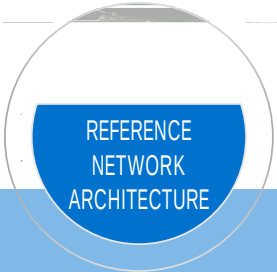


# CISCO VALIDATED DESIGN



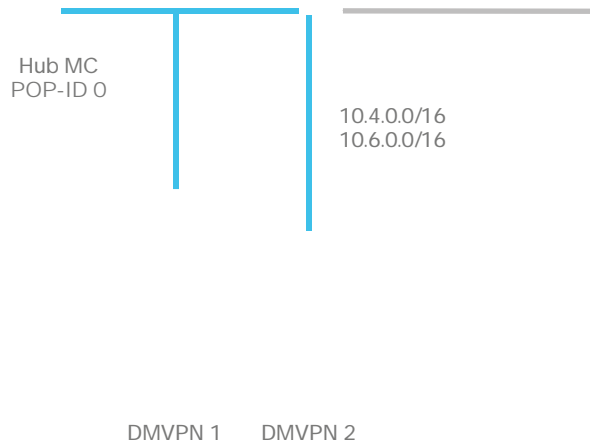
# Table of Contents







Figure 6 IWAN hybrid model—Second data center as a transit site



# Product List









---

# IOS Certificate Authority

Use this optional configuration if you want to deploy an IOS Certificate Authority (IOS CA) on a router in your DMZ with access from the internal network and the MPLS provider network. Skip this configuration if you are using pre-shared keys or if you plan to use a different certificate authority. You can create a more complex CA environment, but the same basic reachability principles will apply for an IWAN enabled solution.

You configure an IOS CA using a single internal LAN interface, which allows access from the hub routers and the remote sites. The remote sites access the IOS CA for authentication, as well as for obtaining their certificate after a DMVPN tunnel has been established with pre-shared keys.

*Figure 7 IWAN IOS Certificate Authority*



















This section includes configuration files corresponding to the IWAN hybrid model WAN aggregation hub and transit sites, as referenced in the figure below.

*Figure 8* IWAN hybrid model–Second DC as a transit site

.....

The following table provides the loopback and port-channel IP addresses for the WAN aggregation devices in the IWAN hybrid design model.

*Table 1* IWAN hybrid model–Hub router IP addresses









Áãbá<æ] \*á↔ãÁÚŞËbæ→àËb↔&^æäËF€ÍIGWĬǾFI

!

!

```
!  
!  
↔^\\æãää´æÁQ~~*âá´←€  
Á↔*ÁáääãæbbÁF€ÈWÈĜĜÈĜIFÁGIIEĞIIEĞIIEĞIIEĞIIE  
!  
↔^\\æãää´æÁŞ~ã\Ě´âá^^æ→GF  
Áäæb´ã↔*\↔~^ÁØÛÈÛNSEĜĜÍI€V  
Á↔*ÁáääãæbbÁF€ÈWÈĜĜÈĜIFÁGIIEĞIIEĞIIEĞIIEĞIIEĞIIE  
no negotiation auto  
!!  
↔^\\æãää´æÁÖ↔&áâ↔\Ó\âæã^æ\F  
Áäæb´ã↔*\↔~^ÁØÛÈÛNSEĜĜÍI€VÁÖ↔&FĐ€ĐFI  
no ip address  
negotiation auto  
cdp enable  
  
!  
↔^\\æãää´æÁÖ↔&áâ↔\Ó\âæã^æ\G  
Áäæb´ã↔*\↔~^ÁØÛÈÛNSEĜĜÍI€VÁÖ↔&GĐ€ĐFI  
no ip address  
negotiation auto  
cdp enable  
Áá  
!  
↔^\\æãää´æÁÖ↔&áâ↔\Ó\âæã^æ\Ĝ
```





!

å~b\^á↑æÄÛŞSËRŞQUËNUÞF€€GVËF





ÁÁÁ↑áb\æãÁF€ÈWÈĞĞÈGIF

ÁÁÁ\*ább}~ãäÁíÁ€W€IIOĞGHÔHFÎÎHÑIJ

!

←æ]Á'ää↔^ÁQNSĚPÓW

key 1







```
bandwidth remaining percent 1
^A\bæ\Aäb´*A\|^æ→AáàFF
A´→ábbAŮŠØÓ
```



```

!
no negotiation auto
!
ip address 10.10.10.1 255.255.255.255
ip route 0.0.0.0 0.0.0.0 10.10.10.1
no ip redirects
ip pim sparse-mode
ip pim nbma-mode
ip nhrp map multicast dynamic
ip nhrp no auto-discovery

```

```

ip nhrp no auto-discovery

```





ÁÁÁå~→äË\↔↑æÁŒ€



!

ã~ | \æË↑á\*ÁÑŒŠOPËŒOGËŒRÛŒSËFÁäæ^ ]ÁF€

→^æÁá | [Á€





```
option application-table
option application-attributes
!
!!
+~}Áæ[ *~ã\æãÁÓ[ *~ã\ËÔSÔËR~^↔\~ãËG
Áäæb´ã↔*\↔~^ÁÔSÔ{ÏÁÑÑPǦÁ}↔\áÁŞã↔↑æ
Áäæb\↔^á\↔~^ÁF€ÈHÈHÎÈĚJ
Áb~|ã´æÁQ~~*âá´←€
Á\ãá^b*~ã\Á|ä*ÁÏÏÏF
```

ÁÁÁ←æ]Ëb\ã↔^&ÁÍÁFIFFFINFÔ€ÍGIÍNÍJÍÑ

!

!

´ã]\*\~Á\*←↔Á\ã|b\\*~↔^ÁÚŞËbæ→àËb↔&^æäËG€ÍÍG€ĞHĞF

Áæ^\*↑

→'æ^bæÁ | ä↔Á\*↔äÁØUÞHHIFËVÐPĪÁb^ÁÔŠOFĪĞŃĪÞŪ

!

b\*á^↔^&Ë\ãæÁæ[ \æ^äÁb ]b\æ↑Ë↔ä

!

|bæã^á↑æÁää↑↔^Ábæ'ãæ\ÁIÁÁFÁU^P↑Á↔áo}ÐFŪÍ€GÖRNR↓ÐÐ@~bË

!

redundancy

mode none

!





