | per-src-mac | per-port } rate-limit-pps attack-threshold-pps

í ” € M ’ , J ¿ y x à J ¿ F å k Ê Ö ñ Þ . F åož

no nfpp define name policy {per-src-ip | per-src-mac | per-port}

Ê Ö Þ . F åož
default nfpp define name policy {per-src-ip | per-src-mac | per-port }

o¬ @ ƒ ª ¢o-

@ ƒ	T
per-src-ip	F å ? › IP ª - x à J ¿ož
per-src-mac	F å ? › MAC ª - x à J ¿ož
per-port	F å ? € M x à J ¿ož
rate-limit-pps	' , J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož
attack-threshold-pps	x à J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož

o¬ Þ . F åo- € M Z Ä \ ' , J ¿ y x à J ¿ k J ¶ B ' , J ¿ y x à J ¿ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- x à J ¿ 4 9 ' , J ¿ož

o¬ F å †o- 1 y F å N M G0/1 # x à tcp ' , J ¿ y x à J ¿ k F å Â 9 IP ' , J ¿ 2pps k x à J ¿ 10pps z F å Â 9 € M ' , J ¿ 50pps k x à J ¿ 100ppsož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS GHILQH WFS SROLF\ SHU VUF LS
5XLMLH FRQILJ LI QISS GHILQH WFS SROLF\ SHU SRUW
```

o¬ à • co- … show nfpp define summary name ò 0 F å ' Îož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.68 nfpp dhcp-guard enable

¥ x X Û ¨ € M ø • DHCP x à ož
nfpp dhcp-guard enable

¼ { € M DHCP x à ož

no nfpp dhcp-guard enable

Ê Ö Þ . F åož
default nfpp dhcp-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M Z Ä F å DHCP x à • ¼ k J ¶ B • ¼ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- € M DHCP x à • ¼ i ¯ 9 ¶ B DHCP x à • ¼ož

o¬ F å †o- 1 ø • N M G0/1 DHCP x à x à ož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS GKFS JXDUG HQDEOH
```

o¬ à • co- … show nfpp dhcp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.69 nfpp dhcp-guard policy

¨ € M F å B B ’ , J ¿ y x à J ¿ož
nfpp dhcp-guard policy { per-src-mac | per-port} rate-limit-pps attack-threshold-pps

í ” € M ’ , J ¿ y x à J ¿ F å k Ê Ö ñ Þ . F åož
no nfpp dhcp-guard policy { per-src-mac | per-port }

Ê Ö Þ . F åož
default nfpp dhcp-guard policy { per-src-mac | per-port }

o¬ @ ƒ ª ¢o-

@ ƒ	T

per-src-mac	F å ? › MAC ª - ', J ¿ y x à J ¿ož
per-port	F å ? € M ', J ¿ y x à J ¿ož
rate-limit-pps	', J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož
attack-threshold-pps	x à J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož

o¬ Þ . F åo- € M Z Ä \ ', J ¿ y x à J ¿ k J ¶ B ', J ¿ y ', J ¿ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- x à J ¿ 4 9 ', J ¿ož

o¬ F å †o- 1 y F å N M G0/1 DHCP x à ', J ¿ y x à J ¿ k F å Â 9 MAC ', J ¿ 3pps k x à J ¿ 10pps z F å Â 9 € M ', J ¿ 50pps k x à J ¿ 100ppsož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS GKFS JXDUG SROLF\ SHU VUF PDF
5XLMLH FRQILJ LI QISS GKFS JXDUG SROLF\ SHU SRUW
```

o¬ à • co- … show nfpp dhcp-guard summary ò 0 F å ' Îož

o¬ U P ' Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.70 nfpp dhcpv6-guard enable

¥ x X Û ¨ € M ø • DHCPv6 x à ož

nfpp dhcpv6-guard enable

¼ { € M DHCPv6 x à ož

no nfpp dhcpv6-guard enable

Ê Ö Þ . F åož

default nfpp dhcpv6-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M Z Ä F å DHCPv6 x à • ¼ k J ¶ B • ¼ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- € M DHCPv6 x à • ¼ i ¯ 9 ¶ B DHCP x à • ¼ož

o¬ F å †o- 1 ø • N M G0/1 DHCPv6 x à x à ož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS GKFSY JXDUG HQDEOH
```

o¬ à • co- … show nfpp dhcpv6-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.71 nfpp dhcpv6-guard policy

¨ € M F å B B ’ , J ¿ y x à J ¿ož

nfpp dhcpv6-guard policy { per-src-mac | per-port } rate-limit-pps attack-threshold-pps

í ” € M ’ , J ¿ y x à J ¿ F å k Ê Ö ñ Þ . F åož

no nfpp dhcpv6-guard policy { per-src-mac | per-port}

Ê Ö Þ . F åož

default nfpp dhcpv6-guard policy { per-src-mac | per-port }

o¬ @ ƒ ª ¢o-	@ ƒ	T

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- x à J ¿ 4 9 ’ , J ¿ož

o¬ F å †o- 1 y F å N M G0/1 DHCPv6 x à ’ , J ¿ y x à J ¿ k F å Â 9 IP ’ , J ¿ 2pps k x à J ¿ 10pps z F å Â 9 MAC ’ , J ¿ 3pps k x à J ¿ 10pps z F å Â 9 € M ’ , J ¿ 50pps k x à J ¿ 100ppsož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS GKFSY JXDUG SROLF\ SHU VUF PDF
5XLMLH FRQILJ LI QISS GKFSY JXDUG SROLF\ SHU SRUW
```

o¬ à • co- … show nfpp dhcpv6-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.72 nfpp icmp-guard enable

¥ x X Û ¨ € M ø • ICMP x à ož
nfpp icmp-guard enable

¼ { € M ICMP x à ož
no nfpp icmp-guard enable

Ê Ö Þ . F åož
default nfpp icmp-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M Z Ä F å ICMP x à • ¼ k J ¶ B • ¼ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- € M ICMP x à • ¼ i ¯ 9 ¶ B ICMP x à • ¼ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.74 nfpp icmp-guard policy

¨ € M F å B B ’ , J ¿ y x à J ¿ož
nfpp icmp-guard policy { per-src-ip | per-port} rate-limit-pps attack-threshold-pps

í ” € M ’ , J ¿ y x à J ¿ F å k Ê Ö ñ Þ . F åož
no nfpp icmp-guard policy {per-src-ip | per-port}

Ê Ö Þ . F åož
default nfpp icmp-guard policy {per-src-ip | per-port }

o¬ @ ƒ ª ¢o-

@ ƒ	T
per-src-ip	F å ? › IP ª - ’ , J ¿ y x à J ¿ož
per-port	F å ? € M ’ , J ¿ y x à J ¿ož
rate-limit-pps	’ , J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož
attack-threshold-pps	x à J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož

o¬ Þ . F åo- € M Z Ä \ ’ , J ¿ y x à J ¿ k J ¶ B ’ , J ¿ y ’ , J ¿ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- x à J ¿ 4 9 ’ , J ¿ož

o¬ F å †o- 1 y F å N M G0/1 ICMP x à ’ , J ¿ y x à J ¿ k F å Â 9 IP ’ , J ¿ 5pps k x à J ¿ 10pps z F å Â 9 € M ’ , J ¿ 100pps k x à J ¿ 200ppsož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS LFPS JXDUG SROLF\ SHU VUF LS
5XLMLH FRQILJ LI QISS LFPS JXDUG SROLF\ SHU SRUW
```

o¬ à • co- … show nfpp icmp-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.75 nfpp ip-guard enable

¥ x X Û ¨ € M ø • IP … þ T ož
nfpp ip-guard enable

¼ { € M IP … þ T ož
no nfpp ip-guard enable

Ê Ö Þ . F åož
default nfpp ip-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- € M Z Ä F å IP … þ T • ¼ k J ¶ B • ¼ož

21.76 nfpp ip-guard isolate-period

¥ x X Û ¨ € M F å B B œ Y ž •ož
nfpp ip-guard isolate-period {seconds | permanent }

í ” € M œ Y ž • F å k Ê Ö ñ Þ . F åož
no nfpp ip-guard isolate-period

Ê Ö Þ . F åož
default nfpp ip-guard isolate-period

o¬ @ ƒ ª ¢o-

@ ƒ	T
seconds	œ Y ž • k % y © a k H › 8 © 0 ê ñ[30, 86400] k 0 n P œ Yož
permanent	K ! œ Yož

o¬ Þ . F åo- Þ . Õ Ñ © Z Ä F å B B œ Y ž • k J ¶ B œ Y ž •ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å N M G0/1 IP x à œ Y ž • 180 aož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS LS JXDUG LVRODWH SHULRG
```

o¬ à • co- … show nfpp ip-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.77 nfpp ip-guard policy

¨ € M F å B B ’ , J ¿ y x à J ¿ož
nfpp ip-guard policy {per-src-ip | per-port } rate-limit-pps attack-threshold-pps

í ” € M ’ , J ¿ y x à J ¿ F å k Ê Ö ñ Þ . F åož

no nfpp ip-guard policy {

no nfpp ip-guard scan-threshold

Ê Ö Þ . F åož
default nfpp ip-guard scan-threshold

o¬ @ ƒ ª ¢o-

@ ƒ	T
pkt-cnt	þ T J ¿ › k % y © ? a † ƒ k H › 8 ©[1,19999] ož

o¬ Þ . F åo- Z F å Â 9 € M IP þ T J ¿ k J ¶ B ARP þ T J ¿ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y F å N M G0/1 IP x à T J ¿ 20ppsož

```
5 X L M L H  F R Q I L J  L Q W H U I D F H  *
5 X L M L H  F R Q I L J  L I  Q I S S  L S  J X D U G  V F D Q  W K U H V K R O G
```

o¬ à • co- … show nfpp ip-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.79 nfpp nd-guard enable

¥ x X Û ¨ € M ø • ND x à ož
nfpp nd-guard enable

¼ { € M ND x à ož
no nfpp nd-guard enable

Ê Ö Þ . F åož
default nfpp nd-guard enable

o¬ @ ƒ ª ¢o-

@ ƒ	T

-	-

o¬ Þ . F åo- € M Z Ä F å ND x à • ¼ k J ¶ B • ¼ož

o¬ x X % ”o- N M F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- € M ND x à • ¼ i ¯ 9 ¶ B • ¼ož

o¬ F å †o- 1 y F å … G0/1 M ND x àož

```
5XLMLH FRQILJ LQWHUIDFH *
5XLMLH FRQILJ LI QISS QG JXDUG HQDEOH
```

o¬ à • co- … show nfpp nd-guard summary ò 0 F å ’ Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

21.80 nfpp nd-guard policy

¨ € M F å B B ’ , J ¿ y x à J ¿ož

nfpp nd-guard policy per-port {ns-na | rs | ra-redirect } rate-limit-pps attack-threshold-pps

í ” € M ’ , J ¿ y x à J ¿ F å k Ê Ö ñ Þ . F åož

no nfpp nd-guard policy per-port {ns-na | rs | ra-redirect }

Ê Ö Þ . F åož

default nfpp nd-guard policy per-port {ns-na | rs | ra-redirect }

o¬ @ ƒ ª ¢o-

@ ƒ	T
ns-na	> D ¬ L y > D ¸ sož
rs	è ˜ ¬ Lož
ra-redirect	è ˜ ¸ s y M g †ož
rate-limit-pps	’ , J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož
attack-threshold-pps	x à J ¿ k % y © ? a † ƒ k H › 8 © 1 ñ 19999ož

```
g)RUPDW RI FROXPQ 5DWH OLPLW DQG $WWDFN WKUHVKROG LV SHU VU
,QWHUIDFH 6WDWXV ,VRODWH SHULRG 5DWH OLPLW $WWDFN WKUHVKR
*OREDO (QDEOH
*L (QDEOH
*L 'LVDEOH

0D[LPXP FRXQW RI PRQLWRUHG KRVWV
0RQLWRU SHULRGy V
```

< † K y

<	ª ¢
Interface	n P + • N M kGlobal n P + • g ¶ B F åož
Status	n P © k ø • x à ož
Isolat-period	n P + • Œ F å œ Y u Êož
Rate-limit	ã ð + • › IP ª - ', J ¿/ › MAC ª - ', J ¿/ € M ', J ¿ ›ož
Attack-threshold	ã ð + • › IP ª - x à J ¿/ › MAC ª - x à J ¿/ € M x à J ¿ ›ož
Scan-threshold	n P þ T J ¿ož

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

21.84 show nfpp define hosts

ò 0 I ! O Ñož

show nfpp define hosts name [statistics | [[vlan vid] [interface interface-id] [

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- U Y ` k @ ƒ g ¡ož

o¬ F å †o- ò 0 # x à tcp I ! O Ñ k † š ç remain-time(s) © 6 þ • œ Y ž •ož

5 X L M L H V K R Z Q I S S G H I L Q H K R V W V D E F
, I F R O B I L O W H U V K R Z V L W P H D Q V K D U G Z D U H G R Q R W L V R O D W H K R
9 / $ 1 L Q W H U I D F H 0 $ & D G G U H V V U H P D L Q W L P H V

* L G I H

14

14

or Î Y ž •ožn

Interface	n P + • N M kGlobal n P + • g ¶ B F åož
Status	n P © k ø • x à ož
Rate-limit	ã ð + • › IP ª - ’ , J ¿/ › MAC ª - ’ , J ¿/ € M ’ , J ¿ ›ož
Attack-threshold	ã ð + • › IP ª - x à J ¿/ › MAC ª - x à J ¿/ € M x à J ¿ ›ož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.86

21.87 show nfpp dhcp-guard hosts

ò 0 I ! O Ñož

show nfpp dhcp-guard hosts [statistics | [[vlan vid] [interface interface-id] [mac-address]]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
statistics	ò 0 I ! O Ñ Ï ‹ ’ Îož
vid	Z ' B ¿ à Zož
interface-id	€ M d fož
mac-address	MAC ª -ož

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 yò0 DHCP x à I ! O Ñ Ï ‹ ’ Îož¢ ù Ä 120 V Ñ t ! O k¿ 100 V Ñ t F ^ è ª œ Y k
20 V Ñ F ^ œ Y â Â g * o – Ü = œ Ä Ä á k ê ñ F ^ Ï › á bž

```
5XLMLH VKRZ QISS GKFS JXDUG KRVWV VWDWLVWLFV
VXFFHVV IDLO WRWDO
```

2 y ò 0 DHCP x à I ! O Ñ k † š ç remain-time(s) © 6 þ • œ Y ž •ož

```
5XLMLH VKRZ QISS GKFS JXDUG KRVWV
,I FROXPQ VKRZV LW PHDQV KDUGZDUH IDLOHG WR LVRODWH KRV
9/$1 LQWHUIDFH 0$& DGGUHVV UHPDLQ WLPH VHFRQGV

JL
JL
7RWDOy KRVW V
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.88 show nfpp dhcp-guard summary

ò 0 F å ’ Îož

show nfpp dhcp-guard summary

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o-

o¬ U 6 -o-

o¬ @ ƒ ª ¢o-

@ ƒ	T
statistics	ò 0 I ! O Ñ Ï ‹ ’ Î
vid	Z ' B ¿ à Z
interface-id	€ M d f
mac-address	MAC ª -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- -

o¬ F å †o- ò 0 DHCPv6 x à I ! O Ñ k † š ç remain-time(s) © 6 þ • œ Y ž •ož

```
5XLMLH  VKRZ QISS GKFSY  JXDUG KRVWV
,I FROXPQ  VKRZV  LW PHDQV  KDUGZDUH IDLOHG WR LVRODWH KRV
9/$1  LQWHUIDFH  0$& DGGUHVV  UHPDLQ WLPH VHFRQGV

      JL
     JL
7RWDOy  KRVW V
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.90 show nfpp dhcpv6-guard summary

ò 0 F å ’ Î

show nfpp dhcpv6-guard summary

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ ... 6 -o- * ¥ x X U Y ò 0 F å ’ Îož

o¬ F å †o- 1 y ò 0 DHCPv6 x à F å ’ Î k , ¶ B F å ’ Î Y C N M F å ’ Îož

```
5XLMLH VKRZ QISS LFPS JXDUG KRVWV VWDWLVWLFV
VXFFHVV    IDLO    WRWDO
```

2 y ò 0 ICMP x à I ! O Ñ k † š ç remain-time(s) © 6 þ • œ Y ž •ož

```
5XLMLH  VKRZ QISS LFPS JXDUG KRVWV
,I FROXPQ  VKRZV     LW PHDQV  KDUGZDUH IDLOHG WR LVRODWH KRV
9/$1  LQWHUIDFH ,3 DGGUHVV     UHPDLQ WLPH V

      *L
      *L
7RWDOy  KRVW V
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.92 show nfpp icmp-guard summary

ò 0 F å ’ Îož

< † K y

<	ª ¢
Interface	n P + • N M kGlobal n P + • g ¶ B F åož
Status	n P © k ø • x à ož
Isolate-period	n P + • F å Œ œ Y u Êož
Rate-limit	ã ð + • › IP ª - ' , J ¿/ › MAC ª - ' , J ¿/ € M ' , J ¿ ›ož
Attack-threshold	ã ð + • › IP ª - x à J ¿/ › MAC ª - x à J ¿/ € M x à J ¿ ›ož

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

21.93 show nfpp icmp-guard trusted-host

ò 0 ! O U ' Ñož

show nfpp icmp-guard trusted-host

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 ICMP x à U ' Ñ F åož

```
5XLMLH VKRZ QISS LFPS JXDUG WUXVWHG KRVW
,3 DGGUHVV PDVN



7RWDOy UHFRUG V
```

o¬ U P ' Îo- -

o¬ u V ª ¢o- -

21.94 show nfpp ip-guard hosts

ò 0 I ! O Ñož

show nfpp ip-guard hosts [statistics | [[vlan vid] [interface interface-id] [ip-address]]]

o¬ @ ƒ ª ¢o-

@ ƒ	T
statistics	ò 0 I ! O Ñ Ï ‹ ’ Î
vid	Z ' B ¿ à Z
interface-id	€ M d f
ip-address	IP ª -

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 yò 0 IP x à I ! O Ñ Ï ‹ ’ Îož ¢ ù Ä 120 V Ñ t ! O k ¿ 100 V Ñ t F ^ è ª œ Y k 20 V Ñ F ^ œ Y â Â g * o – Ü = œ Ä Ä á k ê ñ F ^ Ï › á bž

```
5XLMLH VKRZ QISS LS JXDUG KRVWV VWDWLVWLFV
VXFFHVV IDLO WRWDO
```

2 y ò 0 IP x à I ! O Ñ k † š ç remain-time(s) © 6 þ • œ Y ž •ož

```
5XLMLH VKRZ QISS LS JXDUG KRVWV
,I FROXPQ VKRZV LW PHDQV KDUGZDUH GR QRW LVRODWH KRVW
9/$1 LQWHUIDFH ,3 DGGUHVV 5HDVRQ UHPDLQ WLPH V

      *L                    $77$&.
      *L                    6&$1
7RWDOy KRVW V
```

† š < Reason T Ñ t ! O = œ ŀATTACK n P Ñ G IP † , † Ý x à J ¿ ŀSCAN n P Ñ ¨ þ T î à <ož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.95 show nfpp ip-guard summary

ò 0 F å ’ Î

show nfpp ip-guard summary

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- * ¥ x X U Y ò 0 F å ’ Îož

o¬ F å †o- 1 y ò 0 IP x à F å ’ Î k , ¶ B F å ’ Î Y C N M F å ’ Îož

5 X L M L H V K R Z Q I S S L S J X D U G V X P P D U \

g) R U P D W R I

, Q W H U I D F H 6 W D W X V , V R O D W H S H U L R G 5 D W H O L P L W $ W W D F N W K U H V K R O

* O R E D O (Q D E O H

* L (Q D E O H c™xCP`”!!†F!„5 nû ™Â!ù8€‘#

21.96 shoJg(Ip ip-guard trusted-host6)Tj 04199 g /TT0 1 Tf 0 Tc02 Tw 9 0 0 9 56.7671.0

o¬ … 6 -o- ¢ ™ º Ù Ï œ ß ž k e Ò ™ º 1 t ’ k c ž ¨ ™ º Ù Ï ª P%² Ú ñ Ä K Å C ”-” n ¾ož ’ ò t ¬
} Í ™ º Ù Ï O ê ñ U ä ÿ è © Ï ƒ Î , äož
R ™ º Ù Ï H ™ º ÿ è © Ï ƒ Î k Ä 7 ^ G ÿ ž • í k ò ñ P y
%NFPP_ARP_GUARD-4-DOS_DETECTED: Host<IP=N/A,MAC=0000.0000.0004,port=Gi4/1,VLAN=1> was detected.(2009-07-01 13:00:00)

o¬ F å †o- 1 y ò 0 NFPP ™ º ’ Î F åož

```
5XLMLH VKRZ QISS ORJ VXPPDU\
7RWDORE XIIHVUL]H
6\VORJ DWHHQWSUH\UVHFRQGV
/RJJLQJ
9/$1
LQWHUIDFH *L
LQWHUIDFH *L
```

2 y ò 0 NFPP ™ º Ù Ï ™ º Ú ƒož

```
5XLMLH VKRZ QISS ORJ EXIIHU VWDWLVWLFV
7KHUH DUH ORJV LQ EXIIHU
```

3 y ò 0 NFPP ™ º Ù Ï ož

```
5XLMLH VKRZ QISS ORJ EXIIHU
3URWRFRO 9/$1 ,QWHUIDFH ,3 DGGUHVV 0$& DGGUHVV 5HDVRQ

$53 *L 'R6
$53 *L ,62/$7('
$53 *L 'R6
$53 *L ,62/$7(B)$,/('
$53 *L 6&$1
$53
```

Reason n P = œ k Ä 5 _ H › y

Reason	ª ¢
DoS	n P y ñ ! Í Æ x à
ISOLATED	n P x à ñ t F ^ è ª œ Y
ISOLATE_FAILED	n P œ Y x à ñ â Â
SCAN	n P y ñ þ T
PORT_ATTACKED	n P € M t x à

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

	›ož

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

21.99 show nfpp nd-guard hosts

ò 0 I ! O Ñož

show nfpp nd-guard hosts [statistics | [[vlan vid] [

o¬ u V ª ¢o- -

21.100 trusted-host

F å ! O U ' Ñož
trusted-host {mac mac_mask | ip mask | IPv6/prefixlen}

í " ! O U ' Ñož
no trusted-host {all | mac mac_mask | ip mask | IPv6/prefixlen }

Ž " ! O U ' Ñož
default trusted-host

o¬ @ ƒ ª ¢o-

@ ƒ	T
mac	mac ª -ož
mac_mask	mac ª - Q Aož
ip	IP ª -ož
mask	IP ª - Q Aož
IPv6/prefixlen	IPv6 ª - y Q A x †ož
all	y no %² Ü … k í " ñ Ä U ' Ñ F åož

o¬ Þ . F åo- Þ . Z Ä — å ` ~ U ' Ñož

o¬ x X % "o- NFPP # • º F å % "

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- ò ç ' ò t e È + î V Ñ g ! O k / + ¥ Ñ n P ' ` k é U Y * ¥ x X F åož ¥ U ' Ñ G ª CPU
ICMP † 1 t ª • G ª CPU k Ÿ ` ~ ', y s Š Ô òož* F å Q A U Y ñ + î%² à < ñ Ä
Ñ C g ! Oož
Â Ú u 4 — å 500 Ú U ' Ñož
· À ¯ F å match • º e e õ F å trusted-hostož 3 match F å † • º IPv4 k é ª • F å IPv6 '
` ª - z c ò 3 match F å † • º IPv6 k é ª • F å IPv4 ' ` ª -ož

o¬ F å †o- 1 y Ñ 1.1.1.1 F å # x à tcp U ' Ñož

```
5 X L M L H F R Q I L J Q I S S
5 X L M L H F R Q I L J Q I S S G H I L Q H W F S
5 X L M L H F R Q I L J Q I S S G H I L Q H W U X V W H G K R V W
```

o¬ à • co- … show nfpp define trusted-host name ò 0 F å ' Îož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

21.101 no all-guard enable

¶ B ¼ { NFPP ñ Ä Â E … x à ã • y g # ã • C N M % ” ô • o ã • † Ù bž
no all-guard enable

