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PVCs, creatingescollect art commandW'13a bump (Frame Relay VC-bundle-
member)X,Frame Relay:PVC bundles:bumping, configuring|FBFE:Blacker
Emergency Mode:entering;BFE:Blacker Emergency Mode:leaving[Blacker Emergency
Mode:enteringelBlacker Emergency Mode:address translation;BFE:address
translationem-Blacker Emergency Mode:leavingep
.67915: CRC_CmdRefCommand: encapsulation l2tpv3etclass-map type waasex
clear waas|
cpu-threshold
37695: Section: aps groupaps group commandaps group command
collect waas command
180666: BL_BlockLabel: Cisco CMTS Routers: Example

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+R53833: TC_TableCap: Table 5 Compatibility Matrix for L2TPv3 Authentication Methods


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um>□□
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TableCapPartNext,TCWF_TableCapWPartFirst,TCWN_TableCapWPartNext]> on
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Book Title Cisco IOS Wide-Area Networking Command Reference
Draft Label Version
March 2011 Figure
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Example

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78-xxxxx-xx

RevisedDateMonth day, year

switch/routerCatalyst6500 series switchCisco IOS ReleaseCisco IOS Release
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Command
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Command
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ð\€ v ð^ v ð`€ v ðb v ðd€ v ðf v ðh€ v
ðj v ðl v ðn v ðp v ðr v ðt€ v ðv v
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Guidelines p'€ v p" v v p•€ v p-€% ¥ p-
€% ¥ p~ v p™ v p> v pÿ v p v p; €&v Not
e pç v v p f v v p€ €& Note p¥€ v v p|€ €&v Note p§ v
v p" # Examples p@ €) p^€ p« p-€
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p»€ p¼ v p¼ v p¿€ pÀ€ pÁ€
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ðü 4 Related
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B óu

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Usage Guidelines
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Command Modes
Command History
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Related
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Syntax
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Command Modes
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Command Modes wÍ v-
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wP v wß t Command History wà " Usage
Guidelines wá v wâ v v wã 5 Examples wä v wå v
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Command Modes: Note Syntax Description F Command
Default: v
Command Modes: u u v -
v ! v # v % v ' v) v + v -
v / v 1 v 3 v 5 v 7 v 9 v ; v
v = v ? v @

Command

History A# Examples C v D , E , c d e | f g h i j k l æ , î € v î € B î € B F , G , H I , J , +æ v +ž v ó v ó u ' ó -

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Guidelines ¥ v | v š v " ' Note © # Examples á v « , - , - , ® , ~ , ° , ± , , ² v ³ , ´ , µ (¶ (¸ » v / x v g 4v Related Commands +ÿ Syntax Description ± Defaults ± ; v ± ç

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&000W20†^a%ja000`DAn integer that identifies the access list. Range is from 1 to 199.

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JRestricts incoming connections between a particular access server and the P.j0000@addresses in the access list.

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0W=0†^a%ja000`0This command was introduced.

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12.2(33)SRA

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W@+a%ja`12.2SX
}Ä,|[ÁD\$?ým„WÄ,|[ÁD\$?ý\$?ý4'
A+ a%ja` IThis command is supported in the Cisco IOS Release 12.2SX train.
Support p•j@H in a specific 12.2SX release of this train depends on your
feature set, @!platform, and platform hardware.
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WK9† a a%j a` Command

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access-list

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NConfigures the access list mechanism for filtering frames by protocol type or
P•j©□□□@
vendor code.

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list
€}Ä™™Ä¼I•ÁD?ÿm5„W"Ä™™Ä¼I•ÁD?ÿ?ÿ[2WP†ª%j`<Limits
access to the access server from certain X.25 hosts.

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haccess-class (X.25) A-

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\$Interface configuration (config-if) P-™Ä@-Controller configuration
(config-controller)

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kUse the Eaps group Bcommand to specify more than one working
and protect interface on a routerÑfor 0-™Ä`example, working channel for
group 0 and protect channel for group 1 on one router, and working @Gchannel
for group 1 and protect channel for group 0 on another router.
E2³™Ä`fThe default group number is 0. The p aps group 0 B command
does not imply that no groups exist.
E3`_The Eaps group B command must be configured on both the
protect and working interfaces.
AE4`PUse the Nacr B keyword to configure an ACR working or
protect interface.

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dThe following example shows how to configure two working/protect interface
pairs. Working interface 0-™Ä(3/0/0) is configured in group 10 (the
@Brouter), and protect interface (2/0/1) is configured in group 20.
WÆ7(...UT²Dk` Router# Ûconfigure terminal

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□UßÍîútúvþzÕIJI\$'R'I\$"ÿÿðÖT'I%)\$'IJ^□p5¼µ~øë_²ñ^N□Ls~b@~GÑ¼Íşoó?Ñêÿ□-YWèi^□p1~µ
□«□□æ†íê9³N□D'Çé²~"□f±þßşúÃñ×†tL□ô°î□OtíĚĚª-□ĚkþÖ=ßÛaIOy...þ%srp±ðlêlŸ÷ôĚ-
Iα'Âö†°²iU»¶NÔcp#ð@şöŞĀ"èÿ,¼mqÿăSë□èÿ□VlĀ©Ñ-Ō'-†αŞăö» □ôNô?ô!%)á□Ā-Öjz□ÖKz;²
Ý+''Zi|ð×4z;þŽ&HŸÛ□WŪ>ú+□-O-ÿ□Ö×¶-•WĐâëëPúÇĐ□o~îf...æLKĚ~†'é;úC□îú-
-3!%=RI\$' "'I\$şÿÑÖT'I%)Eielu-81ĚĚîsĚ□□sæT-Ž□□ÿ□-'şôÆt,G-âu□îĚ-□[Ě

ÒÛioô«éÄ3".ÿ8'ÿ8úóöÿYzýÛ'ìtp† †µM?ÎFÖ{îwé»è3p iŠ\–öï-ÿ6áUncÁî6ÿ™¿æÛ"[-
¼wüGôó·^au77BkÆ@ÿ
xd7ñÆIO^a-ÿ?Æ7Ö/ÛBY⁻²šnÃÿ[

,Öê\6¹İw-v÷²İô-Šöİñ%ö<öÖœ<jvÜİ¿Ö±HĐ†<÷
§s}KÿôP'ö,,İ;•^-/ÈÉ,ĀuV78ÄÜt°N%ÿ,'®fê7ÖwýZëðæ8ÿ±ÝúÖ

ö8ÿ□9□_i;ß|nßsüiøT?-ßUr>-7
æûšz+|fû±Y"¥'□HuO¶Ē-öPÛ6~□ô_£²Õ†'ÿª□öXÆÛ[føð□×4È ê×5ÁIyçø;ú0z†L□BĒyvwNnird-
cNĒÛ%ßÑ^îKp%øiüÀèi)Iš'J□ÿððT'I%5:ßSÄé=;#"æ¿f>+
□: I□çÆn-
Ýe`ý□Lüû□ÍÝs«âu¼-•Ö2¿□ĒyvnÑAZ=•TP=µTÖV»iñÅð«×ÉgÕ¼Gp<□<s^'Ýa□©f□sic½wý?ðøİð~èÌÒR-
¼ÿ□š~žŮ?©~ÖAkó1•"À|w}□„□Zæzæ¼□}3ÓêÆè]□□E»™M8□ÕUmÖ81fc[Q{Pí¬÷=%</Ö0«}cëiÖI-ßdè□0»
-¼§,M-□úa~",1Ö~7□ÖÝóoÕ½J-³ù¥Ůý^ú-Ñ~@byŸ|P□ç□éä?Ýu„w¶ßý□Í"ÿ□f-yiÖiñÅ^-
fð`□´^wQ±°îû¼ĒÇç.ó□M□ý+p□zi¹□7¥□ðPâî<}÷øã."|nµiqúnö\$ŸÁ¿Æ□SýfðĒ7k÷Ō†.□¿/L~□ÿÛĒ~Bâ
Qrò@îĒ» .ó°î<□m@ñsÉ{îùîBIMî†Ōð°'VÁê~¿îâ¼;iaí>Ējw>Ůjsë_Hó¼\$%Ō°v?QĀ~ü| |
□t`?I□Ú]¶Ēÿú;Yù-/~□|□%ß-^†Kp-â¿ðYŸŮ,I>Ů□Ÿu□{[s□ê³è~-
•ÿ□„ĒIO`\$'I)ÿóðU□ð»è□?Vú□GS|:à=<ZŸĀî|úL#s=□pvsWó5ø¶Wfÿ□□□-_.znĀÆ³wNéœÖNð
_gÿ"Ē=ÆæUŮPĪN`V¿ç'SĒEd_vMödBóex=Ō[çµ.{Ž÷¼ßÖqPI\$"øéÛ5áð

l»jûEx÷Wkè'h{Xæ½Ōo†lö6iÿphýdúŸx>²ßêu+;BŌ5b×-¥æêËŸÛ÷;ô¶z-
-d'Rl,s•™F0æûX□â,3ø-yÿ□□ýOöwŌÛŸ-ÛnfÛZüýCúv□k□™
Ë: oŌ-µŌ¼°δ,æš=nŸ•-
†e9ŌKè{,²«□úM-}[šï;{*zê?Ç□Sÿ□":K□ûùW3ÿ□□ÆwpŸα§ÊŌI\$"¥<{îÆ¾¼š-k°-¶Ê-n...-iþÇ·ú®
\$§éª?XŌúÉĐ†ú>!·□éâVÞ□s#Ō`□Ÿîwóµ{;™²µ²¼-
üWŸjŸ...x†&M>zwR"«·□□É?í>D'í÷;Ō³þÆzvú¶□2½á%?ŸŌé□ÆoŌŸØ□□Ōc<³"öŌŌã-'□ÆGë□
svíulvÊ½ßİ[]Ÿàx,-;@□XîúÇõf#''Éú8>-
#□,Ú□Ō¥?Ê³s®³þŌŌ''''I\$¥\$'I)÷□ñAŌ†□Ō°Xé;¥Øj,IqªÉ°†»wð½j+þE
sëgRè]□□Î·Ōqi;¡-□P□Æz¶;ÛêqÛkš÷µ>□çÿ□à™êø¼füz}gÇú½xŸfužž□U/fCµ!¥f×|ÍÆ

sB%žf?öÂîúßö-;ëGUv]ä³□¹n-4ûj-ÿ□èëvî¼ïÿ□]LbSG-uæî¹Ômê9îë`□°mc□ßmtÖïîª□ÿ-
ü□ôšŠI\$¥\$'I)Kþ¿Ä-ÖÿÛÿ□'ä¼¿"ôí'ä□□\öGêù

s·nuEnĚ}ßİUeŸá, -¿©ŸXìú¹õf"Éû9>-[@Ô<WûUímÕŸÂT'ŸŸŌóĪ-¿döwðoçŸŸ
ú?pfŸ!fα'JRI\$'"'I\$Ÿ\$'I)I\$'JRI\$'"`¼-ĚØ?Ñ¿žoôßèŸúü...š'JŸŸÛADBEmtrGRAY
XYZ İ İ
8acspMSFTnoneöÖ-
ADBEcprtÀ\$descäqwtpt
XbkptlKTRC€

6ÂÊaJ´ÝðŽž¶...#l€x...6ÂÊaJ´ÝðŽž¶6ÂÖ16ÂÖ100

WarnTable€}ÀûÿÿÁh<^l?ÿmÏ,)€a€dÀûÿÿÁh<^l?ÿ?ÿ'J%WE\$†ªj`
□`

12.0(23)S

€}ÀûÿÿÁh<^Á@fg?ÿmÏ,)€c€eÀûÿÿÁh<^Á@fg?ÿ?ÿ'J%WE%†ªj` This
command was introduced.

€}ÀûÿÿÁw|l?ÿmÏ,)€defÀûÿÿÁw|l?ÿ?ÿ'J&WE&†ªj` 12.3(2)T

€}ÀûÿÿÁw|Á@fg?ÿmÏ,)€eegÀûÿÿÁw|Á@fg?ÿ?ÿ'J&WE'†ªj`=This
command was integrated into Cisco IOS Release 12.3(2)T.

€}ÀûÿÿÁ¼\l?ÿmÛ,)€fehÀûÿÿÁ¼\l?ÿ?ÿ'J'WE(†ªj`
12.2(25)S

€}ÀûÿÿÁ¼\Á@fg?ÿmÛ,)€geiÀûÿÿÁ¼\Á@fg?ÿ?ÿ'J'WE)†ªj`>This
command was integrated into Cisco IOS Release 12.2(25)S.

€}ÀûÿÿÁ•ü[l>?pmp,)€hejÀûÿÿÁ•ü[l>?p?ÿ'J(WE*†ªj`

12.2(27)SBC

€}ÀûÿÿÁ•ü[Á@fg>?p□□□mà□□,)€i□□□□ÀûÿÿÁ•ü[Á@fg>?p>?p□□□'J□(□□€+□†ª%jª□□□ ?Support
for this command was integrated into Cisco IOS Release P•j©□□□@

12.2(27)SBC.

€}\$ÀWÿÿÂ

TMTM □□□mê□□, H□€o□□□\$ÀWÿÿÂ

TMTM □□, kN□)□W€0-□□□□□h<□□À□□Compatibility Matrix for L2TPv3

Authentication Methods

€}ÀtÿóÀWÿÿÂ

TMTM □□□mí□□, H□□□□□ÀtÿóÀWÿÿÂ

TMTM □□, kN□)□W€1-□□□□□e□

€}Àá□□ÀWÿÿÂ

TMTM □□□mï□□, H□□□□□Àá□□ÀWÿÿÂ

TMTM □□, kN□)□W€2-□□□□□e□

€}ÁR?ÿÀWÿÿÂ

TMTM □□□mñ□□, H□□□□□ÁR?ÿÀWÿÿÂ

TMTM □□, kN□)□W€3-□□□□□e□

€}À□TMTMÀjÿÿÀPÿó“□ÿ□□□mó□□, H€k€p□□□À□TMTMÀjÿÿÀPÿó“□ÿ“□ÿ□□, kN□*□□€4□†ªªŠªª□□□ □PE1 p-
ª©□□□□□□Authentication □□□@

Configuration
€}ÀÖ™€ÀjÿÿÀl□

“Ÿm, H€€qÀ™EÀjÿÀl

“ýæp,KN*€5†ªª-ª©\$\$\$PE2 Supporting Old Pçª”LAuthenticationÀP
€~À™™Á÷!ÁžÇ;~mø,HeçerÀ™™Á÷!ÁžÇ;~Š;~kPWE6A...UT†öîdLAny PE
software that supports only the old CHAP-like authentication system.
€}Á>™šÀjÿÿÀq?ü“ýmú,HeçesÁ>™šÀjÿÿÀq?ü“ýæp,KN*€7†ªª-ª©\$\$\$PE2
Supporting New Pçª”LAuthenticationÀQ
€~À™™ÁÀÁžÿ;“mý,HeçetÀ™™ÁÀÁžÿ;“;“kQ€8A...UT†öî\$wAny PE
software that supports only the new message digest authentication and integrity
checking authentication system, p`vi@sbut does not understand the old CHAP-
like authentication system. This type of software may be implemented by other
@*vendors based on the latest L2TPv3 draft.
€}Á-Û-ÀjÿÿÀoÀ“ýmÿ,HeçeuÁ-Û-ÀjÿÿÀoÀ“ýæp,KN*€9†ªª-ª©\$\$\$PE2
Supporting Old and Pçª”LNew AuthenticationÀR
€~À™™Á#d«Áž-!-n,HeçevÀ™™Á#d«Áž-!-“!-kR€:A...UT†öî\$SrAny PE
software that supports both the old CHAP-like authentication and the new message
digest authentication and P`vi@Yintegrity checking authentication system,
such as Cisco IOS 12.0(29)S or later releases.
€}À™™Á“üÀÿó;pn,HeçewÀ™™Á“üÀÿó;py,KN+WE;†ªªšªª`None
€}À™™Á“üÀl

i p n , H e v e x Ò ¢ Ä " ü Ä l

ïþÿ,KN+WE<†Ša`None
€}Á>™šÀ"üÀq?ü;þn,HexeyÁ>™šÀ"üÀq?ü;þþ,KN+€=†Ša`None
Q€>ª@`New integrity check
€}Á-Û-À"üÀoÀ;þn
,HexezÁ-Û-À"üÀoÀ;þþ,KN+€?†Ša`None
Q€@ª@`New integrity check
€}À™™À'ýúÀPÿóÀJûn

00, Heye{000À0™™À´ÿúÀPÿóÀJ0ûα0p00, kN0, 00€A0†ªªŠªª000 0Old P-ª©000@0authentication
€}À0™€À´ÿúÀ10

ÀJûn, Heze | ÀÒ™È'ýúÀl

ÀJûÿ,KN,WEÇ†ªŠª`Old authentication
€}Á>™ŠÀ´ÿúÀq?üÀJûÿn,He{€}Á>™ŠÀ´ÿúÀq?üÀJûÿÿ,KN,WEÇ†ªŠª`Ñ
€}Á-Û-À´ÿúÀoÀÀJûÿn,He|€~Á-Û-À´ÿúÀoÀÀJûÿJûÿ,KN,ED†ªŠª`Old
authentication
€E:>ª@ &Old ß pauthentication ß and §ª"@new
authentication
€F:,ª &Old ß pauthentication ß and RÀDª|@new integrity
check
€}À™™ÀÿöÀPÿó-ÿn,He}€À™™ÀÿöÀPÿó-ÿªp,KN-EG†ªŠª`New P-
ª@authentication
€}ÀÒ™EÀÿöÀl

-ýn, H€~À™EÿçÀl

-ýý, kN-WEH† a a Š a `Ñ
€}Á>™ššÿõÀq?ü-ýn, H€Á>™ššÿõÀq?ü-ýý, kN-WEI† a a Š a `New
authentication
€}Á-Û-ÿõÀ-ýn-, HÁ-Û-ÿõÀ-ý-ý, kN-€J† a a Š a `New
authentication
€K> a @ Old authentication and R:š a ""@new ß p authentication
€}À™Á, ÿòÀPÿó; p n!, HÁ™Á, ÿòÀPÿó; bæ p, kN. €L† a a Š a

New integrity P-^a©□□□@□check
€}ÀÔ™€Á,ÿòÀ1□

i p n # , H À Á , ÿ ò À l

i p y , kN . w e m t a a Š a a ` None
e } Á > ™ š Á , ý ò Ì q ? ù ; i p n % , H Á > ™ š Á , ý ò Ì q ? ù ; i p ; i p , kN . e n t a a Š a a ` None
Q e 0 > a @ ` New integrity check
e } Á - Û - Á , ý ò Ì o Ì ; i p n (, H Á - Û - Á , ý ò Ì o Ì ; i p ; i p , kN . e p t a a Š a a ` None
Q e Q > a @ ` New integrity check
e } Ì ™ ™ Á Ñ ð Ì P ý ó Ì [ú n + , H Ì ™ ™ Á Ñ ð Ì P ý ó Ì [ú p , kN / e R t a a Š a a

Old and new P-^a authentication
€}ÀÖ™ĈÂNđÀ1

À[únn-HÀ™ÉÁÑðÀl

À[úÿ,KN/WEStŠa`Old authentication
€}Á>™ŠÁŃđÀq?üÀ[ún/H
Á>™ŠÁŃđÀq?üÀ[úÿ,KN/WEtŠa`New authentication
€}Á-Û-ÁŃđÀoÀÀ[ún1/H
Á-Û-ÁŃđÀoÀÀ[úÀ[ú,KN/€UŠa`Old authentication
€V>a@`New authentication
€W:

Old and new authentication

Old authentication and new integrity check

Old p-authentication

Old p-authentication

and new integrity check

check

ÀJûn8, H
□

□□ÀÒ™ĒÁ©ÿÊÀ1□

ÀJûÿ,KN0W€_†ªŠª`Old authentication
€}Á>™šÁ@ÿêÀq?üÀJûn: ,H
□
□□□Á>™šÁ@ÿêÀq?üÀJûÿ,KN0W€`†ªŠª`Ñ
€}Á-Û-Á@ÿêÀoÀÀJûn< ,H

Old authentication
Old authentication and new authentication
Old authentication and new integrity check
Command
H

□□□□ÀûÿÿÀR/□Á@fg□?ÿ□?ÿ□□□: S□1□W€j□+^a%j^a□□□`

Description

```
€}ÀÿÿÀao1?ÿnJ, VÀÿÿÀao1?ÿ?ÿ:S2Wk:†ªjª`digest
€}ÀÿÿÀaoÁ@fg?ÿnL, VÀÿÿÀaoÁ@fg?ÿ?ÿ:S2Wl†ªjª`EEnable
s L2TPv3 control channel authentication or integrity checking.
€}ÀÿÿÀp-1s?ÿnN
, VÀÿÿÀp-1s?ÿ?ÿ:S3Wem:†ªjª`
l2tp-class
€}ÀÿÿÀp-Á@fgs?ÿnP
, VÀÿÿÀp-Á@fgs?ÿs?ÿ:S3en†ªjª LCreates a template of L2TP
control plane configuration settings that can be p•j@@inherited by
different pseudowire classes and enters L2TP class @@configuration mode.
€}ÀÿÿÀ-i1>?pR, VÀÿÿÀ-i1>?p?ÿ:S4W€o:†ªjª` password
€}Àm³Á&=d¥ìÿ, †k€UÀm³Á&=d¥ìÿÿ€9K000Wp†ªŠªªe
€}ÀÿÿÀ-iÁ@fg>?pT, VÀÿÿÀ-iÁ@fg>?p>?p:S4ep†ªjª
BConfigures the password used by a PE router for CHAP-style L2TPv3
P•j@@authentication.
€}À"†Á&=dÀ-ªÿ, ^kÀ"†Á&=dÀ-ªÿÿ€9K000Wq†ªŠªªe
```


CH1_CellHead1

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ide-Area Networking Commands
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™™ÿÿ;6²ffÀ´Á
™™ÿÿ„Y66 ŠìÀRìí

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Á|ëd%iDD
DDDD1DD

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Á|ëd%iÉ
7°Ü--Â
Á|ëd%iþpC#...UT...UTl(À
Wide-Area Networking CommandsÀ
À´;†

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7□□□□Ä´;†ç

VÁ{g~%i+ÿpE "…UT…UTlÀ

class
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TM " -i

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¹YÑ

7JMRJM²ffñ"ÄÄ

¹YÄ>¿ñ"Ä²ffñ"Ä²fgñÀ' jf^~Ö

7LNRRLN²fgñÀ' jf^~Àk\$Äé33Á-

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7M P R M P Æ k \$ Ê 3 3 Á - Y
% i O O 1

ÀÔk\$Âé33Á-Y

%i

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%i†ÿbN"W"..."..UT...UTh;ÀCisco IOS Wide-Area Networking

Command Reference

»q<Âô,QÁk-%i

7NRRN»q<Âô, QÁk-%ïQQQ1

»q<Âô, QÁk-%iÖ
7»q<Âô, QÁk-%iþPWP#"...UT...UThÀ, March 2011À-
²ffÂé33Â
°~¹x7P²ffÂé33Â
°~¹HPe}Á_~Á=-_ÄäÖXÿ,,ªk&eÁ_~Á-
=_ÄäÖXÿÿ€9oW€†ªªŠªªe

CH1_CellHead1

À^"ñU@;ÝCbMù 94U^UUÀ^"ñU@;ÝCbMÀ ùIÀê@'†dÛ†Xú
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^To enable Challenge Handshake Authentication Protocol (CHAP) style authentication for Layer 2 0^a@cTunnel Protocol Version 3 (L2TPv3) tunnels, use the Íauthentication ßcommand in L2TP class @lconfiguration mode. To disable L2TPv3 CHAP-style authentication, use the pno ß form of this command.
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WarnTransFirst

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WarnTransFirst

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```

%%CreationDate: (04/10/93) ( )
%%Copyright: ((C) 1987-1996 Adobe Systems Incorporated All Rights Reserved)
userdict /Adobe_level2_AI5 26 dict dup begin
  put
  /packedarray where not
  {
    userdict begin
      /packedarray
      {
        array astore readonly
      } bind def
      /setpacking /pop load def
      /currentpacking false def
    end
    0
  } if
pop
userdict /defaultpacking currentpacking put true setpacking
/initialize
{
  Adobe_level2_AI5 begin
} bind def
/terminate
{
  currentdict Adobe_level2_AI5 eq
  {
    end
  } if
} bind def
mark
/setcustomcolor where not
{
  /findcmykcustomcolor
  {
    (AI8_CMYK_CustomColor)
    6 packedarray
  } bind def
  /findrgbcustomcolor
  {
    (AI8_RGB_CustomColor)
    5 packedarray
  } bind def
  /setcustomcolor
  {
    exch
    aload pop dup
    (AI8_CMYK_CustomColor) eq
    {
      pop pop
      4
      {
        4 index mul
        4 1 roll
      } repeat
      5 -1 roll pop
      setcmykcolor
    }
    {
      dup (AI8_RGB_CustomColor) eq
      {
        pop pop

```

```

        3
        {
            1 exch sub
            3 index mul
            1 exch sub
            3 1 roll
        } repeat
        4 -1 roll pop
        setrgbcolor
    }
    {
        pop
        4
        {
            4 index mul 4 1 roll
        } repeat
        5 -1 roll pop
        setcmykcolor
    } ifelse
} ifelse
}
def
} if
/setAIseparationgray
{
    false setoverprint
    0 setgray
    /setseparationgray where{
        pop setseparationgray
    }{
        /setcolorspace where{
            pop
            [/Separation (All) /DeviceCMYK {dup dup dup}]
setcolorspace
            1 exch sub setcolor
        }{
            setgray
        }ifelse
    }ifelse
} def

/gt38? mark {version cvr cvx exec} stopped {cleartomark true} {38 gt exch
pop} ifelse def
userdict /deviceDPI 72 0 matrix defaultmatrix dtransform dup mul exch dup
mul add sqrt put
userdict /level2?
systemdict /languagelevel known dup
{
    pop systemdict /languagelevel get 2 ge
} if
put
/level2ScreenFreq
{
begin
    60
    HalftoneType 1 eq
    {
        pop Frequency
    } if
    HalftoneType 2 eq
    {

```



```

        pop GrayFrequency
    } if
    HalftoneType 5 eq
    {
        pop Default level2ScreenFreq
    } if
end
} bind def
userdict /currentScreenFreq
    level2? {currenthalftone level2ScreenFreq} {currentscreen pop pop} ifelse
put
level2? not
{
    /setcmykcolor where not
    {
        /setcmykcolor
        {
            exch .11 mul add exch .59 mul add exch .3 mul add
            1 exch sub setgray
        } def
    } if
    /currentcmykcolor where not
    {
        /currentcmykcolor
        {
            0 0 0 1 currentgray sub
        } def
    } if
    /setoverprint where not
    {
        /setoverprint /pop load def
    } if
    /selectfont where not
    {
        /selectfont
        {
            exch findfont exch
            dup type /arraytype eq
            {
                makefont
            }
            {
                scalefont
            } ifelse
            setfont
        } bind def
    } if
    /cshow where not
    {
        /cshow
        {
            [
                0 0 5 -1 roll aload pop
            ] cvx bind forall
        } bind def
    } if
} if
cleartomark
/anyColor?
{
    add add add 0 ne

```

```

} bind def
/testColor
{
    gsave
    setcmykcolor currentcmykcolor
    grestore
} bind def
/testCMYKColorThrough
{
    testColor anyColor?
} bind def
userdict /composite?
1 0 0 0 testCMYKColorThrough
0 1 0 0 testCMYKColorThrough
0 0 1 0 testCMYKColorThrough
0 0 0 1 testCMYKColorThrough
and and and
put
composite? not
{
    userdict begin
    gsave
    /cyan? 1 0 0 0 testCMYKColorThrough def
    /magenta? 0 1 0 0 testCMYKColorThrough def
    /yellow? 0 0 1 0 testCMYKColorThrough def
    /black? 0 0 0 1 testCMYKColorThrough def
    grestore
    /isCMYKSep? cyan? magenta? yellow? black? or or or def
    /customColor? isCMYKSep? not def
    end
} if
end defaultpacking setpacking
%%EndResource
%%BeginResource: procset AGM_Gradient_Sep 1.0 0
%%Title: (AGM Gradient Procset)
%%Version: 1.0 0
%%CreationDate: (4/26/96) ( )
%%Copyright: ((C) 1987-1996 Adobe Systems Incorporated All Rights Reserved)
userdict /defaultpacking currentpacking put true setpacking
userdict /AGM_Gradient_Sep 5 dict dup begin put
/AGM_Gradient_Sep_private 100 dict def
/initialize{
    AGM_Gradient_Sep begin
    AGM_Gradient_Sep_private begin
    _compositeJob{
        initializeSinglePassSeps
    }{
        initializeMultiPassSeps
    }ifelse
    initializeSeps
    AGM_Gradient_private begin
        /_fillSD newSpotDict def
        /_rampSD newSpotDict def
        /_nCustomColorSD nd
end
AGM_Gradient_Sep_private
{
    dup xcheck 1 index type /arraytype eq and
    {
        bind
    }if
}

```

```

        pop pop
    }forall
    AGM_Gradient_Sep
    {
        dup xcheck 1 index type /arraytype eq and
        {
            bind
        }if
        pop pop
    }forall
end

currentdict readonly pop
end
}def
/terminate{
    currentdict AGM_Gradient_Sep eq{
        end
    }if
}def
AGM_Gradient_Sep_private begin
/initializeSeps{
    /currentoverprint { _of } def
    _noImage not _level2PS not and{
        /linealFill{
            currentoverprint{
                0 0 1 1 rectfill
            }{
                mySave
                8 setImageParms
                _color{
                    _nCustomColorSD begin
                        cyan magenta yellow black

                        _spotColor{
                            spot1/tintImage spot1/tintValue get 1
exch sub makeByte8 put
                            spot2/tintImage spot2/tintValue get 1
exch sub makeByte8 put
                        }if
                    end
                }{
                    4{
                        makeByte8 4 1 roll
                    }repeat
                    true 4 _nCustomColorSD ncolorimage
                }{
                    _nCustomColorSD/black get 1 exch sub makeByte8
                    _nCustomColorSD bwImage
                }ifelse
                myRestore
            }ifelse
        }def
    }if
    /_whiteBytes 1 makeByte8 pt
    /knockOut{
        _noImage _level2PS or currentoverprint or{
            gsave
            false setoverprint
            1 setgray
            0 0 1 1 rectfill

```

```

        grestore
    }{
        8 setImageParms _whiteBytes /_image load 5 execImage
    }ifelse
}def
/newSpotDict{
    11 dict dup begin
        /nSpots 2 def
        /spot1 7 dict def
        /spot2 7 dict def
    end
}def
/initSpotData
{
    begin
        /name nd
        /tintImage nd
        /tintValue nd
        /spot_C nd
        /spot_M nd
        /spot_Y nd
        /spot_K nd
    end
}def
/initSpotDict{
    begin
        /cyanInk nd
        /magentaInk nd
        /yellowInk nd
        /blackInk nd
        /cyan nd
        /magenta nd
        /yellow nd
        /black nd
        spot1 initSpotData
        spot2 initSpotData
    end
}def
/copySpotDict{
    /_dst xp
    begin
        cyanInk magentaInk yellowInk blackInk
        cyan magenta yellow black
        spot1 spot2
    end
    _dst begin
        /spot1 spot1 maxlength dict def
        /spot2 spot2 maxlength dict def
        spot2 copy pop
        spot1 copy pop
        /black xd
        /yellow xd
        /magenta xd
        /cyan xd
        /blackInk xd
        /yellowInk xd
        /magentaInk xd
        /cyanInk xd
    end
}def
/setCustomColor

```