ÁÁbæ\Áäb´\*Á\|^æ→Áæà

Á´→ábba´→ábbËäæàá{





```

!
<^ \æãää´ æÄÖ&áâ< \ó \åæã^æ \€Đ€ĐĐ
Áäæb↔ãĚ\ *æÁÄØÛNSEĚĜÍI€VÁÖ<&GĐ€ĐĐ
no ip address
Á↑æä↔áĚ\]*æÁã↓HI
negotiation auto
Á´ää^æ→Ě&ã~|*ÁĜ
!
<^ \æãää´ æÄÖ&áâ< \ó \åæã^æ \€Đ€ĐĜ
no ip address
shutdown
Á↑æä↔áĚ\]*æÁã↓HI
negotiation auto
!
<^ \æãää´ æÄÖ&áâ< \ó \åæã^æ \€Đ€ĐĜ
Áäæb´ã<*\<~^ÁØUŞÁF
Áää^ä}↔ä\åÁI€€€€€
Á{ääÁà~ã}ää↔^&ÁØÛNSEŮĚŮNSUŞŞĚŮĚĜ
Á<*\ÁääääæbbÁFĪĜĚFĴĴĚFĴHĴĚF€ÁĜIĪĚĜIĪĚĜIĪĚ€
negopiarcdonests0
no ip unreachable

```

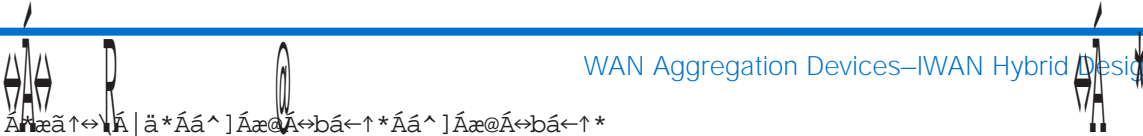


ÁÁÁä↔b\ã↔â | \æË→↔b\Áã~ | \æË↑á\*ÁÚÓÚËÚÑÖËËRÜŞSËGÁ~ | \ÁŞ~ã\Ë´áá^æ→G

ÁÁÁä↔b\ã↔â | \æË→↔b\Áã~ | \æË↑á\*ÁÚÓÚËÚÑÖËËNQÁ~ | \ÁÚ | ^æ→FF

ÁÁÁä↔b\ã↔â | \æË→↔b\Áã~ | \æË↑á\*ÁÑQŠOPËËGOGËËRÜŞSËGÁ↔^ÁÚ | ^æ→FF

ÁÁæ[ ↔\ËáàË\~\*~→~& ]



mgcp behavior 53



```

!
!
!
boot-start-marker
!
!
boot-end-marker
!
!
{
}
!
!
!
aaa new-model
!
!
!
!

```

```
multilink bundle-name authenticated
!  
domain iwan
```

ÁÁF€€€HFJÁ€HFHÔ€ĜÁGÔFNHOÍÁ€ÑI€ÑHÓÁIĜOWHNIÁÑ€FÔÍF€ĜÁÑÎIÍĜ€€€Á€J€İGNÎWÁ  
ÁÁHÎÎWÔÍ€€Á€F€F€I€IÁ€€€ĜÎFÎFÁ€€ÍIGÑÔİÁ€€€ÔĜÎÑÁF€OOÔOÓÁ€FNÔ€€NÁÔĜJ

ÎÎWÔÍ

Á M Ĝ



```
!  
ÁÁáàÈ↔^ \æãàá´æÁäæàá |→\  
ÁÁÁ*ább↔{æÈ↔^ \æãàá´æ  
ÁÁæ[↔\ÈáàÈ↔^ \æãàá´æ  
!  
ÁÁáàÈ↔^ \æãàá´æÁŞ~ã\È´áá^æ→GF  
    authentication mode md5  
ÁÁÁá|\áæ^↔´á\↔~^Á<æ]È´áá↔^ÁQNSEPÓW  
ÁÁÁ^~Á*ább↔{æÈ↔^ \æãàá´æ  
ÁÁæ[↔\ÈáàÈ↔^ \æãàá´æ  
!  
    topology base  
ÁÁæ[↔\ÈáàÈ\~*~&]  
ÁÁ^æ\}~ã<ÁF€ÈÎÈ€È€Á€ÈFÈGIÈGI  
ÁÁæ↔&ã*Áã~|\æãÈ↔äÁF€ÈÎÈĞÈGI
```

↔\*Á\*ãæ%[Ë↔b\ÁŞÞØRNÞWËUØÚÓËŞÞÓÔØVÓUÁbæ@ÁG€Á\*æã↑↔\ÁF€ÈÎÈ€È€DFIU

no service-routing capabilities-manager

!

## VPN-MPLS-ASR1002X-T1–TRANSIT BR (MPLS)

```
version 15.5
```

```
no service pad
```

```
service tcp-keepalives-in
```







```
Á´á´âæÁ\↔↑æ~|\Áá´\↔{æÁIŒ
Áãæ´~ããÁPæ´~ããËÔSÔËØÛNS
!
multilink bundle-name authenticated
!
domain iwan
Á{ããÁãæãá|→\
    border
ÁÁÁb~|ã´æË↔^æãää´æÁQ~~*âá´←€
ÁÁÁ↑áb\æãÁF€ÈÎÈĞĞÈGIF
ÁÁÁ*ább}~ããÁÍÁ€Ğ€Í€NFî€I€€Í€FÓF€
!
←æ]Á´âÁ
```

ÁÁOÏNÔÎFOÎÁNGOGHÎIIÁÔÏ€I€UJÎÁÁÎOFĞJOGIÁ€NÔÏÑHIÓÁÑÑOOÓIF€ÁÓÔHÔGÏHFÁJ€ÓFIGIWA  
ÁÁHÑOÔĞÎĞÔÁNH€N€IIOOÁFNHÓĞÑIĞÁNFNÑN€CIÁÁÏÏFWJÏÑÑIÁ€FINÍIJEFA€ÑOÓOGEÓÁÏ€FGIUGHİÁ  
ÁÁÔNÍFNGÏIİÁÍ€ÔHÔIIGÁÔO€ÏÑNÓGÁOÍHIÏÔÔÍÁOÎH€OFI€ÁOÑIÍFĞNHÁH€ÔI€ÑÑHÁOÍÓÏÏOHHÁ  
ÁÁÍÑ€Í€GEĞÁ€F€€€FNĞÁIĞĞ€IFĞ€Á€Ô€IJEĞIİÁF€FĞ€F€FÁÔÔ€HEIĞ€Á€Ğ€F€FÔÔÁĞ€FÔ€IJEĞÁ  
O ' HEÔ€IJEĞ€R