¶ B • o NFPP ñ Ä Â E … x à ã • g # ã • C N M % ” ô • o ã • † Ù bž
all-guard enable

o¬ @ ƒ ª ¢o- —ož

o¬ x X % ”o- NFPP F å % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 1 o• Ú F å x X show running-config U •ož
2o• Þ . Õ Ñ k ñ Ä Â E … x à ã • ® • oož
3o• ¶ B ¼ { / • o x X u 4 Â E … x à ã • , yARP-GUARD / IP-GUARD / ICMP-GUARD / DHCP-GUARD / DHCPv6-GUARD / ND-GUARDož
4o• ü g ¶ B ¼ { x X e k ñ Ä Â E … x à ã • ü g%²) no xx-guard enable x X kno xx-guard enable x X show running-config U • z ü g%² p • o x X e k ñ Ä Â E … x à ã • ü g%²) xx-guard enable x Xož
5o• u 4 ¶ B • o ê ¼ { # … x à ã • k c ž - § € N M % ” … x à ã • … Ù Áož
6o• ¶ B ¼ { / • o x X u 4 ‘ F å k x ¿ ü g È ç u 4 ‘ F å e M o ÿ |ož

o¬ F å †o-

```
5XLMLH FRQILJ VKRZ UXQQLQJ FRQILJ _ EHJLQ QISS
QISS
 ORJ EXIIHU HQDEOH
 DUS JXDUG UDWH OLPLW SHU SRUW
 DUS JXDUG DWWDFN WKUHVKROG SHU SRUW

5XLMLH FRQILJ QISS
5XLMLH FRQILJ QISS QR DOO JXDUG HQDEOH
5XLMLH FRQILJ QISS VKRZ UXQQLQJ FRQILJ _ EHJLQ QISS
QISS
```

22 DOS • õ

22.1 ip deny invalid-l4port

• o … ï ƒ ô x à ož
ip deny invalid-l4port

¼ { … ï ƒ ô x à ož
no ip deny invalid-l4port

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ Þ . F åo- Þ . Õ Ñ k — Õ … ï ƒ ô x à © ¼ { ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ — Õ • o … ï ƒ ô x à ož
5 X L M L H F R Q I L J L S G H Q \ L Q Y D O L G O S R U W
2 y ¨ — Õ ¼ { … ï ƒ ô x à ož
5 X L M L H F R Q I L J Q R L S G H Q \ L Q Y D O L G O S R U W

o¬ à • co- … show ip deny invalid-l4port x X k U Y ò 0 … ï ƒ ô x à © o © ¼ {ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

22.2 ip deny invalid-tcp

• o … ³ c TCP † x à ož
ip deny invalid-tcp

¼ { … ³ c TCP † x à ož
no ip deny invalid-tcp

o¬ @ ƒ ª ¢o-	@ ƒ	
	-	-

o¬ Þ . F åo- Þ . Õ Ñ k — Õ … ³ c TCP † x à © ¼ { ož

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- 9 0 0 9 555.4199 741.20l947.804E0 /TT062(1)Tj 0.0003 Tc 7.9DE7.963 TD <6F37905A8Tj /TT0 1AD>82547 6F ( )Tj /C2_0 1

o¬ x X % ”o- ¶ B % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ¨ — Õ • o … Land x à ož

```
5XLMLH FRQILJ LS GHQ\ ODQG
```

2 y ¨ — Õ ¼ { … Land x à ož

```
5XLMLH FRQILJ QR LS GHQ\ ODQG
```

o¬ à • co- … show ip deny land x X k U Y ò 0 … Land x à © o © ¼ {ož

o¬ U P ’ Îo- -

o¬ o • j ¨o- -

o¬ u V ª ¢o- -

22.4 show ip deny

ª P ñ Ä … DOS x à Ù Áož

show ip deny

o¬ @ ƒ ª ¢o-

@ ƒ	T
-	-

o¬ x X % ”o- Ô Ó ï % ”

o¬ Þ . ´ ðo- 14

o¬ … 6 -o- -

o¬ F å †o- 1 y ò 0 ñ Ä … DOS x à Ù Áož

```
UXLMLH VKRZ LS GHQ\
```

o¬ U P ’ Îo- -

o¬ u V ª ¢o- -

22.5 show ip deny invalid-l4port

ª P … ï ƒ ô x à Ù Áož
show ip deny invalid-l4port

o¬ @ ƒ ª ¢o-

- A C L & Q O S

ACL&QOS

1. ACL
2. QOS

1 ACL

1.1

id	ACL IP ACL 1-99 1300-1999 IP ACL 100-199 2000-2699 MAC ACL 700–799 ACL 2700–2899
name	ACL
sn	ACL ( )
start-sn	
inc-sn	
deny	
permit	
port	IPv6 ipv6 icmp tcp udp 0-255 IPv4 eigrp gre ipinip igmp nos ospf icmp udp tcp ip IP 0-255 icmp/tcp/udp
interface idx	
src	
src-wildcard	0.255.0.32
src-ipv6-pfix	IPv6
dst-ipv6-pfix	IPv6
pfix-len	
src-ipv6-addr	IPv6
dst-ipv6-addr	IPv6
dscp	, 0-63
flow-label	0-1048575
dst	
dst-wildcard	0.255.0.32

F	SSAP( )	19	T	TCP	46
G	Ctrl	20	U	TCP	48
H	Org Code	21	V		50
I		24	W		54
J	IP	26	XY	IP	58

access-list *id* { **deny** | **permit** } *protocol* [**VID** [*out*] [**inner** *in*]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

ACL

Internet Control Message Protocol (ICMP)

access-list *id* { **deny** | **permit** } **icmp** [**VID** [*out*] [**inner** *in*]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [

	UDP TCP IP IP 0-255 ICMP/TCP/UDP
destination	
destination-wildcard	0.255.0.32
fragment	
precedence	
precedence	0-7
range	
lower	
upper	
time-range	
time-range-name	
tos	
tos	0-15
icmp-type	ICMP 0-255
icmp-code	ICMP 0-255
icmp-message	ICMP
operator	lt- eq- gt- neq- range-
port [*port*]	*range*
host *source-mac-address*	
host *destination-mac-address*	
VID *vid*	vid
ethernet-type	
match-all	tcp flag
tcp-flag	tcp flag
established	tcp flag rst ack
text	

ACL ACL

14

access-list

IP ACL 1-99 1300-1999
IP ACL 100-199 2000-2699
MAC ACL 700-799 MAC
2700-2899 IP ACL IP ACL MAC ACL
ACL ACL ACL VLAN ID

precedence *precedence*/**tos** *tos*/**fragments**/**range** *lower upper*/ **time-range** *time-range-name*

TCP Flag

urg

ack

psh

rst

syn

fin

critical

flash

flash-override

immediate

internet

network

priority

routine

max-reliability

max-throughput

min-delay

min-monetary-cost

normal

ICMP

administratively-prohibited

dod-host-prohibited

dod-net-prohibited

echo

echo-reply

fragment-time-exceeded

general-parameter-problem

host-isolated

host-precedence-unreachable

host-redirect

host-tos-redirect

host-tos-unreachable

host-unknown

host-unreachable

information-reply

information-request
mask-reply
mask-request
mobile-redirect
net-redirect
net-tos-redirect
net-tos-unreachable
net-unreachable
network-unknown
no-room-for-option
option-missing
packet-too-big
parameter-problem
port-unreachable
precedence-unreachable
protocol-unreachable
redirect
router-advertisement
router-solicitation
source-quench
source-route-failed
time-exceeded
timestamp-reply
timestamp-request
ttl-exceeded
unreachable

TCP	TCP
bgp	
chargen	
cmd	
daytime	
discard	
domain	
echo	
exec	
finger	
ftp	
ftp-data	
gopher	
hostname	
ident	

irc
klogin
kshell
login
nntp
pim-auto-rp
pop2
pop3
smtp
sunrpc
syslog
tacacs
talk
telnet
time
uucp
whois
www
UDP UDP
biff
bootpc
bootps
discard
dnsix
domain
echo
isakmp
mobile-ip
nameserver
netbios-dgm
netbios-ns
netbios-ss
ntp
pim-auto-rp
rip
snmp
snmptrap
sunrpc
syslog
tacacs
talk

tftp
time
who
xdmcp
Ethernet-type
aarp
arp
appletalk
decnet-iv
diagnostic
etype-6000
etype-8042
lat
lavc-sca
mop-console
mop-dump
mumps
netbios
vines-echo
xns-idp

ACL ACL **no** {**sn** | **permit** | **deny**}

1 IP

IP 192.168.1.64 - 192.168.1.127

```
Ruijie(config)# access-list 1 permit 192.168.1.64 0.0.
```

2 IP

IP DNS ICMP

Expert Extended ACL ACL IP 192.168.12.3 MAC 00d0.f800.0044 TCP

```
Ruijie(config)# access-list 2702 deny tcp host 192.168.12.3 mac 00d0.f800.0044 any any
Ruijie(config)# access-list 2702 permit any any any any
Ruijie(config)# show access-lists
expert access-list extended 2702
10 deny tcp host 192.168.12.3 mac 00d0.f800.0044 any
20 permit any any any any
```

1 **show access-lists** ACL ACL

2 **show access-lists** *id* ACL ACL

3 **show access-lists** *name* ACL ACL

ACL ACL

```
failed, for the entry is existed or the sequence numbe
```

-

-

1.3 access-list list-remark

ACL

access-list *id* **list-remark** *text*

ACL

no access-list *id* **list-remark**

id	ACL IP ACL 1-99 1300-1999 IP ACL 100-199 2000-2699 MAC ACL 700–799 ACL 2700–2899
text	

ACL

14

ACL ACL ACL
ACL

1 1 ACL ACL “ this acl is to filter the host 192.168.4.12 ”

```
Ruijie(config)# ip access-list extended 100
Ruijie(config)# access-list 100 list-remark this acl i
```

1 **show access-lists** ACL ACL
2 **show access-list** *sid* ACL ACL
3 **show access-lists** *name* ACL ACL

-

-

-

1.4 access-list remark

ACL
access-list *id* **remark** *text*

ACL
no access-list *id* **remark** *text*

id	ACL IP ACL 1-99 1300-1999 IP ACL 100-199 2000-2699 MAC ACL 700–799 ACL 2700–2899
text	

ACL

14

ACL ACL ACL
ACL ACL

1 102 ACL ACL

```
Ruijie(config)# access-list 102 remark deny-host-10.1.
```

1 **show access-lists** ACL ACL

2 **show access-lists** *id* ACL ACL

3 **show access-lists** *name* ACL ACL

ACL ACL

```
Remark is duplicate
```

-

-

1.5 clear access-list counters

ACL deny

clear access-list counters [*id* | *name*]

id	ACL IP ACL 1-99 1300-1999 IP ACL 100-199 2000-2699 MAC ACL 700–799 ACL 2700–2899
name	ACL

14

Ṕ e N ⊾

```
Ruijie# clear access-list counters
Ruijie# show access-lists
ip access-list standard 1
    10 deny host 50.1.1.2 (10 matches)
    20 permit host 60.1.1.2 (15 matches)
```

-

-

1.6 clear counters access-list

ACL

clear counters access-list [*id* | *name*]

id	ACL IP ACL 1-99 1300-1999 IP ACL 100-199 2000-2699 MAC ACL 700–799 ACL 2700–2899
name	ACL

14

ACL ACL

1 2700 ACL

```
Ruijie #show access-lists 2700
expert access-list extended 2700
    10 permit ip VI= ¾ 192.168.3.55 any ¾ 192.16
    20 deny cp any ny q ¾ ʊɔMp̣ɔlɔs ɔlɔs ηηŢƫƫMʁp̣ᵐγ*l
    30 permit tcp any ny ¾ 192.168.6.9" ny 10 matc
```

```
Ruijie# clear c¾ ᵇ ˢ ˢ
Ruijie #show access-lists 2700
expert access-list extended 2700
```

```
10 permit ip VID 4 host 192.168.3.55 any host 192.
20 deny tcp any any eq login any any
30 permit tcp any any host 192.168.6.9 any
```

-

-

1.7 deny

ACL / ACL

1. IP ACL

IP ACL ACL

[*sn*] **deny** { *source source-wildcard* | **host** *source* | **any** } [**time-range** *tm-range-name*] [**log**]

IP ACL ACL

no { *sn* | { **deny** { *source source-wildcard* | **host** *source* | **any** } [**time-range** *tm-range-name*] [**log**] } }

2. IP ACL

IP ACL ACL

[*sn*] **deny** *protocol source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**]

IP ACL ACL

no { *sn* | { **deny** *protocol source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**] } }

IP

Internet Control Message Protocol (ICMP)

[*sn*] **deny icmp** { *source source-wildcard* | **host** *source* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** { *source source-wildcard* | **host** *Source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*]

[**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **deny udp** { *source source –wildcard* | **host** *source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

3. MAC ACL

MAC ACL ACL

[*sn*] **deny** { **any** | **host** *source-mac-address* } { **any** | **host** *destination-mac-address* } [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]

MAC ACL ACL

no { *sn* | {**deny** { **any** | **host** *source-mac-address* } { **any** | **host** *destination-mac-address*} [*ethernet-type*] [**cos** [*out*] [**inner** *in*]] } }

4. ACL

ACL ACL

[*sn*] **deny**[*protocol* | [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]] **[[VID** [*out*] **[inner** *in*]]] { *source source-wildcard* | **host** *source* | **any**}{**host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

ACL ACL

no { *sn* | { **deny** [*protocol* | [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]] **[** [**VID** [*out*] **[inner** *in*]]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] } }

ethernet-type cos

[*sn*] **deny** { [*ethernet-type*] **[cos** [*out*] **[inner** *in*]] } **[[VID** [*out*] **[inner** *in*]]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**time-range** *time-range-name*]

protocol

[*sn*] **deny protocol [[VID** [*out*] **[inner** *in*]]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destinationdestination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

expert

Internet Control Message Protocol (ICMP)

[*sn*] **deny icmp** [[**VID** [*out*] [**inner** *in*]]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** [[**VID** [*out*] [**inner** *in*]]] { *source source-wildcard* | **host** *Source* | **any** } { **host** *source-mac-address* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **deny udp** [[**VID** [*out*] [**inner** *in*]]] { *source source –wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

Address Resolution Protocol (ARP)

[*sn*] **deny arp** { **vid** *vlan-id* } [*source-mac-address source-wildcard* **| host** *source-mac-address* | **any**] [**host** *destination –mac-address* | **any**] { *sender-ip sender-ip–wildcard* | **host** *sender-ip* | **any** } { *sender-mac sender-mac-wildcard* | **host** *sender-mac* | **any** } { *target-ip target-ip–wildcard* | **host** *target-ip* | **any** }

5. IPv6 ACL

IPv6 ACL ACL

[*sn*] **deny protocol** { *source-ipv6-prefix/prefix-length* | **any** | **host** *source-ipv6-address* } { *destination-ipv6-prefix / prefix-length* | **any** | *hostdestination-ipv6-address* } [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

IPv6 ACL ACL

no {*sn* | { **deny protocol** { *source-ipv6-prefix/prefix-length* | **any** | **host** *source-ipv6-address* } { *destination-ipv6-prefix / prefix-length* | **any** | *hostdestination-ipv6-address* } [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] } }

{ *destination-ipv6-prefix* / *prefix-length* | **host** *destination-ipv6-address* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** { *source-ipv6-prefix / prefix-length* | **host***source-ipv6-address* | **any** } [*operator* **port** [*port*]] { *destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any** } [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [u

```
Ruijie(config-exp-nacl)# deny tcp host
192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)# permit any any any any
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended 2702
10 deny tcp host 192.168.4.12 host 0013.0049.8272 an
20 permit any any any any
Ruijie(config-exp-nacl)#
```

2 IP ACL IP 192.168.4.12 TCP 100
γιγαβιτετηερνετ 1/1

```
Ruijie(config)# ip access-list extended ip-ext-acl
Ruijie(config-ext-nacl)# deny tcp host 192.168.4.12 eq
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended ip-ext-acl
10 deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 0/1)# ip access-group
```

3 MAC ACL MAC 0013.0049.8272 100
γιγαβιτετηερνετ 1/1

```
Ruijie(config)# mac access-list extended mac1
Ruijie(config-mac-nacl)# deny host 0013.0049.8272 any
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended mac1
10 deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# mac access-grou
```

4 IP ACL IP 192.168.4.12 gigabitethernet 1/1

```
Ruijie(config)# ip access-list standard 34
Ruijie(config-ext-nacl)# deny host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list standard 34
10 deny host 192.168.4.12
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# ip access-group
```

5 IPv6 ACL IP 192.168.4.12 gigabitethernet 1/1

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# 11 deny ipv6 host 192.168.4.
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# ipv6 traffic-fi
```

1 **show access-lists** ACL ACL

2 **show access-lists** *id* ACL ACL

3 **show access-lists** *name* ACL ACL

-

-

-

1.8 expert access-group

ACL

expert access-group { *id* | *name* } { **in** | **out** }

ACL

no expert access-group { *id* | *name* } { **in**

ACL ACL

1 accept_00d0f8xxxxxx_only ACL GigaEthernet 0/1

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# expert access-g
```

1 **show expert access-group** ACL

2 **show expert access-group {interface** *interface-name* }

ACL

-

-

-

1.9 expert access-list advanced

ACL ACL

expert access-list advanced *name*

ACL

no expert access-list advanced *name*

name	ACL

ACL

14

ACL ACL80

1 “ adv-acl ” ACL

```
Ruijie(config)# expert access-list advanced adv-acl
Ruijie(config-exp-dacl)# show access-lists
expert access-list advanced adv-acl
```

1 **show access-lisst** ACL ACL

2 **show access-lists** *name* ACL ACL

-

-

-

1.10 expert access-list counter

ACL

expert access-list counter { *id* | *name* }

ACL

no expert access-list counter { *id* | *name* }

id	ACL 2700-2899
name	ACL

ACL

14

ACL

1 “ exp-acl ” ACL

```
Ruijie(config)# expert access-list counter exp-acl
Ruijie(config)# show access-lists
expert access-list extended exp-acl
  10 permit ip VID 4 host 192.168.3.55 any host 192.168
  20 deny tcp any any eq login any any (78 matches)
```

2 “ exp-acl ” ACL

```
Ruijie(config)#no expert access-list counter exp-acl
```

```
Ruijie(config)# show access-lists
expert access-list extended 2700
  10 permit ip VID 4 host 192.168.3.55 any host 192.168
  20 deny tcp any any eq login any any
```

1 **show running** ACL

2 **show access-list** ACL

ACL

2 **show access-list** *id* ACL ACE

3 **show access-list** *name* ACL ACE

-

-

-

1.11 expert access-list extended

ACL

expert access-list extended { *id* | *name* }

ACL

no expert access-list extended { *id* | *name* }

id	ACL 2700-2899
name	ACL

ACL

14

ACL IP ACL IP ACL MAC ACL

ACL

1 “ exp-acl ” ACL

```
Ruijie(config)# expert access-list extended exp-acl
```

```
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended exp-acl
Ruijie(config-exp-nacl)#
```

2 2704 ACL

```
Ruijie(config)# expert access-list extended 2704
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended 2704
Ruijie(config-exp-nacl)#
```

1 **show access-lists** ACL ACL

2 **show access-lists** *id* ACL ACL

3 **show access-lists** *name* ACL ACL

-

-

-

1.12 expert access-list new-fragment-mode

ACL

expert access-list new-fragment-mode { *id* **|** *name* }

no expert access-list new-fragment-mode { *id* **|** *name* }

id	ACL 2700-2899
name	ACL

ACL fragment

ACL fragment ACL
fragment ACL fragment ACL
( ) ACL
ACL

1 ID 2700 ACL

```
Ruijie(config)#expert access-list new-fragment-mode 27
```

show running ACL

-

-

-

1.13 expert access-list resequence

ACL

expert access-list resequence { *id* | *name* } *start-sn inc-sn*

no expert access-list resequence {

1 “ exp-acl ” ACL 21 43

```
Ruijie# show access-lists
expert access-list extended exp-acl
  10 permit ip any any any any
  20 deny ip any any any any
```

```
Ruijie# config
Ruijie(config)# expert access-list resequence exp-acl
Ruijie(config)# exit
Ruijie# show access-lists
expert access-list extended exp-acl
  21 permit ip any any any any
  64 deny ip any any any any
```

1 **show access-lists** ACL

2 **show access-lists** *id* ACL

3 **show access-lists** *name* ACL

-

-

-

1.14 global ip access-group

IP ACL

global ip access-group

IP ACL ACL

14

IP ACL IP ACL

1 ACL fastEthernet0/0

```
Ruijie(config)# interface fastEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#global ip access
```

1 **show running** IP ACL

-

-

-

1.15 ip access-group

ACL

ip access-group { *id* | *name* } { **in** | **out** }

ACL

no ip access-group { *id* | *name* } { **in** | **out** }

id	IP ACL IP ACL 1-199 1300-2699
name	IP ACL IP ACL
in	
out	

ACL

14

IP ACL IP ACL ACL

1 fastEthernet0/0 120 ACL

```
Ruijie(config)# interface fastEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#ip access-group
```

1 **show ip access-group** IP IP ACL

2 **show ip access-group {interface** *interface-name* } IP IP ACL

IP IP ACL IP ACL

deny **permit** **show access-lists** ACL

1 “ std-acl ” IP ACL

```
Ruijie(config)# ip access-list standard std-acl
```

IP ACL IP ACL

no ip access-list counter { *id* | *name* }

id	IP ACL IP ACL 1-99 1300-1999 100-199 2000-2699
name	IP ACL IP ACL

IP ACL IP ACL

14

IP ACL IP ACL

1 IP ACL

```
Ruijie(config)# ip access-list counter std-acl
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
  10 permit 195.168.6.0 0.0.0.255 (999 matches)
  20 deny host 5.5.5.5 time-range tm (2000 matches)
```

2 IP ACL

```
Ruijie(config)#no ip access-list counter std-acl
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
  10 permit 195.168.6.0 0.0.0.255
  20 deny host 5.5.5.5 time-range tm
```

show running ACL

-

-

-

1.18 ip access-list log-update interval

IPv4 ACL

ip access-list log-update interval *time*

no ip access-list log-update interval

time	ACL ACL logging [0, 1440] 5 5 ACL 0 ACL logging

5

14

logging IP IP ACL 5

1 IPv4 ACL 10

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with C
Ruijie(config)# ip access-list log-update interval 10
```

show running IPv4 ACL

-

-

-

1.19 ip access-list new-fragment-mode

IP ACL IP ACL

ip access-list new-fragment-mode { *id* **|** *name* }

IP ACL IP ACL

no ip access-list new-fragment-mode { *id* **|** *name* }

id	IP ACL IP ACL 1-99 1300-1999 100-199 2000-2699
name	IP ACL IP ACL

ACL fragment

ACL fragment

14

ACL fragment ACL

fragment ACL fragment ACL

( ) ACL

ACL

1 ID 100 ACL

```
Ruijie(config)#ip access-list new-fragment-mode 100
```

show running ACL

-

-

-

1.20 ip access-list resequence

IP ACL IP ACL

ip access-list resequence { *id* | *name* } *start-sn inc-sn*

no ip access-list resequence { *id* | *name* }

id	IP ACL IP ACL 1-99 1300-1999 100-199 2000-2699
name	IP ACL IP ACL ACL
start-sn	1-2147483647
inc-sn	1-2147483647

start-sn 10
inc-sn 10

14

IP ACL IP ACL
ACL

1 1 ACL 21 43

```
Ruijie# show access-lists
ip access-list standard 1
10 permit host 192.168.4.12
20 deny any any
```

```
Ruijie# config
Ruijie(config)# ip access-list resequence 1 21 43
Ruijie(config)# exit
Ruijie# show access-lists
ip access-list standard 1
21 permit host 192.168.4.12
64 deny any any
```

1 **show access-lists** ACL
2 **show access-lists** *id* ACL
3 **show access-lists** *name* ACL

-

-

-

1.21 ipv6 access-list

IPv6 ACL

ipv6 access-list *name*

ACL

no ipv6 access-list *name*

name	IPv6 ACL

IPv6 ACL

14

IPv6 IPv6 ACL IPv6 ACL

1 “ v6-acl ” IPv6 ACL

```
Ruijie(config)# ipv6 access-list v6-acl
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list v6-acl
Ruijie(config-ipv6-nacl)#
```

1 **show access-lists** ACL IPv6 ACL

2 **show access-lists** *name* ACL IPv6 ACL

-

-

-

1.22 ipv6 access-list counter

IPv6 ACL

ipv6 access-list counter *name*

ACL

no ipv6 access-list counter*name*

name	IPv6 ACL

IPv6 ACL

14

IPv6 ACL IPv6 ACL IPv6

1 IPv6 ACL

no ipv6 access-list resequence *name*

name	IPv6 ACL
start-sn	1-2147483647
inc-sn	1-2147483647

start-sn 10
inc-sn 10

14

IPV6 ACL
ACL

1 “ v6-acl ” IPv6 ACL 21 43

```
Ruijie# show access-lists
ipv6 access-list v6-acl
  10 permit ipv6 any any
  20 deny ipv6 any any
```

```
Ruijie# config
Ruijie(config)# ipv6 access-list resequence v6-acl 21 4
Ruijie(config)# exit
Ruijie# show access-lists
ipv6 access-list v6-acl
  21 permit ipv6 any any
  64 deny ipv6 any any
```

1 **show access-lists** ACL
2 **show access-lists** *name* ACL

-

-

-

1.25 ipv6 traffic-filter

IPv6 ACL

ipv6 traffic-filter *name* { **in** | **out** }

IPv6 ACL

no ipv6 traffic-filter *name* { **in** | **out** }

name	IPv6 ACL
in	
out	

IPv6 ACL

14

IPv6 ACL ACL IPv6

1 access-list v6-acl Gigabit 0/1

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 traffic-fi
```