```

{
  1 index /Black eq{
    6 1 roll 5 npop
    1 exch sub
    setgray
  }{
    6 1 roll _ccAry1 astore exch
    dup null eq{
      pop 0
    }if
    setcustomcolor
  }ifelse
}def
/setCStop{
  /_colorStyle exch pt

  _colorStyle 0 eq{
    0 0 0
    4 -1 roll
    1 exch sub
    _spotColor{
      /_colorStyle 3 pt
      /Black
      1 index
      1 exch sub
    }if
  }if
  _colorStyle 2 eq{
    3 npop
  }if
  _rampSD _fillSD copySpotDict

  _colorStyle 4 eq{
    pop
    9 2 roll 3 npop 6 -2 roll
  } if

  _colorStyle 3 eq _colorStyle 4 eq or{

    _fillSD begin
      /_spot1 spot1 pt
      /_spot2 spot2 pt
    end

    exch dup _spot1/name get eq{
      _spot1 _spot2
    }{
      _spot2 _spot1
    }ifelse
  }begin
  begin
    /name xd
    1 exch sub /tintValue xd
    4{
      tintValue mul 4 1 roll
    }repeat
    _spotColor not{
      /tintValue null def
    }if
  end
  /tintValue 0 def

```

```

        end
    }if
    _fillSD nsetcustomcolor
}def
/renderCMYK{
    spot1/name get null eq
    spot2/name get null eq and
    dup not{
        pop
        spot1 spotConverted
    }if
    dup not{
        pop
        spot2 spotConverted
    }if
}def
/currentInk{
    true
    _inRipSep{
        currentcolorspace 0 get
        dup /DeviceGray eq
        1 index /DeviceCMYK eq or{
            pop
            currentcmkcolor add add add 0 eq{
                pop false
            }if
        }{
            /Separation eq{
                currentcolor 0 eq{
                    pop false
                }if
            }if
        }ifelse
    }{
        currentgray 1 eq{
            pop false
        }if
    }ifelse
}def
/currentInkN{
    _nCustomColorSD begin
        /_spot1 spot1 pt
        /_spot2 spot2 pt
        renderCMYK
    end
    {
        currentInk
    }{
        gsave
        _spot1 begin
            name null ne{
                spot_C spot_M spot_Y spot_K name tintValue
            }{
                currentInk
            }{
                false
            }ifelse
        end
        _spot2 begin
            name null ne{

```

```

spot_C spot_M spot_Y spot_K name tintValue
setCustomColor
    currentInk
    {}
    false
    }ifelse
end
grestore

or
} ifelse
}def
/fill_ /fill load def
/fillOvp{
    currentoverprint{
        _inRipSep{
            currentcolorspace 0 get
            dup /DeviceGray eq
            1 index /DeviceCMYK eq or{
                pop
                currentcmykcolor add add add 0 eq{
                    newpath
                }if
            }{}
            /Separation eq{
                currentcolor 0 eq{
                    newpath
                }if
            }if
        }ifelse
    }{}
    currentgray 1 eq{
        newpath
    }if
    }ifelse
}if
fill_
}def
/fill{
    _nCustomColorSD begin
        /_spot1 spot1 pt
        /_spot2 spot2 pt
        renderCMYK
    end

    {
        fillOvp
    }{}
    _spot1 begin
        gsave
        name null ne{
            spot_C spot_M spot_Y spot_K name tintValue
setCustomColor
            {}
            1 setgray
        }ifelse
        fillOvp
        grestore
    end
    _spot2 begin
        name null ne{

```

```

                                gsave
                                true setoverprint
                                spot_C spot_M spot_Y spot_K name tintValue
setCustomColor
                                fillOvp
                                grestore
                                }if
                                end
                                newpath
                                }ifelse
}def
/expandSpot{
    _spotColor{
        /_len xp
        _rampSD begin
            spot1 begin
                tintImage null ne{
                    tintImage _len expandOne /tintImage xd
                }if
            end
            spot2 begin
                tintImage null ne{
                    tintImage _len expandOne /tintImage xd
                }if
            end
        end
    end
}{}
    pop
}ifelse
}def
/rampImage{
    currentoverprint{
        rectImage
    }{}
        _enabledSmoothShade{
            fillRamp
        }{}
            _color{
                _rampSD begin
                    /cyanInk _cyanData 0 ne def
                    /magentaInk _magentaData 0 ne def
                    /yellowInk _yellowData 0 ne def
                    /blackInk _blackData 0 ne def
                end
                _nSamples setImageParms
                _nSamples expandSpot
                _cyanData _magentaData _yellowData _blackData
_nSamples 4 expandColor
            }{}
                _rampSD begin
                    /cyanInk false def
                    /magentaInk false def
                    /yellowInk false def
                    /blackInk true def
                end
                _nSamples setImageParms
                _blackData _rampSD bwImage
            }ifelse
        }ifelse
}ifelse

```



```

        }ifelse
    }def
    /nsetcustomcolor where{
        pop
    }{
        /nsetcustomcolor
        {
            /_nCustomColorSD xp
            _nCustomColorSD begin
                4 copy
                /black xd
                /yellow xd
                /magenta xd
                /cyan xd
                4 copy
                0 ne /blackInk xd
                0 ne /yellowInk xd
                0 ne /magentaInk xd
                0 ne /cyanInk xd
            end
            setcmykcolor
        }def
    }ifelse
    /nsetcustomcolorend where{
        pop
    }{
        /nsetcustomcolorend
        {
            /_nCustomColorSD null pt
        }def
    }ifelse
}def
/initializeSinglePassSepts{
    /_decodeNorm    [0 1] pt
    /_decodeInvert  [1 0] pt
    /spotConverted
    {
        begin
            name null eq{
                false
            }{
                tintValue null eq tintImage null eq and{
                    true
                }{
                    _inDistiller{
                        false
                    }{
                        false
                    }
                    currentpagedevice/SeparationColorNames
                }
            }
        }
    }
    get{name eq or}forall
        not
        }ifelse
    }ifelse
    }ifelse
end
}def
/dictImage
{
    20 dict dup begin
        /Dict xd
        /Decode xd
    end
}

```

```

        /DataSource xd
        /ImageMatrix xd
        /BitsPerComponent xd
        /Height xd
        /Width xd
        /ImageType 1 def
        Dict
    end
    /_image load 1 execImage
}def
/bwImage{
    begin
        gsave
        currentoverprint{
            blackInk{
                [/Separation /Black /DeviceGray{ }] setcolorspace
                _decodeInvert dictImage
            }{
                5 npop
            }ifelse
        }{
            /DeviceGray setcolorspace
            _decodeNorm dictImage
        }ifelse
        grestore
    end
}def
/ncolorimage where{
    pop
}{
    /ncolorimage{
        begin
            renderCMYK{
                cyanInk
                magentaInk and
                yellowInk and
                blackInk and
                not
                currentoverprint
                and{
                    pop pop
                    gsave
                    cyanInk{
                        8 copy
                        [/Separation /Cyan /DeviceGray{ }]
setcolorspace

                        3 npop
                        _decodeNorm dictImage
                    }if
                    magentaInk{
                        8 copy
                        [/Separation /Magenta /DeviceGray{ }]
setcolorspace

                        4 -1 roll
                        3 npop
                        _decodeNorm dictImage
                    }if
                    yellowInk{
                        8 copy
                        [/Separation /Yellow /DeviceGray{ }]
setcolorspace
                }
            }
        }
    }
}

```

```

        4 -2 roll
        3 npop
        _decodeNorm dictImage
    }if
    blackInk{
        4 -3 roll
        [/Separation /Black /DeviceGray{}]
setcolorspace
        3 npop
        _decodeNorm dictImage
    }{
        8 npop
    }ifelse
    grestore
}{
    /_colorimage load 10 execImage
}ifelse
}{
    6 npop
    gsave
    spot1 begin
        name null ne tintImage null ne and{
            [/Separation name /DeviceGray{}]
setcolorspace
            4 copy
            tintImage
            name /Black eq{
                _decodeNorm
            }{
                _decodeInvert
            }ifelse
            dictImage
        }{
            1 setgray fill
        }ifelse
    end
    spot2 begin
        true setoverprint
        name null ne tintImage null ne and{
            [/Separation name /DeviceGray{}]
setcolorspace
            tintImage
            name /Black eq{
                _decodeNorm
            }{
                _decodeInvert
            }ifelse
            dictImage
        }{
            4 npop
            1 setgray fill
        }ifelse
    end
    grestore
}ifelse
end
}def
}ifelse
/getRampColorSpace{
    /_renderCMYK _rampSD begin renderCMYK end pt

```

```

_renderCMYK not{
  _rampSD begin
    [/DeviceN
    [
      spot1 begin
        name null ne tintImage null ne and{
          name
        }if
      end
      spot2 begin
        name null ne tintImage null ne and{
          name
        }if
      end
    ]
    _inDistiller {
      /DeviceCMYK [
        spot1 begin
          name null ne tintImage null ne
and{
          spot_C spot_M spot_Y
spot_K 1
        }{
          0 0 0 0 0
        }ifelse
      end
        spot2 begin
          name null ne tintImage null ne
and{
          spot_C spot_M spot_Y
spot_K 2
        }{
          0 0 0 0 0
        }ifelse
      end
      5 1 roll 6 -2 roll add
      dup 1 eq {
        pop
        8 /index cvx 1 /exch cvx /sub
cvx
        9 1 /roll cvx
      }{
        2 eq {
          8 /index cvx 1 /exch cvx
/sub cvx
          10 1 /roll cvx
        }if
      }ifelse
      4 1 /roll cvx 5 -2 /roll cvx
      8 /index cvx /mul cvx /exch cvx 9
/index cvx /mul cvx /add cvx 7 1 /roll cvx
      3 1 /roll cvx 4 -2 /roll cvx
      7 /index cvx /mul cvx /exch cvx 8
/index cvx /mul cvx /add cvx 6 1 /roll cvx
      2 1 /roll cvx 3 -2 /roll cvx
      6 /index cvx /mul cvx /exch cvx 7
/index cvx /mul cvx /add cvx 5 1 /roll cvx
      5 /index cvx /mul cvx /exch cvx 6
/index cvx /mul cvx /add cvx 4 1 /roll cvx
      6 -2 /roll cvx /pop cvx /pop cvx
    }
  }
}

```

```

                ] cvx bind
            }{
                /DeviceCMYK {}
            }ifelse
        ] setcolorspace
    end
    /_nColorSpace currentcolorspace pt
}if

_nSamples 1 gt{
    /_ndx 0 pt
    [blendColor] cvx exec
}if
_renderCMYK{
    /_C0 [currentcolor] pt
    /_C0_Space currentcolorspace pt
}{
    /_C0 [
        _nCustomColorSD begin
            spot1 begin
                name null ne{
                    tintValue
                }if
            end
            spot2 begin
                name null ne{
                    tintValue
                }if
            end
        end
    ] pt
    /_C0_Space _nColorSpace pt
}ifelse

_nSamples 1 gt{
    /_ndx _nSamples 1 sub pt
    [blendColor] cvx exec
}if
_renderCMYK{
    /_C1 [currentcolor] pt
    /_C1_Space currentcolorspace pt
}{
    /_C1 [
        _nCustomColorSD begin
            spot1 begin
                name null ne{
                    tintValue
                }if
            end
            spot2 begin
                name null ne{
                    tintValue
                }if
            end
        end
    ] pt
    /_C1_Space _nColorSpace pt
}ifelse

/_rampColorSpace _C0_Space pt
_spotColor{

```

```

        nsetcustomcolorend
    }if
}def
/initializeMultiPassSeps{
  /invertXfer{
    [
      {
        1 exch sub
      }/exec load systemdict /currenttransfer get exec /exec load
    ] cvx systemdict /settransfer get exec
  }def
  /ccThrough{
    gsave
    1 setCustomColor
    currentcmykcolor
    grestore
    add add add 0 ne
  }def
  /spotConverted
  {
    begin
      _isCMYKSep not{
        false
      }{
        name null eq{
          false
        }{
          tintValue null eq tintImage null eq and{
            true
          }{
            spot_C spot_M spot_Y spot_K name ccThrough
          }ifelse
        }ifelse
      }ifelse
    end
  }def
  /spotChannel
  {
    _isCMYKSep{
      pop false
    }{
      /_spotDict xp
      _spotDict/name get null eq{
        false
      }{
        _spotDict/spot_C get
        _spotDict/spot_M get
        _spotDict/spot_Y get
        _spotDict/spot_K get
        _spotDict/name get
        ccThrough
      }ifelse
    }ifelse
  }def
  /getChannelData
  {
    _isCMYKSep dup{
      pop renderCMYK
    }if
    {

```

```

_blackPlate{
  4 1 roll 3 npop blackInk
}{
  _yellowPlate{
    4 2 roll 3 npop yellowInk
  }{
    _magentaPlate{
      4 3 roll 3 npop magentaInk
    }{
      3 npop cyanInk
    }ifelse
  }ifelse
}ifelse
{
  true /nonZeroData
}{
  true /zeroData
}ifelse
}{
  4 npop
spot1/name get null ne
spot1 spotChannel and{
  spot1/tintImage get dup null ne{
    false /nonZeroData
  }{
    pop false /noData
  }ifelse
}{
  spot2/name get null ne
spot2 spotChannel and{
  spot2/tintImage get dup null ne{
    false /nonZeroData
  }{
    pop false /noData
  }ifelse
}{
  false /noData
}ifelse
}ifelse
}ifelse
}def
/renderChannelData
{
  /_tmp xp
_tmp /nonZeroData ne currentoverprint and{
  pop
_tmp /zeroData eq{pop}if
  4 npop
}{
  _tmp /nonZeroData eq{
    {
      invertXfer
    }if
    systemdict/image
    get 5 execImage
  }{
    pop
    _tmp /zeroData eq{pop}if
    4 npop
    knockOut
  }ifelse
}

```

```

    }elseifelse
}def
/bwImage{
  begin
    gsave
    dup dup dup
    getChannelData
    exch pop false exch
    renderChannelData
    grestore
  end
}def
/ncolorimage{
  begin
    pop pop
    gsave
    spot2/name get null ne spot2 spotChannel and{
      true setoverprint
    }if
    getChannelData
    renderChannelData
    grestore
  end
}def
/getRampColorSpace{
  /_renderCMYK _rampSD begin renderCMYK end pt
  _nSamples 1 gt{
    /_ndx 0 pt
    [blendColor] cvx exec
  }if
  _renderCMYK{
    /_C0 [currentcolor] pt
    /_C0_Space currentcolorspace pt
  }{
    /_C0 [
      _nCustomColorSD begin
        0
        spot1 begin
          name null ne
          tintValue null ne and
          spot1 spotChannel and{
            pop tintValue
          }if
        end
        spot2 begin
          name null ne
          tintValue null ne and
          spot2 spotChannel and{
            pop tintValue
          }if
        end
      end
      1 exch sub
    end
    ] pt
    /_C0_Space /DeviceGray pt
  }elseifelse
  _nSamples 1 gt{

```



```

        /_ndx _nSamples 1 sub pt
        [blendColor] cvx exec
    }if

    _renderCMYK{
        /_C1 [currentcolor] pt
        /_C1_Space currentcolorspace pt
    }{
        /_C1 [
            _nCustomColorSD begin
                0
                spot1 begin
                    name null ne
                    tintValue null ne and
                    spot1 spotChannel and{
                        pop tintValue
                    }if
                end
                spot2 begin
                    name null ne
                    tintValue null ne and
                    spot2 spotChannel and{
                        pop tintValue
                    }if
                end
            1 exch sub
        end
        ] pt
        /_C1_Space /DeviceGray pt
    }ifelse

    /_rampColorSpace _C0_Space pt
    _spotColor{
        nsetcustomcolorend
    }if
}def

}def
end
end
defaultpacking setpacking
%%EndResource
%%BeginResource: procset AGM_Gradient 1.0 0
%%Title: (AGM Gradient Procset)
%%Version: 1.0 0
%%CreationDate: (4/26/96) ( )
%%Copyright: ((C) 1987-1996 Adobe Systems Incorporated All Rights Reserved)
userdict /defaultpacking currentpacking put true setpacking
userdict /AGM_Gradient 20 dict dup begin put
/AGM_Gradient_private 201 dict def
/initialize
{
    AGM_Gradient begin
    AGM_Gradient_private begin
    initializeVars

    /bd systemdict/mark get def
    /ed
        _level2PS
        {
            (>>)
        }{

```

```

                (counttomark 2 idiv dup dict begin {def} repeat pop
currentdict end)
        } ifelse
    cvx def

    _level2PS{
        initializeLev2
    }{
        initializeLev1
    }ifelse

    queryDevice

    initializeRectFill
    initializeShading
    initializeOps
    _producingSepts{
        AGM_Gradient_Sep/initialize get exec
    }{
        initializeComposite
    }ifelse
    _illustrator{
        /f{}def
        /F{}def
        /s{}def
        /S{}def
        /b{}def
        /B{}def
    }if
    /image where{
        /image get /_image xd
    }if
    /colorimage where{
        /colorimage get /_colorimage xd
    }if
    AGM_Gradient_private
    {
        dup xcheck 1 index type /arraytype eq and
        {
            bind
        }if
        pop pop
    }forall
    AGM_Gradient
    {
        dup xcheck 1 index type /arraytype eq and
        {
            bind
        }if
        pop pop
    }forall
end

    currentdict readonly pop
end
}def
/initializeAI
{
    pop pop
    AGM_Gradient/AGM_Gradient_private get /_illustrator true put
    AGM_Gradient/initialize get exec

```

```

        AGM_Gradient begin
    }def
/unload{
    systemdict/languagelevel known{
        systemdict/languagelevel get 2 ge{
            userdict/AGM_Gradient_Sep 2 copy known{
                undef
            }{
                pop pop
            }ifelse
            userdict/AGM_Gradient 2 copy known{
                undef
            }{
                pop pop
            }ifelse
        }if
    }if
}def
/terminate{
    currentdict AGM_Gradient eq{
        end
    }if
}def

AGM_Gradient_private begin
/initializeVars{
    /_d255 256 array def
    0 1 255{
        _d255 exch dup 255 div put
    }bind for
    /_d255- 256 array def
    0 1 255{
        _d255- exch 1 _d255 2 index get sub put
    }bind for
    /_sSave nd
    /_dUserSpace matrix defaultmatrix def
    /_bUMatrix matrix def
    /_imageMatrix matrix def
    /_saveMatrix matrix def
    /_xm matrix def
    /_ccAry1 5 array def
    /_bbox 4 array pt
    /_level2PS
        systemdict/languagelevel known dup{
            pop systemdict/languagelevel get 2 ge
        }if
    def
    /_level3PS
        _level2PS systemdict/shfill known and
    def
    currentdict /_illustrator known not{
        /_illustrator false def
    }if
}def
/initializeOps
{
    AGM_Gradient begin
    currentdict/Bc known not{
        /Bc{

```

```

        _renderFlag 2 eq _enabledSmoothShade or{
            6 npop
        }{
            pushBSpace
            _rampIndex 0 eq{
                pop pop
                setCStop
            }if
            linealFill
            popBSpace
        }ifelse
    }def
}if

currentdict/Bg known not{
    /Bg{
        10 npop
        /_gradName xp
        /_renderFlag xp
        /_enabledSmoothShade false pt

        _renderFlag 2 ne{
            _illustrator{
                _of setoverprint
            }if

            /_enabledSmoothShade
            _level3PS{
                _usingSmoothShade
                _producingSeps not
                currentoverprint not or and
                _noImage not and
            }{
                false
            }ifelse
        }pt

        _illustrator _eo and _renderFlag 3 eq or{
            eoclip
        }{
            clip
        }ifelse

        _gradNames _gradName 2 copy known{
            get
            mark exch aload pop
            /_gradType xp
            1 sub dup /_rampIndex xp
            /_maxRampIndex xp
            mark exch aload pop
            0 0
        }if
        pop pop
        getRampData
    }{
        mark mark
    }ifelse
}def
}if

```

```

currentdict/Bm known not{
  /Bm{
    _renderFlag 2 ne{
      _gradType 0 eq{
        linealRamp
      }{
        radialGrad
      }ifelse
    }{
      6 npop
    }ifelse
  }def
}if

currentdict/Bh known not{
  /Bh{
    2 npop
    /_yHi xp
    /_xHi xp
    /_radHilite _xHi 0 ne _yHi 0 ne or pt
  }def
}if

currentdict/Bn known not{
  /Bn{
    AGM_Gradient_private begin
      dict /_gradNames xp
    end
  }def
}if

currentdict/Bd known not{
  /Bd{
    AGM_Gradient begin
    AGM_Gradient_private begin
      /_nColorsBd xp
      /_gradType xp
      /_gradName xp
    end
  }def
}if

currentdict/BD known not{
  /BD{
    currentdict/_gradNames known not{
      /_gradNames 20 dict def
    }if
    ] _nColorsBd _gradType
    ] _gradName exch /_gradNames xput
  end
  end
}def
}if

currentdict/Bb known not{
  /Bb{
    AGM_Gradient/AGM_Gradient_private get /_illustrator get not{
      AGM_Gradient begin
    }if
    AGM_Gradient_private begin

```

```

        _producingSeps{
            AGM_Gradient_Sep/AGM_Gradient_Sep_private get begin
        }if
        mySave
    }def
}if

currentdict/BB known not{
    /BB{

        /_tmp xp
        cleartomark cleartomark

        _tmp dup
        _renderFlag

        myRestore

        _producingSeps{
            end
        }if

        _illustrator dup
    end
    not {
        end
    }if

    {
        2 ne exch 0 gt and{
            2 eq{
                s
            }{
                S
            }ifelse
        }{
            pop newpath
        }ifelse
    }{
        pop newpath
    }ifelse

}if
}def

currentdict/Xm known not{
    /Xm{
        _xm astore pop
    }def
}if

end
}def
/queryDevice{
    /_inDistiller
        systemdict /currentdistillerparams known
    def
    /_inRipSep
        _level2PS{
            currentpagedevice/Separations 2 copy known{

```

```

        get
    }{
        pop pop false
    }ifelse
}{
    false
}ifelse
_inDistiller or
def
/_noImage /lvlFix where{
    pop lvlFix
}{
    false
}ifelse
def
/_useShells where{
    /_useShells get /_usingShells xp
}{
    /_usingShells false def
}ifelse

/_useSmoothShade where{
    pop
}{
    /_useSmoothShade false def
}ifelse
/_forceToCMYK where{
    pop
}{
    /_forceToCMYK false def
}ifelse
/_cyanPlate 1 0 0 0 testCMYKColorThrough def
/_magentaPlate 0 1 0 0 testCMYKColorThrough def
/_yellowPlate 0 0 1 0 testCMYKColorThrough def
/_blackPlate 0 0 0 1 testCMYKColorThrough def
/_compositeJob
    _cyanPlate _magentaPlate and _yellowPlate and _blackPlate and
def
/_isCMYKSep
    _cyanPlate _magentaPlate or _yellowPlate or _blackPlate or
def
/_compositeSpotDevice where{
    pop
}{
    /_compositeSpotDevice _compositeJob not _inRipSep or{
        1
    }{
        0
    }ifelse
    def
}ifelse
/_producingSeps _compositeSpotDevice 0 ne def
/_deviceDPI 72 0 matrix defaultmatrix dtransform dup mul exch dup mul add
sqrt def
/_dpiThreshold where{
    pop
}{
    /_dpiThreshold 600 def
}ifelse
/_screenFreqThreshold where{
    pop

```

```

    }{
      /_screenFreqThreshold 150 def
    }ifelse
  /_contoneDevice where{
    pop
  }{
    /_contoneDevice false def
  }ifelse
  /_subSampleOK
    _deviceDPI _dpiThreshold le
    currentScreenFreq _screenFreqThreshold le and
    _contoneDevice not and
  def
}def
/initializeRectFill{
  /rectfill where dup{
    exch pop not _producingSeps or
  }{
    not
  }ifelse
  {
    /rectfill{
      gsave
      newpath
      4 2 roll moveto
      1 index 0 rlineto
      0 1 index rlineto
      1 index neg 0 rlineto
      pop pop
      closepath
      fill
      grestore
    }def
  }if
}def
/initializeLevl{
  /currentScreenFreq{
    currentscreen pop pop
  }def
  /_byte 1 string def
  /colorimage where{
    pop
  }{
    /colorimage{
      pop pop
      /_blackTmp xp
      /_yellowTmp xp
      /_magentaTmp xp
      /_cyanTmp xp
      /_cnt 0 pt
      [
        _byte dup 0
        _cyanTmp
          /_cnt cvx /get cvx _d255 /exch cvx /get cvx .3 /mul cvx
        _magentaTmp
          /_cnt cvx /get cvx _d255 /exch cvx /get cvx .59 /mul cvx
        _yellowTmp
          /_cnt cvx /get cvx _d255 /exch cvx /get cvx .11 /mul cvx
        _blackTmp
          /_cnt cvx /get cvx _d255 /exch cvx /get cvx
      ]
      /add cvx /add cvx /add cvx 1 /exch cvx /sub cvx
    }def
  }if
}def

```



```

        /dup cvx 0 /lt cvx{
            pop 0
        }/if cvx
        /dup cvx 1 /gt cvx{
            pop 1
        }/if cvx
        255 /mul cvx /cvi cvx
        256 /mod cvx
        /dup cvx 0 /lt cvx{
            pop 0
        }/if cvx
        /put cvx
        /_cnt dup cvx 1 /add cvx /pt cvx
        ] cvx
        bind
        /_image load 5 execImage
    }def
}ifelse
}def
/initializeLev2{
    /level2ScreenFreq{
        begin
            60
            HalftoneType 1 eq{
                pop Frequency
            }if
            HalftoneType 2 eq{
                pop GrayFrequency
            }if
            HalftoneType 5 eq{
                pop Default level2ScreenFreq
            }if
            end
        }def
        /currentScreenFreq{
            currenthalftone level2ScreenFreq
        }def
    }def
/initializeShading{
    _useSmoothShade _level3PS and{
        /_usingSmoothShade true pt
        initializeLev3_Ops
    }{
        /_usingSmoothShade false pt
    }ifelse
}def
/initializeLev3_Ops
{
    /initShFill{
        /_index _gradType 0 eq {0}{_maxRampIndex 1 sub} ifelse pt
        /_rampFuncsArray _maxRampIndex array pt
        /_boundsArray _maxRampIndex 1 sub array pt
        /_encodeArray _maxRampIndex 2 mul array pt
        /_beginCoord _rampPoint pt
        /_colorSpace null pt
        /_firstFill _rampIndex _maxRampIndex eq pt
        /_lastFill false pt
    }def
    /linealShFill{
        popBSpace
        _xm aload pop pushBSpace

```

```

/_size _index 1 add pt
_size _maxRampIndex lt {
  /_rampFuncsArray _rampFuncsArray 0 _size getinterval pt
  /_boundsArray _boundsArray 0 _size 1 sub getinterval pt
  /_encodeArray _encodeArray 0 _size 2 mul getinterval pt
}if

bd
  /ShadingType 2
  /ColorSpace _colorSpace
  _rgbInCMYK{
    /Function [
      _cData sampFunc
      _mData sampFunc
      _yData sampFunc
      _kData sampFunc
    ]
  }{
    /Function
      bd
      /FunctionType 3
      /Domain [0 1]
      /Functions _rampFuncsArray
      /Bounds _boundsArray
      /Encode _encodeArray
    ed
  }ifelse
  /Extend [_firstFill _lastFill]
  /Domain [0 1]
  /Coords [_beginCoord 0 _endCoord 0]
ed
shfill
}def

/radialShFill{
  /_size _maxRampIndex _index sub pt
  _size _maxRampIndex lt {
    /_rampFuncsArray _rampFuncsArray _index _size getinterval pt
    /_boundsArray _boundsArray _index _size 1 sub getinterval pt
    /_encodeArray _encodeArray _index 2 mul _size 2 mul
getinterval pt
  }if

  /_rampLen _beginCoord _endCoord sub pt
  bd
    /ShadingType 3
    /ColorSpace _colorSpace
    _rgbInCMYK{
      /Function [
        _cData sampFunc
        _mData sampFunc
        _yData sampFunc
        _kData sampFunc
      ]
    }{
      /Function
        bd
        /FunctionType 3
        /Domain [0 1]
        /Functions _rampFuncsArray

```

```

                                /Bounds _boundsArray
                                /Encode _encodeArray
                                ed
                                }ifelse
                                /Extend [_lastFill _firstFill]
                                /Domain [0 1]
                                /Coords [_xHi _rampLen mul _yHi _rampLen mul _endCoord 0 0
_beginCoord]
                                ed
                                shfill

                                _radHilite{
                                _xHi _rampLen mul _yHi _rampLen mul translate
                                }if
                                }def

                                %
                                /sampFunc{
                                /_tmp exch pt
                                bd
                                _tmp length 1 eq {
                                _tmp 0 get
                                /_tmp 2 string pt
                                dup _tmp 0 3 -1 roll put
                                _tmp 1 3 -1 roll put
                                }if
                                /FunctionType 0
                                /Order 1
                                /Size [_tmp length]
                                /Domain [0 1]
                                /BitsPerSample 8
                                /DataSource _tmp
                                /Range [0 1]
                                ed
                                }def

                                /fillRamp{

                                /_invert _midPoint 0.5 lt pt
                                _rampIndex _maxRampIndex eq {
                                initShFill
                                }if

                                getRampColorSpace

                                _colorSpace null eq{
                                /_colorSpace _rampColorSpace pt
                                }{
                                _colorSpace _rampColorSpace ne _rgbInCMYK or{
                                /_index _index 1
                                _gradType 0 eq{
                                sub pt
                                linealShFill
                                }{
                                add pt
                                radialShFill
                                }ifelse
                                initShFill
                                /_colorSpace _rampColorSpace pt
                                } if

```

```

}ifelse
/_endCoord _endPoint pt
/_rgbInCMYK false pt
_producingSeps _forceToCMYK or _rgbRamp and {
  _spotColor{
    _renderCMYK
  }{
    _isCMYKSep
  }ifelse
}{
  false
}ifelse
{
  _compositeJob{
    /_rgbInCMYK true pt
    _cyanData _magentaData _yellowData _blackData _nSamples
4 expandColor
    dup length string copy /_kData exch pt
    dup length string copy /_yData exch pt
    dup length string copy /_mData exch pt
    dup length string copy /_cData exch pt
  }{
    _rampFuncsArray _index
    _cyanPlate{ _cyanData }if
    _magentaPlate{ _magentaData }if
    _yellowPlate{ _yellowData }if
    _blackPlate{ _blackData }if
    _nSamples expandOne
    sampFunc
    dup begin /Decode [1 0] def end
    put
    /_invert false pt
  }ifelse
}{
  _rampFuncsArray _index
  bd
  /FunctionType 2
  /Domain [0 1]
  /N 0.5 log _invert{1 _midPoint
sub}{_midPoint}ifelse log div
  _gradType 0 eq{
    _invert{/C1}{/C0}ifelse _C0
    _invert{/C0}{/C1}ifelse _C1
  }{
    _invert{/C0}{/C1}ifelse _C1
    _invert{/C1}{/C0}ifelse _C0
  }ifelse
  ed
  put
}ifelse
_rampIndex 1 ne{
  _boundsArray _index _gradType 1 eq{1 sub}if _endCoord put
} if
0 1 _invert {exch}if
_encodeArray _index 2 mul 1 add 3 -1 roll put
_encodeArray _index 2 mul 3 -1 roll put
_rampIndex 1 eq {
  /_lastFill true pt
  _gradType 0 eq{

```