ÁÁâá^ä}↔ä\áÃãæ↑á↔^↔^&Á\*æã´æ^\ÁHÁ  
ÁÁbæ\Áäb´\*Á\|^æ→ÁáàGF  
Á´→ábbÁOÞØÚØONQËENÚN  
ÁÁâá^ä}↔ä\áÃãæ↑á↔^↔^&Á\*æã´æ^\ÁGIÁ  
    random-detect dscp-based  
ÁÁbæ\Áäb´\*Á\|^æ→ÁáàGF  
Á´→ábbÁUONÜÓSÖÓÞ











ÁÁÁáæ→~Ë↔^ \æã { á→ÁGE

ÁÁÁá~→äË \↔↑æÁWE

ÁÁÁ^~Á\*ááá↔↔{æË↔^ \æãá ~æ^ Á

ÁÁÁ^~Áb\*→↔ \Ëá~ã↔ ~ ^

ÁÁæ [↔ \ËáàË↔^ \æãàá´æ

!

```
ip scp server enable
```

```
!
```



```
!
boot-start-marker
```

```
!
```

```
boot-end-marker
```

```
!
```

```
!
```

```
!
```

```
!
```

```

!
!
ip domain name cisco.local
ip multicast-routing distributed
!
!
subscriber templating
!
!
+~}Áãæ´~ãäÁÆæ´~ãäËÔSÔËØÛNS
Áäæb´ã↔*\↔~^ÁÔ→æ[↔â→æÁSæ\Ô→~}Áä~ãÁØÛNSÁR~^↔\~ã↔^&
Á↑á\´áÁ↔*{HÁ\~b
Á↑á\´áÁ↔*{HÁ*ã~\~´~→
Á↑á\´áÁ↔*{HÁb~|ã´æÁääãæbb
Á↑á\´áÁ↔*{HÁäæb\↔^á\↔~^Áääãæbb
  match transport source-port
  match transport destination-port
Á↑á\´áÁ↔^*\æãää´æÁ↔^*|\
Á↑á\´áÁ+~}Áä↔æ´\↔~^
  collect routing source as
  collect routing destination as
Á´~→æ´\Áã~|\↔^&Á^æ[\Ëå~*ÁääãæbbÁ↔*{H
Á´~→æ´\Á↔*{HÁäb´*
Á´~→æ´\Á↔*{HÁ↔ä
Á´~→æ´\Á↔*{HÁb~|ã´æÁ*ãæ%[
Á´~→æ´\Á↔*{HÁb~|ã´æÁ↑áb←
Á´~→æ´\Á↔*{HÁäæb\↔^á\↔~^Á↑áb←
Á´~→æ´\Á\ãá^b*~ã\Á\´*Á+á&b
Á´~→æ´\Á↔^*\æãää´æÁ~|\*|\
Á´~→æ´\Á+~}Ábá↑*→æã
  collect counter bytes
  collect counter packets
Á´~→æ´\Á\↔↑æb\á↑*Áb]bË|*\↔↑æÁ%ãb\
  collect timestamp sys-uptime last
  collect application name
!

```









´→ábbĚ↑á\*Á↑á\`áĚá^]ÁØSÚÓĚNOÚØŮÓĚŮØĚÓŠ

Á↑á\`áĚáb´\*Á´bHÁÁáàHFÁÁáàHGÁÁáàHĚÁ

´→áb Ě↑á\*Á↑á|`áĚá^]ÁØĚØ



```
AAAbaa*aa{aa&afEEEEEEAAA  
AAAaa^a}aa\aaãa^a^&aa\aa~afEE  
service-policy WAN
```

!

↔^æãää´æÁÚ|^æ→FF

Áâ

Á↔RR

Á↔RR R

Á↔RR

Á↔ →Ï R



```
no ip address
shutdown
negotiation auto
!
```

ÁÁæ[↔\ËáàË↔^\æãàá´æ



```
permit icmp any any echo-reply
```

\á´á´bÁbæã {æãÁÚNONOUËUÓÐÛÓÐËF

ÁáääãæbbÁ↔\* {HÁF€ÈHÈHÎÈFI

Á←æ]ÁÍÁFIGF€Ó€ÔFIJGÔĜÔ€ÔGEGN

!

!

control-plane

# WAN Remote-Site Devices–IWAN Hybrid Design Model

Performance Routing Version 3 (PfRv3) consists of two major Cisco IOS components: an MC and a BR. The MC



!

ÁääãæbbËàá↑↔]Á↔\* {H

Áæ[↔\ËääãæbbËàá↑↔]



!  
!  
+~}Áæ[ \*~ã\æãÁÓ[ \*~ã\ËÔSÔËR~^↔\~ãËG  
Áäæb´ã↔\*\↔~^ÁÔSÔ{ ĨÁSÑÑPǦÁ}↔\áÁŞã↔↑æ  
Áäæb\↔^á\↔~^ÁF€ÈHÈHÎÈĚJ  
Áb~|ã´æÁQ~~\*âá´←€  
Á~|\\*|\Ëàæá\|ãæb  
Á\ãá^b\æãÁ B

```
<æ]Á´åá↔^ÁÛNSEPÓW
```

```
key 1
```

```
ÁÁ<æ]Ëb\ã↔^&ÁÍÁF€H€I€€N€JFÎHĞIÏÎÔ
```

```
cts logging verbose
```

```
!
```





Áä\*ääÁĤÁĪ~^Ëäæ↑á^ä

!

´ã]\*\~Á←æ{GÁ\*ã~%→æÁÔÛÞÔËØÞÓ{GËØÛÑSËÚÞNSUŞŞÞÚËG

Á↑á\´ääÀ{ääÁØÛÑSËÚÞNSUŞŞÞÚËG









LS KHOSHU DGGUHV V

ip pim sparse-mode

!  
↔^\æãää´æÃÖ↔&áâ↔\Ó\áæã^æ\€DGÈJJI  
Áæ^´á\*b|→á\↔~^Áä~\FTÁJJI  
Á↔\*ÁáääãæbbÁF€ÈÍÈÈÈFÁGIIÈGIIÈGIIÈ€  
Á↔\*Ááæ→\*æãËääãæbbÁF€ÈÈÈÈHÎÈF€

ip pim sparse-mode

!  
↔^\æãää´æÃÖ↔&áâ↔\Ó\áæã^æ\€DGÈJJI  
Áæ^´á\*b|→á\↔~^Áä~\FTÁJJI  
Á↔\*ÁáääãæbbÁF€ÈÍÈÈÈÈFÁGIIÈGIIÈGIIÈ€  
Á↔\*Ááæ→\*æãËääãæbbÁF€ÈÈÈÈHÎÈF€

ip pim sparse-mode

!  
↔^\æãää´æÃÖ↔&áâ↔\Ó\áæã^æ\€DGÈÍ€  
Áæ^´á\*b|→á\↔~^Áä~\FTÁÍ€  
Á↔\*ÁáääãæbbÁF€ÈÍÈ€