1 **show ipv6 traffic-filter** IPv6 ACL

2 **show ipv6 traffic-filter {interface } {***interface-name* | *vni}* IPv6 ACL

-

-

-

1.26 list-remark

ACL

list-remark *text*

ACL

no list-remark

text	

ACL

ACL

14

ACL ACL

access-list list-remark ACL

1 102 IP ACL “ this acl is to filter the host 192.168.4.12 ”

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to fi
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#
```

1 **show access-lists** ACL ACL

2 **show access-lists** *id* ACL ACL

3 **show access-lists** *name* ACL ACL

-

-

-

1.27 mac access-group

MAC ACL

mac access-group { *id* | *name* } { **in** | **out** }

MAC ACL

no mac access-group { *id* | *name* } { **in** | **out** }

id	MAC ACL

MAC ACL

no mac access-list counter { *id* | *name* }

id	MAC ACL 700-799
name	MAC ACL

MAC ACL

14

MAC ACL MAC ACL

1 “ mac-acl ” MAC ACL

```
Ruijie(config)# mac access-list counter mac-acl
Ruijie(config)# show access-lists
mac access-list extended mac-acl
  10 permit host 0023.56ac.8965 any (170 matches)
  20 deny any any etype-any cos 6 (239 matches)
```

2 “ mac-acl ” MAC ACL

```
Ruijie(config)#no mac access-list counter mac-acl
Ruijie(config)# show access-lists
mac access-list extended mac-acl
  10 permit host 0023.56ac.8965 any
  20 deny any any etype-any cos 6
```

show running MAC ACL

-

-

-

1.29 mac access-list extended

MAC ACL ACL

mac access-list extended { *id* | *name* }

MAC ACL

no mac access-list extended { *id* | *name* }

id	MAC ACL 700-799
name	MAC ACL

MAC ACL

14

MAC ACL MAC ACL

1 “ mac-acl ” MAC ACL

```
Ruijie(config)# mac access-list extended mac-acl
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended mac-acl
```

2 704 MAC ACL

```
Ruijie(config)# mac access-list extended 704
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended 704
```

1 **show access-lists** ACL

2 **show access-lists** *id* ACL

3 **show access-lists** *name* ACL

-

-

-

1.30 mac access-list resequence

MAC ACL

mac access-list resequence { *id* | *name* } *start-sn inc-sn*

no mac access-list resequence { *id* | *name* }

id	MAC ACL 700-799
name	MAC ACL
start-sn	1-2147483647
inc-sn	1-2147483647

start-sn 10

inc-sn 10

14

MAC ACL

ACL

1 “ mac-acl ” MAC ACL 21 43

```
Ruijie# show access-lists tM
mac access-list extended mac-acl
  10 permit any any etype-any
  20 deny any any etype-any
```

```
Ruijie# config
Ruijie(config)# mac access-list resequence exp-acl 21
```

2 **show access-lists** *id* ACL

3 **show access-lists** *name* ACL

-

-

-

1.31 permit

ACL / ACL

6. IP ACL

IP ACL ACL

[*sn*] **permit** { *source source-wildcard* | **host** *source* | **any** } [**time-range** *tm-range-name*] [**log**]

IP ACL ACL

no { *sn* | { **permit** { *source source-wildcard* | **host** *source* | **any** } [**time-range** *tm-range-name*] [**log**] } }

7. IP ACL

IP ACL ACL

[*sn*] **permit protocol** *source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**]

IP ACL ACL

no { *sn* | { **permit protocol** *source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**log**] } }

IP

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** { *source source-wildcard* | **host** *source* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** { *source source-wildcard* | **host** *Source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag* | **established**]

User Datagram Protocol (UDP)

[*sn*] **permit udp** { *source source –wildcard* | **host** *source* | **any** } [*operator* **port** [*port*]] { *destination destination-wildcard* | **host** *destination* | **any** } [**operator port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

8. MAC ACL

MAC ACL ACL

[*sn*] **permit** { **any** | **host** *source-mac-address* | *source-mac-address mask*} { **any** | **host** *destination-mac-address* | *destination -mac-address mask* } [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]

MAC ACL ACL

no { *sn* | { **permit** { **any** | **host** *source-mac-address* | *source-mac-address mask*} { **any** | **host** *destination-mac-address* | *destination -mac-address mask* } [*ethernet-type*] [**cos** [*out*] [**inner** *in*]] } }

9. ACL

ACL ACL

[*sn*] **permit** [**protocol** | [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]] **[VID [** *out* **] [inner** *in* **]] { *source source-wildcard* | host** *source* **| any } { host** *source*-mac-*address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*]

ACL ACL

no { *sn* | { **permit** [**protocol** | [*ethernet-type*] [**cos** [*out*] [**inner** *in*]]] **[VID [** *out* **] [inner** *in* **]] { *source source-wildcard* | host** *source* **| any } { host** *source*-mac-*address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**precedence** *precedence*] [**tos** *tos*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] } }

Ethernet-type cos

[*sn*] **permit** { *ethernet-type*| **cos** [*out*] [**inner** *in*] } [**VID** [*out*] [**inner** *in*]] { *source source-wildcard* | **host** *source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host** *destination-mac-address* | **any** } [**time-range** *time-range-name*]

Protocol

[*sn*] **permit protocol** [**VID** [*out*] [**inner** *in*] { *source source-wildcard* | **host** *Source* | **any** } { **host** *source-mac-address* | **any** } { *destination destination-wildcard* | **host** *destination* | **any** } { **host**

IPv6 ACL ACL

no { *sn* | { **permit protocol** { *source-ipv6-prefix* / *prefix-length* | **any** | **host** *source-ipv6-address*} { *destination-ipv6-prefix* / *prefix-length* | **any**| *hostdestination-ipv6-address* } [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragment**] [**range** *lower upper*] [**time-range** *time-range-name*] } }

IPv6

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** { *source-ipv6-prefix* / *prefix-length* | **any** *source-ipv6-address* | **host**} { *destin4*

hex-mask	16 ACL
offset	ACL

ACL

ACL

14

ACL ACL

1 Expert Extended ACL ACL IP 192.168.4.12
MAC 001300498272 TCP

```
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# permit tcp host 192.168.4.1
Ruijie(config-exp-nacl)# deny any any any any
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended exp-acl
10 permit tcp host 192.168.4.12 host 0013.0049.8272
20 deny any any any any
Ruijie(config-exp-nacl)#
```

2 IP ACL IP 192.168.4.12 TCP 100
gigabitethernet 1/1

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# permit tcp host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
10 permit tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# ip access-group
```

3 MAC ACL MAC 0013.0049.8272 100
gigabitethernet 1/1

```
Ruijie(config)# mac access-list extended 702
Ruijie(config-mac-nacl)# permit host 0013.0049.8272 an
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended
10 permit host 0013.0049.8272 any aarp702
Ruijie(config-mac-nacl)# exit
```

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# mac access-grou
```

4 ip ACL IP 192.168.4.12 1

```
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# permit host 192.168.4.12
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
10 permit host 192.168.4.12
Ruijie(config-std-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# ip access-group
```

5 IPv6 ACL IP 192.168.4.12 gigabitethernet 1/1

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# ipv6 traffic-fi
```

6 ACL IP 192.168.4.12 gigabitethernet 1/1

```
Ruijie(config)# expert access-list advanced adv-acl
Ruijie(config-exp-dacl)# permit a0c8040c ffffffff 38
Ruijie(config-exp-dacl)# show access-lists
expert access-list advanced adv-acl
 10 permit a0c8040c ffffffff 38
Ruijie(config-exp-dacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# expert access-group adv-acl in
```

1 **show access-lists** ACL ACL

2 **show access-lists** *id* ACL ACL

3 **show access-lists** *name* ACL ACL

-

1.33 remark

ACL ACE

remark *text*

ACE

no remark *text*

1.34 security access-group

security access-group { *id* | *name* }

no security access-group

id	ACL IP ACL 1-99 1300-1999 IP ACL 100-199 2000-2699 MAC ACL 700–799 ACL 2700–2899
name	ACL

14

802.1x web

1 GigaEthernet 1/1 ACL 1

```
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# security access
```

show running

-

-

-

1.35 security global access-group

security global access-group { *id* | *name* }

no security global access-group

id	ACL IP ACL 1-99 1300-1999 IP ACL 100-199 2000-2699 MAC ACL 700–799 ACL 2700–2899
name	ACL

14

14

-

-

1.38 show access-lists

ACL ACL

show access-lists [*id* | *name*] [**summary**]

id	ACL
name	ACL
summary	ACL

14

ACL ACL ACL

1 “ n_acl ” ACL

```
Ruijie# show access-lists n_acl
ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
```

2 ACL

```
Ruijie# show access-lists
ip access-list standard n_acl
ip access-list extended 101
  permit icmp host 192.168.1.1 any log (1080 matches)
   permit tcp host 1.1.1.1 any established
   deny ip any any (80021 matches)
mac access-list extended mac-acl
expert access-list extended exp-acl
ipv6 access-list extended v6-acl
  petmit ipv6 ::192.168.4.12 any (100 matches)
  deny any any (9 matches)
```

-

-

1.39 show expert access-group

ACL

show expert access-group [**interface** *interface-name*]

interface *Interface-name*	

14

ACL ACL

1 GigabitEthernet 0/2 ACL

```
Ruijie# show expert access-group interface gigabitethe
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

-

-

1.40 show ip access-group

IP IP ACL

show ip access-group [**interface** *interface-name*]

interface *Interface-name*	

14

IP IP ACL IP IP ACL

1 GigabitEthernet 0/1 IP IP ACL

```
Ruijie# show ip access-group0/1interface gigabitethernet
ip access-group aaa in
Applied On interface GigabitEthernet 0/1.
```

-

-

1.41 show ipv6 traffic-filter

IPv6 ACL

show ipv6

interface *Interface-name*	

14

MAC ACL MAC ACL

1 GigabitEthernet 0/3 MAC ACL

```
Ruijie# show mac access-group interface gigabitetherne
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

-

-

1.43 show redirect interface

ACL

show redirect [**interface** *interface-name*]

interface *Interface-name*	

14

ACL ACL

1 GigabitEthernet 0/3 ACL

```
Ruijie #show redirect interface gigabitEthernet 0/3
acl redirect configuration on interface gigabitEtherne
redirect destination interface gigabitEthernet 0/3 acl
```

-

-

1.44 svi router-acls enable

SVI ACL

svi router-acls enable

no svi router-acls enable

-	-

SVI ACL

14

SVI ACL SVI ACL
SVI ACL

1 SVI ACL

```
Ruijie(config)# svi router-acls enable
```

show running SVI ACL

-

-

-

2 QOS

2.1 class

class *calss-map-name*

no class *calss-map-name*

calss-map-name	

14

-

1 cmap1 DSCP 5

2.2 class-map

class-map *calss-map-name*

no class-map *calss-map-name*

default class-map *calss-map-name*

calss-map-name	31

14

-

1 MAC ACL, me

```
Ruijie(config)# mac access-list extended me
Ruijie(config-ext-macl)# permit host 1111.2222.3333 an
Ruijie(config-ext-macl)# exit
```

2 cm_acl ACL me

```
Ruijie(config)# class-map cm_acl
Ruijie(config-cmap)# match access-group me
Ruijie(config-cmap)# exit
```

3 cm_dscp DSCP 8 16 24

```
Ruijie(config)# class-map cm_dscp
Ruijie(config-cmap)# match ip dscp 8 16 24
Ruijie(config-cmap)# exit
```

1 **show class-map** [*class-map-name*]

```
-
```

-

-

2.3 drr-queue bandwidth

DRR

drr-queue bandwidth *weight1...weight8*

DRR

no drr-queue bandwidth

DRR

default drr-queue bandwidth

weight1...weight8	8 1:1:1:1:1:1:1:1 SP 0~15 1~15

1:1:1:1:1:1:1:1

14

1 4

2.4 match

match { **access-group** *access_list* | **ip** { **dscp** *dscp-vlaue-list* | **precedence** *pre-vlaue-list* } }

no match { **access-group** *access_list* | **ip** { **dscp** *dscp-vlaue-list* | **precedence** *pre-vlaue-list* } }

access-group *access_list*	ACL *access_list* ACL ACL
ip dscp *dscp-vlaue-list*	DSCP DSCP *dscp-value* 0~63
ip precedence *pre-vlaue-list*	IP PRE IP PRE *pre-vlaue* 0~7

14

-

1 cmap1 DSCP 20 22 24 30

```
Ruijie(config)# class-map cmap1
Ruijie(config-cmap)# match ip dscp 20 22 24 30
```

1 **show class-map** [*class-map-name*]

dscp1...dscp8	CoS DSCP 0~63 CoS 0~7 *dscp1...dscp8* 0 8 16 24 32 40 48 56

CoS 0 1 2 3 4 5 6 7 *dscp1...dscp8* 0 8 16 24 32 40 48 56

14

-

1 CoS DSCP 8 10 16 18 24 26 32 34

```
Ruijie(config)# mls qos map cos-dscp 8 10 16 18 24 26
```

1 **show mls qos maps cos-dscp** CoS-DSCP

-

-

-

2.7 mls qos map dscp-cos

DSCP CoS

mls qos map dscp-cos *dscp-list* **to** *cos*

DSCP-CoS

no mls qos map dscp-cos

DSCP-CoS

default mls qos map dscp-cos

dscp-list	CoS DSCP 0~63
cos	DSCP CoS 0 7

Ø ō ´ ك ̣Ḥ

56~63 CoS 7

14

-

1 IP-PRE DSCP 8 10 16 18 24 26 32 34

```
Ruijie(config)# mls qos map ip-precedence-dscp 8 10 16
```

1 **show mls qos maps ip-prec-dscp** IP-PRE-DSCP

-

-

-

2.9 mls qos scheduler

mls qos scheduler { **sp** | **rr** | **wrr** | **drr** | **wfq** }

no mls qos scheduler

default mls qos scheduler

sp	
rr	
wrr	
drr	
wfq	

WRR

14

-

1

```
Ruijie(config)# mls qos scheduler sp
```

1 **show mls qos scheduler**

-

-

-

2.10 mls qos trust

mls qos trust { **cos** | **dscp** | **ip-precedence** }

no mls qos trust

default mls qos trust

cos	CoS
dscp	DSCP
ip-precedence	IP-PRE

14

-

1 , CoS

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# mls qos trust c
```

1 **show mls qos interface** *interface-id*

-

-

-

2.11 police

police *rate-bps burst-byte* [**exceed-action** { **drop** | **dscp** *new-dscp* | **cos** *new-cos* [**none-tos**] }]

no police

rate-bps	(KBits)
burst-byte	(KBytes)
drop	

dscp -

-

-

2.12 policy-map

policy-map *policy-map-name*

no policy-map *policy-map-name*

default policy-map *policy-map-name*

policy-map-name	31

14

-

1 po cmap1

```
Ruijie(config)# policy-map po
Ruijie(config-pmap)# class cmap1
```

2 10M 256k

```
Ruijie(config-pmap-c)# police 10240 256 exceed-action
```

1 **show policy-map** [*policy-map-name* [**class** *class-map-name*]]

-

-

CoS

priority-queue cos-map *qid cos0* [*cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7*]]]]]]]

CoS

no priority-queue cos-map

CoS

default priority-queue cos-map

qid	CoS 1~8

cos0 ~ cos7 CoS 0~7

default qos queue *queue-id* **bandwidth** { **minimum** | **maximum** }

queue-id	id 1~8
bandwidth { **minimum**	**maximum** } *bandwidth*	

14

-

1 **show qos bandwidth** [**interfaces** *interface-id*]

-

-

-

2.16 rate-limit

rate-limit { **input | output** } *bps burst-size*

no rate-limit { **input | output** }

default rate-limit { **input | output** }

input	

output	
bps	(KBits)
burst-size	(Kbytes)

14

-

1

```
Ruijie(config)# interface gigabitethernet 1/3
```

2 10M 256K

```
Ruijie(config-if-GigabitEthernet 1/3)# rate-limit inpu
```

1 **show mls qos rate-limit** [**interface** *interface-*

policy-map-name	

14

-

1 po input

cos *new-cos*	CoS	new-cos	0~7
vid *new-vid*	VLAN ID	new-vid	1-4094

14

-

1 pmap1 cmap1

```
Ruijie(config)# policy-map pmap1
Ruijie(config-pmap)# class cmap1
```

2 CoS 3

```
Ruijie(config-pmap-c)# set cos 3
```

1 **show policy-map**[*policy-map-name* [**class** *class-map-name*]]

-

-

-

2.19 show class-map

show class-map [*class-map-name*]

class-map-name	

14

-

1

```
Ruijie# show class-map

 Class Map cmap1
   Match ip dscp 20 40
 Class Map cmap2
   Match access-group 110
```

cos-dscp	CoS-DSCP
dscp-cos	DSCP-CoS
ip-prec-dscp	IP-PRE-DSCP

14

-

1 CoS-DSCP

```
Ruijie# show mls qos maps cos-dscp
cos  dscp
---  ----
0    0
1    8
2    16
3    24
4    32
5    40
6    48
7    56
```

cos	CoS
dscp	CoS DSCP

2 DSCP-CoS

```
Ruijie# show mls qos maps dscp-cos
dscp  cos     dscp  cos     dscp  cos     dscp  cos
----  ---     ----  ---     ----  ---     ----  ---
  0    0        1    0        2    0        3    0
  4    0        5    0        6    0        7    0
  8    1        9    1       10    1       11    1
 12    1       13    1       14    1       15    1
 16    2       17    2       18    2       19    2
 20    2       21    2       22    2       23    2
 24    3       25    3       26    3       27    3
 28    3       29    3       30    3       31    3
 32    4       33    4       34    4       35    4
```

```
36      4       37      4       38      4       39      4
40      5       41      5       42      5       43      5
44      5       45      5       46      5       47      5
48      6       49      6       50      6       51      6
52      6       53      6       54      6       55      6
56      7       57      7       58      7       59      7
60      7       61      7       62      7       63      7
```

dscp	DSCP
cos	DSCP CoS

3 IP-PRE-DSCP

```
Ruijie# show mls qos maps ip-prec-dscp
ip-precedence  dscp
-------------  ----
               0  0
               1  8
               2  16
               3  24
               4  32
               5  40
               6  48
               7  56
```

ip-precedence	IP PRE
dscp	IP PRE DSCP

-

-

2.22 show mls qos queueing

CoS

show mls qos queueing

-	-

14

-

1 CoS

```
Ruijie# show mls qos queueing
Cos-queue map:
cos qid
--- ---
0   1
1   2
2   3
3   4
4   5
5   6
6   7
7   8

wrr bandwidth weights:
qid weights
--- -------
1   1
2   2
3   3
4   4
5   5
6   6
7   7
8   8

drr bandwidth weights:
qid weights
--- -------
1   3
2   3
3   3
```

```
5       3
6       3
7       3
8       3

w f q   b a n d w i d t h   w e i g h t s :
q i d   w e i g h t s
- - -   - - - - - - -
1       3
2       4
3       5
4       6
5       7
6       8
7       9
8       1 0
```

Cos-queue map	CoS
wrr bandwidth weights	WRR
drr bandwidth weights	DRR
wfq bandwidth weights	WFQ
cos	CoS
qid	
weights	

-

-

2.23 show mls qos rate-limit

show mls qos rate-limit [**interface** *interface-id*]

interface *interface-id*	

14

-

```
Global Multi-Layer Switching scheduling
 Weighted Round Robin
```

Weighted Round Robin	WRR SP Strict Priority RR Round Robin DRR Deficit Round Robin WFQ Weighted Fair Queue

-

-

2.25 show mls qos virtual-group

show mls qos virtual-group [*virtual-group-number* | **policers**]

virtual-group-number	1~128
policers	

14

-

1

```
Ruijie# show mls qos virtual-group policers
Virtual-group: 1
Attached input policy-map: pmap1
Virtual-group: 20
Attached output policy-map: pmap2
```

Virtual-group	

Attached input policy-map	
Attached output policy-map	

2 pmap1 cmap1

```
Ruijie# show policy-map pmap1 class cmap1

      Class cmap1
         set ip dscp 16
```

-

-

2.27 show qos bandwidth

show qos bandwidth [**interfaces** *interface-id*]

interfaces *interface-id*

14

-

1 gigabitEthernet 0/1

```
Ruijie# show qos bandwidth interface gigabitEthernet 0

 Interface: GigabitEthernet 0/1
  ------------------------------------------------------------
  uc-queue-id  |  minimum-bandwidth  |  maximum-bandwidth
  -----------     -----------------     -----------------
                1                5120                10240
                2                   0                    0
                3                   0                    0
                4                   0                    0
                5                   0                    0
                6                   0                    0
```

```
                7                          0                          0
                8                          0                          0
 ---------------------------------------------------------------------
 Total ucast-queue minimum-bandwidth:                          5120
 Total ucast-queue maximum-bandwidth:                         10240

Interface: GigabitEthernet 0/1
 ---------------------------------------------------------------------
 mc-queue-id | minimum-bandwidth | maximum-bandwidth
 ------------   -------------------   ---------------------
                1                       1024                       5120
                2                          0                          0
                3                          0                          0
                4                          0                       2048
 ---------------------------------------------------------------------
 Total mcast-queue minimum-bandwidth:                          1024
Total mcast-queue maximum-bandwidth:                          5120
```

Interface	
queue-id	id
uc-queue-id	id
mc-queue-id	id
minimum-bandwidth	Kbps
maximum-bandwidth	Kbps
Total queue minimum-bandwidth Total queue maximum-bandwidth	
Total ucast-queue minimum-bandwidth Total ucast-queue maximum-bandwidth	
Total mcast-queue minimum-bandwidth Total mcast-queue maximum-bandwidth	

-

-

2.28 show virtual-group

show virtual-group [*virtual-group-number* | **summary**]

virtual-group-number	1~128
summary	

14

	0~15 1~15

1:1:1:1:1:1:1:1

14

0 SP

1 WFQ 1:1:2:4:4:4:6:8

```
Ruijie(config)# wfq-queue bandwidth 1 1 2 4 4 4 6 8
```

1 **show mls qos queueing** QOS

-

-

-

2.31 wrr-queue bandwidth

WRR

wrr-queue bandwidth *weight1 ... weight8*

no wrr-queue bandwidth

default wrr-queue bandwidth

	8

weight1...weight8

14

0 SP

1 WRR 1:1:1:1:2:2:4:8

```
Ruijie(config)# wrr-queue bandwidth 1 1 1 1 2 2 4 8
```

1 **show mls qos queueing** QOS

-

-

-

-

1. REUP
2. RLDP
3. DLDP
4. VRRP
5. VRRP Plus
6. IP Event Dampening
7. VSU

1 REUP

1.1 link state group

link state group *num* { **upstream | downstream** }

no link state group

default link state group

-

1.2 link state track

link state track [*num*]

no link state track [*num*]

default link state track [*num*]

num	ID

14

1

```
Ruijie(config)# link state track 1
```

-1 **show link state group**

-

-

-

1.3 mac-address-table move update max-update-rate

MAC

mac-address-table move update max-update-rate *pkts-per-second*

MAC

no mac-address-table move update **max-update-rate**

default mac-address-table move update **max-update-rate**

	MAC

pkts-per-second

-	-

14 5 0 7 D 1 0

14

VLAN MAC MAC VLAN
MAC

1 MAC VLAN

Ruijie(config)# mac-address-table move update receive

1 **show mac-address-table move update** vlan 0690074E0776>]TJTT0 d 0

ℕ Î 1 M א ϣ &
è ᵚ 1-

14

MAC

1 MAC

```
Ruijie(config)# mac-address-table move update transit
```

1 **show mac-address-table move update** MAC

1

-

-

1.7 mac-address-table move update transit vlan

MAC VLAN

mac-address-table move update transit vlan *vid*

MAC VLAN

no mac-address-table move update transit vlan

default mac-address-table move update transit vlan

vid	MAC VLAN ID

VLAN MAC

14

MAC MAC

1 MAC VLAN

```
Ruijie(config-if)# mac-address-table move update trans
```

1 **show mac-address-table move update** MAC

1

2 REUP

```
Please enable REUP first
```

1 REUP

-

1.8 mac-address-table update group

MAC

mac-address-table update group [*group-num*]

MAC

no mac-address-table update group [*group-num*]

almaq-dddableuldat gd

1 MAC

```
Ruijie(config-if)# mac-address-table update group 2
```

1 **show mac-address-table update group** MAC

1 1-8 group 9

% Invalid input detected at '^' marker

2

```
Reup pair only support Layer 2 interface
```

3 AP

```
Reup pair can not configure on a aggregateport member
```

4 ,

1 1-8

2 ap

-

1.9 show interfaces switchport backup

show interfaces [*interface-id*] **switchport backup** [**detail**]

interface-id	ID
detail	

14

1 REUP gi0/1 gi0/2

2 gi0/23 gi0/24

3

```
Ruijie #con
Enter configuration commands, one per line. End with
Ruijie (config)#in
Ruijie (config)#interface gi0/1
```

```
Ruijie (config-if-GigabitEthernet 0/1)#switchport back

uijie #con
Enter configuration commands, one per line.  End with
Ruijie (config)#in
Ruijie (config)#interface gi0/23
Ruijie (config-if-GigabitEthernet 0/1)#switchport back