```

                linealShFill
            }{
                radialShFill
            }ifelse
        }if
        /_index _index 1
        _gradType 0 eq{
            add pt
        }{
            sub pt
        }ifelse
    }def
}def
/initializeComposite{
    /bwImage{
        pop /_image load 5 execImage
    }def
    /rampImage{
        _enabledSmoothShade{
            fillRamp
        }{
            _color{
                _nSamples setImageParms

                _rgbRamp _forceToCMYK not and{
                    _redData _greenData _blueData _nSamples 3
expandColor
                    true 3 null ncolorimage
                }{
                    _cyanData _magentaData _yellowData _blackData
_nSamples 4 expandColor
                    true 4 null ncolorimage
                }ifelse
            }{
                _nSamples setImageParms _blackData null bwImage
            }ifelse
        }ifelse
    }def
    /setCStop{
        /_colorStyle exch pt
        _colorStyle 0 eq{
            1 exch sub
            0 0 0
            4 -1 roll
        }if

        _colorStyle 2 eq{
            _forceToCMYK{
                3 npop setcmykcolor
            }{
                setrgbcolor 4 npop
            }ifelse
        }if

        _colorStyle 3 eq{
            1 exch sub /_tmp xp
            pop
            4{
                _tmp mul 4 1 roll
            }repeat
        }if
    }def
}def

```

```

}if

_colorStyle 4 eq{
  _forceToCMYK{
    6 npop setcmykcolor
  }{
    3 -1 roll pop pop
    1 exch sub /_tmp xp
    3{
      1 exch sub _tmp mul 1 exch sub 3 1 roll
    }repeat
    setrgbcolor
    4 npop
  }ifelse
}if
_colorStyle 2 ne _colorStyle 4 ne and{
  null nsetcustomcolor
}if
}def
/nsetcustomcolor
{
  pop setcmykcolor
}def
/nsetcustomcolorend
{
}def
/ncolorimage{
  pop
  /_colorimage load 10 execImage
}def
_noImage not _level2PS not and{
  /linealFill{
    8 setImageParms
    _color{
      currentcmykcolor
      4{
        makeByte8 4 1 roll
      }repeat
      true 4 null ncolorimage
    }{
      currentgray makeByte8 null bwImage
    }ifelse
  }def
}if
/getRampColorSpace{
  _nSamples 1 gt{
    /_ndx 0 pt
    [blendColor] cvx exec
  }if
  /_C0 [currentcolor] pt
  /_C0_Space currentcolorspace pt

  _nSamples 1 gt{
    /_ndx _nSamples 1 sub pt
    [blendColor] cvx exec
  }if
  /_C1 [currentcolor] pt
  /_C1_Space currentcolorspace pt

  /_rampColorSpace _C0_Space pt

```

```

        _spotColor{
            nsetcustomcolorend
        }if
    }def
}def
/npop{
    {pop}repeat
}def
/xd{
    exch def
}def
/nd{
    null def
}def
/pt{
    AGM_Gradient_private 3 1 roll put
}def
/xp{
    exch pt
}def
/xput{
    dup load dup length exch maxlength eq{
        dup dup load dup
        length 2 mul dict copy def
    }if
    load begin
        def
    end
}def
/mySave{
    save /_sSave xp
}def
/myRestore{
    _sSave type /savetype eq{
        _sSave restore
    }if
}def
/gMark{
    counttomark 2 add -1 roll
}def
/execImage{
    /_tmp xp
    {
        exec
    }stopped{
        $error /errorname get /undefinedresult ne{
            stop
        }{
            _tmp npop
        }ifelse
    }if
}def
/pushBSpace{
    newpath gsave
    _bUMatrix astore concat
}def
/popBSpace{
    grestore
}def
/makeByte8{
    /_tmp 0 pt

```

```

    255 mul cvi
    8 string 8{
        dup _tmp 3 index put
        /_tmp _tmp 1 add pt
    }repeat
    exch pop
}def
/setImageParms{
    1 8 2 index 0 0 1 0 0 _imageMatrix astore
}def
/linealFill{
    0 0 1 1 rectfill
}def
/testCMYKColorThrough{
    gsave
    setcmykcolor currentcmykcolor
    grestore
    add add add 0 ne
}def
/expandOne {
    /_tmp xp
    dup type /stringtype ne{
        _tmp string
        exch
        dup 0 ne{
            255 mul cvi
            0 1 _tmp 1 sub{
                3 copy
                exch put pop
            }for
        }if
        pop
    }if
}def
/expandColor{
    /_channels xp
    /_len xp
    _channels{
        _len expandOne _channels 1 roll
    }repeat
}def
/blendColor{
    _color{
        _rgbRamp _producingSeps not and _forceToCMYK not and{
            _redData dup type /stringtype eq{
                /_ndx cvx /get cvx _d255 /exch cvx /get cvx
            }if
            _greenData dup type /stringtype eq{
                /_ndx cvx /get cvx _d255 /exch cvx /get cvx
            }if
            _blueData dup type /stringtype eq{
                /_ndx cvx /get cvx _d255 /exch cvx /get cvx
            }if
            /setrgbcolor cvx
        }{
            _cyanData dup type /stringtype eq{
                /_ndx cvx /get cvx _d255 /exch cvx /get cvx
            }if
            _magentaData dup type /stringtype eq{
                /_ndx cvx /get cvx _d255 /exch cvx /get cvx
            }if
        }
    }
}

```



```

    }if
    _yellowData dup type /stringtype eq{
        /_ndx cvx /get cvx _d255 /exch cvx /get cvx
    }if
    _blackData dup type /stringtype eq{
        /_ndx cvx /get cvx _d255 /exch cvx /get cvx
    }if
    _spotColor{
        _rampSD begin
            /_rampSD cvx /begin cvx

            spot1 begin
                tintImage dup type /stringtype eq{
                    /_ndx cvx /get cvx _d255- /exch cvx
                }{
                    dup null ne{
                        name type /nametype ne{
                            1 exch sub
                        }if
                    }if
                }ifelse
            end
            /spot1 cvx /tintValue 3 -1 /roll cvx /put cvx

            spot2 begin
                tintImage dup type /stringtype eq{
                    /_ndx cvx /get cvx _d255- /exch cvx
                }{
                    dup null ne{
                        name type /nametype ne{
                            1 exch sub
                        }if
                    }if
                }ifelse
            end
            /spot2 cvx /tintValue 3 -1 /roll cvx /put cvx
            /end cvx
        end
        /_rampSD cvx
        /nsetcustomcolor cvx
    }{
        /setcmykcolor cvx
    }ifelse
}ifelse
_blackData dup type /stringtype eq{
    /_ndx cvx /get cvx _d255 /exch cvx /get cvx
}if
_enabledSmoothShade{
    1 /exch cvx /sub cvx 0 0 0 4 -1 /roll cvx /setcmykcolor cvx
}{
    /setgray cvx
}ifelse
}ifelse
}def
/useRectImage{
    _subSampleOK _enabledSmoothShade not and{

```

```

        {
            mark
            0 1 dtransform atan cvi 90 mod 0 eq
            1 0 dtransform atan cvi 90 mod 0 eq
        } stopped
        {
            cleartomark
            false
        }
        {
            and exch pop
        } ifelse
    }{
        false
    }ifelse
}def
/linealImage{
    _noImage{
        rectImage
    }{
        _producingSeps{
            AGM_Gradient_Sep/AGM_Gradient_Sep_private get
            /rampImage get exec
        }{
            useRectImage{
                rectImage
            }{
                rampImage
            }ifelse
        }ifelse
    }ifelse
}def
/linealRamp{
    pushBSpace
    _ramp{
        linealImage
    }{
        linealFill
    }ifelse
    popBSpace
    /_rampIndex _rampIndex 1 sub pt
    _rampIndex 0 gt{
        getRampData
    }if
}def
/radialGrad{
    /_usingShells currentoverprint _producingSeps and _usingShells or pt
    /_firstShell true pt
    _enabledSmoothShade not{
        currentoverprint _producingSeps and{

            newpath
            clippath pathbbox
            1 add 4 1 roll
            1 add 4 1 roll
            1 sub 4 1 roll
            1 sub 4 1 roll
            _bbox astore pop

            newpath
            _bbox 0 get _bbox 1 get moveto

```

```

        _bbox 2 get _bbox 1 get lineto
        _bbox 2 get _bbox 3 get lineto
        _bbox 0 get _bbox 3 get lineto
        closepath
        6 copy
        gsave _bUMatrix astore concat
        1 0 moveto 0 0 1 0 360 arc closepath
        eoclip fill
        popBSPACE
    }{
        fill
    }ifelse
}if
pushBSPACE

_radHilite{
    _xHi _yHi _bUMatrix idtransform /_yHi xp /_xHi xp
    _rampPoint 1 lt{
        1 _rampPoint sub dup _xHi mul exch _yHi mul translate
    }if
}if
_rampIndex{
    radialRamp
    /_rampIndex _rampIndex 1 sub pt
    _rampIndex 0 gt{
        getRampData
    }if
}repeat

popBSPACE

}def
/getNSamples{
    0 exch
    {
        dup type /stringtype eq{
            length exch pop exit
        }if
        pop
    }forall
    dup 0 eq{
        pop 1
    }if
}def
/getRampData{
    /_rampType gMark pt
    /_color _rampType 0 gt pt
    /_ccRGB _rampType 5 eq _rampType 6 eq or pt
    /_rgbRamp _rampType 4 eq _ccRGB or pt
    /_ccProcess _rampType 2 eq _rampType 3 eq or pt
    _producingSeps{
        _rampSD initSpotDict
        /_spotColor _ccProcess _ccRGB or pt
    }{
        /_spotColor false pt
    }ifelse
    /_ramp true pt
    100 div /_rampPoint xp
    100 div /_midPoint xp

    dup /_colorStyle xp

```

```

_colorStyle 0 eq{
  2
}{
  _colorStyle 1 eq{
    5
  }{
    _colorStyle 2 eq{
      8
    }{
      _colorStyle 3 eq{
        _producingSeps{
          _rampSD /spot1 get begin
            /name 3 index def
            /spot_K 4 index def
            /spot_Y 5 index def
            /spot_M 6 index def
            /spot_C 7 index def

          end
        }if
        7
      }{
        _producingSeps{
          _rampSD/spot1 get begin
            /name 4 index def
            /spot_K 8 index def
            /spot_Y 9 index def
            /spot_M 10 index def
            /spot_C 11 index def

          end
        }if
        11
      } ifelse
    }ifelse
  }ifelse
}ifelse
/_tmp xp
_tmp index 100 div /_endPoint xp

_gradType 1 eq{
  _tmp 1 add index 100 div /_midPoint xp
}if

_producingSeps{
  _tmp 2 add index /_nextColorStyle xp
  _nextColorStyle 3 eq{
    /_tmp _tmp 4 add pt
    _tmp index dup
    _rampSD/spot1 get /name get ne{
      _rampSD /spot2 get begin
        /name xd
        /spot_K _tmp 2 add index def
        /spot_Y _tmp 3 add index def
        /spot_M _tmp 4 add index def
        /spot_C _tmp 5 add index def

      end
    }{
      pop
    }ifelse
  }if
  _nextColorStyle 4 eq{
    /_tmp _tmp 5 add pt
  }
}

```

```

        _tmp index dup
        _rampSD/spot1 get /name get ne{
            _rampSD /spot2 get begin
                /name xd
                /spot_K _tmp 5 add index def
                /spot_Y _tmp 6 add index def
                /spot_M _tmp 7 add index def
                /spot_C _tmp 8 add index def
            end
        }{
            pop
        }ifelse
    }if
}if
_rampType 3 eq _rampType 6 eq or{
    /_tint2Data gMark pt
}if
_ccProcess _ccRGB or{
    /_tint1Data gMark pt
}if
_rgbRamp{
    /_blueData gMark pt
    /_greenData gMark pt
    /_redData gMark pt
}if
_producingSeps{
    _ccProcess _ccRGB or{
        _rampType 3 eq _rampType 6 eq or{
            _rampSD /spot2 get begin
                /tintImage _gradType 0 eq{
                    _tint2Data
                }{
                    _tint1Data
                }ifelse
            def
            name null eq{
                /name /Black def
            }if
        end
    }if
    _rampSD /spot1 get begin
        /tintImage _gradType 0 eq _rampType 2 eq or _rampType 5
eq or{
            _tint1Data
        }{
            _tint2Data
        }ifelse
    def
    _rampType 2 eq _rampType 5 eq or{
        name null eq{
            /name _rampSD/spot2 get /name get def
            /spot_C _rampSD/spot2 get /spot_C get def
            /spot_M _rampSD/spot2 get /spot_M get def
            /spot_Y _rampSD/spot2 get /spot_Y get def
            /spot_K _rampSD/spot2 get /spot_K get def
            _rampSD/spot2 get /name null put
        }if
    }{
        name null eq{
            /name /Black def

```

```

        }if
    }ifelse
end
}if
}if
/_blackData gMark pt
_rampType 0 gt{
    counttomark 4 add -3 roll
    /_yellowData xp
    /_magentaData xp
    /_cyanData xp
}if
_ramp{
    /_nSamples
    [
        _rampType 0 eq {_blackData}if
        _rampType 1 eq {_cyanData _magentaData _yellowData
_blackData}if
        _rampType 2 eq {_cyanData _magentaData _yellowData _blackData
_tint1Data}if
        _rampType 3 eq {_cyanData _magentaData _yellowData _blackData
_tint1Data _tint2Data}if
        _rampType 4 eq {_cyanData _magentaData _yellowData _blackData
_redData _greenData _blueData}if
        _rampType 5 eq {_cyanData _magentaData _yellowData _blackData
_redData _greenData _blueData _tint1Data}if
        _rampType 6 eq {_cyanData _magentaData _yellowData _blackData
_redData _greenData _blueData _tint1Data _tint2Data}if
    ] getNSamples pt
    _enabledSmoothShade not {/_ramp _nSamples 1 gt pt} if
} if

setCStop
}def
/rectImage{
    gsave
    /_sInc 1 pt
    /_bInc 1 _nSamples div pt
    /_nSubSamples _nSamples pt
    /_optimize false pt

    _subSampleOK{
        /_uRampLen 1 0 dtransform _dUserSpace idtransform dup mul exch dup
mul add sqrt pt
        /_pChange _uRampLen 0 eq{0}{_nSamples _uRampLen div}ifelse pt

        _pChange .5 gt dup /_optimize xp{
            /_nSubSamples _uRampLen 2 div round cvi dup 1 le{pop 2}if pt
            /_bInc 1 _nSubSamples div pt
            /_sInc _nSamples 1 sub _nSubSamples 1 sub div pt
        }if
    }if
    0
    _nSubSamples
    [
    /dup cvx
    _optimize {
        /round cvx /cvi cvx
    } if
    /_ndx /exch cvx /pt cvx
    blendColor

```

```

0 0 _bInc 1 /rectfill cvx
_bInc 0 /translate cvx
_sInc /add cvx
] cvx
bind
repeat
pop
_spotColor{
    nsetcustomcolorend
}if
grestore
}def
/radialInit{
/_nRadSamples _nSamples dup 0 eq{pop 1}if pt
/_sInc -1 pt
/_rampLen _rampPoint _endPoint sub pt
/_bInc _rampLen _nSamples div neg pt
/_optimize false pt
_subSampleOK{
    /_uRampLen
        _rampLen 0 dtransform _dUserSpace idtransform dup mul exch dup
mul add sqrt
        0 _rampLen dtransform _dUserSpace idtransform dup mul exch dup
mul add sqrt
        2 copy lt{
            exch
        }if pop
    pt
    /_pChange
        _uRampLen 0 eq{
            0
        }{
            _nSamples _uRampLen div
        }ifelse
    pt
    _pChange .5 gt dup /_optimize xp{
        /_nRadSamples _uRampLen 2 div round cvi dup 1 le{pop 2}if pt
        /_bInc _rampLen _nRadSamples div neg pt
        /_sInc _nSamples 1 sub _nRadSamples 1 sub div neg pt
    }if
}if
_radHilite{
    /_xBCInc _xHi _rampLen mul _nRadSamples div pt
    /_yBCInc _yHi _rampLen mul _nRadSamples div pt
}if
}def
/radialRamp{
_enabledSmoothShade{
    fillRamp
}{
    /_saveMatrix _saveMatrix currentmatrix def

    radialInit

    %
    %
    true
    _producingSeps _rgbRamp not and{
        _nSamples 1 gt{
            pop
            /_ndx 0 pt

```

```

        [blendColor] cvx exec
        currentInkN
        /_ndx _nSamples 1 sub pt
        [blendColor] cvx exec
        currentInkN
        or
    }if
}if
{
    _rampPoint

    _nSamples 1 sub

    _nRadSamples
    [
        /dup cvx

        _optimize{
            /round cvx /cvi cvx
        }if

        /_ndx /exch cvx /pt cvx

        _usingShells{
            /_firstShell cvx{
                /_firstShell false pt
            }{
                0 0 3 index 360 0 arcn fill
            }/ifelse cvx
        }if

        blendColor

        _usingShells{
            0 0 3 /index cvx 0 360 /arc cvx
        }{
            0 0 3 /index cvx 0 360 /arc cvx /fill cvx
        }ifelse

        /exch cvx _bInc /add cvx /exch cvx

        _sInc /add cvx

        _radHilite{
            _xBCInc _yBCInc /translate cvx
        }if
    ] cvx bind
    repeat

    pop pop
} {
    _usingShells{
        0 0 _rampPoint 360 0 arcn fill
    }if
}ifelse

_saveMatrix setmatrix

_radHilite{
    _xHi _rampLen mul _yHi _rampLen mul translate
}if

```



```

        _usingShells _rampIndex 1 eq and{
            fill
        }if
        _spotColor{
            nsetcustomcolorend
        }if
    }ifelse
}def
end
end
defaultpacking setpacking
%%EndResource
%%BeginProcSet: Adobe_ColorImage_AI6 1.2 0
userdict /Adobe_ColorImage_AI6 known not
{
    userdict /Adobe_ColorImage_AI6 50 dict put
} if
userdict /Adobe_ColorImage_AI6 get begin
/initialize {
    Adobe_ColorImage_AI6 begin
    Adobe_ColorImage_AI6 {
        dup type /arraytype eq {
            dup xcheck {
                bind
            } if
        } if
        pop pop
    } forall
} def
/terminate { end } def
currentdict /Adobe_ColorImage_AI6_Vars known not {
    /Adobe_ColorImage_AI6_Vars 40 dict def
} if
Adobe_ColorImage_AI6_Vars begin
    /plateindex -1 def
    /_newproc null def
    /_proc1 null def
    /_proc2 null def
    /channelcount 0 def
    /sourcecount 0 def
    /sourcearray 4 array def
    /_ptispace null def
    /_ptiname null def
    /_pti0 0 def
    /_ptil 0 def
    /_ptiproc null def
    /_ptiscale 0 def
    /_pticomps 0 def
    /_ptibuf 0 string def
    /_gtigray 0 def
    /_cticmyk null def
    /_rtirgb null def
    /XIEnable true def
    /XIType 0 def
    /XIEncoding 0 def
    /XICompression 0 def
    /XIChannelCount 0 def
    /XIBitsPerPixel 0 def
    /XIImageHeight 0 def

```

```

/XIImageWidth 0 def
/XIImageMatrix null def
/XIRowBytes 0 def
/XIFile null def
/XIBuffer1 null def
/XIBuffer2 null def
/XIDataProc null def
/XIVersion 6 def
/XIColorSpace /DeviceGray def
/XIColorValues 0 def
end
currentdict /_colorimage known not {
  /colorimage where {
    /colorimage get /_colorimage exch def
  }{
    /_colorimage null def
  } ifelse
} if
/_image systemdict /image get def
/_currenttransfer systemdict /currenttransfer get def
/FourEqual {
  4 index ne {
    pop pop pop false
  }{
    4 index ne {
      pop pop false
    }{
      4 index ne {
        pop false
      }{
        4 index eq
      } ifelse
    } ifelse
  } ifelse
} def
/TestPlateIndex {
  Adobe_ColorImage_AI6_Vars begin
    /plateindex -1 def
    /setcmykcolor where {
      pop
      gsave
      1 0 0 0 setcmykcolor systemdict /currentgray get exec 1 exch
sub
      0 1 0 0 setcmykcolor systemdict /currentgray get exec 1 exch
sub
      0 0 1 0 setcmykcolor systemdict /currentgray get exec 1 exch
sub
      0 0 0 1 setcmykcolor systemdict /currentgray get exec 1 exch
sub
      grestore
      1 0 0 0 FourEqual {
        /plateindex 0 def
      }{
        0 1 0 0 FourEqual {
          /plateindex 1 def
        }{
          0 0 1 0 FourEqual {
            /plateindex 2 def
          }{
            0 0 0 1 FourEqual {
              /plateindex 3 def
            }
          }
        }
      }
    }
  }
}

```

```

                                }{
                                0 0 0 0 FourEqual {
                                /plateindex 5 def
                                } if
                                } ifelse
                                } ifelse
                                } ifelse
                                } ifelse
                                pop pop pop pop
                                } if
                                plateindex
end
} def
/concatprocs {
  /packedarray where {
    pop dup type /packedarraytype eq 2 index type
    /packedarraytype eq or
  }{
    false
  } ifelse
  {
    /_proc2 exch cvlit def
    /_proc1 exch cvlit def
    _proc1 aload pop
    _proc2 aload pop
    _proc1 length
    _proc2 length add
    packedarray cvx
  }{
    /_proc2 exch cvlit def
    /_proc1 exch cvlit def
    /_newproc _proc1 length _proc2 length add array def
    _newproc 0 _proc1 putinterval
    _newproc _proc1 length _proc2 putinterval
    _newproc cvx
  } ifelse
} def
/clrspaceissepn {
  type /arraytype eq
} def
/clrspacegetname {
  dup clrspaceissepn {dup length 2 sub get}{pop ()} ifelse
} def
/clrspacegetalt {
  aload pop pop pop colormake
} def
/clrspacegetcomps {
  dup /DeviceGray eq {
    pop 1
  }{
    dup /DeviceRGB eq {
      pop 3
    }{
      /DeviceCMYK eq {
        4
      }{
        1
      } ifelse
    } ifelse
  } ifelse
} def
} def

```

```

/clrspacemarksplate {
  dup /DeviceGray eq {
    pop plateindex 3 eq
  }{
    dup /DeviceRGB eq {
      pop plateindex 5 ne
    }{
      dup /DeviceCMYK eq {
        pop plateindex 5 ne
      }{
        /findcmkcustomcolor where {
          pop
          dup length 2 sub get
          0.1 0.1 0.1 0.1 5 -1 roll
          findcmkcustomcolor 1 setcustomcolor
          systemdict /currentgray get exec
          1 ne
        }{
          pop plateindex 5 ne
        } ifelse
      } ifelse
    } ifelse
  } ifelse
} def
/colormake {
  dup clrspacegetcomps
  exch 1 index 2 add 1 roll
  dup 1 eq {pop}{array astore} ifelse
  exch
} def
/colorexpand {
  dup clrspacegetname exch
  dup clrspaceissepn {
    clrspacegetalt
    exch 4 1 roll
  }{
    1 3 1 roll
  } ifelse
} def
/colortint {
  dup /DeviceGray eq {
    3 1 roll 1 exch sub mul 1 exch sub exch
  }{
    dup /DeviceRGB eq {
      3 1 roll {1 exch sub 1 index mul 1 exch sub exch} forall pop 3
array astore exch
    }{
      dup /DeviceCMYK eq {
        3 1 roll {1 index mul exch} forall pop 4 array astore
exch
      }{
        3 1 roll mul exch
      } ifelse
    } ifelse
  } ifelse
} def
/colortocmyk {
  dup /DeviceGray eq {
    pop 1 exch sub 0 0 0 4 -1 roll 4 array astore
  }{
    dup /DeviceRGB eq {

```

```

        pop aload pop _rgbtocmyk 4 array astore
    }{
        dup /DeviceCMYK eq {
            pop
        }{
            clrspacegetalt colortint colortocmyk
        } ifelse
    } ifelse
} def
/makeimagedict {
    7 dict begin
        /ImageType 1 def
        /Decode exch def
        /DataSource exch def
        /ImageMatrix exch def
        /BitsPerComponent exch def
        /Height exch def
        /Width exch def
        currentdict end
    } def
/stringinvert {
    0 1 2 index length 1 sub {
        dup 2 index exch get 255 exch sub 2 index 3 1 roll put
    } for
} def
/stringknockout {
    0 1 2 index length 1 sub {
        255 2 index 3 1 roll put
    } for
} def
/stringapply {
    0 1 4 index length 1 sub {
        dup
        4 index exch get
        3 index 3 1 roll
        3 index exec
    } for
    pop exch pop
} def
/WalkRGBString {
    0 3 index
    dup length 1 sub 0 3 3 -1 roll {
        3 getinterval {} forall
        5 index exec
        3 index
    } for

    5 {pop} repeat
} def
/WalkCMYKString
{
    0 3 index
    dup length 1 sub 0 4 3 -1 roll {
        4 getinterval {} forall

        6 index exec

        3 index

    } for

```

```

        5 { pop } repeat
    } def
/StuffRGBIntoGrayString
{
    .11 mul exch
    .59 mul add exch
    .3 mul add
    cvi 3 copy put
    pop 1 add
} def
/StuffCMYKIntoGrayString
{
    exch .11 mul add
    exch .59 mul add
    exch .3 mul add
    dup 255 gt { pop 255 } if
    255 exch sub cvi 3 copy put
    pop 1 add
} def
/RGBToGrayImageProc {
    Adobe_ColorImage_AI6_Vars begin
        sourcearray 0 get exec
        dup length 3 idiv string
        dup 3 1 roll

        /StuffRGBIntoGrayString load exch
        WalkRGBString
    end
} def
/CMYKToGrayImageProc {
    Adobe_ColorImage_AI6_Vars begin
        sourcearray 0 get exec
        dup length 4 idiv string
        dup 3 1 roll

        /StuffCMYKIntoGrayString load exch
        WalkCMYKString
    end
} def
/SeparateCMYKImageProc {
    Adobe_ColorImage_AI6_Vars begin
        sourcecount 0 ne {
            sourcearray plateindex get exec
        }{
            sourcearray 0 get exec

            dup length 4 idiv string

            0 2 index

```



```

        systemdict /settransfer get exec
    } if
    _colorimage
    Adobe_ColorImage_AI6_Vars /plateindex get 5 eq {
        grestore
    } if
    } ifelse
} ifelse
}{}
dup 1 eq {
    pop pop
    image
}{}
    pop pop
    Adobe_ColorImage_AI6_Vars begin
        sourcecount -1 0 {
            exch sourcearray 3 1 roll put
        } for
    /SeparateCMYKImageProc load
end
    systemdict /image get exec
} ifelse
} ifelse
} def
/proctintimage {
    /_ptispace exch store /_ptiname exch store /_pti1 exch store /_pti0 exch
store /_ptiproc exch store
    /_pticomps _ptispace clrspacegetcomps store
    /_ptiscale _pti1 _pti0 sub store
    level2? {
        _ptiname length 0 gt version cvr 2012 ge and {
            [/Separation _ptiname _ptispace {_ptiproc}] setcolorspace
            [_pti0 _pti1] makeimagedict _image
        }{}
        [/Indexed _ptispace 255 {255 div _ptiscale mul _pti0 add
_ptiproc}] setcolorspace
        [0 255] makeimagedict _image
    } ifelse
}{}
    _pticomps 1 eq {
        {
            dup
            {
                255 div _ptiscale mul _pti0 add _ptiproc 255 mul
cvi put
            } stringapply
        } concatprocs _image
    }{}
    {
        dup length _pticomps mul dup _ptibuf length ne {/_ptibuf
exch string store}{pop} ifelse
        _ptibuf {
            exch _pticomps mul exch 255 div _ptiscale mul
_pti0 add _ptiproc
            _pticomps 2 add -2 roll
            _pticomps 1 sub -1 0 {
                1 index add 2 index exch
                5 -1 roll

```



```

                255 mul cvi put
            } for
            pop pop
        } stringapply
    } concatprocs false _pticomps
    /_colorimage load null eq {7 {pop} repeat}{_colorimage} ifelse
} ifelse
} ifelse
} def
/graytintimage {
    /_gtigray 5 -1 roll store
    {1 _gtigray sub mul 1 exch sub} 4 1 roll
    /DeviceGray proctintimage
} def
/cmymktintimage {
    /_cticmyk 5 -1 roll store
    {_cticmyk {1 index mul exch} forall pop} 4 1 roll
    /DeviceCMYK proctintimage
} def
/rgbtintimage {
    /_rtirgb 5 -1 roll store
    {_rtirgb {1 exch sub 1 index mul 1 exch sub exch} forall pop} 4 1 roll
    /DeviceRGB proctintimage
} def
/tintimage {
    TestPlateIndex -1 eq {
        colorexpan
        3 -1 roll 5 -1 roll {0}{0 exch} ifelse 4 2 roll
        dup /DeviceGray eq {
            pop graytintimage
        }{
            dup /DeviceRGB eq {
                pop rgbtintimage
            }{
                pop cmymktintimage
            } ifelse
        } ifelse
    }{
        dup clrspacemarksplate {
            plateindex 5 lt {
                colortocmyk plateindex get 1 exch sub
                exch {1 0}{0 1} ifelse () graytintimage
            }{
                pop exch {0}{0 exch} ifelse 0 3 1 roll () graytintimage
            } ifelse
        }{
            pop pop pop
            {pop 1} 0 1 () /DeviceGray proctintimage
        } ifelse
    } ifelse
} def
/XIImage {
} def
/XIImageMask {
    XIImageWidth XIImageHeight false
    [XIImageWidth 0 0 XIImageHeight neg 0 0]
    /XIDataProc load
    imagemask
} def
/XIImageTint {
    0 setgray

```

```

        XIImageWidth XIImageHeight XIBitsPerPixel
        [XIImageWidth 0 0 XIImageHeight neg 0 0]
        /XIDataProc load
        XIType 3 eq XIColorValues XIColorSpace tintimage
    } def
/XIImage {
    0 setgray
    XIImageWidth XIImageHeight XIBitsPerPixel
    [XIImageWidth 0 0 XIImageHeight neg 0 0]
    /XIDataProc load
    XIChannelCount 1 eq {image}{false XIChannelCount colorimage} ifelse
} def
/XG {
    pop pop
} def
/XF {
    13 {pop} repeat
} def
/Xh {
    Adobe_ColorImage_AI6_Vars begin
        gsave
        /XIType exch def
        /XIImageHeight exch def
        /XIImageWidth exch def
        /XIImageMatrix exch def
        0 0 moveto
        XIImageMatrix concat
        XIImageWidth XIImageHeight scale

        XIType 1 eq {
            /_lp /null ddef
            _fc
            /_lp /imagemask ddef
        }
        if
        /XIVersion 7 def
    end
} def
/XH {
    Adobe_ColorImage_AI6_Vars begin
        /XIVersion 6 def
        grestore
    end
} def
/XIEnable {
    Adobe_ColorImage_AI6_Vars /XIEnable 3 -1 roll put
} def
/XC {
    Adobe_ColorImage_AI6_Vars begin
        colormake
        /XIColorSpace exch def
        /XIColorValues exch def
    end
} def
/XI
{
    Adobe_ColorImage_AI6_Vars begin
        gsave
        /XIType exch def
        cvi dup
        256 idiv /XICompression exch store

```