Á↔\*ÁáääãæbbÁ









➤ ^æÁ´~^Á€

logging synchronous

Á\ǎá^b\*~ǎ\Á\*ǎæðæǎǎæǎÁ^~^æ

➤ ^æÁá|[Á€

➤ ^æÁG

no activation-character

Á^~Áæ[æ´

Á\ǎá^b\*~ǎ\Á\*ǎæðæǎǎæǎÁ^~^æ

Á\ǎá^b\*~ǎ\Á~|\\*|\Á→á\Á\*ááÁ\æ→^æ\Áǎ→~&↔^Á→á\*âË\áÁ↑~\*Á|ä\*\^Á{FG€Ábbå

stopbits 1

➤ ^æÁJÍ

no activation-character

Á^~Áæ[æ´

Á\ǎá^b\*~ǎ\Á\*ǎæðæǎǎæǎÁ^~^æ

transport input all

Á\ǎá^b\*~ǎ\Á~|\\*|\Á→á\Á\*ááÁ\æ→^æ\Áǎ→~&↔^Á→á\*âË\áÁ↑~\*Á|ä\*\^Á{FG€Ábbå







Áæ[ \*~ã\æãÁÓ[ \*~ã\ËÔSÔËR~^↔\~ãËF

Áæ[ \*~ã\æãÁÓ[ \*~ã\ËÔSÔËR~^↔\~ãËG









!

```

Á\|^æ→Áb~|ã´æÁÖ↔&áâ↔\Ó\áæã^æ\€Đ€
  tunnel mode gre multipoint
Á\|^æ→Á←æ]ÁF€F
Á\|^æ→Á{ãàÁØÛNSEÛPNSUSŞŞPÚËF
Á\|^æ→Á*ã~\æ´\↔~^Á↔*bæ´Á*ã~%→æÁCRÛŞSEŞPŞÔØQÓËÛPNSUSŞŞPÚËF
!
↔^æãàá´æÁŞ~ã\Ë´áá^^æ→F
Áäæb´ã↔*\↔~^ÁQ↔^←Á\~ÁPUGĚNGĬJ€V
  no ip address
!
↔^æãàá´æÁŞ~ã\Ë´áá^^æ→FÈIJH
Áäæb´ã↔*\↔~^ÁĚá\á
Áæ^´á*b|→á\↔~^Áä~\FTÁIJH
Á↔*ÁáäŽPÚËF €F

```

```

<^\\æãää´æÁŞ~ã\Ë´ää^æ→FÈİİ
  description Transit Net
  Áæ´á*b|→á\<~^Áä~\FTÁİİ
  Á<*\ÁääããæbbÁF€ÈÍÈFJÈÏÁGIIÈGIIÈGIIÈGIG
  ip pim sparse-mode
  Áäæ→á]ÁGI€€€
  !
<^\\æãää´æÁÓ↑âæääæäËUæã{<´æËÓ^&<^æ€Đ€
  no ip address
  shutdown
  !
<^\\æãää´æÁÖ<æáâ<ó\âæã^æ\€Đ€
  Áâá^ä}<ä\âÁG€€€€
  Á{ããÁä~ã}áãã<^&ÁØÛNSEÛPNSUSŞŞPÚËF
  Á<*\ÁääããæbbÁFÏGÈFJÏÈJÈÏÁGIIÈGIIÈGIIÈGIG
  no ip redirects
  no ip unreachablees
  Á^~Á<*\Á*ã~[ ]Ëäã*
  Áä|*→æ[Áá|\~
  speed auto
  no lldp transmit
  no lldp receive
  no mop enabled

```

```

speed auto
channel-group 1
!
↔^\æãää´æÁ|´bæFÐ€
no ip address
shutdown
!
↔^\æãää´æÁ|´bæFÐF
no ip address
shutdown
!
↔^\æãää´æÁÛ→á^F
no ip address
!
!
ã~|\æãÁæ↔&ã*ÁØÛNSEÖÓØÞŞ
!
ÁääääãæbbËää↑↔]Á↔*{HÁ|↔´áb\Áá|\~^~↑~|bËb]b\æ↑ÁH€€
!
ÁÁääË↔^\æãää´æÁäæää|→\
ÁÁÁ*áb↔{æË↔^\æãää´æ
ÁÁæ[↔\ËääË↔^\æãää´æ
!
ÁÁääË↔^\æãää´æÁÛ|^æ→F€
ÁÁÁb|↑↑ää]ËääääæbbÁF€ËÍËFJË€ÁGIIËGIIËGHÎË€
authentication mode md5
ÁÁÁá|\åæ^↔´á\↔~^Á<æ]Ë´ää↔^ÁÛNSEÞÓW
ÁÁÁåæ→~Ë↔^\æã{á→ÁG€
ÁÁÁå~→äË\↔↑æÁJ€
ÁÁÁ^~Á*áb↔{æË↔^\æãää´æ
ÁÁæ[↔\ËääË↔^\æãää´æ
!
ÁÁääË↔^\æãää´æÁŞ~ã\Ë´ää^æ→FËËË
authentication mode md5
ÁÁÁá|\åæ^↔´á\↔~^Á<æ]Ë´ää↔^ÁÛNSEÞÓW
ÁÁÁ^~Á*áb↔{æË↔^\æãää´æ

```







→^æÁ' ~^Á€



ethernet lmi ce













!

À^\*ããàá'æÁÚ|^æ→FF

Áâá^ä}↔ä\åÁF€€€€



no ip unreachable

no ip unreachable

no ip unreachable

speed 1000000000 Span Bidirectional 1 T0 Tw 100010957.2 Tm 960560002jw Span Bidirectional 1 T0 Tw 10001096 966

no lldp transmit

no lldp receive

no cdp enable

no mop enabled

! ~~IP~~ ~~SPAN~~



```
no ip http server
ip http authentication aaa
ip http secure-server
!
<*&A`*Ab~|ã'æE^æãää'æAQ~~*âá'←€
ip pim autorp listener
<*&A*←↑Ããæ&←b\æãEb~|ã'æAQ~~*âá'←€
```



no activation-character

---

## REMOTE SITE 51–SINGLE-ROUTER, DUAL FALLBACK)

This section includes configuration files corresponding to the diagram referenced in the figure below.

*Figure 10* IWAN hybrid model–WAN remote-site details





```
!  
!  
aaa session-id common  
ethernet lmi ce
```









Áä\*ääÁĤÁIÁ~^Ëäæ↑á^ä

!