Ruijie # show interfaces gi0/24 switchport backup
Switch Backup Interface Pairs:
Active Interface   Backup Interface   State
-----------------   -----------------   ------------------
Gi0/23              Gi0/24              Active Up/Backup S

Ruijie # show interfaces gi0/24 switchport backup deta
Switch Backup Interface Pairs:
Active Interface   Backup Interface   State
-----------------   -----------------   ------------------
Gi0/23              Gi0/24              Active Up/Backup S
Interface Pair : Gi0/23, Gi0/24
Preemption Mode : Off
Preemption Delay : 35 seconds
Bandwidth : Gi0/23(1000 Mbits), Gi0/24(1000 Mbits)
Ruijie # show interfaces  switchport backup detail
Switch Backup Interface Pairs:
Active Interface   Backup Interface   State
-----------------   -----------------   ------------------
Gi0/1               Gi0/2               Active Up/Backup Stan
Gi0/23              Gi0/24              Active Up/Backup S

Ruijie # show interfaces switchport backup detail
Switch Backup Interface Pairs:
Active Interface   Backup Interface   State
-----------------   -----------------   ------------------
Gi0/1               Gi0/2               Active Up/Backup Stan
Gi0/23              Gi0/24              Active Up/Backup S

Interface Pair : Gi0/1, Gi0/2
Preemption Mode : Off
Preemption Delay : 35 seconds
Bandwidth : Gi0/1(1000 Mbits), Gi0/2(1000 Mbits)
```

```
Interface Pair : Gi0/23, Gi0/24
Preemption Mode : Off
Preemption Delay : 35 seconds
Bandwidth : Gi0/23(1000 Mbits), Gi0/24(1000 Mbits)
```

-

-

1.10 show link state group

show link state group

-	-

14

1

```
Ruijie # show link state group
Link State Group:1   Status: Enabled, UP
Upstream Interfaces :Gi0/1(Up)
Downstream Interfaces :Gi0/3(Dwn), Gi0/4(Dwn)
Link State Group:2   Status: Disabled, Down
Upstream Interfaces :
Downstream Interfaces :
(Up):Interface up (Dwn):Interface Down (Dis):Interface
```

-

-

1.11 show mac-address-table move update

MAC

show mac-address-table move update

14

REUP MAC

1 MAC

```
Ruijie#show mac-address-table move update
Mac address table move update status:
Transit:disable
Receive:disable
Max-update-rate:150
Receive vlan:1-4094

Pair: A
```


? ŠAM P Hf $@ŠD ˘ŠJ $J wŸ€ À P Ð †I(6“i ‘#xn• ‘#

-

1.12 show mac-address-table update group

show mac-address-table update group [**detail**]

detail	

14

MAC

1

```
Ruijie # configure terminal
Ruijie (config)# mac-address-table move update receive
Ruijie (config)# interface range gigabitEthernet 0/1-2
Ruijie (config-if-range)# mac-address-table update gro
Ruijie (config-if-range)# end
Ruijie # show mac-address-table update group
Mac-address-table Update Group:1
Member:Gi0/1, Gi0/2
Ruijie # show mac-address-table update group detail
Mac-address-table Update Group:1
Received mac-address-table update message count:0
Group member            Receive Count     Last Receive Swi
------------------------------------------------------------
Gi0/1                   0                 Operation not pe
Gi0/2                   0                 Operation not pe
```

-

-

1.13 switchport backup interface

REUP

switchport backup interface *interface-id*

REUP

no switchport backup interface *interface-id*

default switchport backup interface *interface-id*

interface-id	ID

REUP

14

interface-id

fa 0/1 fa 0/2

```
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# switchport backup interface fa 0/2
```

1 **show interface switchport backup [detail]** REUP

1 2

```
Reup pair only support Layer 2 interface(2 is not laye
```

2 2 AP

```
Reup pair can not configure on a aggregateport member(
```

3

1 REUP

2 ap

-

1.14 switchport backup interface preemption delay

REUP

switchport backup interface *interface-id* **preemption delay** *delay-time*

REUP

no switchport backup interface *interface-id* **preemption delay**

default switchport backup interface *interface-id* **preemption delay**

interface-id	ID
delay-time	

35

14

1 fa0/1 fa0/2 40

```
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# switchport backup interface fa 0/2
```

1 **show interface switchport backup [detail]**

1 2

```
Reup pair only support Layer 2 interface(2 is not laye
```

2 2 AP

```
Reup pair can not configure on a aggregatem ' rls
```

1.15 switchport backup interface preemption mode

REUP

switchport backup interface *interface-id* **preemption mode** { **forced** | **bandwidth** | **off** }

REUP

no switchport backup interface *interface-id* **preemption mode**

default switchport backup interface *interface-id* **preemption mode**

interface-id	ID
forced	**forced**
bandwidth	**bandwidth**
off	**off**

` }

-

1.16 switchport backup interface prefer instance

REUP VLAN

switchport backup interface *interface-id* **prefer instance**

2 RLDP

2.1 rldp detect-interval

RLDP

RLDP

rldp detect-max *num*

no rldp detect-max

default rldp detect-max

num	, 2-10 2

2

14

= × + 1

1 5

```
Ruijie(config)# rldp detect-max 5
```

-

-

-

2.3 rldp enable

RLDP

rldp enable

no rldp enable

default rldp enable

14

14

2 3 L2AP L3AP L2AP L3AP

DLDP

```
Ruijie(config)# interface GigabitEthernet 2/0/9
Ruijie(config-if-GigabitEthernet 2/0/9)# rldp port lo
```

-

-

-

2.6 rldp reset

RLDP

rldp reset

-	-

-

2

errdisable recovery <<SWITCH-INTF-SCG.doc>>

RLDP

```
Ruijie#rldp reset
```

-

-

2.7 show rldp

RLDP

show rldp [**interface** *interface-name*]

interface-name	RLDP

-

2

RLDP

1 RLDP

```
Ruijie#show rldp
rldp state              : disable
rldp hello interval:  3
rldp max hello          : 2
rldp local bridge    : 00d0.f822.37da
-------------------------------------
GigabitEthernet 0/1
port state          : normal
neighbor bridge  : 0000.0000.0000
neighbor port      :
unidirection detect information:
        action: shutdown-port
        state  : normal
bidirection detect information:
        action: shutdown-port
        state  : normal
loop detect information:
        action: shutdown-port
        state  : normal
```

2 GigabitEthernet 0/1

```
Ruijie#show rldp interface GigabitEthernet 0/1
port state          : normal
```

3 DLDP

3.1 clear dldp

DLDP up/down

clear dldp [**interface** *interface-name* [*ip-address*]]

interface-name	
ip-address	IP

2

DLDP up/down up/down

IP

up/down IP up/down

1 up/down

```
Ruijie#clear dldp
```

2 interface GigabitEthernet 0/0 up/down

```
Ruijie#clear dldp interface GigabitEthernet 0/0
```

3 interface GigabitEthernet 0/0 10.83.132.1 up/down

```
Ruijie# clear dldp interface GigabitEthernet 0/0 10.8
```

-

-

3.2 dldp

DLDP no IP DLDP

dldp *ip-address* [*next-hop-ip*] [**mac-address** mac-addr] [**interval** *tick* | **retry** *retry-num* | **resume** *resume-num*]

no dldp *ip-address*

ip-address	IP
next-hop-ip	IP
mac-address mac-addr	MAC IP MAC
interval *tick*	5~6000 tick 5 1tick= 10ms
retry *retry-num*	1~3600
resume *resume-num*	DOWN UP DLDP 1~200

tick 10tick 100ms retry-num 3 resume-num 3

14

DLDP

DLDP IP IP ICMP DOWN IP UP

1 10.83.132.10 DLDP

```
Ruijie(config)#int gi0/0
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.8
Ruijie(config-if-GigabitEthernet 0/0)#dldp 10.83.132.
Ruijie(config-if-GigabitEthernet 0/0)#
```

2 10.83.131.10 DLDP

```
Ruijie#config
Ruijie(config)# int gi0/0
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.8
Ruijie(config-if-GigabitEthernet 0/0)#dldp 10.83.131.
```

-

-

3.4 dldp passive

DLDP no

dldp passive

no dldp passive

-	-

14

DLDP ICMP Echo

ICMP Echo

14

```
Gi0/0          Passive    192.168.6.3    192.168.2.2    10
Gi0/1          Passive    192.168.7.3                   10
Gi0/2          Passive    192.168.3.3    192.168.4.2    10
```

2 gigabitEthernet 0/0

```
Ruijie#show dldp intface gigabitEthernet 0/0
Interface    Type              Ip            Next-hop      Interva
---------    -------    ------------    ------------    -------
Gi0/0          Passive    192.168.6.3    192.168.2.2    10
```

3

```
Ruijie#show dldp statistic
Interface    Type              Ip          record-time    Up-coun
---------    -------    ------------    ------------    -------
Gi0/0          Passive    192.168.6.3    2h34m5s          10
Gi0/1          Passive    192.168.3.3    1d2h3m52s        10
```

4 gigabitEthernet 0/0

```
Ruijie#show dldp statistic interface gigabitEthernet
Interface    Type              Ip          record-time    Up-coun
---------    -------    ------------    ------------    -------
Gi0/0          Passive    192.168.6.3    2h34m5s          10
```

record-time	up/down *y***d**h**m**s y d h m s Up-count Down-count up/down
Up-count	up
Down-count	down

-

-

4 VRRP

4.1 show vrrp

IPv4 VRRP IPv6 VRRP

show [**ipv6**] **vrrp** [**brief** | *group*]

ipv6	IPv6 IPv4
brief	VRRP
group	VRRP VRRP

14

VRRP

1 VRRP

```
Ruijie# show vrrp
GigabitEthernet 0/0 - Group 1
  State is Backup
  Virtual IP address is 192.168.201.1 configured
  Virtual MAC address is 0000.5e00.0101
  Advertisement interval is 3 sec
  Preemption is enabled
    min delay is 0 sec
  Priority is 100
  Master Router is 192.168.201.213 , priority is 120
  Master Advertisement interval is 3 sec
  Master Down interval is 10.82 sec
GigabitEthernet 0/0 - Group 2
  State is Master
  Virtual IP address is 192.168.201.2 configured
  Virtual MAC address is 0000.5e00.0102
  Advertisement interval is 3 sec
  Preemption is enabled
    min delay is 0 sec
```

```
  Priority is 120
  Master Router is 192.168.201.217 (local), priority is
  Master Advertisement interval is 3 sec
  Master Down interval is 10.59 sec
Ruijie#show ipv6 vrrp
GigabitEthernet 0/13 - Group 1
   State is Master
   Virtual IPv6 address is as follows:
      FE80::2
      1::2
   Virtual MAC address is 0000.5e00.0201
   Advertisement interval is 1 sec
   Accept_Mode is enabled
   Preemption is enabled
      min delay is 0 sec
   Priority is 100
   Master Router is FE80::1 (local), priority is 100
   Master Advertisement interval is 1 sec
   Master Down interval is 3.60 sec
```

State	
Virtual IP address	IP
Virtual MAC address	MAC
Advertisement interval	VRRP
Preemption	
min delay	
Priority	
Master Router	Master IP
Master Advertisement interval	Master
Master Down interval	Master
Accept_Mode	IPv6 VRRP Accept_Mode

2 VRRP

```
Ruijie# show vrrp brief
Interface    Grp Pri timer   Own Pre State    Master addr
Gi 0/0         1 100   10.82     -   P  Backup   192.168.201.
Gi 0/0         2 120   10.59     -   P  Master   192.168.201.
Ruijie#show ipv6 vrrp brief
Interface        Grp Pri timer Own Pre State Master addr
Gi0/13             1 100 3.60  -   P  Master FE80::1
```

Interface	
Grp	VRRP
Pri	
timer	Master
Own	Owner
Pre	
State	
Master addr	Master IP
	IP

]

6 IPv4

```
  Advertisement interval is 3 sec
  Preemption is enabled
    min delay is 0 sec
  Priority is 100
  Master Router is 192.168.201.213 , priority is 120
  Master Advertisement interval is 3 sec
  Master Down interval is 10.82 sec
GigabitEthernet 0/0 - Group 2
  State is Master
  Virtual IP address is 192.168.201.2 configured
  Virtual MAC address is 0000.5e00.0102
  Advertisement interval is 3 sec
  Preemption is enabled
    min delay is 0 sec
  Priority is 120
  Master Router is 192.168.201.217 (local), priority is
  Master Advertisement interval is 3 sec
  Master Down interval is 10.59 sec
```

State	
Virtual IP address	IP
Virtual MAC address	MAC
Advertisement interval	VRRP
Preemption	
min delay	
Priority	
Master Router	Master IP
Master Advertisement interval	Master
Master Down interval	Master

-

-

4.3 show vrrp packet statistics

VRRP

show vrrp packet statistics [*interface-type interface-number*]

interface-type interface-number	

OutTransmits	VRRP
OutOctets	VRRP

-

-

4.4 vrrp accept_mode

IPv6 VRRP

vrrp ipv6 *group* **accept_mode**

IPv6 VRRP

no vrrp ipv6 *group* **accept_mode**

group	VRRP

Master IPv6 VRRP IPv6 IPv6
NA NS Accept_Mode Owner IPv6 VRRP Master

```
Ruijie(config-if-GigabitEthernet 0/0)# vrrp ipv6 1 acc
```

1 **show ipv6 vrrp** IPv6 VRRP

-

-

-

4.5 vrrp authentication

VRRP

vrrp *group* **authentication** *string*

VRRP

no vrrp *group* **authentication**

group	VRRP
string	VRRP (8)

```
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1
Ruijie(config-if-GigabitEthernet 0/0)# vrrp 1 authenti
```

1 **show vrrp**

1 8

```
VRRP: Maximum authentication string length is 8.
```

1 VRRP VRRP VRRP
Master
2 VRRPv2 VRRP VRRP
VRRP Master

-

4.6 vrrp delay

VRRP
vrrp delay { **minimum** *min-seconds* | **reload** *reload-seconds* }

VRRP
no vrrp delay

minimum *min-seconds*	
reload *reload-seconds*	

VRRP
VRRP
VRRP 0~60

14

VRRP
VRRP VRRP
VRRP VRRP IPv4 VRRP IPv6 VRRP

1 GigabitEthernet 0/0 IPv4 VRRP IPv4 VRRP 1 GigabitEthernet 0/0 VRRP

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#vrrp delay minimu
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1
```

1 **show vrrp** **show ipv6 vrrp** VRRP

-

-

-

4.7 vrrp description

IPv4 VRRP IPv6 VRRP

vrrp [**ipv6**] *group* **description** *text*

no vrrp [**ipv6**] *group* **description**

ipv6	IPv6 IPv4
group	VRRP
text	VRRP

VRRP VRRP VRRP

14

VRRP VRRP 80

1 GigabitEthernet 0/0 VRRP 1 GigabitEthernet 0/0 IPv4 VRRP 1 Building A – Marketing and Administration IPv6 VRRP 1 Building B – Marketing and Administration

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1
Ruijie(config-if-GigabitEthe“Buiet d0i/n0g)#Av-rrMpa1 kdetsingiapnd o
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 fe80
Ruijie(config-if-GigabitEthernetBu0i/l0d)i#nvgr rBp -i pMva6r k1e tdiensgc
Administration”
```

1 **show vrrp** **show ipv6 vrrp** VRRP

1 80

```
% The length of description is up to 80!
```

-

-

4.8 vrrp ip

VRRP IP

vrrp *group* **ip** *ipaddress* [**secondary**]

VRRP IP

no vrrp *group* **ip** *ipaddress* [**secondary**]

group	VRRP
ipaddress	IP
secondary	IP

VRRP

-

4.9 vrrp ipv6

IPv6 VRRP IPv6

vrrp *group* **ipv6** *ipv6-address*

VRRP IPv6

no vrrp *group* **ipv6** *ipv6-address*

group	VRRP
ipv6-address	IPv6

IPv6 VRRP

14

IPv6 VRRP IPv4 VRRP 1 255 VRRP IPv4 VRRP IPv6 VRRP

1 Fa0/0 IPv6 VRRP VRRP 1 IPv6 FE80::1 2001::1

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 200
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001
```

1 **show ipv6 vrrp** IPv6 VRRP

1 no

```
VRRP:there is not ipv6 group 1 on interface vl2.
```

2 IP IPv6

```
VRRP:::1 is not a valid host address.
```

3 IP

```
VRRP: the first address assigned to IPv6 virtual route
```

4 no IP IP

```
VRRP: FE80::66 is not virtual IPv6 address of ipv6 gro
```

5 no

```
VRRP: link-local address must be deleted at last.
```

1 VRRP VRRP IPv6 VRRP
Master

-

4.10 vrrp preempt

IPv4 VRRP IPv6 VRRP
vrrp [**ipv6**] *group* **preempt** [**delay** *seconds*]

VRRP
no vrrp [**ipv6**] *group* **preempt** [**delay**]

ipv6	IPv6 IPv4
group	VRRP
delay *seconds*	Master 0

VRRP
VRRP VRRP

14

VRRP Master VRRP
VRRP Master
VRRP VRRP IP
VRRP VRRP

1 GigabitEthernet 0/0 IPv4 VRRP IPv4 VRRP 1 IPv4 VRRP (200) 15

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 preempt d
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 priority
```

2 GigabitEthernet 0/0 IPv6 VRRP IPv6 VRRP 1 IPv6 VRRP (200) 15

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 200
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 preer
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 prio
```

1 **show vrrp** **show ipv6 vrrp**

-

-

-

4.11 vrrp priority

IPv4 VRRP IPv6 VRRP

vrrp [**ipv6**] *group* **priority** *level*

no vrrp [**ipv6**] *group* **priority**

ipv6	IPv6 IPv4
group	VRRP
level	VRRP

VRRP VRRP VRRP 100

14

VRRP

1 GigabitEthernet 0/0 IPv4 VRRP IPv4 VRRP 1 IPv4 VRRP 1

254

R u i j i e # c o n f i g u r e t e r m i n a l

R u i j i e (c o n f i g) # i n t e r f a c e G ى ض l } γ ʌ ɔ ʒ̈ ʊ ȳ φ D l M m l D א ʊ ɔ

-

-

4.12 vrrp timers advertise

```
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 timers adv
```

2 GigabitEthernet 0/0 IPv6 VRRP IPv6 VRRP 1 IPv6 VRRP
4

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
/!\ switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 200
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 time
```

3 GigabitEthernet 0/0 VRRP 1 IPv4 VRRP 50

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
/!\ switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 10.0.
```

50

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
/!\ switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 250
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2501
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 time
```

show vrrp show ipv6 vrrp VRRP

2 VRRPv3 IPv4 VRRP IPv6 VRRP

40 show vrrp show ipv6 vrrp VRRP 40

VRRPv3 IPv4 VRRP IPv6 VRRP

50-99 show vrrp show ipv6 vrrp VRRP
VRRPv2 IPv4 VRRP 50-99 show vrrp
VRRP 1s

1 VRRPv3 IPv4 VRRP IPv6 VRRP
40

```
VRRP: The Maximum adver time of VRRPv3 Packet is 40s.
```

-

-

4.13 vrrp timers learn

IPv4 VRRP IPv6 VRRP

vrrp [**ipv6**] *group* **timers learn**

IPv4 VRRP IPv6 VRRP

no vrrp [**ipv6**] *group* **timers learn**

```
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 timers le
```

2 GigabitEthernet 0/0 IPv6 VRRP IPv6 VRRP 1 IPv6 VRRP 1

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 200
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 time
```

-

-

1 VRRP VRRP
VRRP Master

-

4.14

[*priority*]

IPv6 VRRP IPv6

vrrp ipv6 *group* **track** { *ipv6-global-address* | *ipv6-linklocal-address interface-type interface-number* } [**interval** *interval-value*] [**timeout** *timeout-value*] [**retry** *retry-value*] [*priority*]

IPv4 VRRP inrrp6 **track 2]**

VRRP

1 GigabitEthernet 0/0 IPv4 VRRP IPv4 VRRP 1 VRRP 1 GigabitEthernet 1/1 GigabitEthernet 1/1 VRRP 30 GigabitEthernet 1/1 VRRP 1

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 priority
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 track Giga
```

2 GigabitEthernet 0/0 IPv6 VRRP IPv6 VRRP 1 VRRP 1 1000::1

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 200
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 prio
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 trac
```

3 GigabitEthernet 0/0 IPv6 VRRP IPv6 VRRP 1 VRRP 1 VLAN 1 FE80::2

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 200
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 prio
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 trac
```

1 GigabitEthernet 0/0 IPv4 VRRP IPv4 VRRP 1 IPv4 VRRP 1 IPv4 VRRP VRRPv3

```
Ruijie#configure terminal
Ruijie(config)#interface GigabitEthernet 0/0
//nb switchport'
Ruijie(config-if-GigabitEthernet 0/0)#no switchport
Ruijie(config-if-GigabitEthernet 0/0)#ip address 10.0.
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 10.0.1
Ruijie(config-if-GigabitEthernet 0/0)# vrrp 1 version
```

1 **show vrrp** IPv4 VRRP

-

-

-

5 VRRP Plus

5.1 show vrrp balance

VRRP Plus

show vrrp balance [**brief** | *group*]

brief	VRRP Plus
group	VRRP Plus

14

VRRP Plus

1 VRRP Plus

5ΚMLHVKRΖUP00RmUuWW*'rED-

type number	

14

-

1 GigabitEthernet 0/0 VRRP Plus

decrement weight: x

state track
decrement weight

-

-

5.4 vrrp forwarder preempt

VRRP Plus

vrrp *group* **forwarder preempt**

no vrrp *group* **forwarder preempt**

group	vrrp	1-255

14

-

1 interface GigabitEthernet 0/0 VRRP Plus

```
Ruijie#config
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ip 192.16
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 b
```

5.5 vrrp load-balancing

VRRP Plus

vrrp *group* **load-balancing**

5.6 vrrp timers redirect

VRRP Plus MAC

vrrp *group* **timers redirect** *redirect timeout*

no vrrp *group* **timers redirect**

group	VRRP Plus 1 255
redirect	300 5 0 3600
timeout	14400 4 *redirect* + 600 64800

VRRP Plus MAC 300 14400

14

VRRP Plus VRRP Plus MAC

1 VRRP Plus 1 MAC

```
Ruijie#config
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)# vrrp 1 ip 192.1
Ruijie(config-if-GigabitEthernet 0/0)# vrrp 1 balance
Ruijie(config-if-GigabitEthernet 0/0)# vrrp 1 timers r
```

1 **show vrrp balance** VRRP Plus

2 **show vrrp balance interface** VRRP Plus

-

-

-

5.7 vrrp weighting

VRRP Plus

vrrp *group* **weighting** *maximum* [**lower** *lower*] [**upper** *upper*]

no vrrp *group* **weighting**

group	VRRP Plus 1 255
maximum	100 2 254
lower *lower*	1 1 *maximum* - 1
upper *upper*	100 *lower* *maximum*

VRRP Plus 100 1 100

14

VRRP Plus VRRP Plus

1 VRRP Plus 1

```
Ruijie#config
Ruijie(config)#interface GigabitEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)# vrrp 1 ip 192.1
Ruijie(config-if-GigabitEthernet 0/0)# vrrp 1 balance
Ruijie(config-if-GigabitEthernet 0/0)# vrrp 1 weightin
```

1 **show vrrp balance** VRRP Plus

2 **show vrrp balance interface** VRRP Plus

-

-

-

6 IP Event Dampening

6.1 dampening

IP Event Dampening

dampening [*half-life-period* [*reuse-threshold suppress-threshold max-suppress* [**restart** [*restart-penalty*]]]]

IP Event Dampening

no dampening

no dampening

default dampening

half-life-period	<1-30> 5s
reuse-threshold	<1-20000> 1000
suppress-threshold	<1-20000> 2000
max-suppress	<1-255> half-life-period 4
restart *restart-penalty*	<1-20000> 2000

IP Event Dampening

2

/ VRRP

DOWN

dampening dampening

clear counters

1 GigabitEthernet0/1 30 1500 10000 100

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# no switchport
Ruijie(config-if-GigabitEthernet 0/1)# dampening 30 15
```

1 **show runuing-config** ip event dampening

2 **show interfaces dampening** dampening

1 max-suppress

```
% Maximum penalty (10) is less than suppress penalty (
```

2

```
% No memory, configure dampening fail!
```

1 max-suppress

2 no switchport dampening

2 routed port switch port

dampening

6.2 show dampening interface

show dampening interface

-	-

2

dampening

1

```
Ruijie# show dampening interface
1 interfaces are configured with dampening.
No interface is being suppressed.
```

-

-

6.3 show interfaces dampening

IP Event Dampening

show interfaces [*interface-id*] **dampening**

7 VSU

7.1 dad relay enable

dad relay enable

no dad relay enable

-	-

14

AP

1. relay

```
Ruijie(config)#interface aggregateport 1
Ruijie(config-if-AggregatePort 1)#dad relay enable
```