```

256 mod /XIEncoding exch store
pop pop
/XIChannelCount exch def
/XIBitsPerPixel exch def
/XIImageHeight exch def
/XIImageWidth exch def
pop pop pop pop
/XIImageMatrix exch def
XIBitsPerPixel 1 eq {
    XIImageWidth 8 div ceiling cvi
} {
    XIImageWidth XIChannelCount mul
} ifelse
/XIRowBytes exch def
XIEncoding 0 ne XIVersion 6 le and {
    currentfile 128 string readline pop pop
} if
XICompression 0 eq {
    /XIBuffer1 XIRowBytes string def
    XIEncoding 0 eq {
        {currentfile XIBuffer1 readhexstring pop}
    } {
        {currentfile XIBuffer1 readstring pop}
    } ifelse
} {
    /XIBuffer1 256 string def
    /XIBuffer2 XIRowBytes string def
    {currentfile XIBuffer1 readline pop (%) anchorsearch {pop} if}
    /ASCIIHexDecode filter /DCTDecode filter
    /XIFile exch def
    {XIFile XIBuffer2 readstring pop}
} ifelse
/XIDataProc exch def

XIVersion 6 le {
    0 0 moveto
    XIImageMatrix concat
    XIImageWidth XIImageHeight scale
    XIType 1 eq {
        /_lp /null ddef
        _fc
        /_lp /imagemask ddef
    } if
} if
XIEnable {
    XIType 1 eq {
        XIImageMask
    } {
        XIType 2 eq XIType 3 eq or {
            XIImageTint
        } {
            XIImage
        } ifelse
    } ifelse
} {
    XI_NULLImage
} ifelse
grestore

```

```

end
} def
end

```

```

%%EndProcSet
%%BeginResource: procset Adobe_Illustrator_AI5 1.2 0
%%Title: (Adobe Illustrator (R) Version 7.0 Full Prolog)
%%Version: 1.2 0
%%CreationDate: (3/7/1994) ( )
%%Copyright: ((C) 1987-1996 Adobe Systems Incorporated All Rights Reserved)
currentpacking true setpacking
userdict /Adobe_Illustrator_AI5_vars 107 dict dup begin
put
/_eo false def
/_lp /none def
/_pf
{
} def
/_ps
{
} def
/_psf
{
} def
/_pss
{
} def
/_pjsf
{
} def
/_pjss
{
} def
/_pola 0 def
/_doClip 0 def
/cf currentflat def
/_lineorientation 0 def
/_charorientation 0 def
/_yokoorientation 0 def
/_tm matrix def
/_renderStart
[
/e0 /r0 /a0 /o0 /e1 /r1 /a1 /i0
] def
/_renderEnd
[
null null null null /i1 /i1 /i1 /i1
] def
/_render -1 def
/_shift [0 0] def
/_ax 0 def
/_ay 0 def
/_cx 0 def
/_cy 0 def
/_leading
[
0 0
] def
/_ctm matrix def
/_mtx matrix def
/_sp 16#020 def
/_hyphen (-) def
/_fontSize 0 def
/_fontAscent 0 def
/_fontDescent 0 def

```

```
/_fontHeight 0 def
/_fontRotateAdjust 0 def
/Ss 256 string def
Ss 0 (fonts/) putinterval
/_cnt 0 def
/_scale [1 1] def
/_nativeEncoding 0 def
/_useNativeEncoding 0 def
/_tempEncode 0 def
/_pntr 0 def
/_tDict 2 dict def
/_hfname 100 string def
/_hffound false def
/Tx
{
} def
/Tj
{
} def
/CRender
{
} def
/_AI3_savepage
{
} def
/_gf null def
/_cf 4 array def
/_rgbf 3 array def
/_if null def
/_of false def
/_fc
{
} def
/_gs null def
/_cs 4 array def
/_rgbs 3 array def
/_is null def
/_os false def
/_sc
{
} def
/_pd 1 dict def
/_ed 15 dict def
/_pm matrix def
/_fm null def
/_fd null def
/_fdd null def
/_sm null def
/_sd null def
/_sdd null def
/_i null def
/_lobyte 0 def
/_hibyte 0 def
/_cproc null def
/_cscript 0 def
/_hvax 0 def
/_hvay 0 def
/_hvwb 0 def
/_hvcx 0 def
/_hvcy 0 def
/_bitfont null def
```

```

/_bitlobyte 0 def
/_bithiabyte 0 def
/_bitkey null def
/_bitdata null def
/_bitindex 0 def
/discardSave null def
/buffer 256 string def
/beginString null def
/endString null def
/endStringLength null def
/layerCnt 1 def
/layerCount 1 def
/perCent (%) 0 get def
/perCentSeen? false def
/newBuff null def
/newBuffButFirst null def
/newBuffLast null def
/clipForward? false def
end
userdict /Adobe_Illustrator_AI5 known not {
    userdict /Adobe_Illustrator_AI5 95 dict put
} if
userdict /Adobe_Illustrator_AI5 get begin
/initialize
{
    Adobe_Illustrator_AI5 dup begin
    Adobe_Illustrator_AI5_vars begin
    discardDict
    {
        bind pop pop
    } forall
    dup /nc get begin
    {
        dup xcheck 1 index type /operator type ne and
        {
            bind
        } if
        pop pop
    } forall
    end
    newpath
} def
/terminate
{
    end
end
} def
/_
null def
/ddef
{
    Adobe_Illustrator_AI5_vars 3 1 roll put
} def
/xput
{
    dup load dup length exch maxlength eq
    {
        dup dup load dup
        length 2 mul dict copy def
    } if
    load begin

```

```

def
end
} def
/npop
{
  {
    pop
  } repeat
} def
/hswj
{
  dup stringwidth 3 2 roll
  {
    _hwb eq { exch _hvcx add exch _hvcy add } if
    exch _hvax add exch _hvay add
  } cforall
} def
/vswj
{
  0 0 3 -1 roll
  {
    dup 255 le
    _charorientation 1 eq
    and
    {
      dup cstring stringwidth 5 2 roll
      _hwb eq { exch _hvcy sub exch _hvcx sub } if
      exch _hvay sub exch _hvax sub
      4 -1 roll sub exch
      3 -1 roll sub exch
    }
  }
  _hwb eq { exch _hvcy sub exch _hvcx sub } if
  exch _hvay sub exch _hvax sub
  _fontHeight sub
} ifelse
} cforall
} def
/swj
{
  6 1 roll
  /_hvay exch ddef
  /_hvax exch ddef
  /_hwb exch ddef
  /_hvcy exch ddef
  /_hvcx exch ddef
  _lineorientation 0 eq { hswj } { vswj } ifelse
} def
/sw
{
  0 0 0 6 3 roll swj
} def
/vjss
{
  4 1 roll
  {
    dup cstring
    dup length 1 eq
    _charorientation 1 eq
    and
    {

```

```

-90 rotate
currentpoint
_fontRotateAdjust add
moveto
gsave
false charpath currentpoint
5 index setmatrix stroke
grestore
_fontRotateAdjust sub
moveto
_sp eq
{
    5 index 5 index rmoveto
} if
2 copy rmoveto
90 rotate
}
{
currentpoint
_fontHeight sub
5 index sub
3 index _sp eq
{
    9 index sub
} if

currentpoint
exch 4 index stringwidth pop 2 div sub
exch _fontAscent sub
moveto

gsave
2 index false charpath
6 index setmatrix stroke
grestore

moveto pop pop
} ifelse
} cforall
6 npop
} def
/hjss
{
4 1 roll
{
dup cstring
gsave
false charpath currentpoint
5 index setmatrix stroke
grestore
moveto
_sp eq
{
    5 index 5 index rmoveto
} if
2 copy rmoveto
} cforall
6 npop
} def
/jss
{

```



```

    _lineorientation 0 eq { hjss } { vjss } ifelse
} def
/ss
{
    0 0 0 7 3 roll jss
} def
/vjssp
{
    4 1 roll
    {
        dup cstring
        dup length 1 eq
        _charorientation 1 eq
        and
        {
            -90 rotate
            currentpoint
            _fontRotateAdjust add
            moveto
            false charpath
            currentpoint
            _fontRotateAdjust sub
            moveto
            _sp eq
            {
                5 index 5 index rmoveto
            } if
            2 copy rmoveto
            90 rotate
        }
        {
            currentpoint
            _fontHeight sub
            5 index sub
            3 index _sp eq
            {
                9 index sub
            } if
            currentpoint
            exch 4 index stringwidth pop 2 div sub
            exch _fontAscent sub
            moveto
            2 index false charpath
            moveto pop pop
        } ifelse
    } cforall
    6 npop
} def
/hjssp
{
    4 1 roll
    {
        dup cstring
        false charpath
        _sp eq
        {
            5 index 5 index rmoveto
        } if
    }
}

```

```

        2 copy rmoveto
    } cforall
    6 npop
} def
/jsp
{
    matrix currentmatrix
    _lineorientation 0 eq {hjsp} {vjsp} ifelse
} def
/sp
{
    matrix currentmatrix
    0 0 0 7 3 roll
    _lineorientation 0 eq {hjsp} {vjsp} ifelse
} def
/pl
{
    transform
    0.25 sub round 0.25 add exch
    0.25 sub round 0.25 add exch
    itransform
} def
/setstrokeadjust where
{
    pop true setstrokeadjust
    /c
    {
        curveto
    } def
    /C
    /c load def
    /v
    {
        currentpoint 6 2 roll curveto
    } def
    /V
    /v load def
    /Y
    {
        2 copy curveto
    } def
    /Y
    /y load def
    /l
    {
        lineto
    } def
    /L
    /l load def
    /m
    {
        moveto
    } def
}
{
    /c
    {
        pl curveto
    } def
    /C
    /c load def

```

```

/v
{
    currentpoint 6 2 roll pl curveto
} def
/V
/v load def
/Y
{
    pl 2 copy curveto
} def
/Y
/y load def
/l
{
    pl lineto
} def
/L
/l load def
/m
{
    pl moveto
} def
} ifelse
/d
{
    setdash
} def
/cf
{
} def
/i
{
    dup 0 eq
    {
        pop cf
    } if
    setflat
} def
/j
{
    setlinejoin
} def
/J
{
    setlinecap
} def
/M
{
    setmiterlimit
} def
/w
{
    setlinewidth
} def
/XR
{
    0 ne
    /_eo exch ddef
} def
/H
{

```

```

} def
/h
{
  closepath
} def
/N
{
  _pola 0 eq
  {
    _doClip 1 eq
    {
      _eo {eoclip} {clip} ifelse /_doClip 0 ddef
    } if
    newpath
  }
  {
    /CRender
    {
      N
    } ddef
  } ifelse
} def
/n
{
  N
} def
/F
{
  _pola 0 eq
  {
    _doClip 1 eq
    {
      gsave _pf grestore _eo {eoclip} {clip} ifelse newpath /_lp
    }
    /none ddef _fc
    {
      _doClip 0 ddef
    }
    {
      _pf
    } ifelse
  }
  {
    /CRender
    {
      F
    } ddef
  } ifelse
} def
/f
{
  closepath
  F
} def
/S
{
  _pola 0 eq
  {
    _doClip 1 eq
    {
      gsave _ps grestore _eo {eoclip} {clip} ifelse newpath /_lp
    }
    /none ddef _sc
    {
      _doClip 0 ddef
    }
  }
  {
    /CRender
    {
      S
    } ddef
  } ifelse
} def

```

```

        }
        {
            _ps
        } ifelse
    }
    {
        /CRender
        {
            S
        } ddef
    } ifelse
} def
/s
{
    closepath
    S
} def
/B
{
    _pola 0 eq
    {
        _doClip 1 eq
        gsave F grestore
        {
            gsave S grestore _eo {eoclip} {clip} ifelse newpath /_lp /none
ddef _sc
            /_doClip 0 ddef
        }
        {
            S
        } ifelse
    }
    {
        /CRender
        {
            B
        } ddef
    } ifelse
} def
/b
{
    closepath
    B
} def
/W
{
    /_doClip 1 ddef
} def
/*
{
    count 0 ne
    {
        dup type /stringtype eq
        {
            pop
        } if
    } if
    newpath
} def
/u
{

```

```

} def
/U
{
} def
/q
{
    _pola 0 eq
    {
        gsave
    } if
} def
/Q
{
    _pola 0 eq
    {
        grestore
    } if
} def
/*u
{
    _pola 1 add /_pola exch ddef
} def
/*U
{
    _pola 1 sub /_pola exch ddef
    _pola 0 eq
    {
        CRender
    } if
} def
/D
{
    pop
} def
/*w
{
} def
/*W
{
} def
/`
{
    /_i save ddef
    clipForward?
    {
        nulldevice
    } if
    6 1 roll 4 npop
    concat pop
    userdict begin
    /showpage
    {
    } def
    0 setgray
    0 setlinecap
    1 setlinewidth
    0 setlinejoin
    10 setmiterlimit
    [] 0 setdash
    /setstrokeadjust where {pop false setstrokeadjust} if
    newpath

```

```

    0 setgray
    false setoverprint
} def
/~
{
    end
    _i restore
} def
/O
{
    0 ne
    /_of exch ddef
    /_lp /none ddef
} def
/R
{
    0 ne
    /_os exch ddef
    /_lp /none ddef
} def
/g
{
    /_gf exch ddef
    /_fc
    {
        _lp /fill ne
        {
            _of setoverprint
            _gf setgray
            /_lp /fill ddef
        } if
    } ddef
    /_pf
    {
        _fc
        _eo {eofill} {fill} ifelse
    } ddef
    /_psf
    {
        _fc
        hvashow
    } ddef
    /_pjsf
    {
        _fc
        hvawidthshow
    } ddef
    /_lp /none ddef
} def
/G
{
    /_gs exch ddef
    /_sc
    {
        _lp /stroke ne
        {
            _os setoverprint
            _gs setgray
            /_lp /stroke ddef
        } if
    } ddef

```

```

    /_ps
    {
        _sc
        stroke
    } ddef
    /_pss
    {
        _sc
        ss
    } ddef
    /_pjss
    {
        _sc
        jss
    } ddef
    /_lp /none ddef
} def
/k
{
    _cf astore pop
    /_fc
    {
        _lp /fill ne
        {
            _of setoverprint
            _cf aload pop setcmykcolor
            /_lp /fill ddef
        } if
    } ddef
    /_pf
    {
        _fc
        _eo {eofill} {fill} ifelse
    } ddef
    /_psf
    {
        _fc
        hvashow
    } ddef
    /_pjsf
    {
        _fc
        hvawidthshow
    } ddef
    /_lp /none ddef
} def
/K
{
    _cs astore pop
    /_sc
    {
        _lp /stroke ne
        {
            _os setoverprint
            _cs aload pop setcmykcolor
            /_lp /stroke ddef
        } if
    } ddef
    /_ps
    {
        _sc

```



```

        stroke
    } ddef
    /_pss
    {
        _sc
        ss
    } ddef
    /_pjss
    {
        _sc
        jss
    } ddef
    /_lp /none ddef
} def
/Xa
{
    _rgbf astore pop
    /_fc
    {
        _lp /fill ne
        {
            _of setoverprint
            _rgbf aload pop setrgbcolor
            /_lp /fill ddef
        } if
    } ddef
    /_pf
    {
        _fc
        _eo {eofill} {fill} ifelse
    } ddef
    /_psf
    {
        _fc
        hvashow
    } ddef
    /_pjsf
    {
        _fc
        hvawidthshow
    } ddef
    /_lp /none ddef
} def
/XA
{
    _rgbs astore pop
    /_sc
    {
        _lp /stroke ne
        {
            _os setoverprint
            _rgbs aload pop setrgbcolor
            /_lp /stroke ddef
        } if
    } ddef
    /_ps
    {
        _sc
        stroke
    } ddef
    /_pss

```

```

    {
        _sc
        ss
    } ddef
    /_pjss
    {
        _sc
        jss
    } ddef
    /_lp /none ddef
} def
/_rgbtocmyk
{
3
    {
    1 exch sub 3 1 roll
    } repeat
3 copy 1 4 1 roll
3
    {
    3 index 2 copy gt
        {
        exch
        } if
    pop 4 1 roll
    } repeat
pop pop pop
4 1 roll
3
    {
    3 index sub
    3 1 roll
    } repeat
4 -1 roll
} def
/Xx
{
    exch
    /_gf exch ddef
    0 eq
    {
        findcmykcustomcolor
    }
    {
        /findrgbcustomcolor where not {
            4 1 roll _rgbtocmyk
            5 -1 roll
            findcmykcustomcolor
        }
    }
    pop
    findrgbcustomcolor
} ifelse
} ifelse
/_if exch ddef
/_fc
{
    _lp /fill ne
    {
        _of setoverprint
        _if _gf 1 exch sub setcustomcolor
    }
}

```

```

        /_lp /fill ddef
    } if
} ddef
/_pf
{
    _fc
    _eo {eofill} {fill} ifelse
} ddef
/_psf
{
    _fc
    hvashow
} ddef
/_pjsf
{
    _fc
    hvawidthshow
} ddef
/_lp /none ddef
} def
/XX
{
    exch
    /_gs exch ddef
    0 eq
    {
        findcmykcustomcolor
    }
    {
        /findrgbcustomcolor where not {
            4 1 roll _rgbtocmyk
            5 -1 roll
            findcmykcustomcolor
        }
        {
            pop
            findrgbcustomcolor
        } ifelse
    } ifelse
    /_is exch ddef
    /_sc
    {
        _lp /stroke ne
        {
            _os setoverprint
            _is _gs 1 exch sub setcustomcolor
            /_lp /stroke ddef
        } if
    } ddef
    /_ps
    {
        _sc
        stroke
    } ddef
    /_pss
    {
        _sc
        ss
    } ddef
    /_pjss
    {

```

```

        _sc
        jss
    } ddef
    /_lp /none ddef
} def
/x
{
    /_gf exch ddef
    findcmykcustomcolor
    /_if exch ddef
    /_fc
    {
        _lp /fill ne
        {
            _of setoverprint
            _if _gf 1 exch sub setcustomcolor
            /_lp /fill ddef
        } if
    } ddef
    /_pf
    {
        _fc
        _eo {eofill} {fill} ifelse
    } ddef
    /_psf
    {
        _fc
        hvashow
    } ddef
    /_pjsf
    {
        _fc
        hvawidthshow
    } ddef
    /_lp /none ddef
} def
/X
{
    /_gs exch ddef
    findcmykcustomcolor
    /_is exch ddef
    /_sc
    {
        _lp /stroke ne
        {
            _os setoverprint
            _is _gs 1 exch sub setcustomcolor
            /_lp /stroke ddef
        } if
    } ddef
    /_ps
    {
        _sc
        stroke
    } ddef
    /_pss
    {
        _sc
        ss
    } ddef
    /_pjss

```

```

    {
        _sc
        jss
    } ddef
    /_lp /none ddef
} def
/A
{
    pop
} def
/annotatepage
{
    userdict /annotatepage 2 copy known {get exec} {pop pop} ifelse
} def
/XT {
    pop pop
} def
/discard
{
    save /discardSave exch store
    discardDict begin
    /endString exch store
    gt38?
    {
        2 add
    } if
    load
    stopped
    pop
end
    discardSave restore
} bind def
userdict /discardDict 7 dict dup begin
put
/pre38Initialize
{
    /endStringLength endString length store
    /newBuff buffer 0 endStringLength getinterval store
    /newBuffButFirst newBuff 1 endStringLength 1 sub getinterval store
    /newBuffLast newBuff endStringLength 1 sub 1 getinterval store
} def
/shiftBuffer
{
    newBuff 0 newBuffButFirst putinterval
    newBuffLast 0
    currentfile read not
    {
        stop
    } if
    put
} def
0
{
    pre38Initialize
    mark
    currentfile newBuff readstring exch pop
    {
        {
            newBuff endString eq
            {
                cleartomark stop
            }
        }
    }
}

```

```

        } if
        shiftBuffer
    } loop
}
{
stop
} ifelse
} def
1
{
pre38Initialize
/beginString exch store
mark
currentfile newBuff readstring exch pop
{
    {
        newBuff beginString eq
        {
            /layerCount dup load 1 add store
        }
        newBuff endString eq
        {
            /layerCount dup load 1 sub store
            layerCount 0 eq
            {
                cleartomark stop
            } if
        } if
    } ifelse
    shiftBuffer
} loop
} if
} def
2
{
mark
{
    currentfile buffer readline not
    {
        stop
    } if
    endString eq
    {
        cleartomark stop
    } if
} loop
} def
3
{
/beginString exch store
/layerCnt 1 store
mark
{
    currentfile buffer readline not
    {
        stop
    } if
    dup beginString eq
    {
        pop /layerCnt dup load 1 add store
    }
}

```

```

    }
    {
        endString eq
        {
            layerCnt 1 eq
            {
                cleartomark stop
            }
            {
                /layerCnt dup load 1 sub store
            } ifelse
        } if
    } ifelse
} loop
} def
end
userdict /clipRenderOff 15 dict dup begin
put
{
    /n /N /s /S /f /F /b /B
}
{
    {
        _doClip 1 eq
        {
            /_doClip 0 ddef _eo {eoclip} {clip} ifelse
        } if
        newpath
    } def
} forall
/Tr /pop load def
/Bb {} def
/BB /pop load def
/Bg {12 npop} def
/Bm {6 npop} def
/Bc /Bm load def
/Bh {4 npop} def
end
/Lb
{
    4 npop
    6 1 roll
    pop
    4 1 roll
    pop pop pop
    0 eq
    {
        0 eq
        {
            (%AI5_BeginLayer) 1 (%AI5_EndLayer--) discard
        }
        {
        }
    }

    /clipForward? true def

    /Tx /pop load def
    /Tj /pop load def

    currentdict end clipRenderOff begin begin
} ifelse
}

```

```

        {
            0 eq
            {
                save /discardSave exch store
            } if
        } ifelse
    } bind def
/LB
{
    discardSave dup null ne
    {
        restore
    }
    {
        pop
        clipForward?
        {
            currentdict
            end
            end
            begin

                /clipForward? false ddef
            } if
        } ifelse
    } bind def
/Pb
{
    pop pop
    0 (%AI5_EndPalette) discard
} bind def
/Np
{
    0 (%AI5_End_NonPrinting--) discard
} bind def
/Ln /pop load def
/Ap
/pop load def
/Ar
{
    72 exch div
    0 dtransform dup mul exch dup mul add sqrt
    dup 1 lt
    {
        pop 1
    } if
    setflat
} def
/Mb
{
    q
} def
/Md
{
} def
/MB
{
    Q
} def
/nc 4 dict def
nc begin

```



```

/setgray
{
    pop
} bind def
/setcmykcolor
{
    4 npop
} bind def
/setrgbcolor
{
    3 npop
} bind def
/setcustomcolor
{
    2 npop
} bind def
currentdict readonly pop
end
end
setpacking
%%EndResource
%%BeginResource: procset Adobe_cshow 2.0 8
%%Title: (Writing System Operators)
%%Version: 2.0 8
%%CreationDate: (1/23/89) ( )
%%Copyright: ((C) 1992-1996 Adobe Systems Incorporated All Rights Reserved)
currentpacking true setpacking
userdict /Adobe_cshow 14 dict dup begin put
/initialize
{
    Adobe_cshow begin
    Adobe_cshow
    {
        dup xcheck
        {
            bind
        } if
        pop pop
    } forall
end
    Adobe_cshow begin
} def
/terminate
{
currentdict Adobe_cshow eq
{
    end
} if
} def
/cforall
{
    /_lobyte 0 ddef
    /_hibyte 0 ddef
    /_cproc exch ddef
    /_cscript currentfont /FontScript known { currentfont /FontScript get } {
-1 } ifelse ddef
    {
        /_lobyte exch ddef
        _hibyte 0 eq
        _cscript 1 eq
        _lobyte 129 ge _lobyte 159 le and
    }
}

```

```

        _lobyte 224 ge _lobyte 252 le and or and
        _cscript 2 eq
        _lobyte 161 ge _lobyte 254 le and and
        _cscript 3 eq
        _lobyte 161 ge _lobyte 254 le and and
    _cscript 25 eq
        _lobyte 161 ge _lobyte 254 le and and
    _cscript -1 eq
        or or or or and
        {
            /_hibyte _lobyte ddef
        }
        {
            _hibyte 256 mul _lobyte add
            _cproc
            /_hibyte 0 ddef
        } ifelse
    } forall
} def
/cstring
{
    dup 256 lt
    {
        (s) dup 0 4 3 roll put
    }
    {
        dup 256 idiv exch 256 mod
        (hl) dup dup 0 6 5 roll put 1 4 3 roll put
    } ifelse
} def
/clength
{
    0 exch
    { 256 lt { 1 } { 2 } ifelse add } cforall
} def
/hawidthshow
{
    {
        dup cstring
        show
        _hvax _hvay rmoveto
        _hvw b eq { _hvcx _hvcy rmoveto } if
    } cforall
} def
/vawidthshow
{
    {
        dup 255 le
        _charorientation 1 eq
        and
        {
            -90 rotate
            0 _fontRotateAdjust rmoveto
            cstring
            _hvcx _hvcy _hvw b _hvax _hvay 6 -1 roll awidthshow
            0 _fontRotateAdjust neg rmoveto
            90 rotate
        }
        {
            currentpoint
            _fontHeight sub
        }
    }
}

```

```

        exch _hvay sub exch _hvax sub
        2 index _hvwb eq { exch _hvcy sub exch _hvcx sub } if
        3 2 roll
        cstring
        dup stringwidth pop 2 div neg _fontAscent neg rmoveto
        show
        moveto
    } ifelse
} cforall
} def
/hvawidthshow
{
    6 1 roll
    /_hvay exch ddef
    /_hvax exch ddef
    /_hvwb exch ddef
    /_hvcy exch ddef
    /_hvcx exch ddef
    _lineorientation 0 eq { hawidthshow } { vawidthshow } ifelse
} def
/hvwidthshow
{
    0 0 3 -1 roll hvawidthshow
} def
/hvashow
{
    0 0 0 6 -3 roll hvawidthshow
} def
/hvshow
{
    0 0 0 0 0 6 -1 roll hvawidthshow
} def
currentdict readonly pop end
setpacking
%%EndResource
%%EndProlog
%%BeginSetup
userdict /_useSmoothShade true put
Adobe_level2_AI5 /initialize get exec
Adobe_cshow /initialize get exec
Adobe_Illustrator_AI5_vars Adobe_Illustrator_AI5 AGM_Gradient /initializeAI get
exec
Adobe_ColorImage_AI6 /initialize get exec
Adobe_Illustrator_AI5 /initialize get exec
%AI5_Begin_NonPrinting
Np
1 Bn
%AI5_BeginGradient: (Unnamed gradient 1)
(Unnamed gradient 1) 0 2 Bd
[
<
FFFEFDFCFBFAF9F8F7F6F5F4F3F2F1F0EFEFEDECEBEAE9E8E7E6E5E4E3E2E1E0DFDEDDDCDBDAD9D8
D7D6D5D4D3D2D1D0CFCECDCCCBCAC9C8C7C6C5C4C3C2C1C0BFBEBDBCBAB9B8B7B6B5B4B3B2B1B0
AFAEADACABAAA9A8A7A6A5A4A3A2A1A09F9E9D9C9B9A999897969594939291908F8E8D8C8B8A8988
87868584838281807F7E7D7C7B7A797877767574737271706F6E6D6C6B6A69686766656463626160
5F5E5D5C5B5A595857565554535251504F4E4D4C4B4A494847464544434241403F3E3D3C3B3A3938
37363534333231302F2E2D2C2B2A292827262524232221201F1E1D1C1B1A19181716151413121110
0F0E0D0C0B0A09080706050403020100
>
0 %_Br
[

```

```
0 0 50 100 %_Bs
1 0 50 0 %_Bs
BD
%AI5_EndGradient
%AI5_End_NonPrinting--
%AI5_BeginPalette
0 0 Pb
1 1 1 1 k
([Registration]) Pc
1 1 1 1 k
([Registration]) Pc
([Registration]) Pc
([Registration]) Pc
([Registration]) Pc
([Registration]) Pc
([Registration]) Pc
([Registration]) Pc
([Registration]) Pc
0 0 0 0 k
(C=0 M=0 Y=0 K=0) Pc
0 0 0 1 k
(C=0 M=0 Y=0 K=100) Pc
PB
%AI5_EndPalette
%%EndSetup
%AI5_BeginLayer
1 1 1 1 0 0 0 79 128 255 Lb
(Layer 1) Ln
0 A
0 O
0 0 0 1 k
0 J 0 j 1 w 4 M []0 d
0 XR
37.9021 694.1587 m
35.835 694.1587 34.991 695.6238 36.0237 697.4133 c
69.8486 756 l
70.8794 757.7896 72.5708 757.7896 73.6033 756 c
107.4297 697.4133 l
108.4609 695.6238 107.6172 694.1587 105.5518 694.1587 c
37.9021 694.1587 l
f
1 Ap
0 0 0 0 k
83.9766 717.25 m
83.9766 710.4844 78.4917 705 71.7263 705 c
64.9609 705 59.4763 710.4844 59.4763 717.25 c
59.4763 724.0156 64.9609 729.5 71.7263 729.5 c
78.4917 729.5 83.9766 724.0156 83.9766 717.25 c
f
LB
%AI5_EndLayer--
%%PageTrailer
gsave annotatepage grestore showpage
%%Trailer
Adobe_Illustrator_AI5 /terminate get exec
Adobe_ColorImage_AI6 /terminate get exec
AGM_Gradient /terminate get exec
Adobe_cshow /terminate get exec
Adobe_level2_AI5 /terminate get exec
%%EOF
```


AdÃnt,J,J€}À™™Áxü_l?ýn,W,MÀ™™Áxü_l?ý
?ý,dV5W€}†ª%jª`Release
\$QÂ
™™Ánw,H\$QÂ
™™Á,1,X,k,Z Šì`Àrìí

12.2(33)SRB

€}Àí™™Áh<^ÁD□□□?ÿ□□□n"□□, W, N□□□□Àí™™Áh<^ÁD□□□?ÿ□?ÿ□□, dV□6□W□□□† a a%j a□□□`□This
command was introduced.

€}À□™™Á□%□1□?ÿ□□□n□

, W□, Q□□□À□™™Á□%□1□?ÿ□?ÿ□□Ž□W□7□W□□□† a a%j a□□□`□Command

€}Àí™™Á□%□ÁD□□□?ÿ□□□nŽ□

, W, P, R□□□Àí™™Á□%□ÁD□□□?ÿ□?ÿ□□Ž□W□7□W□□□† a a%j a□□□`

□†^a%j^a□□□` Specifies an RT for a VPLS VFI.

□□Âd□□Ã□□□□□□n⁻□□□□□□□□□□, X, X□□□□□□□□□□

AdÃn, l, l²ffQ
TMTMÃn², V²ffQ
TMTMÃ, J, l9, ŠìàRìí

ÀÿÿÂ\$ëmÁ°À«"ñFf,ÀÿÿÂ\$ëmÁ°À«"Àâüf tC†a aŠ™
bThe following partial example shows how to configure a primary and backup
X.25 interface for dual -™Ã@;serial line management of the Lucent 5ESS
switch in a DCN:

```
DD(...UT|Dl`interface serial 1/0
E°Dj` description SCC0
F`$ backup active interface serial 1/1
G` encapsulation x25 dce
H` x25 address 66666666
I`
  x25 ltc 8
J`
  x25 ips 256
K`
  x25 ops 256
L` clockrate 9600
M`!
N`interface serial 1/1
O` description SCC1
P` encapsulation x25 dce
AQ` x25 address 66666666
```


²ffQÂ

™™□□□□ñ\□□f.□, a□□□²ffQÂ

™™□□□□□□□□□□□□□□f0y□□□□□W€Y□

h4`_backup d`elay (L2VP`a`N local switching)

ÀTMÁ-Þ-Á°^oï^oñ' ,w, ^, c^oÀTMÁ-Þ-
Á°^oï^oï^o, l[^]w€|[†] a^aŠTMÄ`L2 VFI configuration

ÀÿÿpÁ°·ÿüñ]f.,_fRÀÿÿpÁ°·ÿü·ÿüf0z€Z†aa†aa cTo
specify how long a backup pseudowire virtual circuit (VC) should wait before
resuming operation 0@a@after the primary pseudowire VC goes down, use the
Íbackup delay ß command in interface configuration @@%mode or
xconnect configuration mode.
S€[^a§`[backup delay ß Íenable-delay ß {Ídisable-
delay ß ß|Í ß Ñnever ß}

™šÛ¼aHŠíÁ€z€`

‘
“ŒDÀÁ&PÁ€Ší†ÿp, !W5"...UT...UT1ÀâMarch 2011Àã

\$ÁWÍFÀRÌÍi) ,w, ` ,d\$ÁWÍFÀRÌÍi ,l_ ,I,N ,I,NW† a Š™
Ä@hÀV

ŠÁxü_Â

™™žpñ* , W , c , gŠÁxü_Â

™™žpžp

□□, I, O, l`□□□, I, N□□□

²ffQÂ

™™ÀkøéÍ„)f-²ffQÂ

™™ÀkøÀkøfwfz„+€-fwfy

\$QÂ

TM™□□□□î{□□, W□□p□□□\$QÂ

TM™□□□□□□□□□□□□□□, lW□□□□□W€s□

h auto-AT route-AU target

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^õ

□□f3,,!□□□□À□™™Á|.öÁ°□□ÁSÑ
%ÿÿ□□□□□□□□□□f5€□□□□□□W,□□† a a † a a □□□`□

Two methods of control channel authentication are available in Cisco IOS Release 12.0(29)S and later releases. The L2TPv3 Control Message Hashing feature (enabled with the `l2tpv3 control message hashing` command) introduces a more robust authentication method than the older CHAP-style method of authentication enabled with the `l2tpv3 control message authentication` command. You may choose to enable both methods of authentication to ensure interoperability with peers that support only one of these methods of authentication, but this configuration will yield control of which authentication method is used to the peer PE router. Enabling both methods of authentication should be considered an interim solution to solve backward-compatibility issues during software upgrades.

Table 1 shows a compatibility matrix for the different L2TPv3 authentication methods. PE1 is running a Cisco IOS software release that supports the L2TPv3 Control Message Hashing feature, and the different possible authentication configurations for PE1 are shown in the first column. Each remaining column represents PE2 running software with different available authentication options, and the intersections indicate the different compatible configuration options for PE2. If any PE1/PE2 authentication configuration poses ambiguity on which method of authentication will be used, the winning authentication method is indicated in bold. If both the old and new authentication methods are enabled on PE1 and PE2, both types of authentication will occur.

\$QÂ

TM™Áè†A□□□éd□□, H□□8□□□\$QÂ

TM™Áè†AÁè†A□□□□□□

kk
, JQwed&,, a a , a @hAN
\$Q
TM^nnE, W\$Q
TM^, Xf, fZ ŠìÀRìí€}ÀÿÿÀÛ/1l?ÿ?ÿ€?Z:W
f, n, ÀÿÿÀÛ/1l?ÿ?ÿ€?Z:W
† a % j a ` X.25-interface number
€}ÀÿÿÀÛ/AD&h?ÿ?ÿn
f, m, ÀÿÿÀÛ/AD&h?ÿ?ÿ€?Z:W† a % j a ` 4X.25 interface type and number,
such as serial 1/3.
€}ÀÿÿÁ[^1?ÿ?ÿnÝf, p, ÀÿÿÁ[^1?ÿ?ÿ, +[; W : † a % j a ` Release
€}ÀÿÿÁ[^ÁFfh?ÿ?ÿnSf, o, q, ÀÿÿÁ[^ÁFfh?ÿ?ÿ, +[; W ; † a % j a ` `
Modification
€}ÀÿÿÁj¼]l?ÿ?ÿnáf, p, r, ÀÿÿÁj¼]l?ÿ?ÿ, +[< W < † a % j a ` `
12.2(13)T
€}ÀÿÿÁj¼]ÁFfh?ÿ?ÿnãf, q, ÀÿÿÁj¼]ÁFfh?ÿ?ÿ, +[< W = † a % j a ` ` This
command was introduced.
€}À TM^2 /
l?ÿ?ÿo
f
t, À TM^2 /
l?ÿ?ÿ?ÿfS\ = W Y † a % j a ` Command
€}À í TM^2 /
Á@fg?ÿ?ÿo
f
, s, u, À í TM^2 /
Á@fg?ÿ?ÿfS\ = W Z † a % j a `

Description

€}À™ÀÁo

l?ÿooo

f

,t,vÀ™ÀÁo

l?ÿ?ÿfs\>W[:†a%ja`

debug backup

€}À™ÀÁo

Á@fg?ÿooo

f

,u,wÀ™ÀÁo

Á@fg?ÿ?ÿfs\>W\†a%ja`FMonitors the transitions of an interface going down and then back up.

€}À™ÀÁ- l?ÿooo

f

,v,xÀ™ÀÁ- l?ÿ?ÿfs\?W]:†a%ja`

show backup

€}Àí™™ÀÐ⁻ Á@fg□?ÿ□□□o

□

f

,w□□□□Àí™™ÀÐ⁻ Á@fg□?ÿ□?ÿ□□fS\□?□W□^□†ª%jª□□□`"Displays interface backup status.

À™Á" |]Á°¥ïñ-

W,gŽÀ™Á" |]Á°¥ï¥ï,lb† a aŠÄ oThis command works with the Í12 vfi autodiscovery command, which automatically creates route targets. p-™ÄlThe Êno version of the command allows you to remove the automatically generated route targets. You @Ucannot enter this command if route targets have not been automatically created yet.

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h+bAyridgAz-e-domain (service instance)

²ffQÂ

™™□□□□ñ~□□fz□f□□□□²ffQÂ

™™□□□□□□□□□□□□f\€ □□□□w,□□

lback^up pAc eer

²ffQÂ

™™□□□□ëè□□f□□f□□□□²ffQÂ

™™□□□□□□□□□□□□f□g□□□□□W□

□□□h"backup □□ÀX□active □□ÀY□interface

ÀÿÿpÁ°ÀMÿûëéff,&ÀÿÿpÁ°ÀMÿûÀMÿûfhh+aa+aa
lTo activate primary and backup lines on specific X.25 interfaces, use the
Íbackup active interface ß 0'a@command in interface
configuration mode. To disable active backup behavior on the X.25 interface, use
@'the pno ß form of this command.
`a\$`3backup active interface ÎX.25-interface number
C`no Íbackup active interface ÎX.25-interface number

ÀÿÁÿ

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AdÃo%ff

ÀÿÿpÁ°Àÿÿûñfzf,,.ÀÿÿpÁ°ÀÿÿûÀÿÿûf\€
To specify a redundant peer for a pseudowire virtual circuit
(VC), use the `backup peer` command in `interface`
configuration mode or `xconnect` configuration mode. To remove the redundant peer,
use the `no backup peer` form of this command.
`backup peer` `peer-router-ip-addr` `vcid` [`priority` `value`]
A, `no backup peer` `peer-router-ip-addr` `vcid`
f, [`priority` `value`]

□□Âd□□Ã□□□□□□□□○-□□□□□□□□□□f
f
□□□□□□□□□□

À°Àžöñö„C,~„gÀ°ÀžöÀžö
„b€Bf5†a†aa hTo bind a service instance or a MAC tunnel to
a bridge domain instance, use the Í bridge-domain p 0'a@bcommand
in either service instance configuration mode or MAC-in-MAC tunnel configuration
mode. To iunbind a service instance or MAC tunnel from a bridge domain
instance, use the Êno ß form of this @ command.
f6 À@a|`abridge-domain

```

f7 Óbridge-id      [   ]
    Îgroup-id      [   ]
f8+_no bridge-domain [   ] Îbridge-id [   ] [   ]
    [   ] [   ] Îgroup-id [   ] [   ]
f9  +^a^...*ç`Ubridge-domain

```


f 0 0 0 0 À û ÿ ÿ À Å / 0 Á D 0 0 § ? ý § ? ý 0 0 f c b 0 0 @ 0 0 €] 0 † ª % j ª 0 0 0 ! H Number of seconds that elapse
after the primary pseudowire VC goes down p • j @ 0 0 0 0 0 I before the Cisco IOS
software activates the secondary pseudowire VC. The 0 0 0 A 2 range is from 0 to 180
seconds. The default is 0.
€ } À ù ÿ ÿ À ì o 1 § ? ý 0 0 0 0 ô ª 0 0 0 f . f 0 0 0 0 0 À ù ÿ ÿ À ì o 1 § ? ý 0 0 ? ý 0 0 f c b 0 A 0 W 0 b
† ª % j ª 0 0 0 a

disable-delay

€}ÀûÿÿÀìòÁD§?ÿô-ff.f fÀûÿÿÀìòÁD§?ÿ§?ÿfcbA c†ª!GNumber of seconds that elapse after the primary pseudowire VC comes up p•j©Gbefore the Cisco IOS software deactivates the secondary pseudowire VC. A6The range is from 0 to 180 seconds. The default is 0.

€}ÀûÿÿÀ-1§?ÿô@ f.f fÀûÿÿÀ-1§?ÿ?ÿfcbB Wd †ªª never

€}ÀûÿÿÀ-ÁD§?ÿô f.f fÀûÿÿÀ-ÁD§?ÿ§?ÿfcbB e†ªª!RSpecifies that the s secondary pseudowire VC will not fall back to the primary p•j©Cpseudowire VC if the primary pseudowire VC becomes available again A*unless the secondary pseudowire VC fails.

€}ÀûÿÿÀÛU1?ÿô,ff.f fÀûÿÿÀÛU1?ÿ?ÿf&x C W k†ªªª Release

€}ÀûÿÿÀÛUÁD§?ÿô f.f fÀûÿÿÀÛUÁD§?ÿ?ÿf&x C W l†ªªª Modification

€}ÀûÿÿÀÓ<T1?ÿô¼ff.f fÀûÿÿÀÓ<T1?ÿ?ÿf&x D W m†ªªª 12.0(31)S

€}ÀûÿÿÀÓ<TÁD§?ÿô¼ff.f fÀûÿÿÀÓ<TÁD§?ÿ?ÿf&x D W n†ªªªª This command was introduced.

€}ÀûÿÿÀâ|S1?ÿôÀff.f fÀûÿÿÀâ|S1?ÿ?ÿf&x E W o†ªªªª 12.2(28)SB

€}ÀûÿÿÀâ|SÁD§?ÿôÀff.f fÀûÿÿÀâ|SÁD§?ÿ?ÿf&x E W p†ªªªª?This command was integrated into Cisco IOS Release 12.2(28)SB.

€}ÀûÿÿÀñ¼R1?ÿôÄff.f fÀûÿÿÀñ¼R1?ÿ?ÿf&x F W q†ªªªª 12.4(11)T

€}ÀûÿÿÀñ¼RÁD§?ÿôÆff.f fÀûÿÿÀñ¼RÁD§?ÿ?ÿf&x F W r†ªªªªª>This command was integrated into Cisco IOS Release 12.4(11)T.

€}ÀûÿÿÀüQ1?ÿôÈff.f fÀûÿÿÀüQ1?ÿ?ÿf&x G W s†ªªªªª

12.2(33)SRB

€}ÀûÿÿÂüQÁD??ÿ??ôÊff.f-f-??ÀûÿÿÂüQÁD??ÿ?ÿff&xGWt†^a%j^a??a@This
command was integrated into Cisco IOS Release 12.2(33)SRB.
€}ÀÿÿÂ<Pl?ÿ??ôÏff.ff??ÀÿÿÂ<Pl?ÿ?ÿff&xHWu†^a%j^a??a

12.2(33)SXI

€}ÀûÿÿÂ<PÁD??ÿ??ôÎff.f-f ????ÀûÿÿÂ<PÁD??ÿ??ÿff&xHwv†ª%jaa@This
command was integrated into Cisco IOS Release 12.2(33)SXI.

€}ÀÿÿÂ|0l>?p??ôĐff.f!???ÀÿÿÂ|0l>?p>?pff&xIwv†ª%ja!

Cisco IOS XE P•j@ARelease3.3 33S

€}ÀûÿÿÂ|OÁD??>?p??ôÏff.f †@???ÀûÿÿÂ|OÁD??>?p??ÿff&xIwv†ª%jaa@This
command was integrat 33ated into Cisco IOS XE Release 3.3S.

ÀÿÿÁĈĤ\$Á°iñe.f.f
f%ÀÿÿÁĈĤ\$Á°iñe f0€j†^aŠÄ \$Interface
configuration (config-if) P-™Ä@)Xconnect configuration (config-if-xconn)

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ÀRÌÍiñfZ,,/f*²ffÁo
ÀRÌÍiif\€
W, †ªŠÄa

ÀTMQÁ°Àÿðî-f
fQÀTMQÁ°ÀÿðÀÿðf
uR(...UT...UT`
x25 ltc 8
SUR`
x25 ips 256
T`
x25 ops 256
U` clockrate 9600
V`.
W`.
AX`.

²ffÁÃüUÂ

™™™À...ÿ÷□□□ñh□□f.f%f'□□□²ffÁÃüUÂ

™™™À...ÿ÷À...ÿ÷□□□□□□□□□f^□f0€□□□□f□f□f□f□f□f-f †@□□□

ÀTMAVñÁ°Àyâñ>f_„6ÀTMAVñÁ°Àyâ%ÿÿfa€WŽ† a a † a
a`

ÀÿÿÄeüLÁ°Àj'ñk.f.f'ÀÿÿÄeüLÁ°Àj'Ài
f0€}†ªŠÄ _The following example shows a
Multiprotocol Label Switching (MPLS) xconnect with one redundant 0-™Ägpeer.
When a switchover to the secondary VC occurs, there will be no fallback to the
primary VC unless @the secondary VC fails.
~(...UT²Dk`+Router(config)#

```
□pseudowire-class mpls
□□□%Di□□□`lRouter(config-pw-class)#□□□
```

```
encapsulation mpls
, <Router(config)#
```

```
connect frpwl serial0/1 50 l2transport
,;Router(config-if)#
```

```
xconnect 10.0.0.1 50 pw-class mpls
,`6Router(config-if-xconn)#
```



```
 backup peer 10.0.0.2 50
A, 3Router(config-if-xconn)#
```

□backup delay 0 never

ÀÿÿÁ

Á°iñfzf#f,ÀÿÿÁ

Á°iif\€

□□□□W,!□†^aŠ™Ä□□□a"No redundant peer is established.

h bAhfe

W, J†^a·M%`iEffective with Cisco IOS Release 12.2, the
command is not available in Cisco IOS Software.

Ñbfe

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□□Âd□□Ã□□□□□□□□o'□□□□□□□□□□f0f0□□□□□□□□□□

ÀÿÿÁ©^#Á°iñ†fzf,f2ÀÿÿÁ©^#Á°iñ†f\€#†ªŠÄ
!\$Interface configuration (config-if) P-Ã(A)Xconnect configuration
(config-if-xconn)
²ffQÂ
TMÄ•f.²ffQÂ
TMÄf
f5,_) □ □□□ŠÏÀRÌÍ□□

AdÃošf5f5


```
□pseudowire-class mpls
□,□ADUN□□□`lRouter(config-pw-class)#□□□
```



```
encapsulation mpls
, <Router(config)#
```

```
connect frpwl serial0/1 50 l2transport
, ;Router(config-if)#
```

```
xconnect 10.0.0.1 50 pw-class mpls
,
6Router(config-if-xconn)#
```

```
□backup peer 10.0.0.2 50
□,
□□□`0Router(config-if-xconn)#□□□
```

```
□backup delay 3 10
□,
```

□□□`□
□,

+†UTĂŽUB□□□h!□□Àf□Cisco CMTS Routers: Example
□,□□†^aÀ□*-□□□ cThe following example sets a 2-second delay before resuming
operation after the primary pseudowire □À©*•□□□@

pw-class-name

€}ÀûÿÿÁ iÁD>?p#fZf<f>ÀûÿÿÁ

iÁD>?p>?p„/eM,†^a%j^a!G(Optional) Name of the pseudowire you created when you established the P•j@A pseudowire class.

€}ÀûÿÿÁ</

l\$?ÿ#ö% fZf=f?ÀûÿÿÁ</

l\$?ÿ?ÿ„/eNW,†^a%j^aa priority

value

€}ÀûÿÿÁ</

ÁD\$?ÿ#ö' fZf>ÀûÿÿÁ</

ÁD\$?ÿ\$?ÿ„/eN,-†^a%j^a!R(Optional) Specifies the priority of the backup pseudowire in instances p•j@R where multiple backup pseudowires exist. The default is 1. The range is from 1 to 100.

€}ÀûÿÿÁà|TÀ|€?ÿ#ö/ fZfAÀûÿÿÁà|TÀ|€?ÿ?ÿfLfOW,\$†^a%j^aa Release
€}Á

€Áà | TÁ3ý?ÿö1fzf@fBÁ

€Áî¼SÁ3ý?ÿööö5fZfBfDöööÁ

€Ái¼SÁ3ý?ý?ýfLfPw, 't^a%j^a This command was introduced.
€}ÀýÿÁpüRÀ|€?ý?ý7fZfCfEÀÿÿÁpüRÀ|€?ý?ýfLfQw, (t^a%j^a
12.2(28)SB
€}Á

€ÁpüRÁ3ý?ÿö9fZfDfFÁ

€ÁpüRÁ3ý?ÿ?ÿfLfQW,)†ª%jaa?This command was integrated into
CiscoIOS Release 12.2(28)SB.
€}ÀÿÿÂ

<QÀ|€??ÿöö;fzfEfgÀÿÿÂ

<QÀ|€??ÿ?ÿfLfRW,*†ª%jªa
12.4(11)T
€}Á

€¹Â

<QÁ3ŷ?ŷö=ffzfHÁ

€¹Â

<QÁ3ŷ?ÿ?ÿfLfRW,+†ª%jªa>This command was integrated into Cisco IOS
Release 12.4(11)T.
€}ÀÿÿÂ|PÀ|€?ÿ?ÿfLfSW,,†ª%jªa

12.2(33)SRB
€}À

€Â | PÁ3ý?ÿöA fZfHfJÁ

€|PÁ3ý?ý?ýfLfS, -t^a%j^a@@This command was integrated into Cisco
IOS Release12.2(33)SRB.
€}ÀýÿÂ,¼OÀ|€?ý?ýfLfT, .t^a%j^a@@a

12.2(33)SXI
€}À

€Â,¼OÁ3ý?ÿöE fzfJ^YÁ

€â,¼ó3ý?ÿ?ÿfLfTW,/†ª%jªa@This command was integrated into Cisco
IOS Release 12.2(33)SXI.

²ffÁà|TÂ

™™À`ÿö□□ñš□□fzf2fM□□²ffÁà|TÂ

™™À`ÿöÀ`ÿö□□□□□□□□f@%7f\€□□□□f@fBfDfFfHfJ^Y%□□□□

ÀÿÿÁ°Á°ÿïñí,)„MfTÀÿÿÁ°Á°ÿïÿï„+€1S†aŠ™Á
Frame Relay DLCI configuration p-™ÁInterface configuration @PVC
range configuration

ÀÿÿŽ|JÁ°ÀAf¶ñfzfMÀÿÿŽ|JÁ°ÀAf¶aïf\€ ,6†aŠ™
ÄapThe combination of the peer-router-ip-addr ß and vcid
ß arguments must be unique on the router.
,7>™Ä!bIn Cisco IOS XE Release 2.3, only one backup pseudowire is supported.
In Cisco IOS XE Release 2.4 P§™ÄACand later releases, up to three backup
pseudowires are supported.

\$À°ÿòÀRÌÍíi□□□□é€□□f
f\$fs□□□\$À°ÿòÀRÌÍíi□□i□□□□□□□□□□□□□□f
v□□□□,s,u,w□,s,u,wW_□†^{a a}Š™Ä□□@h□□□Ä\□

$f \square f \square \square f$

f f w f t a Š Ä @ h Ä b

$\hat{A}^2 /$

\hat{A}

$\text{TM}^{\text{TM}} - \zeta \hat{Y} \dots \acute{e} \dots f$

$f_Q,] \dots \hat{A}^2 /$

\hat{A}

$\text{TM}^{\text{TM}} - \zeta \hat{Y} - \zeta \hat{Y} \dots, s, x f$

$w \dots, s, u, w \dots$


```

The Cisco 7600 router can transmit BPDUs with a PID of either 0x00-0E or 0x00-07. When the router connects to a device that is fully compliant with RFC 1483 Appendix B, in which the IEEE BPDUs are sent and received by the other device using a PID of 0x00-0E, you must not use the ignore-bpdu-pid keyword.
If you do not enter the ignore-bpdu-pid keyword, the PVC between the devices operates in compliance with RFC 1483 Appendix B. This is referred to as strict mode. Entering the ignore-bpdu-pid keyword creates loose mode. Both modes are described as follows:
Without the ignore-bpdu-pid keyword, in strict mode, IEEE BPDUs are sent out using a PID of 0x00-0E, which complies with RFC 1483.
With the ignore-bpdu-pid keyword, in loose mode, IEEE BPDUs are sent out using a PID of 0x00-07, which is normally reserved for RFC 1483 data.

```


ÀŽªŸ dCisco-proprietary PVST+ BPDUs are always sent out on data frames using a PID of 0x00-07, regardless of whether you enter the `ignore-bpdu-pid` keyword.

f

À»ª Use the `ignore-bpdu-pid` keyword when connecting to devices such as ATM digital subscriber line (DSL) modems that send PVST (or 802.1D) BPDUs with a PID of 0x00-07.

f

User EXEC (>)

AdÃp f\ f\

2 ffÁÚÛiÂ

™™- ěŸ□□□ñ°□□„ □f[f^□□□ 2 ffÁÚÛiÂ

™™- ěŸ- ěŸ□□□□□□M□□Š: ŠV„ □€§□□□Š: ŠGŠU□□□

AdÃp
fafa}ÃÄÿ/1>?p,p,
-fdÃÄÿ/1>?p?ÿ„KlUW,P
† a%ja`

vlan-id 3

\$Q

TMTM A p f _ \$Q

TMTM A f \ , , 4 f (Š ì à R ì í

\$ÁÿèÂ

TM™«£ñÖ„1fV„\$ÁÿèÂ

TM™«£«£„3€7f†^{a a}~M½ kThe pbridge-domain p
ßand pbre-connectß commands are mutually exclusive. You
cannot use both P%M/@@Dcommands on the same PVC for concurrent RFC 1483 and
BRE bridging.

$2ff\hat{A}\hat{A}/\square\hat{A}$

$\text{TM}\hat{A}u\zeta\div\square\square\square\acute{e}\sim\square\square f.fR, z\square\square\square 2ff\hat{A}\hat{A}/\square\hat{A}$

$\text{TM}\hat{A}u\zeta\div\hat{A}u\zeta\div\square\square\square\square\square\square\square\square f$

$f \square f 0 \mid \square \square \square f$

f f }Àí™™Àÿ/ÁD>?p p.
 „-f`feÀí™™Àÿ/ÁD>?p>?p „KlU„Q†ªjª LThe number of the VLAN to be used in this bridging configuration. The valid P•j@®range is from 2 to 4094.
 €}À™™Áo1>?p p0 „-fdffÀ™™Áo1>?p?ÿ „KlVW,R:†ªjª`
 access ß
 €}Àí™™ÁoÁD>?p p2 „-fefgÀí™™ÁoÁD>?p>?p „KlV„S†ªjª
 I(Optional) Enables bridging access mode, in which the bridged connection P•j@® does not transmit or act upon bridge protocol data unit (BPDU) packets.
 €}À™™Á5`
 l¿?û p4 „-ffhÀ™™Á5`
 l¿?û?ÿ „KlW„T:†ªjª`

```

dot1q    {
}
ÁD?úp6"-fgfiÁ5-
ÁD?ú?ú,KlW,U+^j^ K(Optional) Enables Institute of Electrical and
Electronic Engineers (IEEE) p.j@K802.1Q tagging to preserve the class of
service (CoS) information from the JEthernet frames across the ATM network.
If this keyword is not specified, the ingress side assumes a CoS value of 0
for quality of service (QoS) @
purposes.
}Áti1?úp8"-fhfjÁti1?ú?ÿ,KlXW,V
+^j^`tag
}ÁtiÁD?úp: "-fifkÁtiÁD?ú?ú,KlXW,W+^j^
F(Optional) ATM PVCs only) Specifies the 802.1Q value in the range 1 to
.j@M4095. You can specify up to 32 pbridge-domain { command
entries using ":Odot1q { for a single PVC. The highest
tag value in a group of Obridge-domain { commands must be greater than
the first tag entered (but no B@more than 32 greater).
}Á' /1^?úp< "-fjflÁ' /1^?ú?ÿ,KlYW,X:+^j^`dot1q-
tunnel {
}Á' /Á^?úp> "-fkfmÁ' /Á^?ú^?ú,KlYW,Y+^j^
I(Optional) Enables IEEE 802.1Q tunneling mode, so that service providers
p.j@Dcan use a single VLAN to support customers who have multiple VLANs,
Hwhile preserving customer VLAN IDs and segregating traffic in different
@customer VLANs.
}Áçnyls?ÿp@ "-flfnÁçnyls?ÿ?ÿ,KlZW,Z
+^j^`
broadcast
}ÁçnyÁD$?ÿpB "-fmfoÁçnyÁD$?ÿ$?ÿ,KlZ, [+^j^
K(Optional) Enables bridging broadcast mode on this PVC. This option is not
p.j@Jsupported for multipoint bridging. Support for this option was removed
in @Cisco IOS Release 12.2(18)SXF2 and Cisco IOS Release 12.2(33)SRA.
}Á^

```


©ül³?ü□□□pD□□„-fnfp□□□À□™™Â

@ül³?üü?ÿ,,Kl[W,\:†ª%jª`ignore-bpdu-pid ß
€}Àí™™Â

©üÁD□□³?ü□□□pF□□,, -fofq□□□Àí™™Â

©üÁD³?ü³?ü„Kl[„,]†ª%ja E(Optional for ATM interfaces only) Ignores BPDUs that do not distinguish BPDUs from data packets. p•j@K(PIDs) and treats all BPDUs as data packets to allow interoperation with ATM customer premises equipment (CPE) devices that do not distinguish BPDUs from data packets.

€}À™™Áîø1,?ü„pH„-fpr™™Áîø1,?ü?ÿ„Kl\W,^:†ª%ja` pvst-tlv

€}À™™ÁîøÁD„,?ü„pJ„-fqfs™™ÁîøÁD„,?ü,?ü„Kl\„,†ª%ja

J(Optional) When the router or switch is transmitting, translates Per-VLAN Spanning Tree Plus (PVST+) BPDUs into IEEE BPDUs.

„,`|j“ IWhen the router or switch is receiving, translates IEEE BPDUs into PVST+ BPDUs.

€}À™™Áz.ô1§?ÿ„p„-frft™™Áz.ô1§?ÿ?ÿ„Kl]W,aK†ª%ja`CE-vlan

€}À™™Áz.ôÁD„§?ÿ„p„-fsfu™™Áz.ôÁD„§?ÿ§?ÿ„Kl]„,b†ª%ja

?Customer-edge VLAN in the Shared Spanning Tree Protocol (SSTP) p•j@Ftag-length-value (TLV) to be inserted in an IEEE BDU to a PVST+ BDU @

conversion.

€}Ä™™™Ä;ññl>?pQ„-ftfv™™™Ä;ññl>?p?ÿ„Kl^W,c:†ªj`increment
ß

€}Äí™™™Ä;ññÁD>?pS„-fu™™™Äí™™™Ä;ññÁD>?p>?p„Kl^,d†ªj E(PVC
range configuration mode only) (Optional) Increments the bridge P•j@domain
number for each PVC in the range.

€}ÄÿÿQlÄP?úU„)fx™™™ÄÿÿQlÄP?ú?ÿ,el_W,e:†ªj`lan-fcs

€}ÄÿÿQÁDÄP?úP„)fwfy™™™ÄÿÿQÁDÄP?úÄP?ú,el„,f†ªj
I(Optional) Specifies that the VLAN bridging should preserve the Ethernet
0•j@LAN frame checksum (FCS) of the Ethernet frames across the ATM @
network.

□,g²j§ <This option applies only to routers using a FlexWAN module.

p¼j|Support for this option was removed in Cisco IOS

@8Release12.2(18)SXF2 and Cisco IOS Release 12.2(33)SRA.

€}ÄÿÿÄ;?úl>?pP„)fxfz™™™ÄÿÿÄ;?úl>?p?ÿ„el`W,h:†ªj`split-
horizon ß

€}ÄÿÿÄ;?úÁD>?pP\„)fy™™™ÄÿÿÄ;?úÁD>?p>?p„el`„,i†ªj
C(Optional) Enables RFC 1483 split horizon mode to globally prevent
P•j@ (bridging between PVCs in the same VLAN.

€}ÄÿÿÁTÍ@l§?ýQ„)ff|™™™ÄÿÿÁTÍ@l§?ý?ÿ„HmbW,p†ªj`
12.1(13)E

€}ÄÿÿÁTÍ@ÁD§?ýS„)f{f}™™™ÄÿÿÁTÍ@ÁD§?ý§?ý„Hmb„,q†ªj PThis
command was introduced as the □ pbridge-vlan ß command for the 2-port
p•j@COC-12 ATM WAN Optical Services Modules (OSMs) on Cisco7600 series
@,routers and Catalyst6500 series switches.

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=l?ÿ?ÿ„HmcW,r†ªj`

12.1(12c)E

€}ÀûÿÿÁ|

=ÁD??ÿ??òW,,)f}f??ÀûÿÿÁ|

=ÁD??ÿ??ÿ,,Hm?c?W,s?+^a%j^a??`@This command was integrated into Cisco IOS Release 12.1(12c)E.

€}ÀûÿÿÁ<M<1>?p??òY,,)f~,,??ÀûÿÿÁ<M<1>?p??ÿ,,Hm?d?W,t?+^a%j^a??`

12.1(14)E1

€}ÀûÿÿÁ<M<ÁD??>?p??ò[??,,)f,,??ÀûÿÿÁ<M<ÁD??>?p>?p,,Hm?d??,u?+^a%j^a?? CThis command was integrated into Cisco IOS Release 12.1(14)E1. The R

•j@??@%dot1q-tunnel?? ? keyword was added.

€}ÀûÿÿÁ|[:1>?p??ò]??,,) ,, ??ÀûÿÿÁ|[:1>?p??ÿ,,Hm?e?W,v?+^a%j^a??`

12.2(14)SX

€}ÀûÿÿÁ|[:ÁD??>?p??ò_??,,) ,, ??ÀûÿÿÁ|[:ÁD??>?p>?p,,Hm?e??,w?+^a%j^a?? CThis command was integrated into Cisco IOS Release 12.2(14)SX. The R

•j@??@<dot1q-tunnel?? ? keyword is not supported in this release.

€}ÀûÿÿÁÁÍ81??ÿ??òa??,,) ,, ??ÀûÿÿÁÁÍ81??ÿ??ÿ,,Hm?f?W,x?+^a%j^a??`

12.1(19)E

€}ÀûÿÿÁÁÍ8ÁD??ÿ??òc??,,) ,, ??ÀûÿÿÁÁÍ8ÁD??ÿ??ÿ,,Hm?f?W,y?+^a%j^a??`/The ??
Ñsplit-horizon?? ? keyword was added.

€}ÀûÿÿÁÑ

71>?p??òe??,,) ,, ??ÀûÿÿÁÑ

71>?p??ÿ,,Hm?g?W,z?+^a%j^a??`

12.2(18)S

€}ÀûÿÿÁÑ

7ÁD??>?p??òg??,,) ,, ??ÀûÿÿÁÑ

7ÁD??>?p>?p,,Hm?g??,{?+^a%j^a?? BThis command was integrated into Cisco IOS Release 12.2(18)S. The R

•j@??@Vdot1q-tunnel?? ? and ?? Ñsplit-horizon?? ? keywords are supported in this release.

€}ÀûÿÿÁÌ51>?p??òi??,,) ,, ??ÀûÿÿÁÌ51>?p??ÿ,,Hm?h?W,|?+^a%j^a??`

12.2(18)SXF2

€}ÀÛÿÿÂ"Í1ÁD00>?p0000ðs00,,)

"

0000ÀÛÿÿÂ"Í1ÁD00>?p>?p000,,Hm0j00f00t^a%ja0000 TSupport for the 00 00lan-fcs00 00

and 00 00broadcast 00 00keywords was removed. The R

•j@0000@Aignore-bpdu-pid 00 00and 00 00pvst-tlv 00 00keywords were added.

€}ÀÛÿÿÂ>

/l0?ÿ00000u00,,)

□□□À□ÿÿÂ>
/1□?ÿ□?ÿ□□„Hm□k□Wf□□†^aa%j^a□□□`

12.2(33)SRA

€}ÀûÿÿÂ>

/ÁD□□□?ÿ□□□Öw□□,")"

□□□□ÀûÿÿÂ>

/ÁD□□□?ÿ□?ÿ□□, Hm□k□Wf□□†^a%j^a□□□`@This command was integrated into Cisco□IOS

Release 12.2(33)SRA.

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"B□, □□□□ÀûÿÿÁæ-□l□?ÿ□?ÿ□□, d□l□Wf□□†^a%j^a□□□`□Command

□□Âd□□Ã□□□□□□pÛ□□□□□□□□□□„□„□□□□□□□□□□

ÀÿÿÂiM.Á°Àf²ÖñÒ,,)fYÀÿÿÂiM.Á°Àf²Ö+ï,,+€5f†aŠ™
Ä RFC 1483 bridging on ATM interfaces supports the point-to-point bridging
of Layer 2 packet data units p-™Äb(PDUs) over Ethernet networks. RFC 1490
Frame Relay bridging on Packet over SONET (POS) or serial interfaces that
are configured for Frame Relay encapsulation provides bridging of Frame Relay
packets @over Ethernet networks.
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™™Äfa,, f+,, " □ ŠìàRìí□

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TM™.£.£"3€9f†a~M%€The Ñaccess ß, Ñdot1q ß, and Ñdot1q-tunnel ß options are mutually exclusive. If you do not specify any of these pM%hoptions, the connection operates in ÖrawÓ bridging access mode, which is similar to access, except that Ñ@8the connection does act on and transmit BPDU packets. □

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ZRFC 1483 bridging is supported on AAL5-MUX and AAL5-LLC Subnetwork Access
Protocol (SNAP) p'ª@ªªªªª^encapsulated PVCs. RFC-1483 bridged PVCs must
terminate on the ATM interface, and the bridged ®®®®®ottraffic must be forwarded
over an Ethernet interface, unless the ®® p®split-horizon®® §® option is used,
which ®®®®®@lallows bridging of traffic across bridged PVCs.

Adã pá,, "

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™™ÀqBjÀTÿú□□□□□□N□□ŠŤŠ^„□€(□□□ŠŤŠYŠ[Š]□□□

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TM™-°□«£□□□□□□□□□□□□„3€;□□□□□□f□□†^a~M½□□□ fRFC 1483 bridging is not supported for switched virtual circuits (SVCs). It also cannot be configured P□M¼□□□@!for PVCs on the main interface.

€}ÀÉ-7Á+~□Á_□□,?ü□□□Óv□□„C„□„2□□□ÀÉ-7Á+~□Á_□□,?ü,?ü□□„&{□□□□f<□†^a%j^a□□□□ QIdentifier for the bridge domain instance. The range is an integer from 1 to the 0•j©□□□□□□Rplatform-specific upper limit, where platform-specific upper limit is the maximum □□□@□allowed by the platform.

Qf=²j§□□□`2Upper limit on the Cisco ASR 1000 router is 4096.

^The following example shows a PVC being configured for IEEE 802.1Q VLAN bridging using a VLAN ID of 99:

```
Router# configure terminal
Router(config)# interface ATM6/2
Router(config-if)# pvc 2/101
Router(config-if-atm-vc)# bridge-domain 99 dot1q
Router(config-if-atm-vc)# end
```

The following example shows how to enable BPDU translation when a Catalyst 6500 series switch is connected to a device that understands only IEEE BPDUs in an RFC 1483-compliant topology:

```
Router(config-if-atm-vc)# bridge-domain
100 pvst-tlv 150
```

The keyword is not used because the device operates in an RFC 1483-compliant topology for IEEE BPDUs.

The following example shows how to enable BPDU translation when a Catalyst 5500 ATM module is a device that understands only PVST BPDUs in a non-RFC1483-compliant topology. When a Catalyst 6500 series switch is connected to a Catalyst 5500 ATM module, you must enter both keywords.

```
Router(config-if-atm-vc)# bridge-domain
100 ignore-bpdu-pid
pvst-tlv 150
```

To enable BPDU translation for the Layer 2 Protocol Tunneling (L2PT) topologies, use the following command:

```
Router(config-if-atm-vc)# bridge-domain
100 dot1q-tunnel ignore-bpdu-pid pvst-tlv
150
```

The following example shows a range of PVCs being configured, with the bridge domain number being incremented for each PVC in the range:

```
Router(config)# interface atm 8/0.100
Router(config-subif)# range pvc 102/100 102/199
Router(config-if-atm-range)# bridge-domain 102 increment
```

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ÀG"Ž-?ÝÓy"C,\$,9À™Ácï
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dThe Cisco IOS Release 12.2(33)SCF supports up to three backup pseudowires for a
primary pseudowire. p'a@lThe Êpriorityß keyword is
optional when only one backup pseudowire is configured. This keyword is a
@Brequired choice when multiple backup pseudowires are configured.

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$\text{TMTM } a \hat{y} \hat{\epsilon}^2 f_{\square} - f(\hat{A}) \hat{\sigma}$

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TM™.£ð...„h2ffÄÿiÄ

TM™.£.£...€MŠ3†^{a a}~M% pThe Ê ûbridge-domain
ß(config) command allows a user to configure components on a bridge
domain. For pM%`example, the MAC Address Limiting security component can
be configured on a bridge domain using @

this command.

€}ÀÉ-7Áci

Á_??ýó{C,2,:ÀÉ-7Áci

Á_??ý?ý_&{pff?+a%ja P(Optional) Configures a port or service instance as a member of a split-horizon .j@group.

Qf@|j`GThis keyword is not supported in MAC-in-MAC tunnel configuration mode.

€}À™™Á/ÀG"ž ?pó~C,9,;À™™Á/ÀG"ž ?p?ý_&{qWfA +a%ja`group

€}ÀÉ-7Á/Á_?pó€C,:"<ÀÉ-

7Á/Á_?p ?p_&{qffB+ a%ja`,(Optional) Defines the split-horizon group.

QfCšj@GThis keyword is not supported in MAC-in-MAC tunnel configuration mode.

€}À™™Á°oÀG"ž+?ýófC,;,,=À™™Á°oÀG"ž+?ý?ý_&{?WfD +a%ja` group-id

€}ÀÉ-7Á°oÁ_+?ý+?ý_ó...C,<ÀÉ-

7Á°oÁ_+?ý+?ý_&{?ffE+ a%ja`H(Optional) Identifier for the split-horizon group. Range is 1 to 65533.

fFšj@HThis argument is not supported in MAC-in-MAC tunnel configuration mode.

AfG`WOn the Cisco ASR 1000 router, the range for the ^group-id B argument is 0 to 1.

€}ÀÿÿÀðð'Àj_ì¿?û+€,,,"?ÀÿÿÀðð'Àj_ì¿?û?ÿ,,Q€ZrWfK +a%ja`enter

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KCauses the Cisco IOS software to send a special address translation packet p.j@Qthat includes an

enter emergency mode B command to the Blacker Front End J(BFE) if the emergency mode window is open. ÀÛIf the BFE is already in Memergency mode, this command enables the sending of Àìaddress translation @

information.

€}ÀÿÿÁ0"Àj_ì>?p±'„„„?„AÀÿÿÁ0"Àj_ì>?p?ÿ„„Q€ZsWfM

†^a%j^a``leave

€}Àú_ëÁ0"ÁBÍe>?p±"„„„@^PÀú_ëÁ0"ÁBÍe>?p>?p„„Q€Zsfn†^a%j^a(PDisab
les the ÌÁÍ sending of address translation information from the Cisco IOS

P•j©@7software to the BFE when the BFE is in emergency mode.

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□bridge-domain 200

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²ffÁ; 'ÀRÌÍiìì...€P%ŠŠ-Š %ŠŠ-Š WŠF†ªªŠ™Ä@hÀ~

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h.bump (Frame Relay VC-bundle-member)

To enable RFC 1483 ATM bridging or RFC 1490 Frame Relay bridging to map a bridged VLAN to an ATM permanent virtual circuit (PVC) or Frame Relay data-link connection identifier (DLCI), use the `bridge-domain` command in Frame Relay DLCI configuration, interface configuration, interface ATM `jVC` configuration, or PVC range configuration mode. To disable bridging, use the `no` form of this command.

```

bridge-domain {vlan-id | access | dot1q | tag | dot1q-tunnel | broadcast | ignore-bpdu-pid} [x@q]
no bridge-domain {vlan-id | access | dot1q | tag | dot1q-tunnel | broadcast | ignore-bpdu-pid}
  
```

□ □

□□CE-vlan□□

```

]  [ increment  [  [  lan-fcs  [  [  psplit-
horizon  [  ]
S,0  `no bridge-domain  [  ^vlan-id  [  ]

```

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f`fefgfifkfmfofqfsfu□fwfy□□€}À□™™™Â^¼Ml□?ÿ□□□Ó□□□„C□„N□□□À□™™™Â^¼Ml□?ÿ□?ÿ□□□...□}□□@□

WŠ\$□†^a%j^a□□□`□Release

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(iTo allow the router to participate in |emergency mode or to end
participation in emergency mode when 0'a@the interface is configured for
x25 bfe-emergency decision ß and
x25 bfe-decision ask ß, use the ß Ëbfe ß ß @command in
user EXEC mode.
SfJ ^a§`Hbfe

{ ~enter

□ | □ □ Õ □ □ Ñ leave □ □

} \hat{e} \hat{i} type number

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À™ÁçP#Á°iïò
U„U™ÁçP#Á°iïi...€YWf_†^aŠÄ`,Frame Relay VC-
bundle-member configuration

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□□...□„T...□□□□\$Áîí<ÀRîíí□i□□i□□□□□□□□□□□□...□€Z□□□□„p„r„t„v„x□„p„r„t„v„xWfj□†^aŠ™Ä□□@
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...?€_ft†^a~M½ fWhen no alternative PVC can be found to handle bumped traffic, even when there are no packets of that M¼etraffic type present, the bundle brings itself down. No messages are displayed unless the Ídebug " frame-relay vc-bundle ßcommand is enabled or the interface-level command Ílogging event frame-relay hvc-bundle status ßis enabled. When default (implicit) bumping is used for all PVCs, the PVC that is bjhhandling the lowest service level can be configured to bump explicitly to a PVC handling a higher service @level.

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eThe following examples show the alerts that appear during configuration.
They describe configuration 0'^a@[problems that might prevent the bundle
from coming up or might cause the bundle to go down @

unexpectedly:

`fv-^a$`j`The following example shows an alert that appears when the `fv` `explicit` command is configured:

`fw(...UT;UP 1%DLCI 300 could end up bumping traffic to itself` `IUN@`
`fx+^a^T^a^ç` aIt warns that PVC 300 may be configured to bump to a PVC that will in turn bump back to PVC 300, `^`a;@'` in which case the bundle will go down.

`fy^Q^a` `]`The following example shows an alert that appears when a PVC that is explicitly bumped to is `^}^a^ÿ@7` configured with the `fv` `no bump traffic` command:

`fz(...UT^UH 7%DLCI 306 is configured for bumping traffic to level 7` `^--UF@`

`f{+^a^Ë^a^š` _The following example shows an alert that appears when the service levels handled by a PVC are `0^@^a^™` changed, which leaves other PVCs explicitly configured to bump to levels that are no longer being `@` handled by that PVC:

`f|(...UT^ÊUA @%DLCI(s) configured for explicitly bumping traffic to DLCI 300` `^ËÛ?@`

`f}+^a^Ë^a^"` aThe following example shows an alert that appears when a PVC is configured to explicitly bump to `^Ë^a'` a level that is not yet handled by any PVCs:

`f~(...UT^ÛU; /%Presently no member is configured for level 3` `^ËU9@`

`f+^a^Ë^a^` [The following example shows an alert that appears when you attempt to explicitly configure `^Ë^a^E@` bumping to a PVC that is already configured with the `fv` `no bump traffic`

`fv` `no bump traffic` command:

`W, (...UT^A, U5 5%DLCI configured for level 0 does not accept bumping`

The following commands are used to configure PVC bumping:

```

no bump implicit
no bump explicit
fm> bump c To change the configured bumping rules for a PVC bundle member,
override the current configuration (bump @) with a new bump command entry.
fn, bump b To return to the default condition of implicit bumping, use the
bump implicit command.
fo @ The effects of different bumping configurations are as follows:
fp b Implicit bumping: If you configure implicit bumping, bumped traffic is
sent to the PVC configured pbf to handle the next-lower service level.
When the original PVC that bumped the traffic comes back up, it resumes
transmission of the configured service level. When the
bump explicit command
is not configured, the bump implicit command
takes effect by default; however, the
bump implicit command does not appear in the show
running-config and show startup-config command outputs.
  
```

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™™ □□□□ ò7□□...R□...U□□□ ²ffQÂ

™™ □□□□□□□□□□□□...T€f□□□□□W,, □□

h!„...cell-pa†ckin†g
€}À™™ÄüLl?ÿ“„C„N„^À™™ÄüLl?ÿ?ÿ...}AWŠ&† a%j a`

12.2(33)SRB

€}Àí™™ÂmüLÁ@ff□?ÿ□□□Ó•□□„C„]^6□□□Àí™™™ÂmüLÁ@ff□?ÿ□?ÿ□□...□}□□A□WŠ'□†^a%j^a□□□`□This
command was introduced.


```

R1# enable
R1# configure terminal
R1# interface atm1/0
R1# atm mcpt-timers 1000 800 500
R1# atm pvp 100 l2transport
R1# xconnect 10.0.0.1 234 encapsulation mpls
R1# cell-packing 10 mcpt-timer 2
R1# exit
R1# interface atm1/0
R1# atm mcpt-timers 100 200 250
R1# class-int cellpacking
R1# pvc 1/200 l2transport

```

```

R1# enable
R1# H/4Di Router#

```

```

R1# configure terminal
R1# I Router(config)#

```

```

R1# interface atm1/0
R1# J Router(config-if)#

```

```

R1# atm mcpt-timers 1000 800 500
R1# K Router(config-if)#

```

```

R1# atm pvp 100 l2transport
R1# L Router(config-if-atm-l2trans-pvp)#

```

```

R1# xconnect 10.0.0.1 234 encapsulation mpls
R1# M Router(config-if-atm-l2trans-pvp)#

```

```

R1# cell-packing 10 mcpt-timer 2
R1# N

```

```

R1# O+^a^f+ XThe following example configures ATM cell relay over MPLS with
cell packing in VC class @Bconfiguration mode. The VC class is then
applied to an interface.
R1# P(...UT^DY Router>

```

```

R1# enable
R1# Q^DW Router#

```

```

R1# configure terminal
R1# R Router(config)#

```

```

R1# vc-class atm cellpacking
R1# S l Router(config-vc-class)#

```

```

R1# encapsulation aal0
R1# T ; Router(config-vc-class)#

```

```

R1# cell-packing 10 mcpt-timer 1
R1# U # Router(config-vc-class)#

```

```

R1# exit
R1# V & Router(config)#

```

```

R1# interface atm1/0
R1# W 4 Router(config-if)#

```

```

R1# atm mcpt-timers 100 200 250
R1# X / Router(config-if)#

```

```

R1# class-int cellpacking
R1# Y Router(config-if)#

```

```

R1# pvc 1/200 l2transport
R1# Z T Router(config-if-atm-l2trans-pvc)#

```

```

xconnect 10.13.13.13 100 encapsulation mpls
]
]The following example configures ATM AAL5 over L2TPv3 in VC
class configuration mode. The VC 'class is then applied to an
interface.
](...,Router(config)#
vc-class atm aal5class
] ^>D=Router(config-vc-class)#
encapsulation aal5
]_!
]`&Router(config)#
interface atm1/0
]a,Router(config-if)#
class-int aal5class
]b.Router(config-if)#
pvc 1/200 l2transport
A,cVRRouter(config-if-atm-l2trans-pvc)#
xconnect 10.13.13.13 100 encapsulation l2tpv3

```

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À°™™QÁ°Àfï

Àfï

The following example configures PVC 101 in the Frame Relay PVC bundle named bundle1 with 0-™™explicit bumping to the PVC bundle member having a precedence level of 7. PVC 101 is also configured to prohibit traffic from other PVCs from being bumped to it:

```
frame-relay vc-bundle bundle1
```

```
  frame-relay member
```

```
    pvc 101
```

```
  
```

□precedence 5

□„□□□□`□□no bump traffic

A„□□□□`□□bump explicit 7

□\$QÂ

™™™™Â□□□□□□qU□□„C□□□□□□\$QÂ

™™™™Â□□□□„D...□, ~...□ □□□□□□ŠÏÏÀRÌÍ□□□□

À™ÁŸ-°íü„C„(„eÀ™ÁŸ-°íü„b€FwfQ†ªŠÄ
`MService instances and MAC tunnels are not bound to a bridge domain
instance.
€}À™ÄÛ/Àzfg¿?ûqa...„iÀ™ÄÛ/Àzfg¿?û?ÿ...
€tWfU
†ª%jª`explicit Ê Ì Îlevel

${}^2f\tilde{f}\tilde{A}g^-$

ÀRÌÍì□□□□ò9□□...R...V...

□□²ffĀg⁻

\$Á*öÀRìíïïïïïY,,Cf

ÀÿÿQÁ°%ÿÿéÝ„B„%ÀÿÿQÁ°%ÿÿ%ÿÿ„D€<Wf†aa†aa`tIn
interface configuration mode, only the p_dot1q ß and p_dot1q-
tunnel ß keyword options are supported.
€}À™™ÁoÀzfgs?ýqe...„i„mÀ™™ÁoÀzfgs?ý?ÿ...
€uWfW
†aa%ja` implicit

Àzfg>?p□□□qi□□...□„m„o□□□À□™™ÁÁ⁻

Àzfg>?p□?ÿ□□...
€□□v□WfY
†^a%j^a□□□`□traffic
€}Àü□□ÁA⁻

Á5™š>?p□□□qk□□...□„n□□□□Àü□□ÁA⁻

Á5™š>?p>?p...

€vffZ†ªj JSpecifies that the PVC accept bumped traffic (the default condition). The R:•j@Eno Bform stipulates that the PVC does not accept bumped traffic.

€}À™ÁíüUÀzfg?ÿqs...„q„À™ÁíüUÀzfg?ÿ?ÿ...€wWf`†ªj`Releas e

€}Àü™ÁíüUÁ5™š?ÿqu...„p„r„Àü™ÁíüUÁ5™š?ÿ?ÿ...€wWfa†ªj` Modification

€}À™ÁÝ<TÀzfg?ÿqw...„q„s„À™ÁÝ<TÀzfg?ÿ?ÿ...€xWfb†ªj` 12.2(13)T

€}Àü™ÁÝ<TÁ5™š?ÿqy...„r„t„Àü™ÁÝ<TÁ5™š?ÿ?ÿ...€xWfc†ªj` This command was introduced.

€}À™Áì|SÀzfg?ÿq{...„s„u„À™Áì|SÀzfg?ÿ?ÿ...€yWfd†ªj` 12.2(16)BX

€}Àü™Áì|SÁ5™š?ÿq}...„t„v„Àü™Áì|SÁ5™š?ÿ?ÿ...€yWfe†ªj`@This command was integrated into Cisco IOS Release 12.2(16)BX.

€}À™Á¼RÀzfg?ÿq...„u„w„À™Á¼RÀzfg?ÿ?ÿ...€zWff†ªj` 12.0(26)S

€}Àü™Á¼RÁ5™š?ÿq...„v„x„Àü™Á¼RÁ5™š?ÿ?ÿ...€zWfg†ªj`>This command was integrated into Cisco IOS Release 12.0(26)S.

€}À™Á

üQÀzfg?ÿqf...„w„y„À™Á

üQÀzfg?ÿ?ÿ...€{Wfh†ªj`

12.2(28)SB

€}Àü™Á

üQÁ5™š?ÿq...„x„Àü™Á

üQÁ5™š?ÿ?ÿ...€{Wfi†ªj`?This command was integrated into Cisco IOS Release 12.2(28)SB.

€}À™ÁÕ-ŠŽ...L„{...À™ÁÕ-ŠŽ...?ÿ?ÿ...€|W„ 9†ªj` Command

€}Á™ÁÕ-ŠÁ!ñ...L„z„|...Á™ÁÕ-ŠÁ!ñ...?ÿ?ÿ...€|W„ 9†ªj`

Description

€}À^{™™}Ää^#Äž□□□?ÿ□□□q-□□...L„ { „ } □□□Ä^{™™}Ää^#Äž□□□?ÿ□?ÿ□□...□€□□ } □W„

† a % j a class
€} Á Ä ä ^ # Á ! ñ ? ý q @ ... L „ | „ ~ Á Ä ä ^ # Á ! ñ ? ý ? ý ... € } W „
† a % j a . Associates a map class with a specified DLCI.
€} Ä Ö ž " Ä Ž > ? p q ° ... L „ } „ Ä Ö ž " Ä Ž > ? p > ? p ... € ~ „

† a a% j a dscp (Frame Relay P•j@VC-bundle-member)
€}ÁÀ™™™Àóž"Á!ñ>?p q²...L,"~...À™™™Àóž"Á!ñ>?p>?p...€~,"† a a% j a
B Specifies the DSCP value or values for a specific Frame Relay PVC
P•j@ bundle member.
€}À™™™Á

Ð ĀŽ□□>?p□?ŷ□□...□€□□□□W,,□
€}Ā□™™Á

†^a%j^a□□□`□exp

P Á!ñ>?p>?p...€...„,†ª%jª 8Configures MPLS EXP levels for a Frame Relay PVC bundle P•j@member.
€}À™™Á*--ÀŽ>?p...q, ...L...™™Á*--ÀŽ>?p>?p...€€...„, †ª%jª
precedence (Frame Relay P•j@VC-bundle-member)
€}Á™™Á*--Á!ñ>?p...q°...L...™™Á*--Á!ñ>?p>?p...€€...„, †ª%jª
>Configures the precedence levels for a Frame Relay PVC bundle P•j@member.
€}À™™ÁE^ÀŽ>?p...q¼...L...™™ÁE^ÀŽ>?p>?p...€€...„, †ª%jª
protect (Frame Relay P•j@VC-bundle-member)
€}Á™™ÁE^Á!ñ>?p...q¼...L...™™ÁE^Á!ñ>?p>?p...€€...„, †ª%jª
:Configures a Frame Relay PVC bundle member with protected P•j@group or protected PVC status.
€}À™™Á`žÀŽ>?p...qÀ...L...™™Á`žÀŽ>?p?ÿ...€€W...„, †ª%jª`pvc
(Frame Relay VC-bundle)
€}Á™™Á`žÁ!ñ>?p...qÂ...L...™™Á`žÁ!ñ>?p>?p...€€...„, †ª%jª
;Creates a PVC and PVC bundle member and enters Frame Relay P•j@%VC-bundle-member configuration mode.

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™™™À`ÿùÀ`ÿù□□□□□□\$□□...5...<†□€v□□□...5...7...9...;□□□

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a `

²ffÁç°@Â

™™Á-OÀ`...„F²ffÁç°@Â

™™Á-OÀTÿúL%Š!...€Q%ŠŠ-Š □□□

ÀÿÿÁg⁻

Á°□□□ï□□□□ð;□□...R,,f...□□□□À□ÿÿÁg⁻

ÀÿÿÀµ/°Á°ÁÐî\+...

ÀÿÿÀµ/°Á°ÁÐî%ÿÿ+€wW,,m+aa+aa`

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™™ÀL?û...ìm...„U„X...\$ÁíüUÂ

™™ÀL?ûÀL?û... „p„y...€[...„p„r„t„v„x...

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À°Àÿû_++\$...A°ÀÿûÀÿû+€y„o+aa+aa
%rTo associate a map class with a specified data-link connection identifier
(DLCI), use the `map class class dlci` command in Frame Relay DLCI
configuration mode or Frame Relay VC-bundle-member configuration mode. To
remove the association between the DLCI and the map class, use the `no`
form of this command.
P ^a§e class *class* *name*
C,qe no *class* *name*

\$\hat{A}^{\frac{1}{4}}\hat{M}\hat{A}\$

$\text{TM}\hat{A}qC^3 \dots \acute{e}i \dots , C, 0 \dots \hat{A}^{\frac{1}{4}}\hat{M}\hat{A}$

$\text{TM}\hat{A}qC^3 \hat{A}d? \grave{u} \dots , L\% | , b \in J \dots , L,] ^6 \% x \% \{ \dots$

AdÃqø... !

ÀTMÁxï
Á^oïïïïïïïï

AdÃqß... "€}ÿÿÂÛ/À_fgÀU?úqö...R...
ÿÿÂÛ/À_fgÀU?ú?ÿ...V€ €W„-3†ª%j`cells
\$QÂ
™™Âqâ...\$QÂ
™™Â...? „I„ [ŠìàRìí

ÀÿÿÁ`ž%Á°+ïò?R...-ÀÿÿÁ`ž%Á°+ï+ï...T€m,,(†ªŠ
Interface configuration p-~(L2transport VC configuration~for ATM VC
~(L2transport VP configuration~for ATM VP @VC class
configuration

À™Á

-Á°íó^‡\$‡ À™Á

-Á°íí^[]W†=†^{a a}ŠÄdPrivileged EXEC

²ffQÂ

™™ö\$†r...E²ffQÂ

™™†t

W...5


```
class (map-list)
```


ÀÿÿQÁ°ÀGiéô...„7„8ÀÿÿQÁ°ÀGiÀGi...€LŠ0†ªŠÄ
mUse the `bridge-domain` `(service instance)` command to bind either
a service instance or a MAC tunnel `-™Ä@` to a bridge domain.
XBridge domains cannot be configured under a service instance under a
MAC tunnel without `™Ä@encapsulation` also being configured.
QŠ2Ä™Ä`8The Cisco ASR 1000 router does not support MAC tunnels.
€}ÄiffÄÛ/ÄMÄU?úqø...R...!ÄiffÄÛ/ÄMÄU?úÄU?ú...V€ €„-
†ªªjª`L(Optional) The number of cells to be packed into an MPLS or L2TPv3
packet.
„ šj@ LThe range is from 2 to the maximum transmission unit (MTU) of the
interface `0|j`` divided by 52. The default number of ATM cells to be packed
is the MTU of `@`-the interface divided by 52.
„!Äcj| LIf the number of cells packed by the peer provider edge router
exceeds this `PÄj¥@limit`, the packet is dropped.
€}ÄÿÿÁ0o

À_fg>?p□□□qü□□...R... ..."□□□À□ÿÿÁ0o

À_fg>?p?ÿ...V€ €W," †^a%j^a`mcpt-timer β ÷timer
€}ÄiffÄ0o

ÁM□□>?p□□□q□□...R...!□□□□ÀïffÁ0o

ÁM<>?p>?p...V€ #†ª%jª R(Optional) Specifies which timer to use.
Valid values are 1, 2, or 3. The default P•j©@@@
value is 1.
€}ÀÿÿÁà¼Tl?ÿr...R...\$ÀÿÿÁà¼Tl?ÿ?ÿ...>€€W,,)†ª%jª`Release
€}ÀÿÿÁà¼TÁ@fg?ÿr...R...#...%ÀÿÿÁà¼TÁ@fg?ÿ?ÿ...>€€W,,*†ª%jª`
Modification
€}ÀÿÿÁiüSl?ÿr
...R...\$...&ÀÿÿÁiüSl?ÿ?ÿ...>€€W,,+†ª%jª`
12.0(25)S
€}ÀÿÿÁiüSÁ@fg?ÿr

...R...%...'ÀÛÿÿÁiüSÁ@fg?ÿ?ÿ...>€€W,,†ª%jª`This command was
introduced.
€}ÀÿÿÁÿ<Rl?ÿr

...R...&... (ÀÿÿÁÿ<Rl?ÿ?ÿ...>€€W,, -†ª%jª`
12.0(29)S
}ÀÿÿÁÿ<RÁ@fg?ÿr...R...')ÀÿÿÁÿ<RÁ@fg?ÿ?ÿ...>€€W,, .†ª%jª` ' Supp
ort for L2TPv3 sessions was added.
}ÀÿÿÁ

|Q1>?p□□□r□□□...R...(*□□□Ã□ÿÿÃ

|Q1>?p□?ÿ□□...>€□□€□□w,,/□†^a%j^a□□□`
12.0(30)S
€}ÀûÿÿÂ

|QÁ@fg>?p□□□r□□□...R...)...+□□□ÀûÿÿÂ

|QÁ@fg>?p>?p...>€€„0†^a%j^a MThis command was updated to enable cell
packing as part of a virtual circuit P•j©@

(VC) class.

€}ÀÿÿÂ)%0l?ÿr...R...*,...ÀÿÿÂ)%0l?ÿ?ÿ...>€€ W,,1†ª%j`
12.0(31)S

€}ÀÿÿÂ)%0Á@fg?ÿr...R...+...-ÀÿÿÂ)%0Á@fg?ÿ?ÿ...>€€ W,,2†ª%j`>This
command was integrated into Cisco IOS Release 12.0(31)S.

€}ÀÿÿÂ8üNl?ÿr...R...,...ÀÿÿÂ8üNl?ÿ?ÿ...>€€
W,,3†ª%j`

12.2(28)SB

€}ÀÿÿÂ8üNÁ@fg?ÿr...R...-.../ÀÿÿÂ8üNÁ@fg?ÿ?ÿ...>€€

W,,4†ª%j`?This command was integrated into Cisco IOS Release 12.2(28)SB.

€}ÀÿÿÂH<Ml?ÿr-...R...0ÀÿÿÂH<Ml?ÿ?ÿ...>€€

W,,5†ª%j`

12.4(11)T

€}ÀÿÿÂH<MÁ@fg?ÿr...R.../...1ÀÿÿÂH<MÁ@fg?ÿ?ÿ...>€€

W,,6†ª%j`>This command was integrated into Cisco IOS Release 12.4(11)T.

€}ÀÿÿÂW|Ll?ÿr"R...0...2ÀÿÿÂW|Ll?ÿ?ÿ...>€€

□W,,7□† a a%j a □□□`

12.2(33)SRB

€}ÀûÿÿÂW|LÁ@fg□?ÿ□□□r\$□□...R...1...3□□□ÀûÿÿÂW|LÁ@fg□?ÿ□?ÿ□□...>€□□€

W,8t^a%ja`@This command was integrated into Cisco IOS Release 12.2(33)SRB.
€}ÀÿÿÂf%Kl?ÿr&...R...2...4ÀÿÿÂf%Kl?ÿ?ÿ...>€€
W,9t^a%ja`

12.2(33)SXH

€}ÀûÿÿÂf¼KÁ@fg□?ÿ□□□r(□□...R...3□□□□ÀûÿÿÂf¼KÁ@fg□?ÿ□?ÿ□□...>€□□€

□W„:□†ª%jª□□□`@This command was integrated into Cisco□IOS Release 12.2(33)SXH.

€}ÃÿÿÀR/□l□?ÿ□□□rT□□†□□...6□□□ÀÿÿÀR/□l□?ÿ□?ÿ□□...

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W„d t a a%j a ` Command
€}ÀûÿÿÀR/Á@fg?ÿrV t...5...7ÀûÿÿÀR/Á@fg?ÿ?ÿ...
€€

□W,,e□t^a□%j^a□□□`

Description