´ã]\*\~Á←æ{GÁ\*ã~%→æÁÔÛÞÔËØÞÓ{GËØÛNSEÛÞNSUŞŞÞÚËĜ

Á↑á\´ääÀ{ääÁØÛNSEÛÞNSUŞŞÞÚËĜ

```
match dscp cs1
```

```
`→ábbĚ↑á*Á↑á\`âĚá^]ÁONQQĚUØöSNQØSö
```





Áâá^ä}↔ä\ãĀĜĕĕĕ

Á↔\*Á^ã~\*Á&ã~ | \*ÁᵇUËÖᵇŠŮŞËF€RÑŞU

Á↔\*Á^ã~\*Á^æ\} ~ã←Ë↔ãÁF€G

Á↔\*Á^ã~\*Áã~→ä\↔↑æÁJ€€

Á↔\*Á^ã~\*Á^ábÁF€EJËÈĜJËÈFÁ^â↑áÁFÍGÈFJËÈFH€ÈFÁ↑|→\↔'áb\

Á↔\*Á^ã~\*Á^ábÁF€EJËÈĜJËÈGÁ^â↑áÁFÍGÈFJËÈFH€ÈGÁ↑|→\↔'áb\



Á↔\*Áå→\*æãËääãæbbÁF€ÈÈÈÎÈF€

```
↔^\\æãää´æÁOæ→→|→áã€ĐFĐF
```

```
no ip address
```

```
encapsulation slip
```

```
!
```

```
↔^\\æãää´æÁÛ→á^F
```

```
no ip address
```

```
!
```

```
!
```

```
ã~|\\æãÁæ↔&ã*ÁØÛNSEÓØÖÞŞ
```

```
!
```

no

authentication mode md5

AAAÁ | \áæ^\↔'á\↔~^Á<æ]Ë' áá↔^ÁÛNSEPÓW

AAAáæ→~Ë↔^\æã{á→ÁG€

AAAá~→äË\↔↑æÁW€

AAA^~Á\*ább↔{æË↔^\æãää'æ





!  
ã~ | \æË↑á\*ÁÆRÛ\$SFËÑÞËØSÁ\*æã↑↔\ÁF€  
Áäæb´ã↔\*\↔~^ÁRá\´áÁ\á&&æäÁã~ | \æbÁ↔^â~ | ^ä  
Á↑á\´áÁ\á&ÁF€FÁF€Ĝ  
!  
!  
b^↑\*Ëbæã {æãÁ´~↑↑ | ^↔\ ]Á´↔b´~ÁÞŠÁII  
b^↑\*Ëbæã {æãÁ´~↑↑ | ^↔\ ]Á´↔b´~FGĜÁÞÛÁII  
b^↑\*Ëbæã {æãÁ↔% ^äæ [ Á\*æãb↔b\  
b^↑\*Ëbæã {æãÁ\ãá\*Ëb~ | ã´æÁQ~~\*âá´←€  
\á´á´bÁbæã {æãÁÚNONOUËUÓÞÛÓÞËF  
ÁääääæbbÁ↔\* {HÁF€ÈHÈHÎÈFI  
Á←æ]ÁÍÁFGGN€€FH€€€ÓFÎGÔGÔĜG





# WAN Aggregation Devices–IWAN Dual Internet Design Model

.....















!

!

{ ääÄäæ% ^↔\↔~^ÁR&↑\Ë↔^ \à

!

ÁäääãæbbËäá↑↔↔]Á↔\* {H

Áæ[↔\ËäääãæbbËäá↑↔↔]

!

ÁäääãæbbËäá↑↔↔]Á↔\* {I

Áæ[↔\ËäääãæbbËäá↑↔↔]

!

æ^áâ→æÁbæ´ãæ\ÁIÁÁFÁ↑PS\ÁÛŞãHÖH]~ÓàRIJ´\*ŠâÐÓ€U^È

!

ÁÁÁ\*ább}~ääÁÍÁ€ÏHÔFÔFNFN€NHIJH€IÎ

load-balance

advanced

ÁÁÁÁ´áá^æ→Ë| ^ãæá´ááâ→æË\↔↑æãÁH

ÁÁÁæ^\æã\*ã↔bæË\*ãæ%[ ÁÁ\*ãæ%[ Ë→↔b\ÁÓÚÓËËËØUÓËËËÓÓØVÓU

ÁÁÁ´ ~→æ´\~ãÁF€ÈÈÈÈËËËÁ\*~ã\ÁËËËF

ÁÁÁ´→ábbÁÜŠØÓÁbæ@|æ´æÁF€

ÁÁÁ←æ]Ëb\ã↔^&ÁÍÁF€H€IÎ€N€IWFÎHĞIİİÔ

!

!

´ã]\*\~Á\*↔↔Á\ã|b\\*~↔^ÁÚŞËbæ→àËb↔&^æäËGIHIİİĞHÎU

Áæ^ã~→↑æ^Ábæ→àb↔&^æä

Áb|â↓æ´\Ë^á↑æÁ´^KØŠUËUæ→àËU↔&^æäËOæã\↔%´á\æËGIHIİİĞHÎU

redundancy

!

!

cdp run

!

!

↔^\æãàá' æÁQ~~\*âá' ←€'











Á' ~->æ'\Á↔\*{HÁäæb\↔^á\↔~^Á↑áb←

Á' ~->æ'\Á\ãá^b\*~ã\Á\'\*Á+á&b

Á' ~->æ'\Á↔^æãää'æÁ~|\\*|\

Á' ~->æ'\Á+~}Ábá↑\*→æã

collect counter bytes

Á´á´åæÁ\↔↑æ~|\Áá´\↔{æÁIŒ

Áãæ´~ããÁŒæ´~ããËÔSÔËØÛNS

!

multilink bundle-name authenticated











!

```
ip nhrp redirect
Á↔*Á\´*Ááä↓|b\Ë↑bbÁFǦIJE
Áäæ→á]ÁF€€€
Á\|^æ→Áb~|ã´æÁÖ↔&áâ↔\Ó\áæã^æ\€Đ€ĐǦ
tunnel mode gre multipoint
Á\|^æ→Á←æ}
```

```
Á\|^æ→ÁjjãjjÁ*
```

```

Á^~Á↔*Á*ã~[ ]Ëää*
Á↔*Áá´ æbbË&ã~ | *ÁNOQËØSÓÚËŞÛÑQØOÁ↔^
negotiation auto
no mop enabled
no lldp transmit
no lldp receive
Ábæã{↔´æË*~→↔´]Á~|\*|\ÁŞSQØWEËÚÞNSUSŞÞÚËĚËUÒNŞÓËŞSQW
!
↔^æãää´æÁÖ↔&áâ↔\Ó\áæã^æ\€Đ€ĐH
no ip address
shutdown
negotiation auto
!
↔^æãää´æÁÖ↔&áâ↔\Ó\áæã^æ\€Đ€ĐI
no ip address
shutdown
negotiation auto
!
↔^æãää´æÁÖ↔&áâ↔\Ó\áæã^æ\€
Á{ääÁâ~ã}ää↔^&ÁR&↑\Ë↔^à
no ip address
shutdown
negotiation auto
!
!