2 relay

```
Ruijie(config)#interface aggregateport 1
Ruijie(config-if-AggregatePort 1)#no dad relay enable
Ruijie(config-if-AggregatePort 1)#exit
```

show switch virtual dual-active aggregateport

-

DAD AP

-

7.2 dual-active bfd interface

BFD

dual-active bfd interface *interface-name*

no dual-active bfd interface *interface-name*

interface-name	

-

config-vs-domain

14

BFD

Gi 1/1/1 BFD

```
Ruijie(config)# interface GigabitEthernet 1/1/1
Ruijie(config-if-GigabitEthernet 1/1/1)# no switchpor
Ruijie(config)# interface GigabitEthernet 2/1/1
Ruijie(config-if-GigabitEthernet 2/1/1)# no switchpor
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active bfd interface Gi
Ruijie(config-vs-domain)# dual-active bfd interface Gi
```

show swcshvsl dhl-abtiwdn

-

ő

dual-active detection { **aggregateport | bfd** }

no dual-active detection { **aggregateport | bfd** }

7.4 dual-active exclude interface

VSU recovery **uaal-actvve exclde innterfac**

dual-active interface *interface-name*

no dual-active interface

interface-name	AP

-

config-vs-domain

14

AP

aggregateport 1

```
Ruijie(config)# interface aggregateport 1
Ruijie(config-if-AggregatePort 1)#exit
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active interface aggrega
```

interface-name	GigabitEthernet 0/1 VSU GigabitEthernet 1/0/1
copper	
fiber	

-

config-vsl-port

14

VSU

interface-name VSL

VSL

vsl vsl

40G VSL

NLB VSL

VSL

1 / VSL-AP

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)# port-member interface GigabitE
Ruijie(config-vsl-port)# no port-member interface Gigab
```

2 VSU / VSL-AP

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)# port-member interface GigabitE
Ruijie(config-vsl- port)# no port-member interface Giga
```

show switch virtual link port

-

VSL

NLB VSL

-

7.7 led-blink

/

led-blink {enable | disable} [device *device_id***]**

enable	
disable	
device_id	id

14

/ device

VSU device_id / device

VSU /

30

1 /

```
Ruijie#led-blink enable
Ruijie#led-blink disable
```

2 / VSU

```
Ruijie#led-blink enable device 2
Ruijie#led-blink disable device 2
```

3 / VSU

```
Ruijie#led-blink enable
Ruijie#led-blink disable
```

status

-

-

-

7.8 show switch id

show switch id

-	-

14

-

1

```
Ruijie #show switch id
Switch ID is 2
```

2 VSU

```
Ruijie#show switch id
Switch ID is 1
```

-

-

-

7.9 show switch virtual

ID

show switch virtual

-	-

14

-

1

```
Ruijie# show switch virtual
Current system is running in “STANDALONE” mode.
```

2 VSU

```
Ruijie#show switch virtual
Switch_id       Domain_id       Priority       Status       Ro
-------------------------------------------------------------
1(1)            1(1)            100(100)       OK           ACTI
2(2)            1(1)            100(100)       OK           CAND
3(3)            1(1)            100(100)       OK           STAN
```

Switch_id	
Domain_id	
Priority	
Status	OK Recovery Leave Isolate
Role	ACTIVE STANDBY CANDIDATE
Description	

-

-

7.10 show switch virtual balance

VSU

show switch virtual balance

-	-

14

-

VSU

```
Ruijie#show switch virtual balance
Aggregate port LFF enable
```

Aggregate port LFF	enable ap

-

-

7.11 show switch virtual config

VSU VSU

show switch virtual config

```
switch 1 priority 200
!

vsl-port
port-member interface GigabitEthernet 0/1
port-member interface GigabitEthernet 0/2
```

3 VSU VSU 1

```
Ruijie#show switch virtual config 1
switch_id: 1 (mac: 00d0.f810.1111)
!
switch virtual domain 1
!
switch 1
switch 1 priority 200
switch 1 description switch1
!
vsl-port
port-member interface GigabitEthernet 0/1
port-member interface GigabitEthernet 0/2
!
```

switch_id	id
switch virtual domain	
priority	
description	
vsl-port	VSL

-

-

7.12 show switch virtual dual-active

show switch virtual dual-active { **aggregateport | bfd | summary** }

14

-

1

```
Ruijie# show switch virtual dual-active summary
BFD dual-active detection enabled: Yes
Aggregateport dual-active detection enabled: No
Interfaces excluded from shutdown in recovery mode:
GigabitEthernet 1/0/3
GigabitEthernet 1/0/4
In dual-active recovery mode: No
```

2 BFD

```
Ruijie# show switch virtual dual-active bfd
BFD dual-active detection enabled: Yes
BFD dual-active interface configured:
    GigabitEthernet 1/0/1: UP
    GigabitEthernet 2/0/2: UP
```

3

```
Ruijie# show switch virtual dual-active aggregateport
Aggregateport dual-active detection enabled: Yes
Aggregateport dual-active interface configured:
    AggregatePort 1:   UP

        GigabitEthernet 2/0/1: UP
        GigabitEthernet 1/0/2: UP
        GigabitEthernet 2/0/2: UP
```

-

7.13 show switch virtual link

VSL

show switch virtual link [**port**]

port	VSL

14

“ DOWN ” DISABLE “ UP ” “ OK ” “ DOWN ” LINK DOWN
“ DISABLE ” “ UP ” LINK UP
VSL-AP “ OK ” LINK UP VSL-AP

1 VSL

```
Ruijie# show switch virtual link
VSL-AP    State    Peer-VSL      Rx        Tx          Uptime
--------------------------------------------------------------------
1/1       UP       2/1           100000    100000      1d,4h,29m
2/1       UP       1/1           100000    100000      1d,4h,29m
```

VSL-AP	VSL AP
State	AP DOWN UP
Peer-VSL	VSL AP
Rx	
Tx	
Uptime	AP

2 VSL

```
Ruijie# show switch virtual link port

switch 1:
Port              AP    State    Peer-port              Rx    Tx    U
--------------------------------------------------------------------
```

```
GigabitEthernet 1/0/1   1    OK      GigabitEthernet 2/0/1
GigabitEthernet 1/0/2   2    OK      GigabitEthernet 2/0/2

Switch 2:
Port              AP   State    Peer-port               Rx    Tx   U
------------------------------------------------------------------
GigabitEthernet 2/0/1   1    OK      GigabitEthernet 1/0/1
GigabitEthernet 2/0/2   2    OK      GigabitEthernet 1/0/2
```

Port	
State	
Peer-port	
Rx	
Tx	
Uptime	VSL

-

-

7.14 show switch virtual role

show switch virtual role

-	-

14

show switch virtual

1

```
Ruijie# show switch virtual
Current system is running in “STANDALONE” mode.
```

```
[1](1/2)---(2/1)[2]

Switch[1]: ACTIVE, MAC: 00d0.f822.33d6, Description: Sw
Switch[2]: STANDBY, MAC: 1234.5678.9003, Description: S
```

Ring Topology	
Switch[-]	

-

-

7.16 switch

VSU

switch *switch_id*

no switch

switch_id	VSU

1

config-vs-domain

14

VSU “ slot/port ”

“ switch/slot/port ” “ switch ”

VSU **switch** *sw_id* **renumber** *new_sw_id*

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 2
Ruijie(config-vs-domain)# exit
```

show switch virtual config

1 vsu

```
Ruijie# switch convert mode virtual
```

2 VSU sw_id 2 (sw_id 1)

```
Ruijie# switch convert mode standalone 2
Ruijie# switch convert mode standalone 1
```

-

1.VSU

config.text standalone.text config.text

```
Convert mode will backup and delete config file, and relo
```

config.text

```
Do you want to recover config file from mcbrack+ofcidaencienl)st
[yes/no]:n
```

2. VSU

VSU config.text virtual_switch.text config.text

```
Convert mode will backup and delete config file, and relo
```

config.text

```
Do you want to recover config file from mcbrack+ofcidaencienl)s
[yes/no]:
```

-

-

7.18 switch crc

switch crc errors *error_num* **times** *time_num*

no switch crc

error_num	
time_num	

errors 3 times 10

config-vs-domain

14

-

1 10 5

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
Ruijie(config-vs-domain)#switch crc errors 10 times 5
```

show switch virtual config

-

-

-

7.19 switch description

VSU

switch *switch_id* **description** *dev-name*

config-vs-domain

14

VSU

1

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 description buildin
Ruijie(config-vs-domain)# exit
```

show switch virtual

-

-

-

7.20 switch domain

VSU domain

switch *switch_id* **domain** *new_domain_id*

domain

no switch *switch_id* **domain**

switch_id	VSU
new_domain_id	domain id 1-255

domain id 100

config-vs-domain

14

VSU

14

VSU

sw_id VSU *sw_id*

1 1 200

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 priority 200
Ruijie(config-vs-domain)# exit
```

2 VSU 1 200 2

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 priority 200
Ruijie(config-vs-domain)# no switch 2 priority
Ruijie(config-vs-domain)# exit
```

show switch virtual

-

-

-

7.22 switch renumber

VSU

switch *switch_id* **renumber** *new_sw_id*

no switch *switch_id*

switch_id	VSU
new_sw_id	

-

config-vs-domain

14

VSU

no switch_id

1 VSU

```
Ruijie(config)#
Ruijie(config-v
```

2 VSU

```
Ruijie(config)#
Ruijie(config-v
```

show switch virtual

-

-

-

7.23 switch virtual aggregatep

VSU AP

switch virtual aggregateport-lff

no switch virtual aggregateport

- -

config-vs-domain

14

-

1 VSU AP

```
Ruijie(config)# switch virtual domain 1
                                                    rtual aggregateport
```

show switch virtual balance

-

-

-

7.24 switch virtual domain

VSU VSU config-vs-domain

switch virtual domain *domain_id*

1 1 100

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
```

-

-

-

-

7.25 switch virtual ecmp-lff enable

VSU ecmp

switch virtual ecmp-lff **enable**

no switch virtual ecmp-lff **enable**

-	-

config-vs-domain

14

-

1 VSU ecmp

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch virtual ecmp-lff ena
```

show switch virtual balance

-

-

-

7.26 vsl-port

VSL-PORT

vsl-port

-	-

-

config

14

VSU

1 VSL-AP

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)#
```

2 VSU VSL

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)#
```

-

-

-

-

-

1. SNMP
2. RMON
3. NTP
4. SNTP
5. SPAN-RSPAN
6. ERSPAN
7. sFlow

1 SNMP

1.1 clear snmp locked-ip

ļ ▌ტ SNMP ف ﻥ ɲ -¸ م ª ɑ ڄ ḧ▯◊ IP ş ɣ ˊ ı ت¨EΦ ≠ ₩Ã ᵘ ɲ **clear snmp locked-ip**

clear snmp locked-ip [**ipv4** *ipv4-address* | **ipv6** *ipv6-address*]

v ʺQ ˇ

v ʺQ	ώ ك
ipv4 *ipv4-address*	▌ტ • Ⱥ ≠ ḧ▯◊ IPv4 ş ɣ
ipv6 *ipv6-address*	▌ტ • Ⱥ ≠ ḧ▯◊ IPv6 ş ɣ

ᵘ ɲ₩Ã ≠ ₩Ã

ﻝ ﻥ¸ 14

Æ ŧ ˝YṀ Ĭ ᵘ ɲ ɪ̂ ė Ṫ ▌ტ SNMP ف ﻥ ɲ -¸ م ª ɑ ڄ ḧ▯◊ IP ş ɣ ı ˈ Ꝍ ▌ტQȺ ◊ IP ş ɣ ˊ ıĈ ˈ Ꝍ ▌ტ • Ⱥ ≠ ḧ▯◊ IP ş ɣ

◊ IP ş ɣ ɑ ▌ტ ª ıᵽ ˢ ɪ̂ ℅ ◊ IP ş ɣ▯SNMP Ⱡ ƚ ĭ ă ı w ˈ ꝋ ᵱȦ ő ⁝ ɲ -

ب ﻝ ʒ æ ï ˏ▯˜ æ ▌ტQȺ SNMP ف ﻥ ɲ -¸ م ª ɑ ڄ ḧ▯◊ IP ş ɣ ˊ χ

```
Ruijie# clear snmp locked-ip
```

ώ˜ ʒ Ụ -

Ẉ ᴶ ب ˝

1.2 no snmp-server

ب ﻝ Ṟ Ƣ ⱷ ᵻ SNMP ҂ ת ı ĺ

no snmp-server

v ʺQ ˇ

v ʺQ	ώ ك
-	-

ﻝ ب ﻝ ᵏ ʊ SNMP ҂ ת ı ĺ

ᵘ ɲ₩Ã ☋ ṕ ب ﻝ₩Ã

ƛ ᐟ.	14
Æ ŧ ˝YṀ	SNMP ᖘ ᴨ ı ĺ ᵒ ᴏ ᴨ ѡ ᴨ Ã ᵏ ı ᴰ ᵘ ᵽ ф ᒧ SNMP ᖘ ᴨ v ᵡ ε æ ḅ NMS �Z ᵴ ᵡ ᴨ - ᵉ ᵓ Ա ᴊ ᴗ ᐟ Ḥ ı ᵃ ᵡ ᴴ ᴐ ᵸ ᴗ ᵾ ᵋ Ã SNMP ᖘ ᴨ ᵒ ᴏ ᴨ ı Æ ŧ Ĺ ᵘ ᖘ ᴵ ᙆ ᴎ ᵾ ф ᵻ ᵀ Ḥ ' Y ㊀ Ä õ v SNMP ㊀ ᖘ ᴨ ᵒ ᴏ ᴨ Ĺ ᵘ ᖘ ọ ᵮ ᒪ ᵒ ᴏ ᴨ Ã ᴎ ᵘ ᖘ **enable service snmp-agent** ᵃ ᵡ Ḥ ᵋ Ã ı SNMP ᖘ ᴨ ᵒ ᴏ ᴨ ᵻ ĺ ᵻ ᾣ ı Ꮋ ᴱ ᶅ ᴎ ᴊ ˝ Ꞇ ᵾ ㊀ Ⱥ ı SNMP ᖘ ᴨ ᵒ ᴏ ᴨ Ṅ j ᵸ ᵻ ᾣ Æ ŧ Ĺ ᵘ ᖘ ㊀ ᵃ ᵡ Ḥ ı Ṅ Ḯ Ꝙ Ä õ SNMP ᖘ ᴨ ᵒ ᴏ ᴨ ᵽ ᒧ ε o Æ ŧ **show running-config** ᵘ ᖘ ᵀ ˜ ᵡ Ḥ j ᵸ Ĭ ˜ ᵽ ᒧ ı ᵽ Ä Ã ᵏ SNMP ᖘ ᴨ ᵒ ᴏ ᴨ ᴵ Ꝋ Õ ᵚ ζ ı ă̈ **enable service snmp-agent** ᵘ ᖘ „ j ᵸ Ḯ Ꝙ SNMP ᖘ ᴨ ᵽ ᒧ
ᵽ ᒧ ᶎ æ	1 χ Ḯ Ꝙ SNMP ᖘ ᴨ ᵒ ᴏ ᴨ `Ruijie(config)# no snmp-server`
ᵴ ᶎ Ä |	˝ Ε Φ **no snmp-server** ᵘ ᖘ ı ɬ ᵅ ˝ Ε Φ **show running-config** ᵘ ᖘ ᵀ ˜ ᵽ ᒧ ı ᴵ Ꝋ ᴧ ᵡ ᵑ Ĺ ᵘ ᖘ Ꝋ ᵘ ı Ä õ SNMP ᖘ ᴨ ㊀ ᵽ ᒧ ᵘ ᖘ ᵠ ᵮ ᵠ Ḯ Ꝙ % ᵡ Ḥ Æ ŧ NMS ṇ | Ա ᴊ MIB
ώ ˜ ᶚ Ụ	-
Ẃ ỏ ᵭ ᵴ	-
Ẉ ᴶ ᵽ ˝	-

1.3 show snmp

Ĭ ˜ SNMP ㊀ ᵗ ỗ ᶚ Ụ

show snmp

Æ ɤ ˝YṀ -

ب ɻ ʒ̈ æ 1 χ Ǐ ˜ ĩ SNMP ⃞ ∕ ɯ ʒ Ụ

```
Ruijie# show snmp
Chassis: 60FF60
0 SNMP packets input
          0 Bad SNMP version errors
          0 Unknown community name
          0 Illegal operation for community name supplie
          0 Encoding errors
          0 Number of requested variables
          0 Number of altered variables
          0 Get-request PDUs
          0 Get-next PDUs
          0 Set-request PDUs
0 SNMP packets output
          0 Too big errors (Maximum packet size 1472)
          0 No such name errors
          0 Bad values errors
          0 General errors
          0 Response PDUs
          0 Trap PDUs
SNMP global trap: disabled
SNMP logging: disabled
SNMP agent: enabled
```

È ɟ ɹ ᵩ χ

È ɟ	ب ˝
Chassis	∢ ∕ ẑ ̊ .
SNMP packets input	ɻ ʖ ĭ ă ɯ ̈Ọ χ ɻ ʖ ĭ ă Ở ̈Ọ
Bad SNMP version errors	ɻ ʖ ĭ ă ɯ ̈Ọ χ ν ⃞
Unknown community name	ɻ ʖ ĭ ă ɯ ̈Ọ χ Æ ɤ ˙ ˜ ᵽ ɥ ᵃ ᵩ Φ Ш ⃞ ĭ ă Ở ̈Ọ
Illegal operation for community name supplied	ɻ ʖ ĭ ă ɯ ̈Ọ χ Æ ɤ ᵽ ɥ ᵃ ᵩ Φ ९ ¨Ḥ Ă ⃞ ĭ ă Ở ̈Ọ
Encoding errors	ɻ ʖ ĭ ă ɯ ̈Ọ χ ∢ ⃞
Number of requested variables	ɻ ʖ ĭ ă ɯ ̈Ọ χ ɾ ɒ ⃞ MIB Ḿ ɛ Ở ̈Ọ
Number of altered variables	ɻ ʖ ĭ ă ɯ ̈Ọ χ ϕ ɻ ⃞ MIB Ḿ ɛ Ở ̈Ọ
Get-request PDUs	ɻ ʖ ĭ ă ɯ ̈Ọ χ Get ت ∂ ĭ ă Ở ̈Ọ
Get-next PDUs	ɻ ʖ ĭ ă ɯ ̈Ọ χ Get-next ت ∂ ĭ ă Ở ̈Ọ

Set-request PDUs	ژ ϖ ï ă ɯ̈ Ρ χ Set ت ∂ ï ă Ở̈ Ρ 20(p)16(a)2(ck ɯ ϖ 11(s) ϖ-7(ă output PDUs) ITU-T G.8261 ï ă Ở̈ Ρ

```
Ruijie(coGnifgiagb-iitfE-thernet 1/1)# no snmp trap link-status
```

2χ ĕ Ã ì Æ ʌ ڳ Link Trap ı ĩ

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(coGnifgiagb-iitfE-thernet 1/1)# snmp trap link-status
```

ₛ ⇂ Ä | -

ώ˜ ʒ Ụ -

Ẃ ȣ ჭ ئ -

Ẉ ᴶ ب ˝ -

1.5 snmp-server authentication attempt

ᵘ ɲ ₹ ں SNMP ف ﾉ ɲ -¸ م Ƙ ̋Ω ı Ẋ ̋Y ḧ ف ﾉ ɲ -¸ م ª ʃ ת Ⴓ צ Í ᵘ ɲ **no** ė Ã ▌ ڻ ف ﾉ ɲ -¸ م Ƙ ̋Ω ں ʒ ʰ ʜ ʃ ת Ⴓ צ

snmp-server authentication attempt *times* **exceed** { **lock** | **lock-time** *minutes* | **unlock** }

▌ ڻ ف ﾉ ɲ -¸ م Ƙ ̋Ω ں ʒ ʰ ʜ ʃ ת Ⴓ צ

no snmp-server authentication attempt *times* **exceed** { **lock** | **lock-time** *minutes* | **unlock** }

v ̋Ω ب ˝

v ̋Ω	ώ ك
times	SNMP ɲ -¸ م ώ ᶻ Ƙ ̋Ω ı ¸ ȟ χ 1~10
exceed	Ḿ SNMP ő ⁝ ɲ - ª¸ م Ƙ ̋Ω ʌ ص ώ ᶻ ں Ö ̋A پ ח ʃ ת Ⴓ צ
lock	ˊ ˜ ⇔ Ψ ̃ Ƀ Ĭ ◊ IP ş χ ف Φ ɲ - ı ˊ ˚ ʔ س ª ɒ ı ₓ ļ ר ת ^ ė Ť ف Φ ɻ ڻ
lock-time *minutes*	ˊ ˜ ˃ Ƀ Ĭ ◊ IP ş χ ɟ Ḥ ژ ª ı W ы ɒ Ʊ پ Ȁ ɲ - Ʊ ʌ ı *minutes* ʁ ̃ Ƀ Ĭ ◊ IP ş χ Ḥ ژ ı ¸ ȟ χ 1 Ḱ 65535 ı ɒ Ꮋ χ ˋ ث
unlock	ˊ ˜ Ḿ ɲ -¸ م ɪ Ȁ j Ȳ ں ʃ ת ı ы ɒ Ʊ ʌ ʌ ` ę

ƛ ب ɻ ѫ ɲ ʜ ڎ SNMP ώ ` گ ï ₅ ╝ ı ĩ

ᵘ ɲ ₩ Ã ϡ ṕ ب ɻ ₩ Ã

ƛ ʌ ¸ 14

Æ ɪ ˝ Ỳ Ḿ SNMP ɲ -¸ م ª ı ⍲ ʌ h Ṅ Ʊ ɪ ϡ SNMP ◊ IP ş χ ר ת س ª ɒ Ę ɲ -¸ م Ƙ ̋Ω ʌ ص ں ḧ Ö Ḥ ı ⍲ ʌ Ṅ h ⁞ ̋Ω ф ᵻ ф ɻ ʃ ת ù Ạ Ḿ Ʊ ɵ ª ш ڎ ɲ - Φ ʁ ف Φ ̃ Ƶ ں χ

Ṃ́ ᵠ ⇦ Ψ̂ ฿ ᵑ - ▯◊ IP ᵴ ᵡ ᵢ ᴱ ῶ ᵑ ᵀ ᵔ ᵩ Φ ᵋ Ṫ ᵎ ᵑ ᵅ ᵢ Ỉ ◊ IP ᵴ ᵡ ᵋ ᵎ ᵖ̈ Ạ̈ Ꝉ ᵬ ᵑ - ψ
Ṃ́ ᵠ̂ ฿ ᵎ Ḥ ᵱ ᵯ ᵑ - ▯◊ IP ᵴ ᵡ ᵢ Ẹ ᵩ ᵎ ▯ ฿ Ḥ ᵱ ᵏ Ḥ ᵅ̃ ᵃ̈ ᵑ ᵀ ᵋ Ṫ ᵎ ᵑ ᵅ ᵢ Ỉ ◊ IP ᵴ ᵡ ᵋ ᵎ ᵠ ᵖ̈ Ạ̈ ᵑ - ψ
Ṃ́ ᵎ ᵖ ᵚ̇ ▯◊ IP ᵴ ᵡ ᵢ ᴱ ᵎ ᵻ Ạ̈ ᵖ̈ Ạ̈ Ꝉ ᵬ ᵑ - Ḥ ᵻ Æ ᵻ ᵌ * . ▯community ᵋ ᵢ Ḿ SNMPv1 ⁼ SNMPv2c ᶎ ᵅ̃ username ᵋ ᵢ Ḿ SNMPv3 ᶎ ᵢ ᵭ ᵎ ᵠ ᵖ̈ Ạ̈ ᵑ - ᵅ̆ ᵢ

ᵖ̈ ᵎ ᵷ̈ æ 1 χ ï ᵎ ▯ ̃ æ ᵩ ᵎ SNMP ᵮ ᵑ - ¸ ᵐ Ꝁ ̈Ꝙ ᵚ 4 ᵢ ᵮ ᵑ 4 Ꝁ ᵑ - ¸ ᵐ ᵅ ᵸ ḧ 30ʿ ᵵ:

```
Ruijie(config)# snmp-server authentication attempt 4 e
```

ᵴ ᵴ Ạ | ᵋ À SNMP ᵠ̀ گ ï ᵴ ᵻ ᵢ ᵯ ᵅ ᵢ ᵻ ᵴ ᵴ ᵴ ▯ ᵽ ᵠ ᵃ̆ ᵴ ᵴ ᵴ ▯ ᵻ Ạ ᵉ ᵮ Φ Ꝉ ᵬ ᵑ - ᵢ ᵮ ᵑ - ¸ ᵐ ᵅ ᵸ ḧ Ỉ ◊ IP ᵴ ᵡ ᵢ W Ꝁ Ꝉ ᵬ ᵑ - ▯ Ḥ ö ᵸ õ log Ỉ IP Ṯ ᵻ ᵠ ᵸ ḧ ᵻ show snmp locked-ip ᵎ ᵚ ̃ ̇ ᵸ ḧ ̊ ᵌ ᵴ õ Ỉ IP ᵴ ᵡ