```
€}ÀÿÿÀao1>?p000rX00†0...6...8000ÀÿÿÀao1>?p0?ÿ00...
€00€00W„f:†^a%j^a000`0atm mcpt-timers
€}ÀÿÿÀaoÁ@fg>?p000rZ00†0...7...9000ÀÿÿÀaoÁ@fg>?p>?p00...
€00€000„g†^a%j^a000 KCreates cell-packing timers, which specify how long the PE
router can wait P•j0000@6for cells to be packed into an MPLS or L2TPv3 packet.
€}ÀÿÿÀ|_01>?p000r\00†0...8...:000ÀÿÿÀ|_01>?p>?p00...
€00€000„h:†^a%j^a000
debug atm P•j0000@
cell-packing
€}ÀÿÿÀ|_0Á@fg>?p000r^00†0...9...;000ÀÿÿÀ|_0Á@fg>?p0?ÿ00...
€00€00W„i†^a%j^a000`<Displays ATM cell relay cell packing debugging information.
€}ÀÿÿÀ-ì01>?p000r`00†0...:...<000ÀÿÿÀ-ì01>?p0?ÿ00...
€00€00W„j:†^a%j^a000`0show atm cell-packing
€}ÀÿÿÀ-ì0Á@fg>?p000rb00†0...;0000ÀÿÿÀ-ì0Á@fg>?p>?p00...
€00€000„k†^a%j^a000 FDisplays information about the VCs and VPs that have ATM
cell packing P•j0000@ enabled.
```


AdÃr1...?..?#

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™™™™ Â□□□□...□...N...H,,Z □ □□□□ŠììÀRìí□□□

ÀÿÿÂ`ùJÁ°¼¶èE...R...@ÀÿÿÂ`ùJÁ°¼¶¥ï...T€q„=†ªŠÄ
kThe Êcell-packing §command is available only if you configure the
ATM VC or virtual path (VP) with p-™ZATM adaptation layer 0 (AAL0)
encapsulation. If you specify ATM adaptation layer 5 (AAL5) @*encapsulation,
the command is not valid.

\$\hat{A}/\hat{A}\$

TMTM? \dot{y} òb†...A...D \hat{A}/\hat{A}

TMTM? \dot{y} ? \dot{y} %*f*

...X† ϵ {*f*

□□

ÀÿÿpÁ°«ÿÿö%tr...t{ÀÿÿpÁ°«ÿÿ«ÿÿtt


```
6. To associate a map class with a protocol-and-address
combination, use the map-class command in map-list
configuration mode.
S...7
**a** protocol protocol-address map-class map-class
```

□ [□□ Ñ□broadcast□□

□] [□□ Ñtrigger□□

□] [□□

Ñietf□□

ÀTMÁ^oí^{de}†...D...J^{ÀTMÁ^oí^í}†[€]}^{W,,w†^aŠ^Ä}
No map class is defined.

\$QÂ

TM¹ 1 çüðf7†.QÂ

TM¹ 1 çü'...o†9

...o...q

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lExplicit bumping: If you configure a PVC with the `no ip bump explicit` command, you can specify the `priority` service level to which traffic is bumped when that PVC goes down, and the traffic is directed to a `priority` PVC mapped with that level. If the PVC that picks up and carries the traffic goes down, the traffic `priority` uses the bumping rules for that PVC. You can specify only one service level for bumping.

`priority` Permit bumping: The PVC accepts bumped traffic by default. If the PVC has been previously `priority` configured to reject bumped traffic, you must use the `no ip bump traffic` command to return the PVC to `priority` its default condition.

`priority` Reject bumping: To configure a discrete PVC to reject bumped traffic when traffic is directed to it, `priority`, use the `no ip no bump traffic` command.

À°Àÿû...„I„SÀ°ÀÿûÀÿû...€SŠE†a†a
(iTo Ø configure the bumping rules for a Frame Relay permanent virtual
circuit (PVC) bundle member, use 0'@gthe Íbump ß command in
Frame Relay VC-bundle-member configuration mode. To specify that the PVC
@Ybundle member does not accept bumped traffic, use the Íno
ßform of this command.
fS 'a§`bbump Ê

{ \tilde{N} explicit \hat{E} \hat{I} level \hat{E} }

□ | □ □ Ñimplicit□□

□ | □□

Ñtraffic□□

}
AfT`no bump Ê Ñtraffic

AdÃr | ...N..N\$

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AdÃr...T.T%

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™™™Â□□□□□□r^□□...R□□□□□□ ²ffQÂ
™™™Â□□□□...N...W,,\...B □ □□□□□ŠììÀRìí□□□□

ÀÿÿpÁ°Àÿÿûi%...R,\...PÀÿÿpÁ°ÀÿÿûÀÿÿû...T€g,,t^a^a
`To enable ATM over Multiprotocol Label Switching (MPLS) or Layer 2 Tunneling Protocol Version 3 0'^a@l(L2TPv3) to pack multiple ATM cells into each MPLS or L2TPv3 packet, use the cell-packing command @lin the appropriate configuration mode. To disable cell packing, use the no form of this command.
cell-packing [cells] [mcpt-timer timer] [no cell-packing

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™™™™Àp□øÀp□ø□□□□□□□□ "□□□□...□□□□" ...T€i□□□□...□□□□!□□□□\$QÂ
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™™™™Â□□□□□□□□...T†□□□□...s„` □□□□□□□□šììÀrìí□□□□€}Á□™™™™ÀÛ/□Á(íð□?ÿ□□□□□□~□□†□f
□□□□Á□™™™™ÀÛ/□Á(íð□?ÿ□?ÿ□□□□...C€□□□□€□□□□W„s□†a%ja□□□□a<Name of the map class to
associate with the specified DLCI.
€}À□™™™™Ág| |j□?ÿ□□□□□□□□ □□†□□□□...Z□□□□À□™™™™Ág| |j□?ÿ□?ÿ□□□□...r€□□□□€□□□□W„z□†a%ja□□□□a□Release
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Modification
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command was introduced.
€}À□™™™™Á...ü[j>?p□□□□□□□□□□†□□□□...^□□□□À□™™™™Á...ü[j>?p□?ÿ□□□□...r€□□□□€□□□□W„~□†a%ja□□□□a
12.2(13)T
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command was made available in Frame Relay VC-bundle-member
P•j□□□□□□□□□□ configuration mode.
€}À□™™™™Á; <Yj□?ÿ□□□□□□□□□□†□□□□...^□□□□`□□□□À□™™™™Á; <Yj□?ÿ□?ÿ□□□□...r€□□□□€□□□□W...□□†a%ja□□□□a
12.2(28)SB
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command was integrated into Cisco IOS Release 12.2(28)SB.
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Description

€}ÀÿÿÂsnÊÀ,,>?pöð+2...h...jÀÿÿÂsnÊÀ,,>?pÿ+J€€WŽ
+^%j^aframe-relay interface-dlci

€}ÁÿÿÂsnÊÁ,â>?pöð+2...i...kÁÿÿÂsnÊÁ,â>?p>?p+J€€Ž-+^%j^a!EAssi
gns a DLCI to a specified Frame Relay subinterface on the router P•j@Aor
access server.

€}ÀÿÿÂŽ@ÈÀ,,>?pöð+2...j...lÀÿÿÂŽ@ÈÀ,,>?pÿ+J€€WŽ
+^%j^aframe-relay map

€}ÁÿÿÂŽ@ÈÁ,â>?pöð+2...k...mÁÿÿÂŽ@ÈÁ,â>?p>?p+J€€Ž
+^%j^a!DDefines mapping between a destination protocol address and the DLCI
P•j@A,used to connect to the destination address.

€}ÀÿÿÂîÊÀ,,>?pöð+2...l...nÀÿÿÂîÊÀ,,>?pÿ+J€€WŽ!
+^%j^aframe-relay vc-bundle

€}ÁÿÿÂîÊÁ,â>?pöú+2...mÁÿÿÂîÊÁ,â>?p>?p+J€€Ž"+^%j^a!BCreat
es a Frame Relay PVC bundle and enters Frame Relay VC-bundle
P•j@Aconfiguration mode.

€}À™™™À`ÿÀ,,>?pÿöü+7...p™™™À`ÿÀ,,>?pÿÿ...G€€-WŽ#
+^%j^a`map-class frame-relay

€}Á™™™À`ÿÀ,â>?pÿö+7...o...q™™™À`ÿÀ,â>?pÿÿ...G€€-WŽ\$+^%j^a`ACrea
tes a map class for which unique QoS values can be assigned.

€}À™™™ÀöpÀ,,>?pö+7...p™™™ÀöpÀ,,>?pÿÿ...G€€,LWŽ% +^%j^a`pvc
(frame-relay vc-bundle)

\$Ág |]Â

™™ÀŽčö□□□òl□□†□...Q...t□□□\$Ág |]Â

™™ÀŽčöÀŽčö□□□□□□&□□...Y...f†□□□□□...Y...[...]..._...a...c...e□□□

À™™QÁ°ÀÁÿñï6...S...~À™™QÁ°ÀÁÿñÀÁÿñ

□□□□

...WeCr...>+a+a... Only cells from the same VC or VP can be packed into one MPLS or L2TPv3 packet. Cells from different connections cannot be concatenated into the same packet.

When you change, enable, or disable the cell-packing attributes, the ATM VC or VP and the MPLS or L2TPv3 emulated VC are reestablished.

If a provider edge (PE) router does not support cell packing, the PE routers sends only one cell per MPLS or L2TPv3 packet.

The number of packed cells need not match between the PE routers. The two PE routers agree on the lower of the two values. For example, if PE1 is allowed to pack 10 cells per MPLS or L2TPv3 packet and PE2 is allowed to pack 20 cells per MPLS or L2TPv3 packet, the two PE routers would agree to send no more than 10 cells per packet.

If the number of cells packed by the peer PE router exceeds the limit, the packet is dropped.

If you issue the `cell-packing` command without first specifying the `atm mcpt-timers` command, you get the following error:

```
W,D(...UTÀ;UG...`Please set mcpt values first
```


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™™ ?p ?p□□□□□□□R□□ŠDŠM‡□□ □□□ŠD□□□

Use this command with DLCIs that were created using the `frame-relay interface-dlci` command and 0- with DLCIs that were created as permanent virtual circuit (PVC) bundle members within a specified `Frame Relay PVC bundle`. The PVC bundle is created using the `frame-relay vc-bundle` command. The `Frame Relay PVC bundle member DLCIs` are then created by using the `pvc` command in Frame Relay `E-VC-bundle` configuration mode.

A map class applied to the interface is applied to all PVC members in a PVC bundle. A class applied to an individual PVC bundle member supersedes the class applied at the interface level.

Àh™½□□□elThe map class is created by using the □□
ß□ command in global configuration mode.

Í□map-class frame-relay□□


```

À°Àgÿñò-!À°ÀgÿñÀgÿñ
X+^+^$]Two maps are set up because these protocol-
and-address combinations are heading for the same @D{destination, as
defined by the
dest-addr keyword and the values following it in the map-
list command.
Y(...UTçURdJmap-list maplist1 source-addr E164 14085551212 dest-addr E164
15085551212
Z-UPd"ip 131.108.177.100 class classip
[...d#appletalk 1000.2 class classapple
...\d
] +^ÀK^ doIn the following example, the
trigger keyword allows AppleTalk broadcast packets to trigger an SVC:
^(...UTÀ[UId,ip 172.21.177.1 class class1 broadcast ietf
Q..._ÀeUGd5appletalk 1000.2 class class1 broadcast trigger ietf

```


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™™™Àp?øÀp?ø□□□□□□□)□□†□†□††□□□□□†□†□†□†□†□□□□

²ffQÀRÌÍiïA†...

²ffQÀRÌÍiïi...†€u...5...7...9...;...5...7...9...;W,,1†ªŠ™Ä@hÀ

AdÃs t t'

AdÃs t t (

␣␣␣Àá␣␣ÀÔ␣␣ÁM␣␣?ÿ␣?ÿ␣␣|€␣␣€ ␣w...;␣†^a%j^a␣␣␣`bProtocol address. The ␣␣
␣␣bridge␣␣ ␣␣ and ␣␣
␣␣clns␣␣ ␣␣ keywords do not use protocol addresses.
€}À␣TMÀã~␣À_fg>?p␣␣␣s-␣␣†rt
†
␣␣␣À␣TMÀã~␣À_fg>?p␣?ÿ␣␣|€␣␣€!␣w...<
†^a%j^a␣␣␣`
map-class
€}Àá␣␣Àã~␣ÁM␣␣>?p␣␣␣s/␣␣†rt

DName of the map class from which
to derive quality of service (QoS) P•j@
information.

broadcast

broadcast

/_fgs?ýs5trtÀ™Á

/_fgs?ý?ÿ|€€#w...@
†ª%jª`trigger
€}ÀáÁ

/ÁM§?ýs7trtÀáÁ

/[ÁM\$?ý\$?ý+|€€#...A+^a%j^ M(Optional) Enables a broadcast packet to trigger an SVC. If an SVC that uses p•j@Nthis map class already exists, the SVC will carry the broadcast. This keyword @Bcan be configured only if Ñ broadcast ß is also configured.

€}ÀÁ5o

À_fg>?p9tr+ÀÁ5o

À_fg>?p?ý+|€€\$W...B

+^a%j^`ietf

€}ÀáÁ5o

ÁM>?p;s;tr+ÀáÁ5o

ÁM>?p>?p+|€€\$...C+^a%j^ B(Optional) Specifies RFC 1490 encapsulation. The default is Cisco P•j@encapsulation.

€}ÀÁ¼Uj?ýsCtr+ÀÁ¼Uj?ý?ý...}€€%W...I+^a%j^`Release

€}ÀëÁ¼UÁG?ýsEtr+ÀëÁ¼UÁG?ý?ý...}€€%W...J+^a%j^` Modification

€}ÀÁÜTj?ýsGtr+ÀÁÜTj?ý?ý...}€€&W...K+^a%j^`11.2

€}ÀëÁÜTÁG?ýsItr+ÀëÁÜTÁG?ý?ý...}€€&W...L+^a%j^`This command was introduced.

€}ÀÁì<Sj>?pSktr+ÀÁì<Sj>?p?ý...}€€e'W...M+^a%j^`

12.2(13)T

€}ÀëÁì<SÁG>?pSmtr+ÀëÁì<SÁG>?p>?p...}€€e'...N+^a%j^`VThe Ñvines ß and Ñxns ß arguments were removed because

Banyan VINES and P•j@IXerox Network Systems are no longer available in the Cisco IOS software.

€}ÀÁ|Qj?ýsOtr+ÀÁ|Qj?ý?ý...}€€e(W...O+^a%j^`

12.2(33)SRA

€}Àë™™™Â|QÁG??ÿ??sQ??tr††|????Àë™™™Â|QÁG??ÿ??ÿ??...}€€€(W...P†ª%jª??`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}À™™™Â¼Pj§?ÿ??sS??tr††|????À™™™Â¼Pj§?ÿ??ÿ??...}€€€)W...Q†ª%jª??`12.2SX

€}Àë™™™Â¼PÁG??§?ÿ??sU??tr††|????Àë™™™Â¼PÁG??§?ÿ??ÿ??...}€€€)R†ª%jª?? IThis command is supported in the Cisco IOS Release 12.2SX train. Support p•j@?????Hin a specific 12.2SX release of this train depends on your feature set, @!platform, and platform hardware.

€}ÀÿÿÀÖ/

j?ÿ??sf??†??†|????ÀÿÿÀÖ/

j?ÿ??ÿ??†S€€€*W...`9†ª%jª??`Command

€}ÀÿÿÀÖ/

ÁD??ÿ??sh??††-†|????ÀÿÿÀÖ/

ÁD??ÿ??ÿ??†S€€€*W...a9†ª%jª??`

Description

€}ÀÿÿÀào j?ÿsjs!ÀÿÿÀào j?ÿ?ÿtSe+W...b:t^a%j^`map-class frame-relay

€}ÀÿÿÀào ÁD?ÿsl t "ÀÿÿÀào

ÁD?ÿ?ÿtSe+W...c t^a%j^`7Specifies a map class to define QoS values for an SVC.

€}ÀÿÿÀô`j>?p sn t!t#ÀÿÿÀô`j>?p?ÿtSe, W...d:t^a%j^` map-list

€}ÀÿÿÀô`ÁD>?p sp t "ÀÿÿÀô`ÁD>?p>?p tSe, ...e t^a%j^`

LSpecifies a map group and links it to a local E.164 or X.121 source address

P•j@Fand a remote E.164 or X.121 destination address for Frame Relay SVCs.

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TM TM □□□□□□□□□□□□□□ □□ † □ €x □□□□□□ W „ n □

†^a □□□□l□c□l□□À'□as□□À'□s

ÀÿÿÄYüMÁ°iö,rtt&ÀÿÿÄYüMÁ°iiti...UtaŠÄ
\$eThis command is used for Frame Relay SVCs; the parameters within the map
class are used to negotiate P-ÄLlfor network resources.Ä> The class is
associated with a static map that is configured under a map list.

□†^aŠÄ□□□d-Global configuration (config)

ÀTMÁïÁ°Á¼úö0††SÀTMÁïÁ°Á¼úšÿp†…g†^a†^a
a□□d□
Q...h^{-a}©□□d□

À™À·ÿÁ°ïöC†'††-
À™À·ÿÁ°ïï)0W...n†^aŠÄd+This command has no
arguments or keywords.

À™ÀËüÁ°Â@î;†7..GÀ™ÀËüÁ°Â@%ÿÿ†9
WŽ(†a†a`

ÀTMÀáíÁ°íööE††-
†1ÀTMÀáíÁ°íööE††)2W...p†^aŠÄdPrivileged EXEC (#)

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™™À²öaÀHÿû□□□□□□T□□ŠcŠk†□□, □□□ŠcŠeŠhŠj□□□

□□Âd□□Ã□□□□□□s%□□□□□□□□□□†4†4)□□□□□□□□

ÀTMÁçëoÁ°Àè`öG†'†NÀTMÁçëoÁ°Àè`%ÿÿ)9W††a†a
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TMÂsE†2²ffQÂ
TMÂ††9†H†J ŠìÀRìí

²ffÁèknÂ

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™™ÀTÿúÀTÿú□□□□□□+□□†:†A‡)□4□□□†:†<†>†@□□□

ÀdÃs`+9+9*è}À/Àu>?p sã
†n†UÀ/Àu>?p?ÿ†Mè#è4W†
†a%j`session
\$QÂ
TMÂs"†7\$QÂ
TMÂ†4†t...G†. ŠÏÏÀRÌíè}ÀTMÂ

HÀiÿø?ÿÄ†'†;ÀTMÂ

HÀiÿø?ÿ?ÿ†6è è-W...q†a%j`Release
è}ÀèŽÁ

HÁDø?ÿÄ†'†:†<ÀèŽÁ

HÁDø?ÿ?ÿ†6è è-W...r†a%j`

Modification

è}ÀTMÂÁMGÀiÿø?ÿÄ†'†;†=ÀTMÂÁMGÀiÿø?ÿ?ÿ†6è è.W...s†a%j`10.0
è}ÀèŽÁMGÁDø?ÿÄ†'†<†>ÀèŽÁMGÁDø?ÿ?ÿ†6è è.W...t†a%j`This
command was introduced.
è}ÀTMÂÁ+FÀiÿø?ÿÄ†'†=†?ÀTMÂÁ+FÀiÿø?ÿ?ÿ†6è è/W...u†a%j`

12.2(33)SRA

€}Àè™ŽÁ+□FÁD□□□?ý□□□Ä□□†'†>†@□□□Äè™ŽÁ+□FÁD□□□?ý□?ý□□†6€ □€/□W...w□†ª%jª□□□`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}À™™™Á:ÍEÀiÿö§?ý□□□Ä!□□†'†?†A□□□Ä™™™Á:ÍEÀiÿö§?ý□?ý□□†6€ □€0□W...w□†ª%jª□□□`□12.2SX

€}Àè™ŽÁ:ÍEÁD□□§?ý□□□Ä#□□†'†@□□□Äè™ŽÁ:ÍEÁD□□§?ý§?ý□□†6€ □€0□□□...x□†ª%jª□□□ IThis command is supported in the Cisco IOS Release 12.2SX train. Support □•j@□□□□Hin a specific 12.2SX release of this train depends on your feature set, P-ÿp□□□@!platform, and platform hardware.

€}À™™™Á,+rÀqff□?ý□□□Ä*□□†'□†C□□□Ä™™™Á,+rÀqff□?ý□?ý□□†N€!□€1□W...}9†ª%jª□□□`□Comma nd

€}ÀòÿÿÁ,+rÁ;□□□?ý□□□Ä,□□†'†B†D□□□ÄòÿÿÁ,+rÁ;□□□?ý□?ý□□†N€!□€1□W...~9†ª%jª□□□`

Description

€}À™™ÁÇkqÀqff?ÿÄ.†'†C†E™™ÁÇkqÀqff?ÿ?ÿ†N€!€2W...:†ª%jª`fram
e-relay inverse-arp

€}ÀðÿÿÁÇkqÁ;†?ÿÄ0†'†D†F™™ÁðÿÿÁÇkqÁ;†?ÿ?ÿ†N€!€2W††ª%jª`@Reen
ables Inverse ARP on a specified interface or subinterface.

€}À™™ÁÖ«pÀqff?ÿÄ2†'†E†G™™ÁÖ«pÀqff?ÿ?ÿ†N€!€3W††ª%jª`show
frame-relay map

€}ÀðÿÿÁÖ«pÁ;†?ÿÄ4†'†F™™ÁðÿÿÁÖ«pÁ;†?ÿ?ÿ†N€!€3W††ª%jª`HDispl
ays the current map entries and information about the connections.