```



↔\*Á\á´á´bÁb~|ã´æË↔^\æãàá´æÁQ~~\*âá´←€

↔\*ÁbbåÁb~|ã´æË↔^\æãàá´æÁQ~~\*âá´←€

↔\*ÁbbåÁ{æãb↔~^ÁG











```
Á´á´âæÁ\↔↑æ~|\Áá´\↔{æÁIŒ€  
Áãæ´~ããÁPæ´~ããËÔSÔËØÛNS  
!  
multilink bundle-name authenticated  
!  
ä~↑á↔^Á↔}á^G  
Á{ããÁãæää|\→\  
border  
ÁÁÁb~|ã´æË↔^æãää´æÁQ~~*âá´←€  
ÁÁÁ↑áb\æãÁF€ÈWÈĞĞÈGIG  
ÁÁÁ*ább}~ããÁÍÁ€HIÎINFI€OGÓF€FOIN  
!
```



ÁÁÓGNİÔÖĞĖÁGİJGŦOĖIÁOĖĖFNĖIFÁOŦIĖFNİJÁHOĖĖĖĖĤÁNFĤHNĪÍGAÓŦİİİŦFÁJŦNİİİJÁ  
%







Á´→ábbÁ´→ábbËäæàá |→\

```
AAA^a}↔ä\ãÃæ↑á↔^↔^&Ããä\↔~ÁI€
    service-policy WAN
*~↔' ]Ë↑á*ÁÞUËÖÞŠÛŞËFERNŞUËŞQØOW
Á'→ábbÁ'→ábbËäæá|→\
ÁÁbáá*æÁá{æãá&æÁFEEEEEEÁÁÁ
AAA^a}↔ä\ãÃæ↑á↔^↔^&Ããä\↔~ÁI€
    service-policy WAN
*~↔' ]Ë↑á*ÁŞQØOWËÚÞNSUŞŞÞÚËËUØNŞÓËŞQW
Á'→ábbÁ'→ábbËäæá|→\
ÁÁbáá*æÁá{æãá&æÁFEEEEEEÁÁÁ
!
!
```





```
shutdown
negotiation auto
!
↔^ \æãää´ æÃÖ↔&áâ↔\ó\áæã^æ\€
Ã{ãàÃà~ã}áãã↔^&ÁR&↑\Ë↔^ \à
no ip address
shutdown
negotiation auto
!
!
ã~ | \æãÁæ↔&ã*ÁØÛNSEÓØÖÞ§
!
```

!

topology base

ÁÁÁä↔b\ã↔â | \æË→↔b\Áã~ | \æË↑á\*ÁÚÓÚËÚÑÖËËRÜŞSEHÁ~ | \ÁŞ~ã\Ë'ää^æ→H

ÁÁÁä↔b\ã↔â | \æË→↔b\Áã~ | \æË↑á\*ÁÚÓÚËÚÑÖËÑQQA~ | \ÁÚ | ^^æ→GF

```
Á*æã↑↔\Á↔↑*ÁÁ^]ÁÁ^]Á\→Èæ[´ææäää
  permit icmp any any port-unreachable
Á*æã↑↔\Á|ä*ÁÁ^]ÁÁ^]Á&\ÁF€GĞÁ\→Áæ@ÁF
↔*ÁÁ´´æbbÈ↔b\Áæ[\æ^ääääØUNPRŞ
Á*æã↑↔\Á|ä*ÁÁ^]Áæ@Á↔bá←↑*ÁÁ^]Áæ@Á↔bá←↑*
!
no service-routing capabilities-manager
!
ã~|\æÈ↑á*ÁUÓÚÈÚNÖÈÈRÛŞSÈHÁ*æã↑↔\ÁF€
```

```

->^æÁá|[Á€
  stopbits 1
->^æÁ{\}Á€ÁH
Áæ[æ'Ë\↔↑æ~|\Á€Á€
Á\ãá^b*~ã\Á*ãæðæãæãÁ^~^æ
  transport input ssh
line vty 5 15
Á\ãá^b*~ã\Á*ãæðæãæãÁ^~^æ
  transport input ssh
!
^\'Áb~|ã'æÁQ~~*âá'←€
^\'Ábæã{æãÁF€ÈÈÈÈÎÈFÍ
!
!
end

```







!



```
mode none
```

```
!
```

```
`ã]*\~Á<×-æ{GÁ*ã~*~bá→ÁNÓUĐOÑOƏGIIJÁ
```

```
Áæ^`ã]*\<↔~^ÁáæbĚ`â`ĚGIIJ
```

```
Á↔^\<æ&ã↔\]ÁbááIFG
```

```
Á&ã~|*ÁFH
```

```
!
```

```
!
```

```
`ã]*\~Á<×-æ{GÁ<-æ]ã↔^&ÁĚRÛŞSĚPÓWĚØSÖĚĚ
```

Á↑á\`áÄäb`\*Á`bĜÁ

`→ábbË↑á\*Á↑á\`áËá^]ÁSÓÚËOÚËQ

match dscp cs6











```
shutdown
negotiation auto
!
!
ã~ | \æãÁæ↔&ã*ÁØÛNSEÖÓØÞ§
!
ÁÁääãæbbEää↑↔→]Á↔* {HÁ | ^↔´ áb\Áá | \~^~↑~ | bEëb]b\æ↑ÁH€€
!
ÁÁáàE↔^ \æãàá´ æÁäæàá |→\
ÁÁÁ*ább↔{æE↔^ \æãàá´ æ
ÁÁæ[↔\EáàE↔^ \æãàá´ æ
!
ÁÁáàE↔^ \æãàá´ æÁ§~ã\E´ áá^æ→I
authentication mode md5
ÁÁÁá | \áæ^ \↔´ á \↔~^Á←æ]E´ áá↔^ÁQNSEÞÓW
```

AAA<=&ã\*Ãã~ | \æãË↔ãÁF€ÈIJEĞĜÈGHI

ÃÃ^bà

Ãæ[↔\ËääããæbbËää↑↔↔]

!

↔\*Ãâ~ã}áããË\*ã~\~'~→Ã^ä

!