ώ ̃ ᶚ Ụ -

Ẃ ȯ ᵴ ᵴ -

Ẉ ᴶ ᵦ ᵐ -

1.6 snmp-server chassis-id

ᵦ ᵎ ᵻ ᵻ ẑ ̊ .
snmp-server chassis-id *text*

Õ ᵚ ȷ̊ Ë
no snmp-server chassis-id

v ̈Ꝙ ᵦ ᵐ

v ̈Ꝙ	ώ ᶄ
text	ᵻ ᵻ ẑ ̊ ᴺ ▯ ᵃ̆ ᵢ ᵎ ▯ ᵚ ĩ ̈Ꝙ È ᵃ̆ È ᵎ

ȷ̊ ᵦ ᵎ ẑ ̊ ᴺ ȷ̊ Ë ĩ 60FF60

ᵘ ᵑ ₩ Ã ᵌ ṕ ᵦ ᵎ ₩ Ã

ȷ̊ ᵑ̣ 14

Æ ᵻ ̈ Y Ḿ SNMP ᵻ ᵻ ẑ ̊ ᴺ ̃ Æ ᵻ ᵚ ▯ ẑ ̊ ᴺ ᵎ ▯ ᵚ ẍ Ḿ ᵩ ᵎ ᵮ Φ ᵛ̊ ¸ ᵻ ᵻ ẑ ̊ ᴺ ᵎ ▯ ᵚ ص **show snmp** ᵘ ᵑ ▪ ̃

ᵖ̈ ᵎ ᵷ̈ æ 1 χ ᵦ ᵎ SNMP ▯ ᵻ ᵻ ẑ ̊ ᴺ ᵸ 123456

```
Ruijie(config)# snmp-server chassis-id 123456
```

Ẃ ð ج ئ -

Ẉ ᴶ ب ˝ -

1.9 snmp-server enable traps

ᵇ ᴶ Agent ᶻ ʊ ᵇ NMS ʌ ᶜ̈ Trap ╦ Ụ
snmp-server enable traps [*notification-type*]

ᵇ̈ ₿ SNMP ᵇ NMS ᶻ ʊ ʌ ᶜ̈ Trap ╦ Ụ
no snmp-server enable traps

v ˝Ǫ ب ˝

v ˝Ǫ	ὼ ك
notification-type	ᶻ ʊ ʌ ᶜ̈ Trap ˧ ʒ ı ω̃ Ɑ ï ˧ ʒ χ snmp: ᵏ ʊ SNMP ’ ʈ TRAP ڼ˜ ψ bridge: ᵏ ʊ BRIDGE ’ ʈ TRAP ڼ˜ ψ mac-notification: ᵏ ʊ MAC ’ ʈ TRAP ڼ˜ ψ ospf: ᵏ ʊ OSPF ’ ʈ TRAP ڼ˜ ψ vrrp: ᵏ ʊ VRRP ’ ʈ TRAP ڼ˜ ψ web-auth: ᵏ ʊ WEB ȵ - ’ ʈ TRAP ڼ˜

ᵇ ᴶ ᵇ ᴶ ᵇ ï ı ᵇ̈ ₿ SNMP ᵇ NMS ᶻ ʊ ʌ ᶜ̈ Trap ╦ Ụ

ᵘ ȵ ₩ Ã ʒ ṕ ᵇ ᴶ ₩ Ã

ᵇ ᴶ ˧˙ 14

Æ ɤ ˝Y Ṁ Ĺ ᵘ ȵ ọ ء ȵ ʒ ṕ ᵇ ᴶ ᵘ ȵ **snmp-server host** ᴠ Æ ɤ ı ἐ ἵ ʌ ᶜ̈ Trap ╦ Ụ
ḅ ' ≡ ω̃ ˝Y ḧ Trap ˧ ʒ ı ̤ ɣ ὐ ˝A ω̃ Trap ˧ ʒ

ᵇ ᴶ ᶻ æ 1 χ ᵇ ᴶ ᶻ ʊ ʌ ᶜ̈ SNMP ’ ʈ Trap ╦ Ụ

Ẉ ᴶ ب ˝ -

1.10 snmp-server flow-control

ᵢ ᴧ SNMP ᴸ í

snmp-server flow-control pps [*count*]

Ṏ ᵻ SNMP ᴸ í ⌧ ɲ Ö

no snmp-server flow-control pps

v ˝Ǫ ب ˝

v ˝Ǫ	ὼ ᶜ
count	⅛ ˥ ʃ ת ⌧ SNMP ت ∂ ï ᾰ ˝Ǫ ᵢ ᵢ ᵤ ɧ <50-65535>

ᴧ̀ ᵢ ᴧ ᴧ̀ ᵢ ᴧ *count* ⌧ 300

ᵘ ȵ ₩ Ã ʒ ṕ ᵢ ᴧ ₩ Ã

ᴧ̀ ᴧ ̣ 14

Æ ᵢ ˝Y Ṁ -

ᵢ ᴧ ǯ æ 1 χ ᵢ ᴧ ⅛ ˥ ʃ ת 200 ᴬ SNMP ت ∂ ï ᾰ

```
Ruijie(config)# snmp-server flow-control pps 200
```

ᵢ ᵢ Ä | -

ώ˜ ʒ Ụ -

Ẃ ὁ ᵢ ᵢ -

Ẉ ᴶ ب ˝ -

1.11 snmp-server group

ᵢ ᴧ SNMP ᵢ ˝Ä ᴧ

snmp-server group *groupname* { **v1** | **v2c** | **v3** { **auth** | **noauth** | **priv** } } [**read** *readview*] [**write** *writeview*] [**access** { **ipv6** *ipv6-aclname* | *aclnum* | *aclname* }]

ـ ث ٲ ٱ ٲ

no snmp-server group *groupname* { **v1** | **v2c** |

1.13 snmp-server inform

ᴉ ᴉ inform

ᵢ ᵥ ᴧ ᴧ ᴨ ᴧ

no snmp-server location

ᴠ ᴳ̈ ᴗ ᴳ̈

ᴠ ᴳ̈	ὼ ᶜ
text	ὼ ᶜ ᴧ ᴧ ᴢ ᴜ̣ ᴱ̈ ᴵ ᴷ

ȷ̀ ʅ. 14

ώ˜ ʒ Ụ -

Ẃ ȯ ج ئ -

Ẉ ᴶ ب ˝ -

1.17 snmp-server queue-length

ᴉ ᴊ Trap ╦ Ụ ï ă ⌧ ᴗ ˚ ᴑ ỷ
snmp-server queue-length *length*

Õ ᵻ ᴊ̀ Ö
no snmp-server queue-length

ᴠ ˝Ǫ ب ˝

ᴠ ˝Ǫ	ὼ ᵏ
length	ᴗ ˚ ᴑ ỷ ı ᶻ ṇ ʀ 1˙ 1000

ᴊ̀ ᴉ ᴊ 10

ᵘ ᴨ ₩ Ã ᴝ ṕ ᴉ ᴊ ₩ Ã

ᴊ̀ ᴧ ̣ 14

Æ ᴛ ˝Y Ṁ ᴝ ص ذ ˜Ǫ ╦ Ụ ᴗ ˚ ᶻ ṇ ᴾ í ˙ ╦ Ụ ʌ گ ھ ỷ

ᴉ ᴊ ǯ æ 1 χ ᴉ ᴊ Trap ╦ Ụ ᴗ ˚ ᴑ ỷ ᴎ 100

```
Ruijie(config)# snmp-server queue-length 100
```

ᵓ ᴊ Á | -

ώ˜ ʒ Ụ -

Ẃ ȯ ج ئ -

Ẉ ᴶ ب ˝ -

1.18 snmp-server system-shutdown

ᵖ ᵢ ᵹ̌ æ	1 χ ˝Y ḧ ⱬ ᵝ ᵢ Æ 0/1 ⸨⸩ IP ş ᵹ Ă ⱨ ʌ ᶜ̌ Trap ╦ Ụ⸨⸩ ◊ ş ᵹ
	R u i j i e (c o n f i g) # s n m p - s e r v e r t r a p - s o u r c e f a s t e t h e r n e t 0
⁵ ᵣ Ǻ |	-
ώ˜ ʒ Ụ	-
Ẃ ȯ ᵹ ئ	-
Ẉ ᵘ ᵇ ˝	-

1.21 snmp-server trap-timeout

ᵖ ᵢ ʌ ᶜ̌ Trap ╦ Ụ ᵽ ʌ ⸨⸩ ʌ `H`H ᵹ

snmp-server trap-timeout *seconds*

Õ˘ ᵻ ᵢ̌ ᵖ ᵢ

no snmp-server trap-timeout

ⱴ ˝Ǫ ᵇ ˝

ⱴ ˝Ǫ	ὼ ᶜ̌
seconds	ʌ `H`H ᵹ ɪ ᴅ ᵻ ⱨ ᵢ ⱬ ᵽ ɪ ⱬ Ö ᵹ ɧ χ ɟ $ $ O Ú Ó A ɿ

Ẉ ᴶ ب ˝ -

1.22 snmp-server udp-port

˝Y ḧ ì ᾠ SNMP ĭ ᾰ ᵒᵇᵗ ʙ ɲ ᴹ ᴬ ᴺ

snmp-server udp-port *port-num*

Ỡ ᵻ ᴵ̀ ᴶ ᴸ

no snmp-server udp-port

v ˝Ω ب ˝

ˍ ȶ SNMP ɾ Ä

no snmp-server user *username groupname* {**v1** | **v2c** | **v3** }

v ¨Ọ ب ˝

v ¨Ọ	ώ ك
username	ɾ Ä ᵉ
groupname	Ǐ ɾ Ä Ḿ Ẓ ⃞ ɻ ᵉ
v1 | **v2c** | **v3**	¨Y ˝ SNMP v ᴱ ω v3 ˜Ḥ'Y ᵅ ˛ ⃞ Ḡ ϡ v ¨Ọ
encrypted	¨Y ḧ ⃞ ĩ Ḷ ژ ϡ ⃞ Ä Ã ⱡ Ḷ ă ژ ϡ ᵋ ˛ ı Ꝋ ˝ ă ژ ϡ ȶ ˛ ă ژ ϡ ı ˛ ۍ ا ژ ϡ ف ɻ ⃞ 16 ف ¨Ọ È È ɬ ´ ~ ⃞ Ḷ ɪ ├ Ỿ Æ ɾ MD5 ⃞ ɲ - Ḷ ɪ ɕ ỷ ⱡ 16 È ` ı ă SHA ɲ - ʁ ɲ Ḷ ɪ ɕ ỷ ⱡ 20 È ` Ꝋ ƀ Ⱥ È ɬ ´ ~ Ⱥ È ` ɾ Ḷ ´ ~ ⃞ Ḷ ɪ ĸ Ḿ Ậ ˝ Ḥ ω ᷒
auth	¨Y ḧ ĩ ᵋ Æ ɾ ⱬ -
md5	¨Y ḧ Æ ɾ MD5 ɲ - ʁ ɲ **sha** ¨Y ḧ Æ ɾ SHA ɲ - ʁ ɲ
auth-password	ب ɻ ɲ - ʁ ɲ Æ ɾ ⃞ Æ ɲ È ɬ ⱡ ε j ʌ ص 32 Ⱥ È ɬ ζ ɻ ı Ṅ ف Ᵽ Æ ɲ ⱬ ¨Ꝋ ă ̓ Ẓ ⃞ ɲ - Ḷ ɪ
priv	¨Y ḧ ĩ ᵋ Æ ɾ Ȝ Ḷ **des56** ¨Y ˝ Æ ɾ 56 ɥ ⃞ DES ɾ Ḷ ʁ ɲ
priv-password	ⱡ ɾ Ḷ ɾ ⃞ Æ ɲ È ɬ ⱡ ε j ʌ ص 32 Ⱥ È ɬ ζ ɻ ı Ṅ ف Ⱥ Æ ɲ ⱬ ¨Ꝋ ă ̓ Ẓ ⃞ ɾ Ḷ Ḷ ɪ
aclnum	Ⱡ ڈ ˚ ´ ẑ ˚ ᴺ ı ⱨ ʊ ǐ ¨Y ḧ ⃞ Ⱡ ڈ ˚ ´ ı ¨Y ḧ ǐ Ⱡ ڈ MIB ⃞ ipv4 NMS ş ɣ ˛ ḫ
aclname	Ⱡ ڈ ˚ ´ ᵉ Ɬ ı ⱨ ʊ ǐ ¨Y ḧ ⃞ Ⱡ ڈ ˚ ´ ı ¨Y ḧ ǐ Ⱡ ڈ MIB ⃞ ipv4 NMS ş ɣ ˛ ḫ
Ipv6-aclname	ipv6 Ⱡ ڈ ˚ ´ ᵉ Ɬ ı ⱨ ʊ ǐ ¨Y ḧ ⃞ Ⱡ ڈ ˚ ´ ı ¨Y ḧ ǐ Ⱡ ڈ MIB ⃞ ipv6 NMS ş ɣ ˛ ḫ

ɻ ب ɻ ɻ ≡ ω ب ɻ ɾ Ä

ᵘ ɲ ₩ Ã ϡ ṕ ب ɻ ₩ Ã

ɻ ۱ ˙ 14

Æ ɾ ¨Y Ṁ -

ب ɻ ʖ æ 1 χ ب ɻ Ⱥ SNMPv3 ɾ Ä ı Æ ɾ MD5 ɲ - ı ⁼ Æ ɾ DES ɾ Ḷ

```
Ruijie(config)# snmp-server user user-2 mib2user v3 au
```

ₛ ɕ Ä | -

ώ˜ ȝ Ụ -

Ẃ ȸ ȶ ۍ -

Ẉ ᴶ ب ˝ -

1.24 snmp-server view

ᵇ ᴉ SNMP ᵃ ᵍ

snmp-server view *view-name oid-tree* {**include** | **exclude**}

ᵕ ᵇ SNMP ᵃ ᵍ

no snmp-server view *view-name* [*oid-tree*]

v ˝Ω ب ˝

v ˝Ω	ὼ ᶜ
view-name	ᵃ ᵍ ᵉ
oid-tree	ᵃ ᵍ ᵘ ῏ ⃞ MIB Ḿ ᵉ ι ῏ MIB D̯ ‴
include	‰ ˝ ʲ MIB Ḿ ᵉ D̯ ‴ ᵠ ʏ ᵍ ᵖ ᵃ ᵍ ᵒ ᴊ
exclude	‰ ˝ ʲ MIB Ḿ ᵉ D̯ ‴ ᵠ ὴ ᵇ ᵖ ᵃ ᵍ ᵒ ᵘ

ᴉ ᴉ ᴉ ᴉ default ᵃ ᵍ ι ᵇ̈ι ᵖ ᴌ ᵈ ˝A ῶ ⃞ MIB Ḿ ᵉ

ᵘ ᴉ ₩ Ã ᵊ ṕ ᴉ ᴉ ₩ Ã

ᴉ ᴉ ̣ 14

Æ ᵊ ˝Y Ṁ -

ᴉ ᴉ ᵍ̌ æ 1 χ ᴉ ᴉ ᴉ ᵃ ᵍ ι ʏ ὺ ˝A ῶ ⃞ MIB-2 D̯ ‴ ε oid ᵏ 1.3.6.1 ζ

Ruijie(config)# snmp-server view mib2 1.3.6.1 include

ᵉ ᵊ ˝A | -

ώ˜ ʒ Ụ -

Ẃ ᵒ ᵊ ᵍ -

Ẉ ᴶ ب ˝ -

2 RMON

2.1 rmon alarm

ٮ ل RMON ɔ ع ا Ǐ

rmon alarm *number variable interval* {**absolute** | **delta**} **rising-threshold** *value* [*event-number*] **falling-threshold** *value* [*event-number*] [**owner** *ownername*]

ˌ ڻ˝Y ẗ ɔ ع ˊ ˚

no rmon alarm *number*

ν ˝Ϙ ب ˝

ν ˝Ϙ	ώ ك
number	ɔ ع ˊ ˚ ⃞ل Â ᴺ ا ں Ë˳ ɮ χ 1~65535
variable	ɔ ع ψ ˌ ا ѫ 1~255 ₳ È ٤ ⃞È ٤ ا ѧ ا Ẋ ħ Ϙ ` ᵽ OID ⃞ᵽ ʿ † Ã ε† Ã ѫ entry.integer.instance ا ɮ 1.3.6.1.2.1.2.1.10.1 ζ ف Φ ˊ ~
Interval	ـ ¯ ژ ڜ ̀H ژ ا ɒ ɥ ѫ ٧ ا ɲ Ë˳ ɮ ѫ 1 Ќ 2147483647
absolute	ـ ¯ ١ ʒ ѫ ٨ Ḿ Ë ـ ¯ ا o ـ ¯ ̀H ژ ˙ ژ ̀H ´ ì ώ ɲ ψ ˌ ⃞Ë
delta	ـ ¯ ١ ʒ ѫ ψ ק Ë ـ ¯ ا o ـ ¯ ̀H ژ ˙ ژ ̀H ώ ɲ ⃞ï ψ ˌ ɮ ـ ¯ ژ ڜ ɲ ⃞ψ ק Ë
rising-threshold *value*	ֆ ل ـ ¯ ˝Ϙ ˌ ⃞ i ں ν ˝Ϙ *value* ا ɲ Ë˳ ɮ χ -2147483648~+2147483647
event-number	ε ا Ǐ ζ ˙ ژ i ï ں ̀H ن ٨ ’ ʇ ᴺ ѫ *event-number* ⃞ ʇ
falling-threshold *value*	ֆ ل ـ ¯ ˝Ϙ ˌ ⃞ ï ں ν ˝Ϙ *value* ا ɲ Ë˳ ɮ χ -2147483648~+2147483647
owner *ownername*	ε ا Ǐ ζ ֆ ل ˊ ˚ ⃞ ă ă *ownername* ا *ownername* ѫ 1~63 ₳ È ٤ ⃞È ٤ ا ѧ ا ת ʿ ᶻ ṇ ˚

ƛ ـ ل -

ᵘ ɲ ₩ Ã ᴝ ṕ ₩ Ã

ƛ ١ ˌ 14

Æ ŧ ˝Y Ṁ ы ɒ Ḿ Ţ ل ـ ل ⃞ ɔ ع ˊ ˚ ν ˝Ϙ ف Φ Й ώ ا ץ ὺ ɔ ع ψ ˌ ـ ¯ ١ ʒ ˊ ˚ ⃞ ă ă ـ ¯ ژ ڜ ̀H ژ ـ ¯ ˝Ϙ ˌ ⃞ i / ï ں Ë ʒ Ʊ Ḿ Ẓ ⃞ u ٨ ’ ʇ

ـ ل ڎ æ 1 χ ˘ í MIB ψ ˌ ḫ æ ifInNUcastPkts.6 ا ـ ¯ ̀H ژ ژ ڜ ѫ 60 ٧ ا Ẹ ـ ¯ Ë ژ ˙ i ں 20 ă ă ï ں 10 ̀H ʠ u ٨ ’ ʇ 1 ف Φ ’ ʇ ʃ ת

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with C
```

Æ ŕ ˝YṀ j ы ƿ Ḿ Ţ ⅄ ب ⅄ ⸨⸩ ᴗ ᴷ í ´ ´ ° v ˝Ѿ ق Φ Й ώ ψ j ы ƿ ƾ ì Æ ï ¯ ث ˚ ì Æ ï ب ⅄ ⸨⸩ ᴗ ᴷ ⅄ щ ´ °

ب ⅄ ǯ æ 1 ب ⅄ ƾ ⅄ Æ GigabitEthernet 0/1 i Æ ŕ

Æ ĩ ˝YṀ j ы ꝑ Ḿ Ṯ ؇ ﺑ ﺭ /\ щ ˊ ˊ ˚ v ˝Ọ ﻓ Φ Ӣ ῲ ψ j ы ꝑ ꝑ ì ᴱ ï ̤ ڽ ̊ ì ᴱ ï ﺑ ﺭ ﺎ ᴷ /\ щ ˊ ˚

ﺑ ﺭ ꝣ æ 1χ ﺑ ﺭ ꝑ ٩ ᴱ GigabitEthernet 0/1 i Æ ĩ /\ щ ı ĩ́

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with C
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-GigabitEthernet0/1)# rmon collection sta
```

₅ ﺟ Ά | 1χ Æ ĩ **show run** ᵘ ҧ ı ˡ Ꝍ ˜ ᵘ ҧ ﺑ ﺭ ĩ ᵋ ᾰ̈ ı
2χ Æ ĩ **show rmon statistics** ᾰ̃ ᾰ̈ **show rmon** ᵘ ҧ ı ˡ Ꝍ ˜ ˙ /\ щ ˊ ˊ ˚ ℧ ɥ v ˝Ọ ӆ ķ

ώ˜ ʒ Ụ 1χ ̤ ڽ j è ꝑ ﺑ ﺭ ̀H ı ̤ ώ˜ ﺞ ﯼ
2χ Ӣ ῲ Ṯ ؇ ﺑ ﺭ /\ щ ˊ ˚ v ˝Ọ ı ώ˜ ﺞ ﯼ
3χ ﺑ ﺭ ˊ ˚ Ꞻ ˝Ọ Ṯ ؇ ﺕ ˙ i ﺱ j ы ꝑ W ﺑ ﺭ ̀H ı ώ˜ ﺞ ﯼ
4χ ꝑ ˥ ﺕ ӆ è j ᾰ ı ὺ ̀ ï ı ̤ ώ˜ ﺞ ﯼ

Ẃ ŏ ﺞ ﯼ 1χ ﭗ ᴴ ﺑ ﺭ ᾰ̃ ᾰ̈ Ӣ ῲ Ṯ ؇ ﺑ ﺭ /\ щ ˊ ˊ ˚

Ẉ ᴶ ﺏ ˝ -

2.4 rmon event

ﺑ ﺭ RMON ʾ ʈ

rmon event *number* [**log]** [**trap** *community*] [**description** *description-string*] [**owner** *ownername*]

̤ ڽ ˝Y ḧ ʾ ʈ ˊ ˚

no rmon event *number*

v ˝Ọ ﺏ ˝

v ˝Ọ	ῲ ﻙ
number	ʾ ʈ ˊ ؇ Ậ ᴺ ı п Ё̤ ɓ χ 1~65535
log	ε ˡ J̌ ζ ἠ Ő ʾ ʈ ı Ẹ ʾ ʈ ɋ Ꞟ ʌ ̀H ı ؇ /\ h ʟ ẹ ἠ Ő ı ﺴ ꞃ ἠ Ő ʟ ẹ ķ ﯾ ĩ 10ᶂ ı ʌ ﺹ 10ᶂ ̀H h ̤ ڽ ῲ Έ ɵ ˙ ʟ ẹ
trap *community*	ε ˡ J̌ ζ Trap ʾ ʈ ı Ẹ ʾ ʈ ɋ Ꞟ ʌ ̀H ı ؇ /\ h Ꝍ *community* ꭎ ᵽ ɥ ᵉ ʌ ﮒ Trap
description *description-string*	ε ˡ J̌ ζ ф ﺭ ʾ ʈ ῲ ﻙ ʒ Ụ *description-string* ı*description-string* ꭎ 1~127 Ꞻ Ȅ ˧ Ȅ ˧ ꭑ
owner *ownername*	ε ˡ J̌ ζ ф ﺭ ˊ ˚ ̤ ấ ᾰ̈ *ownername* ı *ownername* ꭎ 1~63 Ꞻ Ȅ ˧ Ȅ ˧ ꭑ ı ภ ̒ ᶼ ṇ ̌

ǰ ᵽ ɻ -

ᵘ ɲ ₩ Ã ৯ ṕ ᵽ ɻ ₩ Ã

ǰ ۱ ̣ 14

Æ ŧ ˝ Y Ṁ ы ƿ Ḿ Ţ ɻ ᵽ ɻ ţ ˊ ° ѵ Ѿ ؋ Φ Й ۊ ı ɣ ù ’ ţ ˊ ۱ ʒ ᵽ ɥ ᵉ Ч ¸ ấ ở ۊ ڭ ʒ Ụ Ч ѵ Ѿ

ᵽ ɻ ʖ æ 1 χ ḧ Θ ’ ţ ȣ Ă χ ɾ ẹ ’ ţ ∧ ڜ trap ╦ Ụ ı trap ∧ ڜ ŧ ˙ ȣ ᵽ ɥ ᵉ ₭ public

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with C
Ruijie(config)#rmon event 1 log trap public descriptio
```

ₛ ƶ Ä | 1 χ Æ ŧ **show ru**n ᵘ ɲ ı ˡ Ꙍ ¶ ˜ ᵘ ɲ ᵽ ɻ ĩ ᵋ ă ı

2 χ Æ ŧ **show rmon event** ấ ở **show rmon** ᵘ ɲ ı ˡ Ꙍ ¶ ˜ ˙ ’ ţ ˊ Ꙍ ʒ ғ ł ȣ ţ ɾ ẹ ˊ ˊ ° ȣ ɥ ѵ Ѿ ɲ ķ

ώ ˜ ʒ Ụ 1 χ ¨ ȸ j è ƿ ȣ ᵽ ɻ `H ı ¸ ώ ˜ ҷ ئ

2 χ ᵽ ɻ ˊ ° Ѧ Ѿ Ţ ɻ ڑ ˙ i ں j ы ƿ W ᵽ ɻ `H ı ώ ˜ ҷ ئ

3 χ ƿ ٹ ت ɲ è j ă ı ȣ ù ` ï ı ¸ ώ ˜ ҷ ئ

Ẃ ȸ ҷ ئ -

Ẉ ᴶ ᵽ ˝ -

2.5 show rmon

Ǐ ˜ ˝ A ũ RMON ʒ Ụ

show rmon

v Ѿ ᵽ ˝

v Ѿ	ۊ ڭ
-	-

ᵘ ɲ ₩ Ã ᵋ ₩ Ã

ǰ ۱ ̣ 14

Æ ŧ ˝ Y Ṁ Ǐ ˜ ʒ Ụ ɣ ù ˝ A ũ ȣ ᵑ ȥ ˊ ʒ Ụ ’ ţ ˊ ɜ ’ ţ ɾ ẹ ˊ ʒ Ụ ᴗ ᴷ í ˙ ˊ ɜ ᴗ ᴷ ɾ ẹ ˊ ʒ Ụ ۱ ɯ ˊ ʒ Ụ

ᵽ ɻ ʖ æ R u i j i e # s h o w r m o n

```
ether statistic table:
                    index = 1
                    interface = GigabitEthernet 0/1
                    owner = admin
                    status = 0
                    dropEvents = 61
                    octets = 170647461
                    pkts = 580375
                    broadcastPkts = 2135
                    multiPkts = 3615
                    crcAlignErrors = 0
                    underSizePkts = 0
                    overSizePkts = 0
                    fragments = 0
                    jabbers = 0
                    collisions = 0
                    packets64Octets = 3254668
                    packets65To127Octets = 1833370
                    packets128To255Octets = 2098146
                    packets256To511Octets = 126716
                    packets512To1023Octets = 363621
                    packets1024To1518Octets = 1077865

rmon history control table:
                    index = 1
                    interface = GigabitEthernet 0/1
                    bucketsRequested = 5
                    bucketsGranted = 5
                    interval = 60
                    owner = UserA
                    stats = 1

rmon history table:
                    index = 1
                    sampleIndex = 2485
                    intervalStart = 7d:22h:56m:38s
                    dropEvents = 0
                    octets = 5840
                    pkts = 27
                    broadcastPkts = 0
                    multiPkts = 0
```

2.6 show rmon alarm

Ĭ ˜ ᵓ ᵉ ˊ ʒ Ụ

show rmon alarm

v ˝Ǫ ب ˝

v ˝Ǫ	ὼ ك
-	-

ᵘ ɲ₩Ã ⸗ ₩Ã

ᵢ̀ ᵢ̀ ˌ 14

Æ ɾ ˝YṀ -

ب ᵢ ǯ æ 1χ˙ ˜ ᵓ ᵉ ˊ ʒ Ụ

```
Ruijie#show rmon alarm
rmon alarm table:
                    index: 1
                    interval: 60
                    oid = 1.3.6.1.2.1.2.2.1.12.6
                    sampleType: 2
                    alarmValue: 0
                    startupAlarm: 3
                    risingThreshold: 20
                    fallingThreshold: 10
                    risingEventIndex: 1
                    fallingEventIndex: 1
                    owner: UserA
                    status: 1
```

ώ˜ ʒ Ụ -

Ẉ ᵘ ب ˝ -

2.7 show rmon event

Ĭ ˜ ' ʈ ˊ ʒ Ụ

show rmon event

v ̈Ǫ ب ̈

v ̈Ǫ	ὼ ك
-	-

ᵘ ɲ₩Ã ⸗ ₩Ã

ɹ̂ ˥˛ 14

Æ ɾ ̈YṀ -

ب ɹ ǯ æ 1χ˙ ˜ ’ ɽ ˊ ʒ Ụ

```
Ruijie#show rmon event
rmon event table:
                    index = 1
                    description = ifInNUcastPkts is abn
                    type = 4
                    community = public
                    lastTimeSent = 0d:0h:0m:0s
                    owner =UserA
                    status = 1

rmon log table:
                    eventIndex = 1
                    index = 1
                    logTime = 6d:19h:21m:48s
                    logDescription = ifInNUcastPkts is
```

ώ˜ ʒ Ụ -

Ẉ ᴶ ب ̈ -

2.8 show rmon history

Ĭ ˜ ᴗ ᴷ ˊ ʒ Ụ

show rmon history

v ̈Ǫ ب ̈

v ̈Ǫ	ὼ ك
-	-

ᵘ ɲ₩Ã ⸗ ₩Ã

ᴉ̀ ᴉ̣ 14

Æ ᵊ ˝YṀ -

ᴉ̣ ᴉ ᴇ̌ æ 1 χ ᵊ ˜ ᴗ ᴷ ᴉ ʒ Ụ

```
Ruijie#show rmon history
rmon history control table:
                    index = 1
                    interface = GigabitEthernet 0/1
                    bucketsRequested = 5
                    bucketsGranted = 5
                    interval = 60
                    owner = UserA
                    stats = 1

rmon history table:
                    index = 1
                    sampleIndex = 2485
                    intervalStart = 7d:22h:56m:38s
                    dropEvents = 0
                    octets = 5840
                    pkts = 27
                    broadcastPkts = 0
                    multiPkts = 0
                    crcAlignErrors = 0
                    underSizePkts = 0
                    overSizePkts = 0
                    fragments = 0
                    jabbers = 0
                    collisions = 0
                    utilization = 0
```

//ᴉ̣ ɷ̃ 4 ᴀ ᴗ ᴷ ʟ ẹ ʒ Ụ ƥ % ʃ ổ ɣ

ώ˜ ʒ Ụ -

Ẉ ᴶ ᴗ ˝ -

2.9 show rmon statistics

Ĭ ˜ Ɑ ᵊ ᴧ ᴧ ɰ ʒ Ụ

show rmon statistics

ν ̋Ω ب ̋

ν ̋Ω	ὼ ك
-	-

ᵘ ҧ₩Ã ⸗ ₩Ã

ᴧ̀ ᴧ̣ 14

3 NTP

3.1 no ntp

ҩ ڎ NTP ᵃ ℓ `O n ı ȳ ₿ ҧ `H ڑ `O n ᴴ ⌧ ᵃ ℓ ı ▌ ڻ ntp ⌧ ̋A ω ̣ ⅃ ʒ Ụ

no ntp

v ̋Ω ̣ ̋

ν ̈Ǫ ب ̈

ν ̈Ǫ	ὼ ك
peer	ŋ ϊ ϱ Ḿ ş NTP ̀Ο ɲ ڤ Φ ̀Η ژ ت ∂ ⁼ í ˙ ⁋ Ĩ ıĈ̂ϊ ϱ ş ϕ ⁝ ɲ ڢ ⁋ ⁄ ⁄ ª ℓ ̀Η ژ ε Ḣ ϡ ⅃ ڈ ں ζ
serve	ϊ ϱ Ḿ ş NTP ̀Ο ɲ ڤ Φ ̀Η ژ ت ∂ ⁼ í ˙ ⁋ Ĩ ıϢ j ϊ ϱ ş ϕ ⁝ ɲ ڢ ⁋ ⁄ ⁄ ª ℓ ̀Η ژ
serve-only	ĸ ϊ ϱ Ḿ ş NTP ̀Ο ɲ ڤ Φ ̀Η ژ ت ∂
query-only	ĸ ϊ ϱ Ḿ ş NTP ̀Ο ɲ ڤ Φ í ˙ ⁋ Ĩ
access-list-number	IP ⅃ ڈ í ˙ ° ˊ ‰ ᴺ ψ ̤ ϧ ⅄ 1 Ḱ 99 ⁼ 1300 Ḱ 1999
access-list-name	IP ⅃ ڈ í ˙ ° ˊ ᵋ

ɹ̀ ɥ ɹ ɹ̀ ὺ ̀ ï ' ɥ ɹ γ Ḿ NTP ⅃ ڈ í ˙ h ̤

ᵘ ɲ ₩ Ã ϡ ṕ ɥ ɹ ₩ Ã

ɹ̀ ⅄ ̣ 14

Æ ɤ ̈Y Ṁ ϕ ɹ Ḿ ş ϕ ⁝ NTP ̀Ο ɲ ⅃ ڈ í ˙ ں ڢ ̣ ώ ĕ ̄ ˥ ϣ ṇ ں ŷ ⅃ Ḡ ϡ ὺ Ạ ı ̃ Ḡ ϡ ⅃ Ά | ĩ Æ ɤ NTP ځ ¥ ج - ˙
Ẹ ⅄ ⅃ ڈ ت ∂ ˙ ژ ̀Η ı NTP

ɲ ╦ ২ ṕ NTP ɲ - Ḷ ᵯ

no ntp authentication-key *key-id*

ν ̈Ọ ب ˝

ν ̈Ọ	ώ ك
key-id	Ḷ ᵯ ID ψ ɲ Ë„ ḫ 1 Ḱ 4294967295
key-string	Ḷ ᵯ È ۱ ₩
enc-type	ε ˡ J̌ ζ Ỉ Ḷ ᵯ ĩ ᵋ ĩ ɾ Ḷ ١0 ˊ˜ ṇ ɾ Ḷ ١7 ˊ˜ ١ɹ ɒ ɾ Ḷ ѡ ɲ ĩ ṇ ɾ Ḷ

ỉ ب ل ỉ ≡ ῶ ب ل ɲ - Ḷ ᵯ

ᵘ ɲ ₩ Ã ২ ṕ ب ل ₩ Ã

ỉ ۱. 14

Æ ɾ ˝ Y Ṁ ب ل ২ ṕ ɲ - Ḷ ᵯ ١ Ẋ ب ɾ md5 ڤ Φ ɾ Ḷ ١ ⅛ Ѧ Ḷ ᵯ õ Ѧ χ ١ key-id ‰ ٧ ١ ị ̈A ˡ Ꝋ ɾ **ntp trusted-key** Ṅ Ỉ key-id Ḿ Ẓ ١ Ḷ ᵯ ֆ ل ѡ ২ ṕ ȝ γ Ḷ ᵯ

Ḷ ᵯ i ں ѡ 1024 Ѧ ١ Ꜧ ĩ ⅛ Ѧ Ȯ ɲ ʰ ĸ ĸ ̃Ḥ'Y Ѧ Ḷ ᵯ

ب ل ᵹ æ 1 χ ب ل Ѧ ID ѡ 6 ١ ɲ - Ḷ ᵯ χ

```
Ruijie(config)# ntp authentication-key 6 md5 woooooop
```

ₛ ᴈ A │ -

ώ˜ ȝ Ụ -

Ẃ ȸ ᵹ ئ -

Ẉ ᴶ ب ˝ -

3.5 ntp disable

ʜ ƪ Ḿ Ẓ ì Æ ì ώ NTP ĭ ă ١ ĵ

ntp disable

ν ̈Ọ ب ˝

ν ̈Ọ	ώ ك
-	-

ỉ ب ل ỉ ù` ï ì Æ q ˡ Ꝋ ì ᴘ NTP ĭ ă

ᵘ ᴛ ₩ Ã	ì ᴬᵉ ᵢ ᴧ ₩ Ã
ᴧ̀ ᴧ̣	14
Æ ɾ̀ ˝Y Ṁ	ᵽ ᴧ̀ ù` ï ı γ Ỵ ì ᴬᵉ i ì ᴘ ⊞ NTP ï ᾰ ᵠu ˡ ᴏ ώ ĕ ᴧ ˡ ḭ ˝A ᴧ ˡ ڤ Φ `H ت ذ ˝Ω ı ڼ ص ᵠ ᴧ ف ᴧ ᴧ ı ˡ ˡ ᴏ Ṛ Ω Ḿ Ẓ ì ᴬᵉ i ᵠ ⊞ NTP ï ᾰ ⚠ IP
ᵢ ᴧ ᵹ æ	1 χ ᴈ ᵹ ì ᴬᵉ ì ᵠ NTP ï ᾰ χ R u i j i e (c o n f i g - i f) # n o n t p d i s a b l e
ᵹ ᴧ Á |	-
ώ˜ ᵹ Ụ	-
Ẃ ᵭ ᵹ ᵹ	-
Ẉ ᴶ ᵇ ˝	-

3.6 ntp master

ᵠ ᴧ ᵹ `H ت Ă ᴈ NTP ᵹ `H ت ε ᵹ `H ت ᴠ ᾰ̈ ◊ ˡ ˛ ζ ı ᴈ Ʊ Ę ᵠ ᵗ ώ ĕ ᵃ ℓ `H ᵹ

ntp master [*stratum*]

ᴨ ╥ NTP ᵹ `H ت ᵠ ᴧ

no ntp master

ᴠ ˝Ω ᵇ ˝

ᴠ ˝Ω	ὼ ᵭ
stratum	ε ˡ ᴊ ζ ˝Y ḧ ᵹ `H ت ˝A ᴶ ⊞ Ṗ ˝Ω ı ˛ ᵽ ᴈ 1 Ḱ 15 ψ ᴵ ʝ ˝Y ḧ ǐ ᴠ ˝Ω ˛ ᴍ ᴎ Ö ᴈ 8 ï F@NTP ÿ BWdD1…"X $ B AVƒ ••à'ì" ðÆúÀfrÐñ™Þ .Š |L, t FÐT€ˆ0

ᵘ ɲ ₩ Ã ৎ ṕ ᵽ ㇵ ₩ Ã

ỉ ㇷ 14

Æ ɪ ″ Y Ṁ ´ ` ჟ ὰ RGOS ㇶ ㇷ ĸ ʷ Ḥ ' Y ¡ Ï A ㇷ ≡ ῶ Ὸ ᴑ ᴎ ㇷ ι ʷ Ḥ ' Y ᵃ ℓ Ὸ ᴑ ᴎ i ㅅ ㎞ 20 Å
ι ₫ Φ љ Ὸ ᴑ ᴎ ɪ Ę ᵑ ʒ ι ث Ж ᵪ ι Ф ㇵ ৎ ṕ ɪ Ę Ę ᵾ Ꝍ ʒ ৎ ṕ ʒ γ Ę ᵾ ι ɬ ᵅ ″ Y ħ Ḿ Ƶ Ę ᵾ ㎞ Ὸ ᴑ ᴎ ʒ γ Ę ᵾ ι ė ˡ Ꝍ ʌ ∀ љ Ὸ ᴑ ᴎ ɪ Ę ᵑ ʒ ι ι Ḥ ă љ Ὸ ᴑ ᴎ ɪ Ę ᵑ ʒ ι ∂ Ὸ ᴑ ᴎ ῶ ᵃ ৎ ṕ ɪ Ę Ę ᵾ љ ৎ ṕ ʒ γ Ę ᵾ
ᵽ ᵃ ὺ ` ε ㇶ ỷ ζ ï ι Ч Ж J̌ ″ O prefer Ὴ ت ₫ Φ ᵃ ℓ
ᵽ ㇵ NTP ʌ ǰ ĩ ă ◊ ì Æ Ḥ ö Ƶ Î ├ Ỳ ï ᵽ ㇵ ì Æ ọ ɛ ㎞ ᵽ ㇵ ˝ IP Ẋ ˡ Ꝍ ⁼ Ḿ Ƶ NTP Ὸ ᴑ ᴎ ɳ ʒ ì Æ

ᵽ ㇵ ᵹ æ 1 χ ᵽ ㇵ ㇵ ㇹ i ₱ ᵻ ㎞ NTP server

```
Ruijie(config)# ntp serveᵽㇵ192.168.210.222 //IPv4
Ruijie(config)# ntp sᵩㇵver 10::2 //IPv6
```

ₛ ᴈ Ä | -

ώ ˜ ʒ Ụ -

Ẃ ȸ ᵮ ᵴ -

Ẉ ᴶ ᵬ ″ -

3.8 ntp trusted-key

Ṅ Å ID Ḿ Ƶ Ę ᵾ ᵽ ㇵ ㎞ ৎ ṕ ʒ γ Ę ᵾ
ntp trusted-key *key-id*

ᵤ ᵭ ID Ḿ Ƶ ৎ ṕ ʒ γ Ę ᵾ
no ntp trusted-key *key-id*

ν ″ Ꝙ ᵬ ″

ν ″ Ꝙ	ὼ ᶄ
key-id	ৎ ṕ ʒ γ Ę ᵾ ID ᴨ Ë ᵤ ᵷ 1 Ḱ 4294967295

ỉ ᵽ ㇵ ѫ ɲ ὺ ` ï ≡ ῶ ʒ γ Ę ᵾ

ᵘ ɲ ₩ Ã ৎ ṕ ᵽ ㇵ ₩ Ã

ỉ ㇷ 14

⁵ ⱻ Ά |	-
ώ˜ ʒ Ụ	-
Ẃ ȯ ⱼ ئ	-
Ẉ ᴶ ب ˝	-

3.10 show ntp server

Ĭ ˜ NTP Ȯ п ʜ ʒ Ụ

show ntp server

v ˝Ǫ ب ˝

v ˝Ǫ	ὼ ك
-	-

ᵘ ȵ₩Ã ⸗ ɤ ˝A₩Ã ʒ ṕ ب ⅃₩Ã ì Æ ب ⅃₩Ã VLAN ب ⅃₩Ã

⅃ ⅄ 14

Æ ɤ ˝YṀ ḅ ' ω̃ ب ⅃ NTP Ȯ п ı ̤ Ĭ ˜ Ẹ ̇ ⊞ NTP Ȯ п ʜ ʒ Ụ ı ᵋ ̤ Í ᵘ ȵ j ʜ ɛ̋ м γ Ṃ ʒ Ụ

ب ⅃ ǯ æ 1 χ Ĭ ˜ Ẹ ̇ ⅄ ⅄ ⊞ NTP Ȯ п ʜ ʒ Ụ

n t p - s e r v e r	s o u r c e k

VLAN

14

1 NTP

```
Ruijie# show ntp status
Clock is synchronized, stratum 8, reference is 127.127
nominal freq is 250.0000 Hz, actual freq is 250.0000 H
reference time is D4BD819B.433892EE (01:27:55.000 UTC
clock offset is 0.00000 sec, root delay is 0.00000 s
root dispersion is 0.00002 msec
```

precision	

4 SNTP

4.1 show sntp

Ĭ ˜ SNTP ⿰ ɦ v ̈Ǫ

show sntp

v ̈Ǫ ب ˝

v ̈Ǫ	ὼ ك
-	-

ᵘ ɲ ₩ Ã ⸗ ɨ ̈A ₩ Ã ʒ ṕ ب ɹ ₩ Ã ì Æ ب ɹ ₩ Ã

ɹ̀ ʅ̣ 14

Æ ɨ ̈Y Ṁ -

ب ɹ ǯ æ 1 χ ̣ ˜ SNTP ⿰ ɦ v ̈Ǫ

```
Ruijie# show sntp
SNTP state                : Enable
SNTP server               : 192.168.4.12
SNTP sync interval        : 60
Time zone                 : +8
```

Ȅ ɟ ɟ ɻ χ

Ȅ ɟ	ب ˝
state	ˊ ˜ sntp Ȁ ᵏ ↑ õ
server	ˊ ˜ ̀H ɟ ᵃ ℓ ̀O ɲ ᴴ
sync interval	ˊ ˜ ̀H ɟ ᵃ ℓ ɟ ڭ
Time zone	Ẹ ̇ ̀H ɲ
SNTP server source	ˊ ˜ ̀H ɟ ᵃ ℓ ĭ ᾰ ⿰ ɟ χ ⿰ ◊ IP ş χ

ώ ˜ ʒ Ụ -

Ẉ ᴶ ب ˝ -

4.2 sntp enable

ᵠ ᴊ ᴇ̈ Ȁ SNTP ı ΐ

sntp enable

Ṅ Ί ᵠ ᴊ Ỡ ᵘ ᴉ ᴊ Ö—Disable

no sntp enable

v ̈Ǫ ب ̈

v ̈Ǫ	ὼ ك
-	-

ᴊ ب ᴊ ᴊ SNTP ↑ ỗ ĩ Disable

ᵘ ᴉ ₩ Ã ᴉ ṕ ب ᴊ ₩ Ã

ᴊ ᴧ ̣ 14

Æ ɤ ̈Y Ṁ -

R u i j i e (c o n f i g) # s n t p e n a b l e

ᵢ ᴊ Á | 1 χ Æ ɤ **show sntp** ᵘ ᴉ ̣ ̃ SNTP ̓ ᴉ v ̈Ǫ

ώ ̃ ʒ Ụ -

Ẃ ὁ ᴇ ᴇ -

Ẉ ᴶ ب ̈ -

v ̈Ǫ	ὼ ك

ᵘ ɲ₩Ã̃ ʒ ṕ ب ɹ₩Ã̃

ɹ̀ ɹ̣ 14

Æ ɪ ̈Y Ṁ ⚠ **sntp enable**

ب ɹ ǯ æ 1 χ ب ɹ SNTP ⅛ ṇ ̀H ª ℓ Ꞩ ̀H ɔ̀

```
Ruijie(config)# sntp interval 3600
```

5 ɔ̣ Ǻ | 1 χ Æ ɪ **show sntp** ᵘ ɲ ̈ ̃ SNTP ̀ ʜ v ̈Ǫ

ώ ̃ ʒ Ụ -

Ẃ ð ʒ ئ -

Ẉ ᴶ ب ̈ -

4.4 sntp server

ɸ ɹ SNTP Server

sntp server { *ip- address* | *domain* }

ɹ̣ ɔ̀ ̈Y ḧ SNTP Server

no sntp server

v ̈Ǫ ب ̈

v ̈Ǫ	ὼ ʖ
ip-address	SNTP ̀O ɲ ʜ IP ʂ ɣ
domain	SNTP ̀O ɲ ʜ ³ ᵊ

ɹ̀ ب ɹ ɹ̀ ≡ ω̃ ɸ ɹ γ Ṃ SNTP ̀O ɲ ʜ

ᵘ ɲ₩Ã̃ ʒ ṕ ب ɹ₩Ã̃

ɹ̀ ɹ̣ 14

Æ ɪ ̈Y Ṁ SNTP ʙ ɲ ᵓ NTP Ḣ ʒ Ɉ ḳ ı ̈A Ɋ ɸ ɹ SNTP Server Ḣ ʒ ˡ Ɋ ب ɹ ᾰ̈ internet i ʒ ɪ NTP Server

ب ɹ ǯ æ 1 χ ب ɹ ɹ ʌ ʌ i SNTP ̀O ɲ ʜ

```
Ruijie(config)# sntp server 192.168.4.12
```

ᵇ ᵣ Ά |	1 χ Æ ɤ **show sntp** ᵘ ᴉ ̈ ˜ SNTP ̓ ʜ ν ̈Ω
ώ˜ ʒ Ụ	-
Ẃ ὁ ᵽ ʿ	-
Ẉ ᴶ ᵇ ˝	-

5 SPAN-RSPAN

5.1 mac-loopback

ᾰ̈ Ȁ ì ᴬ MAC₅ ᴬ ı ᴬ̈

mac-loopback

ᴎ ᴣ ì ᴬ MAC₅ ᴬ ı ᴬ̈

no mac-loopback

v ̈Ǫ ب ̈

v ̈Ǫ	ὼ ك
-	-

ᴬ̀ ب ᴬ ᴎ ᴣ ì ᴬ MAC₅ ᴬ ı ᴬ̈

ᵘ ȵ₩Ã ì ᴬ₩Ã

ᴬ̀ ᴬ̣ 14

Æ ᴛ ̈YṀ ş ḫ א Ḿ ^ ᴇ ü ̀H ı ᴇ ᴬ̈ ᴬ̈ ì ᴬ MAC₅ ᴬ ı ᴬ̈ ε ت J̌ ̈O ᴀ DOWN ↑ õ ᴬ ᴬ Ȳ MAC₅ ᴬ ᴬ ı ħ j ᴬ ȵ ᴬ̈ ᴬ ᴬ i ▌ ᴛ Ʊ Ę̈ ب ᴬ ζ

ب ᴬ ᴣ æ 1 χ ث ✕ ب ᴬ ف ᴬ VLAN

```
Ruijie(config)#vlan 100
Ruijie(config-vlan)#remote-span
Ruijie(config-vlan)#exit
```

2 χ ب ᴬ ◊ ᵠ ᵗ ᴣ ᴇ ü ◊ ᴬ

```
Ruijie(config)#monitor session 1 remote-source
Ruijie(config)#monitor session 1 source interface giga
```

3 χ ب ᴬ ᴇ ü ´ ᴬ ᴬ ı Ẋ ᾰ̈ Ȁ ´ ᴬ ᴬ MAC₅ ᴬ ı ᴬ̈ ε ı Ɑ ɥ ḻ ̇ GigabitEtherne t 4/2 ᴬ ᴬ ᴣ i UP ᴠ ᴾ ζ