↔\*Ãâ\\*Ãb~ | ã'æË↔^\æãää'æÃQ~~\*âá'←€

no ip http server

ip http authentication aaa

ip http secure-server

↔\*Ãâ\\\*Ãbæ' | ãæË\ã | b\\*~↔^\Ãää{↔'æŽbæ→àŽb↔&^æä

↔\*Ãâ\\\*Ã'→↔æ^\Ãbæ' | ãæË\ã | b\\*~↔^\Ãää{↔'æŽbæ→àŽb↔&^æä

~~ip authentication aaa~~stener

↔\*Ã\*↔↑Ããæ&↔b\æãËb~ | ã'æÃQ~~\*âá'←€

↔\*Ãã~ | \æÃ{ãääÁØÛNSEÚÞNSUŞŞÞÚËĞÁ€È€È€È€Á€È€È€È€Á€Í \*Ãã~ | \Â à ^\Ãää{Û\*{



```
line vty 5 15
  transport input ssh
  !
  ^\*Áb~|ã´æÁQ~~*âá´←€
  ^\*Ábæã{æãÁF€ÈÈÈÈÎÈÈÍ
  !
  !
end
```

## VPN-INET-ASR1002X-6–HUB BR2 (INET2)

version 15.5









```
crypto pki trustpoint IWAN-CA
```





```
'->ábbĚ↑á*Á↑á\`áĚá^]ÁUÚĚÓNRØSÖĚŮØĚÓŠ
Á↑á\`áĚáb´*ÁáàĜFÁÁáàĜGÁÁáàĜĜÁÁ´bIÁ
'->ábbĚ↑á*Á↑á\`áĚá^]ÁØSÚÓĚNOÚØŮÓĚŮØĚÓŠ
Á↑á\`áĚáb´*Á´bHÁÁáàHFÁÁáàHGÁÁáàHGÁ
'->ábbĚ↑á*Á↑á\`áĚá^]ÁOĚØÚØONQĚENÚN
Á↑á\`áĚáb´*ÁáàFFÁÁáàFGÁÁáàFĜÁÁ´bGÁÁáàGFÁÁáàGGÁÁáàGĜÁ
'->ábbĚ↑á*Á↑á\`áĚá^]ÁŮŠØOÓ
Á↑á\`áĚáb´*ÁæàÁ
'->ábbĚ↑á*Á↑á\`áĚá^]ÁUONŮÓSÓÓĚ
match dscp cs1
'->ábbĚ↑á*Á↑á\`áĚá^]ÁONQQĚŮØÖSNQØSÖ
Á↑á\`áĚáb´*Á´bĜÁ
```

ÁÁbæ\Áäb´\*Á\|^æ→ÁáàFF

Á´→ábbaÜŠØÓ

priority level 1

ÁÁ\*~→´æÁ´↔ãÁ\*æã´æ^\ÁF€

ÁÁbæ\Áäb´\*Á\|^æ→Áæà

Á´→ábba´→ábbaËäæàá|→\







```

<^ \æãää´ æÄÖ↔&ää↔\ó\åæã^æ\€Đ€Đ€
Áäæb´ã↔*\↔~^ÁØÛÈÛÑSĚĚĜÍI€VÁÖ↔&FĐ€ĐIŪ
no ip address
negotiation auto
cdp enable
channel-group 6
!
<^ \æãää´ æÄÖ↔&ää↔\ó\åæã^æ\€Đ€ĐF
Áäæb´ã↔*\↔~^ÁØÛÈÛÑSĚĚĜÍI€VÁÖ↔&GĐ€ĐIŪ
no ip address
negotiation auto
cdp enable
channel-group 6
!
<^ \æãää´ æÄÖ↔&ää↔\ó\åæã^æ\€Đ€ĐG
no ip address
shutdown
negotiation auto
!
<^ \æãää´ æÄÖ↔&ää↔\ó\åæã^æ\€Đ€ĐĜ
Áäæb´ã↔*\↔~^ÁØSÓÚĜ

```

shutdown





```

control-plane
!
!
->^æÁ'~^Á€
Á\ãá^b*~ã\Á*ãæðããæãÁ^~^æ
  stopbits 1
->^æÁá|[Á€
  stopbits 1
->^æÁ{\}Á€ÁH
Áæ[æ'Ë\↔↑æ~|\Á€Á€
Á\ãá^b*~ã\Á*ãæðããæãÁ^~^æ
  transport input ssh
line vty 5 15
Á\ãá^b*~ã\Á*ãæðããæãÁ^~^æ
  transport input ssh

```



The following table provides the loopback addresses for the WAN remote site devices in the IWAN dual Internet design model.

*Table 7*















Áæ^`ã] \* \<~^ÁáæbË`â`ËGIU

Á<^ \æ&ã< \ ] ÁbãáIFG

Á&ã~ | \*ÁFH

!

!

`ã] \* \~Á<~æ { GÁ<æ ]ã<^ &ÁÆRÛŞŞËPÓWÞØSÖËĜ

Á\*ææãÁNSW

ÁÁääããæbbÁ€È€È€È€Á€È€È€È€

ÁÁ\*ãæËbããããæË<æ ] Á`Fb`~FGĜ

!

!

`ã] \* \~Á<~æ { GÁ\*ã~%→æÁÔÛÞÔËØPÓ { GËØÛNSEÛÞNSUSŞŞÞÚËĜ

Á↑á\`áÁà {ãàÁØÛNSEÛÞNSUSŞŞÞÚËĜ

Á↑á\`áÁ<æ^ \< \ ] Áãæ↑~ \æÁääääæbbÁ€È€È€È€Á

authentication remotn1 0 Sp061share\$pan 0ID520 B6TT01 Tf000109642 Tm4authentication remotn



```
random-detect
*~>' ]Ë↑á*ÁŞŒQØWËÚÞNSUSŞŠÞÚËĤ
Á'→ábbÁ'→ábbËäæàá|→\
ÁÁbåá*æÁÁ{æãá&æÁFËËËËËËËËÁÁÁ
    service-policy WAN
*~>' ]Ë↑á*ÁŞŒQØWËÚÞNSUSŞŠÞÚËĤ
Á'→ábbÁ'→ábbËäæàá|→\
ÁÁbåá*æÁÁ{æãá&æÁFËËËËËËËËÁÁÁ
    service-policy WAN
!
!
'ã]*\~Á↔*bæ'Ábæ'|ã↔]Ëább~'↔á\↔~^Áãæ*→á]Á}↔^ä~}Ëb↔æÁF€GH
!
'ã]*\~Á↔*bæ'Á\ãá^bà~ã↑Ëbæ\ÁNÓUGIÏJÐUÒÑËÚÞNSUSŞŠÞÚÁæb*ËáæbÁGIIJÁæb*
```





ip nhrp shortcut





















```

Á{ãÀÁãää|→\
  border
ÁÁÁb~|ã'æE↔^æääá'æÁQ~~*âá'←€
  master local
ÁÁÁ*ább}~ääÁÍÁ€€€ÍHGFIEÍIHINIHI0
  master branch