```
Ruijie(config)#monitor session 1 destination remote vla
Ruijie(config)#interface gigabitEthernet 4/2
Ruijie(config-if-GigabitEthernet 4/2)#switchport acces
Ruijie(config-if-GigabitEthernet 4/2)#mac-loopback
```

4 χ ب ᴬ GigabitEthernet 4/3-4 ì ᴬ ᴛ ᴝ ف ᴬ VLAN

¨ ڢ ⅃ ᵢ̈ ᴴ ؟ α̃¨ ڢ ⅃ ᵢ̈ ᴴ ؟ ⅃ ᴬᴱ

no monitor session *session-num* [**destination remote vlan** *remote-vlan-id* **interface**

3χ بᴊ ڤ ١ ﻱ ü h ؟

```
Ruijie(config)# monitor session 10 remote-source
```

4χ ◊ ₱ ¦ ʌ بᴊ ڤ ١ ﻱ ü ڑ ٫ ٧ Æ ă ă ´ ₱ ¦ ʌ ´ ٧ Æ

```
Ruijie(config)# monitor session 4 destination remote v
```

5χ بᴊ VLAN Ў ﺵ ﻱ ü ◊

```
Ruijie(config)# monitor session 1 source vlan 1
```

6χ ¨ ڻ ﻱ ü h ؟ ε ۲ ن ﻱ ü ◊ ¤ ´ ٧ Æ بᴊ ζ

```
Ruijie(config)# no monitor session 1
```

7χ ¨ ڻ ﻱ ü h ؟ ʌ ◊ ă ă ´ Æ (h ؟ ځ j h q ¨ ڻ)

```
Ruijie(config)# no monitor session 1 source interface
Ruijie(config)# no monitor session 1 destination inte
```

8χ بᴊ CPU ï ă Ă ﺵ ﻱ ü ◊ ا ا Ꝋ بᴊ ᴱ ˇ í CPU ï ă ا Ĉ ا Ꝋ بᴊ ª H ˇ í ˝ ن ﻱ ü ï ă ¤ CPU ï ă

λ ᴱ ˇ í CPU گ ◊ Æ ï ă χ

```
Ruijie(config)# monitor session 3 source interface gig
```

λ ˇ í CPU ï ă ¤ ˝ ن ﻱ ü ï ă ا ـ ا ª H بᴊ cpu ﻱ ü ¤ ˝ ن ﻱ ü

```
Ruijie(config)# monitor session 3 source interface gig
Ruijie(config)# monitor session 3 source interface gig
```

ذ ؛ ʒ Ụ -

ώ˜ ʒ Ụ 1χ ʏ ٧ Æ ï AP ă ^ Æ H ا ا Ṅ Ꞇ بᴊ ﺵ ﻱ ü ◊ ă ´ ٫ h ⁄ ٫ ḅ ï ώ˜

```
Set fail on ap member.
```

2χ remote-vlan-id Ḿ Ẓ VLAN j è ƥ ă ă j ï ڤ ١ VLAN H ⁄ ٫ ḅ ï ώ˜

```
vlan 1 doesn't exist or it isn't remote span vlan.
```

Ẉ ᴶ ب ˝ -

5.3 remote-span

VLAN ₩ Ã ï بᴊ VLAN ﺵ ڤ ١ VLAN

remote-span

VLAN ₩ Ẫ ï Ṅ ﭗ ۱ VLAN ﭙ ہ ѫ ˝ ڽ VLAN

no remote-span

v ῭Ὠ ب ˝

v ῭Ὠ	ὼ ڭ
-	-

ﮀ ﭙ ہ ﮀ ڈ ﭗ ۱ VLAN

ᵘ ҧ ₩ Ẫ VLAN ₩ Ẫ

ﮀ ⩘ 14

Æ ﭑ ˝YṀ % ᵘ ҧ ﭑ ﭙ ہ VLAN Ɽ ﭗ ۱ VLAN

ﭙ ہ ჯ æ 1 χ ﭙ ہ ﭗ ۱ VLAN

6 ERSPAN

6.1 destination ip address

ɸ ɹ GRE Ṃ Ƚ ⍰ ̈Y ḧ ´ ⍰ IP ş ɣ Æ ɤ ǐ ᵘ ȵ ⍰ **no** ǰ ° ̣ ̣ ʊ ´ ⍰ IP ş ɣ

destination ip address *ip_address*

no destination ip address

v ̈Ω ب ̈

v ̈Ω	ὼ ك
ip_address	GRE Ṃ Ƚ ⍰ ´ ⍰ IP ş ɣ

ɹ̀ ب ɹ ɹ̀ IP ş ɣ ⍣ ⍲

ᵘ ȵ ₩ Ã ERSPAN ب ɹ ₩ Ã

ɹ̀ ɹ̣ 14

Æ ɤ ̈Y Ṁ ɭ ف ɨ ̇ ⸗ ₩ Ã ɪ ɮ ʊ **end** ᵘ ȵ ɪ ᾰ̃ ɕ ʊ Ctrl+C ɹ ᵀ ɕ

ɭ ف ɨ ̇ ʊ ṕ ب ɹ ₩ Ã ɪ ɮ ʊ **exit** ᵘ ȵ

ب ɹ ǯ æ ب ɹ ip ĭ ă ⍰ ´ ⍰ ip ş ɣ

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#destination ip address
```

› ɔ ̀A |

ᵘ ȵ	ὼ ك
show monitor	Ĭ ˜ ɛ ü h ʕ ʒ Ụ

ώ ˜ ʒ Ụ ḅ ' ɮ ʊ ɮ ʊ ⍰ IP ş ɣ ⍣ ṇ̀ ᾧ̃ IP ş ɣ ̣ ̈ E Φ destination ip address ̀H ɹ̀ ̣ ώ ˜ ʒ Ụ χ

Invalid ip address

Ẉ ᵊ ب ̈ -

6.2 ip dscp

ɸ ɹ Ṃ ᵗ IP ï ᾰ ⌧ dscp Ö ı Æ ɾ Î ᵘ ȵ ⌧ **no** J̌ ° Õ ᵻ ɯ ȵ Ö

ip dscp *dscp-value*

no ip dscp

v ̈Ǫ ب ̈

v ̈Ǫ	ὼ ك
dscp-value	Ṃ ᵗ IP ï ᾰ ⌧ dscp Ö

ɹ̀ ɹ ب ɹ Ṃ ᵗ IP ï ᾰ ⌧ ɯ ȵ dscp Ö ⌘ 0

ᵘ ȵ ₩ Ã ERSPAN ɹ ب ɹ ₩ Ã

ɹ̀ ɹ ̣ 14

Æ ɾ ̈Y Ṁ ɭ ف ɨ ̇ ⸗ ₩ Ã ı ɹ̀ ʒ **end** ᵘ ȵ ı ᾶ ɾ ʒ Ctrl+C ɹ ᵀ ɾ

ɭ ف ɨ ̇ ʒ ṕ ɹ ب ɹ ₩ Ã ı ɹ̀ ʒ **exit** ᵘ ȵ

ɹ ب ɹ ǯ æ ɹ ب ɹ ip ï ᾰ ⌧ dscp ⌧ Ö

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#ip dscp 56
```

› ɾ Á |

ᵘ ȵ	ὼ ك
show monitor	Ĭ ˜ ɹ ɥ ɦ ʕ ʒ Ụ

ώ ˜ ʒ Ụ

Ẉ ᵘ ب ̈ -

6.3 ip ttl

ɸ ɹ Ṃ ᵗ IP ï ᾰ ⌧ TTL Ö ı Æ ɾ Î ᵘ ȵ ⌧ **no** J̌ ° Õ ᵻ ɯ ȵ Ö

ip ttl *ttl-value*

no ip ttl

ttl-value	Ṃ Ḫ IP ttl

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#ip ttl 65
```

	session_num	

-

14

end

Ctrl+C

exit

ERSPAN

```
Ruijie(config)# monitor session 2 erspan-source
```

show monitor	

-

6.5 origin ip address

GRE **no**

origin ip address *ip_address*

no origin ip address

ip_address	GRE IP

ᴉ̀ ᴉ̣ ᴉ̀	-
ᵘ ҧ ₩ Ã	ERSPAN ᴉ̣ ᴉ̀ ₩ Ã
ᴉ̀ ᴉ̣	14
Æ ɤ ̈ Y Ṁ	ᴉ ف ɨ ̇ ⸗ ₩ Ã ı ɮ ʒ **end** ᵘ ҧ ı ᾰ̃ ᴇ̧ ʒ Ctrl+C ᴉ ᵀ ᴇ̧
	ᴉ ف ɨ ̇ ʒ ṕ ᴉ̣ ᴉ̀ ₩ Ã ı ɮ ʒ **exit** ᵘ ҧ
ᴉ̣ ᴉ̀ ǯ æ	ᴉ̣ ᴉ̀ ip ï ᾰ ⸢⸣ ◊ ip ş ɣ

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#origin ip address 11.1.
```

› ᴇ̧ Á |	ᵘ ҧ	ὼ ك
	show monitor	Ĭ ˜ ᴇ̧ ᵘ̈ ɦ ʕ ʒ Ụ
ώ ˜ ʒ Ụ		
Ẉ ᴶ ب ˝	-	

6.6 shutdown

ᵠ ᴉ̀ ᴉ̣ ɦ ʕ ʕ Æ ɤ ɨ ᵘ ҧ ⸢⸣ **no** J̌ ° Ṅ ᵠ ᴉ̀ Õ ᵘ ᾰ̈ ᴉ̀ Ö

shutdown

no shutdown

v ̈Ω ب ˝	v ̈Ω	ὼ ك
	-	-

ᴉ̀ ᴉ̣ ᴉ̀ ɯ ɲ Ã ᵏ ɦ ʕ ı ɨ̃

ᵘ ᴉ ₩ Ã ERSPAN ᴉ ᴉ ₩ Ã

ᴉ ᴉ 14

Æ ᵊ ˝ Y Ṁ ᴉ ف ᵊ ˙ ˝ ₩ Ã ı ᴉ ᴉ **end** ᵘ ᴉ ı ᾰ ᴉ Ctrl+C ᴉ ᵀ ᴉ

ᴉ ف ᵊ ˙ ᴉ ṕ ᴉ ₩ Ã ı ᴉ ᴉ **exit** ᵘ ᴉ

ᴉ ᴉ ᴉ æ ᴉ ᴉ ERSPAN ᴉ ᴉ 2

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#shutdown
```

› ᴉ Á | ᵘ ᴉ ὼ ك

show monitor Ĭ ˜ ᴉ ᴉ ᴉ ᴉ ᴉ Ụ

ώ˜ ᴉ Ụ

Ẉ ᴶ ب ˝ -

6.7 source interface

ᴉ ERSPAN ᴉ ᴉ ◊ ᴉ Æ Æ ᵊ ᵊ ᵘ ᴉ **no** ᴉ ˚ ˛ ᴉ ف ᴉ ◊ Æ

source interface *single-interface* [**rx | tx | both**]

no source interface *single-interface* [**rx | tx | both**]

ᴉ ᴉ ᴉ ᴉ ERSPAN ᴉ ᴉ ◊

source interface *single-interface* rx acl acl-name

v ˝ Ω ب ˝

v ˝ Ω	ὼ ك
single-interface	ᴉ ᴉ ◊ ᴉ Æ
rx	ᴱ ᴉ ᴉ ì ώ Á ᵇ ˝ Ω ˜ Ω
tx	ᴱ ᴉ ᴉ ʌ گ Á ᵇ ˝ Ω ˜ Ω

both	ì ώ̣ ʌ گ̈ Ά ᵇ Ώ̣ Ώ ʐ ي ü ı rx/tx ʐ ˈ ب̤ ﻟ Ἡ ı س ɲ Ấ ﻝ̆ ˚
acl *acl-name*	ACL ѵ ﺻ ᵉ Ȅ̀

ﻟ̂ ب̤ ﻟ -

ᵘ ҧ₩ Ã ERSPAN

```
i n v a l i d   h o s t   a d d r e s s .
```

Ẃ ð ჭ ئ -

Ẉ ᴶ ب ˝ -

7.2 sflow collector collector-id destination

ب ل sFlow Collector ş χ

sflow collector *collector-id* **destination** { *ip-address* | **ipv6** *ipv6_address* } *udp-port* **]**

¨ ڀ sFlow Collector ş χ

no sflow collector *collector-id* **destination** { *ip-address* | **ipv6** *ipv6_address* } *udp-port* **]**

Õ ʰ ỉ ب ل

default sflow collector *collector-id* **destination** { *ip-address* | **ipv6** *ipv6_address* } *udp-port* **]**

v ˝Ọ ب ˝

v ˝Ọ	ώ ك
collector-id	sFlow Collector id ı п Ë„ ḫ 1-2
ip-address	sFlow Collector IPv4 ş χ
ipv6 *ipv6-address*	sFlow Collector IPv6 ş χ
udp-port	sFlow Collector ˘ ¦ ч Æ ᴺ

ỉ ب ل -

ᵘ ɲ ₩ Ã ২ ṕ ₩ Ã

ỉ ۱ ̣ 14

Æ ŧ ˝ Y Ṁ Í ᵘ ɲ ₹ ̂ ̃ ب ل sFlow Collector ş χ ı ş χ ᴱ Í ꟾ Ƶ ş χ ı Ẹ ب ل ꟾ ᵒ Ƶ ş χ ı ⅝ ḅ ۱ Ḥ ş χ ẍ Ḥ ş χ ı Ṅ ώ ˜ ب ل ¸ م sFlow Collector ḡ ب ل ㊀ ч Æ ᴺ i ˘ ¦ sFlow ĭ ă

ب ل ƺ æ

ƽ ⳹ Ä | 1 χ Æ ŧ **show sflow** ᵘ ɲ ı ˡ Ɋ ˜ sFlow Collector ş χ ĩ ᵋ ب ل

ώ ˜ ʒ Ụ 1 χ ḅ ' ب ل ㊀ ş χ ĩ ᵒ | ㊀ ş χ ı „ ώ ˜ ჭ ئ

```
i n v a l i d   h o s t   a d d r e s s .
```

2 χ vpn j è ḡ

```
v p n   i s   n o t   e x i s t
```

Ẃ ŏ ᶜ ᶜ -

Ẉ ᴶ ᵇ ˝ -

7.3 sflow collector collector-id max-datagram-size

ᵇ ᴶ ᴶ ᵊ sFlow ï ă ῳ ᶻ ᶻ ŷ

sflow collector *collector-id* **max-datagram-size** *datagram-size*

ᵊ ᵊ ᵊ sFlow ï ă ῳ ᶻ ᶻ ŷ ᴶ ᵇ

no sflow collector *collector-id* **max-datagram-size**

Ỡ ᵻ ᴶ ᴶ ᵇ

default sflow r

7.4 sflow counter collector

ᵻ ᴶ sFlow counter ᵖ ¯ ᵹ ˛ ⁰⁸⁸ collector id

sflow counter collector *collector-id*

˛ ᵺ sFlow counter ᵖ ¯ ᵹ ˛ ⁰⁸⁸ collector id ᵻ ᴶ

no sflow counter collector

Õ ᵻ ᴶ ᵻ ᴶ

default sflow counter collector

v ˝Ω ب ˝

v ˝Ω	ὼ ك
collector-id	sFlow Collector id ı п Ö˛ ɧ 1-2

ᴶ ᵻ ᴶ -

ᵘ ɲ ₩ Ã ì Æ ₩ Ã

ᴶ ᴵ˛ 14

ſ ת ˚ ı п ⅜ ` ı п سم ? ^

ᵢ ᵢ ᵢ sFlow counter ᵖ ¯ ᵒᵇ ᵗ H ᵣ ᵣ ᵏ ᵇ ᵣ

no sflow counter interval

Õ ᵗ ᵣ ᵇ ᵣ

default sflow counter interval

v ᵛ Ω ᵇ ᵛ

v ̈Ω̣ ب ̈

v ̈Ω̣	ὼ ̇ك
-	-

ɹ̀ ɹ̣ ʹ Æ ĩ́

ᵘ ɲ₩Ã ì ᴬ₩Ã

ɹ̀ ɹ̣ 14

Æ ɪ̀ ̈YṀ Í ᵘ ɲ̃Ḥ'Y ɲ ɪ ɲ Æ ĩ̈ ᵀ Æ ï ɹ̣ ʹ
ᵃ `H ᵏ ʊ̃ counter ɹ̣ ̄ ᵊ flow ɹ̣ ̄ ı ĩ́
Ḿ Z̰ sFlow Collector ᴱ ɷ̃ ɹ̣ L S ş ɣsFlow ï ᾰ ɛ́ ĩ́ ɹ̣

ɹ̣ ɹ̣ ǯ æ 1 χ ɲ ì ᴬ TenGigabitEthernet 0/5 ï ɹ̣ sFlow ɹ̣ ̄ ı ĩ́ Æ ĩ́
Ruijie(config-if-TenGigabitEthernet 0/5)# sflow enable

ᵊ ɹ̣ Á | 1 χ Æ ɪ̀ **show sflow** ᵘ ɲ ı ᴵ Ɋ ̃ ì ᴬ sflow ɹ̣ ̄ ı ĩ́ ĩ̃ ᵋ Æ ĩ́

ώ ̃ ʒ Ụ -

Ẃ ɔ̀ ɕ ɛ -

Ẉ ᴶ ب ̈ -

7.7 sflow flow collector

ɹ̣ sFlow flow ɹ̣ ̄ ɹ̣ collector id
sflow flow collector *collector-id*

ɹ̣ ɔ̀ sFlow flow ɹ̣ ̄ ɹ̣ collector id ɹ̣
no sflow flow collector

Õ ᵻ ɹ̀ ɹ̣
default sflow flow collector

v ̈Ω̣ ب ̈

v ̈Ω̣	ὼ ̇ك
collector-id	sFlow Collector id ı ɲ Ö̤ ɲ 1-2

ɹ̀ ɹ̣ -

ᵘ ɲ ₩ Ã ì Æ ₩ Ã

ỉ ⑁ 14

Æ ŧ ″ Y Ṁ Í ᵘ ɲ T̈ Ḥ ' Y ƥ ɨ ת Æ SVI Æ ǐ ᵀ Æ ⊃ ت ᵻ Ḏ ì Æ ï ᵽ ⅃
Ḿ Ẓ sFlow Collector ᴱ õ ᵽ ⅃ IP ş ϰ , sFlow ï ă ε ǐ ɮ ,

ᵽ ⅃ ʖ æ 1 χ ƥ ì Æ TenGigabitEthernet 0/5 ï ᵽ ⅃ sFlow flow ᵱ ¯ ɮ , ˙ sFlow Collector 2
Ruijie(config-if-TenGigabitEther2net 0/5)# sflow flow c

ₛ ⇂ Ä | 1 χ Æ ŧ **show sflow** ᵘ ɲ ı ˡ Ɋ ¶ ˜ sFlow flow ᵱ ¯ ɮ , collector id ĩ ᵋ ᵽ ⅃

ώ ˜ ʒ Ụ -

Ẃ ȸ ⇂ ئ -

Ẉ ᴶ ᵬ ″ -

7.8 sflow flow max-header

ᵽ ⅃ sFlow flow ᵱ ¯ ü ف ï ă ˘ ₪ ω ᶻ ᵵ ỷ
sflow flow max-header *length*

¨ ᵭ sFlow flow ᵱ ¯ ü ف ï ă ˘ ₪ ω ᶻ ᵵ ỷ ᵽ ⅃
no sflow flow max-header

Õ ʸ ỉ ᵽ ⅃
default sflow flow max-header

v ″ Ọ	ώ ك
length	ü ف ï ă ˘ ω ᶻ ᵵ ỷ ı п Ḙ ₙ ƫ 18-256 ı ỉ Ḙ 64 ı ᴅ ʮ È `

ỉ ᵽ ⅃ 64

ᵘ ɲ ₩ Ã ↄ ṕ ₩ Ã

ỉ ⑁ 14

Æ ŧ ″ Y Ṁ ᵽ ⅃ ƥ ف Φ ï ă ɲ ķ ü ف Ḥ ı ϰ ⊃ Ḋ ï ă ₪ ʰ Ã Ḋ ı ы ƫ ü ف ₪ ω ᶻ È ` ″ Ọ ü ف ₪ ɲ ķ h ʟ ę ƥ ł ă ₪ ᵽ
‾ ‾ ₳

ᵽ ᒧ ᵹ æ 1 χ ᵽ ᒧ sFlow flow ᵽ ¯ ü ف ï ᵅ˘ ⊞ω ᶻ ᵶ ŷ ㎞ 128 È `
R u i j i e (c o n f i g) # s f l ⓪ ⓦ 8 f l o w m a x - h e a d e r

ₛ ᶎ Ά │ 1 χ Æ ŧ **show sflow** ᵘ ᵑᵬ ı ˡ Ⓠ ˜ sFlow flow ᵽ ¯ ü ف ï ᵅ˘ ⊞ω ᶻ ᵶ ŷ ï ᵋ ᵽ ᒧ

ώ˜ ʒ Ụ -

Ẃ ȍ ᶎ ئ -

Ẉ ᴶ ب ˝ -

7.9 sflow sampling-rate

ᵽ ᒧ sFlow flow ᵽ ¯ ⊞ᵽ ¯ '
sflow sampling-rate *rate*

ᵕ ȍ sFlow flow ᵽ ¯ ⊞ᵽ ¯ ' ᵽ ᒧ
no sflow sampling-rate

Õ ʸ ᶉ ᵽ ᒧ
default sflow sampling-rate

v ¨Ọ ب ˝	v ¨Ọ	ώ ك
	rate	sFlow flow ᵽ ¯ ⊞ᵽ ¯ ' ı o ⅛ rate Ⱥ ï ᵅ ᵽ ¯ Ⱥ ï ᵅ ı ᵖ Ⓔ ₪ ㎞ 4096-16777215 ı ᶉ Ⓔ 8192

ᶉ ᵽ ᒧ 8 1 9 2

ᵘ ᵑᵬ ₩ Ã ২ ṕ ₩ Ã

ᶉ ᐟ 14

Æ ŧ ¨Y Ṁ Ỉ ᵘ ᵑᵬ ᵽ ᒧ ˝ sFlow flow ᵽ ¯ ⊞২ ṕ ᵽ ¯ ' ı ¨A õ ì Æ⊞ sFlow flow ᵽ ¯ ₫ u Æ ŧ ف Ⱥ ᵽ ¯ '

ᵽ ᒧ ᵹ æ 1 χ ᵽ ᒧ sFlow flow ᵽ ¯ ⊞ᵽ ¯ ' ㎞ 4096
R u i j i e (c o n f i g) # s f ⓫ ⓪ ⓦ 6 s a m p l i n g - r a t e

ₛ ᶎ Ά │ 1 χ Æ ŧ **show sflow** ᵘ ᵑᵬ ı ˡ Ⓠ ˜ sFlow flow ᵽ ¯ ⊞ᵽ ¯ ' ï ᵋ ᵽ ᒧ

ώ˜ ʒ Ụ -

Ẃ ŏ ᶜ ئ -

Ẉ ᴶ ب ˝ -

7.10 show sflow

Ĭ ˜ sFlow ᴾ ᴶ ʒ Ụ

show sflow

ᴠ ˝Ω ب ˝

ᴠ ˝Ω	ὼ ك
-	-

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ᴶ ᴧ ̣ 14

Æ ᵣ ˝YṀ -

ᴾ ᴶ ᵹ æ 1 χ Ĭ ˜ sFlow ᴾ ᴶ

```
Ruijie(config)#show sflow
sFlow datagram version 5
Global information:
Agent IP: 10.10.10.10
sflow counter interval:30
sflow flow max-header:64
sflow sampling-rate:8192
Collector information:
ID    IP                                    Port  Size  VPN
1     192.168.2.100                         6343  1400
2     NULL                                  0     1400
Port information
Interface                                 CID   FID   Enable
TenGigabitEthernet 0/1                    0     1     Y
TenGigabitEthernet 0/2                    0     1     N
```

Ȅ ᴶ ᴶ ᴾ χ

Ȅ ᴶ	ب ˝
sFlow datagram version	sFlow ĭ ᾰ ᴠ ᴺ ι π Ö ᴱ ĭ ᴽ 5 ι ˊ ˜ Ẹ ̇ κ ̃Ḥ ̇Y ʌ ̈ گ ᴠ ᴺ ᴽ 5 ⓞⓑ sFlow ĭ ᾰ

Agent IP	sFlow Agent ⃞ IP ş χ ı ˈ **sflow agent address** {ip-address | **ipv6** ipv6-address }ᴗ ᴊ
sflow counter interval	Counter ᴨ ¯ ⃞ Ἡ ᴊ ᴊ ᴄ̇
sflow flow max-header	ᴋ ᴐ Ḋ ἵ ᾰ ⃞ Ἂ Ḋ ı ᴇ̈ ᵽ ᵾ ف ⃞ ῳ ᶻ Ἐ ` Ὦ
sflow sampling-rate	Flow ᴨ ¯ ⃞ ἵ ᾰ ᴨ ¯ '
ID	sFlow Collector id
IP	ì ῳ̇ sFlow ἵ ᾰ ⃞ sFlow Collector ⃞ IP ş χ