```





```
AAA^a}↔ä\ãÃãæ↑á↔^↔^&Ã*æã´æ^\ÁHÁ
AAAæ\Áäb´*ÁáàGF
Á´→ábbÁOÞØÚØONQËENÚN
AAA^a}↔ä\ãÃãæ↑á↔^↔^&Ã*æã´æ^\ÁGIÁ
    random-detect dscp-based
AAAæ\Áäb´*ÁáàGF
Á´→ábbÁUONÜÓSÖÓÞ
    bandwidth remaining percent 1
AAAæ\Áäb´*ÁáàFF
Á´→ábbÁÜŠØÓ
```





```
ip pim sparse-mode
standby 16 preempt
```









no activation-character

no activation-character

no activation-character

no activation-character



```

ethernet lmi ce
!
!
ip domain name cisco.local
ip multicast-routing
!
!
+~}Áãæ'~ãäÁæ'~ãäËÔSÔËØÛNS
Áäæb'ã↔*\↔~^ÁÔ→æ[↔â→æÁSæ\Ô→~}Áä~ãÁØÛNSÁR~^↔\~ã↔^&
Á↑á\'á↔*{HÁ\~b
Á↑á\'á↔*{HÁ*ã~\~'~→
Á↑á\'á↔*{HÁb~|ã'æÁääãæbb
Á↑á\'á↔*{HÁääæb\↔^á\↔~^Áääãæbb

```





```
ä~↑á↔^Á↔}á^G
Á{ãääÁääää|→\
  border
  ÁÁÁb~|ã'æË↔^æääá'æÁQ~~*âá'←€
  ÁÁÁ↑áb\æääF€ÈGIIÈGHĞÈFH
  ÁÁÁ*ább}~ääÁÍÁ€FF€IÍFÍIî€HIÍI€ÍG
  !
  !
  ←æ]Á'ää↔^ÁÛNSEPÓW
  key 1
  ÁÁ←æ]Ëb\ã↔^&ÁÍÁ€Ğ€Í€NFî€I€€Í€FÓF€
  cts logging verbose
  !
  crypto pki trustpoint IWAN-CA
```

ÁÁJHÑIO€HÍÁĪĈĜĪĜÑINÁ€ĪIJJÍÓĪIÁÔOIÔĪFĜJWÁGOÑĪÔHJWÓÁÔHIÓGIFĜÁĪHĪOHFÑGÁÑĜÍGFĜĜWÁ  
ÁÁJÍÔÓIĪÍFÁ€GNWÓIFOFÁÓFĪÍHÓWĪÁÑĪĈGNÍĜ€ÁHIÑHGĪHOÁĈHHÔGGĪIÁÓĪĜĪ€NÍÍÁÑJ€ĪÓOEÁ  
ÁÁN€JÍĪÑĪHÁĈHGÔWJOGÁĈÓGNJGJWJ€ÁĪGI€GGNÍÁÔĪÔDHĈEOĜÁÓĪJĪÔÔĪÓAGĜĪĜFĈFNÁĜĪĜÓÓINĪÁ  
ÁÁNÔ€ĪĪGOĪÁGÓÔOGÑGHÁIHFOÍOÔĪÁÑGJĪÑĜJHÁÔĈGHĈEGJGÁGFÔJIFĈÍÁÓÍÓNJĪH€ÁGÓIÓHĈEGÁ  
ÁÁ€ĜF€€€FÁÑĜĪF€J Ī RR RR R RR R V N









Áäæb´ã↔\*↔~^ÁÛ~↔´æ

Áæ^´á\*b|→á↔~^Áä~\FTÁIĬ

Á↔\*ÁáääãæbbÁF€ÈÍÈIFÈĞÁGIIEÈGIIEÈGIIE€



```
Ábæã {↔´æË*~→↔´]Á~|\*|\ÁŞŞQØWËÚÞNSUŞŞÞÚËH
!
↔^\<æãää´æÄÖ↔&áâ↔\Ó\áæã^æ\€DF
Áäæb´ã↔*\↔~^ÁÞUFHËNGÏJ€VÁÇ&↔&FÐ€DHÎD
no ip address
Áä|*→æ[Áá|\~
speed auto
Á´áá^^æ→Ë&ã~|*ÁG
!
↔^\<æãää´æÄÖ↔&áâ↔\Ó\áæã^æ\€DG
Áäæb´ã↔*\↔~^ÁÞUFHËNGÏJ€VÁÇ&↔&GÐ€DHÎD
no ip address
Áä|*→æ[Áá|\~
speed auto
Á´áá^^æ→Ë&ã~|*ÁG
!
↔^\<æãää´æÄ|´bæFÐ€
no ip address
shutdown
!
↔^\<æãää´æÄ|´bæFÐF
no ip address
shutdown
!
↔^\<æãää´æÄÛ→á^F
no ip address
!
!
ã~|\æãÁæ↔&ã*ÁØÛNSEÓØÞŞ
!
ÁääääæbbËää↑↔↔]Á↔*{HÁ|^↔´áb\Áá|\~^~↑~|bËb]b\æ↑ÁH€€
!
ÁÁääË↔^\<æãää´æÄæää|→\
ÁÁÁ*áb↔↔{æË↔^\<æãää´æ
ÁÁæ[↔\ËääË↔^\<æãää´æ
!
```





```
b^↑*Ëbæã {æãÁ↔%^äæ[ Á*æãb↔b\  
b^↑*Ëbæã {æãÁ\ãá*Ëb~|ã´æÁQ~~*âá´←€  
\á´á´bÁbæã {æãÁÚNONOUËUÓÞÛÓÞËF  
ÁääääæbbÁ↔* {HÁF€ÈHÈHÎÈFI  
Á←æ]ÁÍÁFIGF€Ó€ÔFIJGÔÛÔ€ÔGEGN  
!  
!  
control-plane  
!  
!  
mgcp behavior rsip-range tgcp-only  
mgcp behavior comedia-role none  
mgcp behavior comedia-check-media-src disable  
↑&´*Áâæää{↔~ãÁ´~↑æä↔áËbä*Ëà~ã´æÁä↔báâ→æ  
!
```













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