```
set cos 2
/
0+↑UTÁ<U!SExample of the class Command for Defining Traffic Classes Inside
an MPLS Domain in A-ŌA-CiscoIOSRelease12.2(33)SCF
1↑+aÁŸaj!^The following example shows how to define traffic classes for
the MPLS domain with packet EXP A+aiaAvalues:
2(...UTÁUaenable
ŠÁËUaconfigure terminal
Žaapolicy-map exp7
Ža
class exp7
Ža"set mpls experimental topmost 2
AŽaend
```


²ffÂd.ËÂ

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™™ÀkÑ5À<□ö□□□□□□' □□...g...n†4□□□□□...g...i...k...m□...o...q□□

\$ÄÄ/□Ä

TMÄ¼¿ð□□□ö□□†n†K†O□□□\$ÄÄ/□Ä

TMÄ¼¿ðÄ¼¿ð□□□□□□-□□†8†a†p□J□□□†8†V†X†Z†\†^†`□□□

\$\hat{A}, +r\hat{A}\$

TM \hat{Y} - \hat{Y} \hat{S} \hat{z} $\hat{A}, +r\hat{A}$

TM \hat{Y} - \hat{Y} \hat{B} \hat{G} \hat{D} \hat{F}

2 ffÁ`|^Â

TM™žp...i...†††T 2 ffÁ`|^Â

TM™žpžpSŠŠb†&ŠŠR

\$ÁÉÐ ÀRÌÍiöR†n†P†s\$ÁÉÐ
ÀRÌÍiipM†b†d†b†dW†† a Š™Ä@lÀα

†^a%j^a` tunnel

€}Àö™ššÀû-Á; >?p s i t n X Z Àö™ššÀû-Á; >?p >?p M € # € 6 t

†^a%j^a H(Optional) Specifies that L2TP session counters for sessions associated P•j@*with a particular tunnel will be cleared.

€}Àö™ššÀû-Á; >?p s i t n Y t [Àö™ššÀû-Á; >?p >?p M € # € 7 t

remote-name R

•j@remote-name local-name

€}ÄöšÁ2/

Á;[]>?p[]s[]ö[]t[]n[]t[]\t^[]ÄöšÁ2/

Á;[]>?p[]>?p[]t[]M[]#[]€8[]t[]t[]a[]%[]j[]a[] H(Optional) Specifies the tunnel for which L2TP session counters will be P•j@<cleared using the remote tunnel name and local tunnel name.

€}ÄöšÁMo

Äu[]>?p[]s[]÷[]t[]n[]t[]]t_[]ÄöšÁMo

Äu[]>?p[]?ÿ[]t[]M[]#[]€9[]W[]t[]

t[]a[]%[]j[]a[]\username [] [] Îusername

€}ÄöšÁMo

Á;[]>?p[]s[]ù[]t[]n[]t[]^t^[]ÄöšÁMo

Á;[]>?p[]>?p[]t[]M[]#[]€9[]t[]t[]a[]%[]j[]a[] L(Optional) Specifies that L2TP session counters for the sessions associated P•j@,with a particular username will be cleared.

€}ÄöšÁh- Äu[]>?p[]s[]û[]t[]n[]t[]_t[]a[]ÄöšÁh- Äu[]>?p[]?ÿ[]t[]M[]#[]€:[]W[]t[]

t[]a[]%[]j[]a[]\vcid [] [] Îvcid

€}ÄöšÁh- Á;[]>?p[]s[]ý[]t[]n[]t[]ÄöšÁh- Á;[]>?p[]>?p[]t[]M[]#[]€:[]t[]t[]a[]%[]j[]a[]

L(Optional) Specifies that L2TP session counters for the sessions associated P•j@=with a particular virtual circuit ID (VCID) will be cleared.

€}ÄöšÁË

9l[]?ÿ[]t[]t[]n[]t[]c[]ÄöšÁË

9l[]?ÿ[]?ÿ[]t[]s[]€\$[]€;[]W[]t[]t[]a[]%[]j[]a[]\Release

€}ÄíÁË

9ÁD[]?ÿ[]t[]t[]n[]t[]b[]d[]ÄíÁË

9ÁD[]?ÿ[]?ÿ[]t[]s[]€\$[]€;[]W[]t[]t[]a[]%[]j[]a[]\

Modification

€}ÄöšÁÚM8l[]?ÿ[]t[]t[]n[]t[]c[]t[]e[]ÄöšÁÚM8l[]?ÿ[]?ÿ[]t[]s[]€\$[]€<[]W[]t[]t[]a[]%[]j[]a[]\

12.2(28)SB

€}ÄíÁÚM8ÁD[]?ÿ[]t[]

[]t[]n[]d[]ÄíÁÚM8ÁD[]?ÿ[]?ÿ[]t[]s[]€\$[]€<[]W[]t[]t[]a[]%[]j[]a[]\This command was introduced.

€}ÄöšÁR/[]l[]?ÿ[]t[]t[]

^[]t[]g[]ÄöšÁR/[]l[]?ÿ[]?ÿ[]€-€%[]€=[]W[]t[]&[]t[]a[]%[]j[]a[]\Command

€}ÄíÁR/[]ÁD[]?ÿ[]t[]t[]

^[]t[]f[]h[]ÄíÁR/[]ÁD[]?ÿ[]?ÿ[]€-€%[]€=[]W[]t[]'[]t[]a[]%[]j[]a[]\

Description

€}ÀTMÀao1>?p^{tt}^^{ti}ÀTMÀao1>?p>?p^{EE}-€%^{EE}>^{tt}(:†^a%j^a ^{clear}
l2tun counters P•j^{tt}@

tunnel l2tp

€}Àí™™ÀaoÁD>?p○○t○○^○th+j○○Àí™™ÀaoÁD>?p○?ÿ○○€-€%○€>W†)○†ª%jª○○`IClears global or per-tunnel control message statistics for L2TP tunnels.

€}À™™À|~○l○?ÿ○○t○○^○ti+k○○À™™À|~○l○?ÿ○?ÿ○○€-€%○€?W†*:†ª%jª○○`

show l2tun

€}Àí™™À|~ÁD○○?ÿ○○t-

○○^○†j+l○○Àí™™À|~ÁD○○?ÿ○?ÿ○○€-€%○€?W†+○†ª%jª○○`ADisplays general information about Layer 2 tunnels and sessions.

€}À™™À<i○l>?p○○t!○

^○†k†m○○À™™À<i○l>?p>?p○○€-€%○€@○○†,:†ª%jª○○ show l2tun counters P•j©○○@

tunnel l2tp

€}Àí™™À<iÁD>?p#

^ltnÀí™™À<iÁD>?p>?pE-€@-t^aja NDisplays global or per-tunnel control message statistics for L2TP tunnels, or P.j@Ftoggles the recording of per-tunnel statistics for a specific tunnel.

€}Àí™™À\$/>?p%t^mtoÀí™™À\$/>?p?ýE-€AW+.:t^aja`show l2tun session

€}Àí™™À\$/ÁD>?p#t'p^ntpÀí™™À\$/ÁD>?p>?pE-€A+/t^aja NDisplays the current state of Layer 2 sessions and protocol information about P.j@L2TP control channels.

€}Àí™™ÀÂo1\$?ýt)qÀí™™ÀÂo1\$?ý?ýE-€B+W0:t^aja`show l2tun tunnel

€}Àí™™ÀÂoÁD\$?ýt+q^tpÀí™™ÀÂoÁD\$?ý\$?ýE-€B+1t^aja DDisplays the current state of Layer 2 tunnels and information about p.j@Iconfigured tunnels, including local and remote L2TP hostnames, aggregate @packet counts, and control channel information.

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TMŠ žpööS†n†R†~ŠÁĚ

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TMŠ žpžp.†b†e†pN†b†d²ffQÂ

TMŠ Â†8†r²ffQÂ

TMŠ Â†9†...†(ŠÏÏÀRÏÍ

ÀÿÿÂ<+hÁ°À"Ô~øç†`†5ÀÿÿÂ<+hÁ°À"Ô~%ÿÿ†bFhW<†a a †a
a d

\$QÂ

TM™ □□□□êq□□‡'□‡j□□□\$QÂ

TM™ □□□□□□□□□□□□□□‡)□-□□□□W...j□

1"ÀcÄlear frame-relay-inarp

²ffQÂ

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™™□□□□□□□□□□□□‡□□□□□□□□WŠ~□

class-map type waas

À™Á~

BÁ°œiŠ†'†L†zÀ™Á~

BÁ°œiœi†)6...{†^aŠÄdCThe following example clears
dynamically created Frame Relay maps:

W...|(...UTŠDm d clear frame-relay-inarp

\$ÁüYÀRÌíi<†'†y†N\$ÁüYÀRÌíi)7†B†D†F†B†D†Fw†
†^aŠ™Ä@l††††;†

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†

††W...D† a Š™Ä@@1@@Ä~

$2ff\hat{A}^1/\square\hat{A}$

$\text{TM}\hat{A}-\square\tilde{o}\square\square\hat{e}G\square\square\uparrow r\uparrow\{\dots O\square\square\square 2ff\hat{A}^1/\square\hat{A}$

$\text{TM}\hat{A}-\square\tilde{o}\hat{A}-\square\tilde{o}\square\square\square\square\square\square(\square\square\uparrow\square\uparrow\square\uparrow t\square$

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™™™ÀTÿúö³%%C<^0™™™ŠÁ-ÍFÂ

™™™ÀTÿúÀTÿúö³%%E,™™™†w†y†{†}™™™

À™™À7Á°™ïööU††~†À™™À7Á°™ï™ï†pP†-
†ªªŠÄ\$çUse the Íclear l2tun counters ßcommand to clear the
counters for all sessions. Use the additional syntax P-™ÄDIOptions to clear
the counters for only the specified subset of sessions.

\$QÂ

™™ □□□□ ò í □□ † n □ ^ □□□□ \$QÂ

™™ □□□□□□□□□□□□□□ □ p □ G □□□□□ W † □□

12tun counters

AdÃtGt,t,}Ã¹/1>?pzt
^tÃ¹/1>?p?y+"e'EW+7
+a%ja`authentication
SQÃ
ÃtJtSQÃ
Ãt+...y+* šììÀRìí}Ã¹/Ã>?p\t
^t+Ã¹/Ã>?p>?p+"e'EW+8+a%ja J(Optional) Clears the L2TP
control channel authentication attribute-value P•j@\$(AV) pair counters.
}Ã¹>?p^
^t+Ã¹>?p?y+"e'EW+9
+a%ja`id ílocal-id
}Ã¹Ã>?p`
^t+Ã¹Ã>?p>?p+"e'EW+:+a%ja G(Optional) Clears the per-
tunnel control message counters for the L2TP P•j@\$tunnel with the specified
local ID.
}Ã¹Ã1?yft^t
Ã¹Ã1?y?y+%(EW>+a%ja`Release
}Ã¹Ã1Ã>?yth^t t
Ã¹Ã1Ã>?y?y+%(EW+?+a%ja`
Modification
}Ã¹ÃF
Cl?yjt^t
‡

À ÁF
Cl?ÿ?ÿ+;%(Fw+@+a%ja`
12.2(28)SB
€}À ÁF
CÁD?ÿ?ÿtll^+
À ÁF
CÁD?ÿ?ÿ+;%(Fw+A+a%ja` This command was introduced.
€}À ÁZ|l?ÿt}
^+
+`

À™™ÊZ | l?ÿ?ÿ†?€)€GW†P†ª%jª`Command
}À™™ÊZ | ÁD??ÿt
^†
†À™™ÊZ | ÁD??ÿ?ÿ†?€)€GW†Q†ª%jª`

Description

€}ÀTMÂtš{1>?p□□□t□□□^□‡

†□□□□À□™™Âtš{1>?p>?p□□†?€)□€H□□†R:†^a%j^a□□□

monitor l2tun P•j@counters tunnel l2tp

€}Àí™™Âtš{ÁD>?p^f^††Àí™™Âtš{ÁD>?p>?p†?€)€H†S†ª%jª

PEnables or disables the collection of per-tunnel control message statistics for

P•j@

L2TP tunnels.

€}À™™ÂÛyl>?p□□□t...□

^□†□†□□□□À™™ÂÛyl>?p>?p□□†?€)□€I□□†T:†^a%j^a□□□ □show l2tun counters P•j©□□□@

tunnel l2tp

€}Àí™™ÂÛýÁD>?p□□□t†□

^□†□†□□□□Àí™™ÂÛýÁD>?p□?ÿ□□†?€)□□€I□W†U□†^a%j^a□□□`KDisplays global or per-tunnel control message statistics for L2TP tunnels.

€}Àí™™Â«wl>?p□□□t%□□^□†□†□□□□Àí™™Â«wl>?p□?ÿ□□†?€)□□€J□W†V:†^a%j^a□□□`□show l2tun
tunnel

€}Àí™™Â«wÁD>?p□□□t<□□^□†□□□□□Àí™™Â«wÁD>?p>?p□□†?€)□□€J□□†W□†^a%j^a□□□
LDisplays the current state of L2TP tunnels and information about configured
P•j©□□□@ tunnels.

□□Âd□□Ã□□□□□□t"□□□□□□□□□□†□†□-□□□□□□□□€}À□™™Á

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Hl□?ÿ□?ÿ□□†d€+□€K□W†`□†ªª%jª□□□`□Release

□²ffQÂ

™™Á□□□□□□□□t-□□†□□□□□□²ffQÂ

™™Á□□□□□†□†)†x†0 □ □□□□□ŠììÀRìí□□□

Œ; |OÀRÌÍïïöV†††mŒ; |OÀRÌÍïïïïïïïïïïïïïïïpQW† †^aŠ™Äd

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Á°ÁäPðòù^E-ÀÿÿÀë-

Á°ÁäPð%ÿÿ^UW†3†ªªªd

²ffÀ·ÿÿÀRÌÍïïïïïèïï†`^

2ffÀ¹/□Â

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™™™™ÀX?úÀX?ú□□□□□□□□O□□†=Šr†b□=□□□†=Š_ŠaŠoŠq□□□□

\$\hat{A}^1 / \square \hat{A}\$

TMTM ¶üö1□□^□^z‡\$□□□\$¹ / □¹ \hat{A}

TMTM ¶üü□□□□□□0□□‡□□^□□Y□□□‡□□□□□

\$Á6ÍDÂ

™™žpönn^ ‡5\$Á6ÍDÂ

™™žpžp1 ‡

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{}€}Àí™™Á

HÁD[]?ÿ[]t»^;††*[]Àí™™Á

HÁD[]?ÿ[]?ÿ[]†d€+[]€K[]W†a[]†^a%j^a[]`
Modification

AdÃs(+)}.ÄÿÑ/Ä" "ÿtø%
CÄÿÑ/Ä" "ÿÿ< €/QWtv
†a%ja`serial number
\$QÄ
TMÄt' \$QÄ
TMÄ†b†w†3
ŠÏÀRÏÄ}ÄTMÄMGl?ÿt½^;†&†+ÄTMÄMGl?ÿÿ†de+ELW†
b†a%ja` 12.1(1)T
ÄíTMÄMGÄD?ÿt;^;†*†,ÄíTMÄMGÄD?ÿÿ†de+ELW†c†a%ja`This
command was introduced.
ÄTMÄ+Fl?ÿtÄ^;††-ÄTMÄ+Fl?ÿÿ†de+EMW†d†a%ja`

12.2(33)SRA

€}Àí™™Á+□FÁD□□□?ÿ□□□tÃ□□^;†,†.□□□Àí™™Á+□FÁD□□□?ÿ□?ÿ□□tde+□€M□Wte□†a%ja□□□`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}À™™Á:ÍEls?ÿ□□□tÅ□□^;†-†/□□□À™™Á:ÍEls?ÿ□?ÿ□□tde+□€N□Wtf□†a%ja□□□`□12.2SX

€}Àí™™Á:ÍEÁD□□§?ÿ□□□tÇ□□^;†.□□□Àí™™Á:ÍEÁD□□§?ÿ§?ÿ□□tde+□€N□□tg□†a%ja□□□ IThis command is supported in the Cisco IOS Release 12.2SX train. Support p•j©□□□□□Hin a specific 12.2SX release of this train depends on your feature set, □□□@!platform, and platform hardware.

€}À™™ÁîŠl□?ÿ□□□tĐ□

^;†1□□□À™™ÁîŠl□?ÿ□?ÿ□□^4€,□€O□Wtn□†a%ja□□□`□Command

€}Àí™™ÁîŠÁD□□□?ÿ□□□tÒ□

^;†0†2□□□Àí™™ÁîŠÁD□□□?ÿ□?ÿ□□^4€,□€O□Wto□†a%ja□□□`

Description

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^;†l†3□□□ÀTMÁÝZ%l□?ÿ□?ÿ□□^4€,□€P□W†p:†^a%j^a□□□`

clear pppoe

€}Àí™™ÁÝZ%ÁD□□□?ÿ□□□tÖ□

^;†2□□□□Àí™™ÁÝZ%ÁD□□□?ÿ□?ÿ□□^4€,□€P□W†q□†^a%j^a□□□`□Clears PPPoE sessions.

À™™ÁqMBÁ°ÀGió^+5+6À™™ÁqMBÁ°ÀGiÀGi^_+D+^a
Š™ÄdnUse the Íclear l2tun counters tunnel l2tp ßcommand to
clear the global L2TP control message counters.
+E>™Ä\$qUse the Íclear l2tun counters tunnel l2tp id Îlocal-id
ßcommand to clear the per-tunnel L2TP control ß™ÄDBmessage counters
for the L2TP tunnel with the specified local ID.
+F,™Ä\$eUse the Íclear l2tun counters tunnel l2tp authentication
ßcommand to globally clear only the PÄ™ÄDauthentication counters.

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™™™¹ ¿ü¹¿ü□□□□□□P□□ŠsŠx†b□A□□□ŠsŠuŠw□□□

ÀÿÿpÁ°Àÿÿüêd††x†>ÀÿÿpÁ°ÀÿÿüÀÿÿü†-†<†a†a†a
\$rTo configure a WAAS Express class map, use the `class-map type waas` `p`
`command` in global configuration `'a@DUmode`. To remove a WAAS Express
class map, use the `no` `class-map` form of this command.
`class-map type waas` `class-map-name`
Q<URdno class-map type waas `class-map-name`
€}À¹/l>?pæ
†`ŠNÀ¹/l>?p>?p†€YQŠa †a%ja
l2tp-class R
•j@l2tp-class-name

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‡‡‡‡□□□□€}ÀÿÿÂ:¼Ml□?ÿ□□□ôÔ□□f.f!^□□□□ÀÿÿÂ:¼Ml□?ÿ□?ÿ□□f&x□□9□W□y□†ª%jª□□□a□12

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Ñfastethernet□□

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•j©□□□□(tokenring□| fddi□□ ℑ□}□□ Ñ□ □□ Î□number B
□□□@

mac-address

€}Á# !ÀòÁÿÿ\$?ýp% †D†FÁ# !ÀòÁÿÿ\$?ý\$?ý< €/€R†y†ª%j`
>Local CMNS interface (Ethernet, Fast Ethernet, Token Ring, or p•j@;FDDI
interface) and MAC address of the remote device; this @'information
identifies a CMNS service.

€}ÀÿÿÁ-À" "\$?ýu% †E†GÀÿÿÁ-À" "\$?ý?ý< €/€S†z
†ª%j`

vc-number

€}Á# !Á-Áÿÿ\$?ýu% †F†HÁ# !Á-Áÿÿ\$?ý\$?ý< €/€S†{†ª%j`
9(Optional) SVC or PVC number, in the range 1 to 4095. If p•j@Especified,
the SVC is cleared or the PVC is reset. If not specified, @ (the X.25 or CMNS
service is restarted.

€}ÀÿÿÁ.ì

À" ">?p% †G†IÀÿÿÁ.ì

À" ">?p?ý< €/€T†|

†ª%j`

dlci-number

€}Á# !Á.ï

Áÿÿ>?pÿÿÿuÿÿÿ% †HÿÿÿÿÁ# !Á.ï

Áÿÿ>?p>?pÿÿ< €/€Tÿÿ†}ÿ†^a%j^aÿÿÿ <(Optional) When combined with a serial interface number, it P•j©ÿÿÿ@9triggers a restart event for an Annex G logical X.25 VC.

€}ÀÿÿÁ`M=jÿ?ÿÿÿÿu

00% 0tK000À0ÿÿÁ'M=j0?ÿ0?ÿ00^5€00€U0W†00†ª%jª000`0Release
€}ÀùÿÿÁ'M=ÁD000?ÿ000u

□□% †J†L□□□ÀùÿÿÁ`M=ÁD□□□?ÿ□?ÿ□□^5€0□€U□W†□□†a a%j a□□□`

Modification

€}À□ÿÿÁ □<j□?ÿ□□□u□□□% †K†M□□□À□ÿÿÁ □<j□?ÿ□?ÿ□□^5€0□€V□W†□□†a a%j a□□□`□11.2

€}ÀùÿÿÁ □<ÁD□□□?ÿ□□□u□□□%

†L†N□□□ÀùÿÿÁ □<ÁD□□□?ÿ□?ÿ□□^5€0□€V□W†□□†a a%j a□□□`-This command was introduced.

€}À□ÿÿÁ-Í; j□?ÿ□□□u□□□% †M†O□□□À□ÿÿÁ-Í; j□?ÿ□?ÿ□□^5€0□€W□W†□□†a a%j a□□□` 12.0(3)T

€}ÀùÿÿÁ-Í; ÁD□□□?ÿ□□□u□□□% †N†P□□□ÀùÿÿÁ-Í; ÁD□□□?ÿ□?ÿ□□^5€0□€W□W†□□†a a%j a□□□`- Annex G restart or clear options were added.

€}À□ÿÿÁ¿

: j□?ÿ□□□u□□□% †O†Q□□□À□ÿÿÁ¿

: j□?ÿ□?ÿ□□^5€0□€X□W†□□†a a%j a□□□`

12.2(33)SRA

€}ÀùÿÿÁ¿

:ÁD□□□?ÿ□□□u□□□% †P†R□□□ÀùÿÿÁ¿

:ÁD□□□?ÿ□?ÿ□□^5€0□€X□W†□□†^a%j^a□□□`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}ÀÿÿÁÎM9j§?ÿ□□□u□□□% †Q†S□□□ÀÿÿÁÎM9j§?ÿ□?ÿ□□^5€0□€Y□W† □†^a%j^a□□□`□12.2SX

€}ÀùÿÿÁÎM9ÁD□□§?ÿ□□□u-□□□ †R□□□ÀùÿÿÁÎM9ÁD□□§?ÿ§?ÿ□□^5€0□€Y□□†

□†^a%j^a□□□ IThis command is supported in the Cisco IOS Release 12.2SX train.

Support p•j©□□□□□H in a specific 12.2SX release of this train depends on your feature set, □□□@!platform, and platform hardware.

€}À□™™™Àé/

Àffg□?ÿ□□□u3□□%6□†U□□□À□™™™Àé/

Àffg□?ÿ□?ÿ□□<&€1□€Z□W†□9†^a%j^a□□□`□Command

€}Á□□□Àé/

Á)□□□?ÿ□□□u5□□%6†T†V□□□Á□□□Àé/

Á)□□□?ÿ□?ÿ□□<&€1□€Z□W†-9†^a%j^a□□□`

Description

```
€}ÀTMÀø  Àffg?ÿu7%6†U†WÀÀø  Àffg?ÿ?ÿ<&€1€[W†-
:†a%jaÀ
clear xot
€}ÁÀø  Á)??ÿu9%6†V†XÁÀø  Á)??ÿ?ÿ<&€1€[W†
†a%jaÀ (Clears an XOT SVC or resets an XOT PVC.
€}ÀTMÁÀÀffg>?pu;%6†W†YÀÀÀÀffg>?p?ÿ<&€1€\W†! :†a%jaÀfram
e-relay interface-dlci
€}ÁÀÁÀÁ)??pu=%6†X†ZÁÁÀÁ)??p>?p<&€1€\W†"†a%jaÀ
EAssigns a DLCI to a specified Frame Relay subinterface on the router
P•j@À@or access server.
€}ÀTMÁ"iÀffg?ÿu?%6†Y†[ÀÀTMÁ"iÀffg?ÿ?ÿ<&€1€]W†#:†a%jaÀshow
x25 context
€}ÁÀÁ"iÁ)??ÿuA%6†Z†\ÀÁÀÁ"iÁ)??ÿ?ÿ<&€1€]W†$†a%jaÀ*Disp
lays details of an Annex G DLCI link.
€}ÀTMÁ2/Àffg?ÿuC%6†[†]ÀÁ2/Àffg?ÿ?ÿ<&€1€W†%:†a%jaÀshow
x25 services
€}ÁÀÁ2/Á)??ÿuE%6†\†ÀÁÀÁ2/Á)??ÿ?ÿ<&€1€W†&†a%jaÀ*Disp
lays information about X.25 services.
€}ÀTMÁAoÀffg?ÿuG%6†]†ÀÁAoÀffg?ÿ?ÿ<&€1€W†':†a%jaÀ
```

show x25 vc

€}ÁÁÁÁÁoÁ)??ÿuuI%6†^ÁÁÁÁÁoÁ)??ÿÿ<&€l€_W†(†^a%j^a``9Displ
ays information about active X.25 virtual circuits.

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À°TMÁ;|OÁ°À" f+öWn+À°TMÁ;|OÁ°À" f+ÀMipR!+aŠ
™ÄDThe following example clears the session counters for all sessions:
+ "(...UTŠDm"Router#
clear l2tun counters
+#Dk
+\$+a-™;iThe following example clears the session counters for only those
sessions associated with the peer at IP »%Daddress 10.1.1.1:
W+%(...UTÀKDg;Router#
clear l2tun counters session ip-addr 10.1.1.1

AdÃue ttp0

À™Á¿°ïö,,^<†o^
™Á¿°ïi^?wW<B†^aŠÄdLInformation about
closed connections, statistics, or tokens is not cleared.

□

€}ÁÿÿÀ¹/Á&ÊÏ?ÿux%Cs†uÁÿÿÀ¹/Á&ÊÏ?ÿ?ÿ<€4€`W†0†ª%jª` ;Remo
te IP address and port number of an XOT connection ID.

€}ÀÿÿÀÈoÀ†?ÿuz%C††vÁÿÿÀÈoÀ†?ÿ?ÿ<€4€aW†1T†ª%jª`
local□

□ □ □ Î ip-address port

€}ÁÿÿÀÈoÁ&GÎ?ÿ□□□u|□□%C†u□□□□ÁÿÿÀÈoÁ&GÎ?ÿ□?ÿ□□<€4€Ca□W†2†^a%j^a□□□` :Local
IP address and port number of an XOT connection ID.

€}ÀÿÿÁ-ÍFj□?ÿ□□□u,□□%C†x□□□□ÀÿÿÁ-ÍFj□?ÿ□?ÿ□□†}€5€b□W†6†^a%j^a□□□` □Release

€}ÀÿÿÁ-ÍFÁD□□□?ÿ□□□u,□□%C†w†y□□□□ÀÿÿÁ-ÍFÁD□□□?ÿ□?ÿ□□†}€5€b□W†7†^a%j^a□□□`
Modification

€}ÀÿÿÁ.

Ej□?ÿ□□□u†□□%C†x†z□□□□ÀÿÿÁ.

Ej□?ÿ□?ÿ□□†}€5€c□W†8†^a%j^a□□□` □11.2

€}ÀÿÿÁ.

EÁD□□□?ÿ□□□u^□□%C†y†{□□□□ÀÿÿÁ.

EÁD□□□?ÿ□?ÿ□□†}€5€c□W†9†^a%j^a□□□` □This command was introduced.

€}ÀÿÿÁ-MDj□?ÿ□□□uŠ□□%C†z†|□□□□ÀÿÿÁ-MDj□?ÿ□?ÿ□□†}€5€d□W†:†^a%j^a□□□`

12.2(33)SRA

€}ÀùÿÿÁ=MDÁD□□□?ÿ□□□u€□□%C†{†}□□□ÀùÿÿÁ=MDÁD□□□?ÿ□?ÿ□□†}€5□€d□W†;□†^a%j^a□□□`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}ÀÿÿÁL□Cj\$?ÿ□□□uŽ□□%C†|†~□□□ÀÿÿÁL□Cj\$?ÿ□?ÿ□□†}€5□€e□W†<□†^a%j^a□□□`□12.2SX

€}ÀùÿÿÁL□CÁD□□\$?ÿ□□□u□□□%C†}□□□ÀùÿÿÁL□CÁD□□\$?ÿ\$?ÿ□□†}€5□€e□□†=□†^a%j^a□□□ IThis command is supported in the Cisco IOS Release 12.2SX train. Support p•j©□□□□□Hin a specific 12.2SX release of this train depends on your feature set, □□□@!platform, and platform hardware.

€}ÀÿÿÿÁ@Úfj□?ÿ□□□uš□□%C□^□□□□ÀÿÿÿÁ@Úfj□?ÿ□?ÿ□□ŠA€6□€f□W†E9†^a%j^a□□□`□Command

€}ÀùÿÿÿÁ@ÚfÁD□□□?ÿ□□□uæ□□%C†□^□□□□ÀùÿÿÿÁ@ÚfÁD□□□?ÿ□?ÿ□□ŠA€6□€f□W†F9†^a%j^a□□□`

Description

€}ÀÿÿÂP, jÿ?ÿÿÿÿužÿÿÿ%C^ÿ^ÿÿÿÿÀÿÿÿÂP, jÿ?ÿÿ?ÿÿÿŠA€6€gW†G:†^a%j^aÿÿÿ`ÿshow x25
services

€}ÀÿÿÿÂP, ÁDÿÿÿÿ?ÿÿÿÿu ÿÿ%C^ÿÿÿÿÿÿÀÿÿÿÂP, ÁDÿÿÿÿ?ÿÿ?ÿÿÿŠA€6€gW†H†^a%j^aÿÿÿ`6Displ
ays information pertaining to the X.25 services.

□□Âd□□Ã□□□□□□u«□□□□□□□□□□^□^□1□□□□□□□□

AdÃu;^2ffQ
TMÃu@^ffQ
TMÃp^†v† ŠìàRìí

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Á°iÓR% ^/^/À™Áf/
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,W††ªŠÄdPrivileged EXEC
€}À™Ä/0l?ÿÉxES^RÀ™Ä/0l?ÿ?ÿ€} ,W<x
†ª%jª`maximum-threshold

\$QÂ

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TM™ □□□□□□□□□□□□□□□□%□

, □□□□□□W□□

□□□1□□□Ä-□clear x25

\$Áé^ÀRÌÍiöö...^<†q^

??\$Áé^ÀRÌÍi?xW<C†^aŠ™Äd

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^-À™Áé^Á°ïï^?yW<D†^aŠÄdPrivileged EXEC (#)

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l&c|lear 12tun counters tunnel 12tp

ÀÿÿpÁ°«ÿÿê„†`^

²ffQÂ

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Azÿñ
Azÿñ8,

The following example forces an X.25 restart, which implicitly clears all SVCs and resets all PVCs using the interface:

```
clear x25 serial 0
```

```
UP
```

The following example restarts the specified CMNS service (if active), which implicitly clears all SVCs using the service:

```
clear x25 ethernet 0 0001.0002.0003
```

```
UJ
```

The following example clears the specified DLCI Annex G connection (40) from the specified interface:

```
clear x25 serial 1 40
```

This command was integrated into Cisco IOS Release 12.2(33)S CF.

À™™Áí@Á°ÀÑîó{C^0^3À™™Áí@Á°ÀÑîÀÑî%E,†@†^a
Š™Ä`Each SVC or PVC supported by the XOT service uses a TCP connection to
communicate X.25 packets. 0-™ÄgA TCP connection is uniquely identified by
the data quartet: remote IP address, remote TCP port, local gIP address, and
local TCP port. This command form is used to forcibly disrupt service on an
individual D
XOT circuit.
†A;™Ä\$FXOT connections are sent to TCP port 1998, so XOT connections
originated by the router will have that PÄ™;D]remote port number, and
connections received by the router will have that local port number.

{ serial number }

□ | {□□ Ñ□ethernet□□

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Ñfastethernet□□

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□] | [□□ î□dlci-number□□

Description

€}À^{TMTM}Àao1l?ÿ^v

%M^&^(^{À^{TMTM}Àao1l?ÿ?ÿ<€;€pWtq:†^a%j^aconnect (FRF.5)}

€}À^{TMTM}ÀaoÁ@fg?ÿ^v

%M^'^(^{À^{TMTM}ÀaoÁ@fg?ÿ?ÿ<€;€pWtr†^a%j^a7Connects a Frame Relay DLCI or VC group to an ATM PVC.}

€}À^{TMTM}Àp⁻1l?ÿ^v

%M^(^*^{À^{TMTM}Àp⁻1l?ÿ?ÿ<€;€qWts:†^a%j^ade-bit map-clp}

€}À^{TMTM}Àp⁻Á@fg?ÿ^v

%M^)^{À^{TMTM}Àp⁻Á@fg?ÿ?ÿ<€;€qWtt†^a%j^aBSets the Frame Relay DE bit field in the Frame Relay cell header.}

ÀÿÿÁ~

BÁ°™iï¿^;ti^,ÀÿÿÁ~

BÁ°™i™i^=m†j†^aŠÄ\$hUse this command to clear all PPPoE sessions on the device. To clear a specific PPPoE session or set of P-™Älssessions, use the `clear pppoe` command.

\$\hat{A}\$ | Q\$\hat{A}\$

TMžpö^<^-^N\$A | Q

TMžpžpV<M<P^? { <M<O

²ffÁîŠÂ

™™Àáâv□□□í□□□^;^8□□□□²ffÁîŠÂ

™™Àáâvž□p□□□□□□□4□□†0†3^=□q□□□†0†2□□□

\$Á`M=Â
TM™Äd?ùöö % ^/^:ö\$Á`M=Â
TM™Äd?ùÄd?ùö6†J†S%
, ö†J†L†N†P†R€}Ä™™Ä}<Kl?ÿó-
ö„C„^%HÄ™™Ä}<Kl?ÿ?ÿ...}öBöWŠ(†ªªjª`

12.2(33)SRD

identified:

W#D(...UT|Dl□□□d4clear xot remote 10.1.1.1 1998 local 172.2.2.2 2000

\$Â006ÀRÌÍ00ï00000ö;00%

^5^L000\$Â006ÀRÌÍ00ï00ï000000000000000000%

'
00000W‡

□ † a Š™Ä□□□d□

□□Âd□□Ã□□□□□□v □□□□□□□□□□^=^=3□□□□□□□□□□

AdÃv+^?^4^2ffQÂ
TM^v#^;^2ffQÂ
TM^?Š\$^4
ŠiìÀRìí}ÀÿÿÀĭ/0l0?ÿv†Š8^]ÀÿÿÀĭ/0l0?ÿ?ÿEPEExW^
+a%ja`connection-name
\$QÂ
TM^v.^<^\$QÂ
TM^=^z^T
ŠiìÀRìí}ÀÿÿÁLü`j0?ÿvA%~^AÀÿÿÁLü`j0?ÿ?ÿŠ"@erW^
+a%ja`Release
e}ÀÿÿÁLü`ÁD000?ÿvC%~^@BÀÿÿÁLü`ÁD000?ÿ?ÿŠ"@erW^+a%ja`
Modification
e}ÀÿÿÁ\<_j0?ÿvE%~^A^CÀÿÿÁ\<_j0?ÿ?ÿŠ"@esW^+a%ja`10.0
e}ÀÿÿÁ\<_ÁD000?ÿvG%~^B^DÀÿÿÁ\<_ÁD000?ÿ?ÿŠ"@esW^+a%ja`This
command was introduced.
e}ÀÿÿÁk|^j0?ÿvI%~^C^EÀÿÿÁk|^j0?ÿ?ÿŠ"@etW^+a%ja`

12.2(33)SRA

€}ÀùÿÿÁk|^ÁD□□□?ÿ□□□vK□□%~^D^F□□□ÀùÿÿÁk|^ÁD□□□?ÿ□?ÿ□□Š"€@□□€t□W^□□†^a%j^a□□□`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}ÀùÿÿÁz¼]j\$?ÿ□□□vM□□%~^E^G□□□ÀùÿÿÁz¼]j\$?ÿ□?ÿ□□Š"€@□□€u□W^□□†^a%j^a□□□`□12.2SX

€}ÀùÿÿÁz¼]ÁD□□\$?ÿ□□□vO□□%~^F□□□ÀùÿÿÁz¼]ÁD□□\$?ÿ\$?ÿ□□Š"€@□□€u□□^□□†^a%j^a□□□ IThis command is supported in the Cisco IOS Release 12.2SX train. Support □•j@□□□□Hin a specific 12.2SX release of this train depends on your feature set, P-ÿp□□□@!platform, and platform hardware.

€}ÀùÿÿÁ8 j□?ÿ□□□vY□□%~□^I□□□ÀùÿÿÁ8

j□?ÿ□?ÿ□□<'€A□□€v□W^□□9†^a%j^a□□□`□Command

€}ÀùÿÿÁ8 ÁD□□□?ÿ□□□v[□□%~^H^J□□□ÀùÿÿÁ8

ÁD□□□?ÿ□?ÿ□□<'€A□□€v□W^□□9†^a%j^a□□□`

Description

€}ÀÿÿÂGIÿj>?p[]v[]%~^I^K[]ÀÿÿÂGIÿj>?p?ÿ[]<'€A€w[]W^[]:†a%ja[]`
x25 route
€}ÀÿÿÂGIÿÁD[]>?p[]v_[]%~^J[]ÀÿÿÂGIÿÁD[]>?p>?p[]<'€A€w[]^[]†a%ja[]
KCreates an entry in the X.25 routing table (to be consulted for forwarding
P•j@[]@Lincoming calls and for placing outgoing PAD or protocol translation
calls).

À™™À°Àïöç% ^: ^MÀ™™À°ÀïÀï%

/'

†ªŠ™™À°ÀïdiThis command replaces the clear x25-vc command, which first appeared in Cisco IOS Release 8.3.

†

>™Ã□□□\$eThis command is used to disrupt service forcibly on an individual circuit or on all circuits using a □\$™Ã□□□D'specific X.25 service or CMNS service.

□‡□,™Ã□□□\$uIf this command is used without the □□ Î□vc-number□□ ß□ value, a restart event is initiated, which implicitly clears □ÃD™Ã□□□D-all SVCs and resets all PVCs.

□‡□ÃU™¿□□□\$gThis command allows the option of restarting an Annex G connection per data-link connection identifier pÃa™¾□□□□□i(DLCI) number, clearing all X.25 connections, or clearing a specific X.25 logical circuit number on that □□□D

Annex G link.

□□□□w†□□† a Š™Ä□□□d□

À™™ÄNüOÁ°¥ïööŠ^<^N^SÀ™™ÄNüOÁ°¥ï¥ï^?}<K†ªŠÄ
`Use this command to clear any information about WAAS Express on the router.
The Íclear waas -™Äjconnection conn-id ß command resets
the connection and is provided to kill a particular connection for R-ÿpD

some reason.

€}Àí™™ÀĬ/□ÁD□□□?ÿ□□□Éz□□□S^□□□□□Àí™™ÀĬ/□ÁD□□□?ÿ□?ÿ□□€^€}□,□□W<y□†^a%j^a□□□`GThe
maximum limit. The range is 1 to 100. The default threshold is 80.

ÀTMpÁ°«ÿÿ«é¥«^
^ZÀTMpÁ°«ÿÿ«ÿÿ^W«†5†^a†^a«\$iTo clear global or per-tunnel control message statistics for Layer 2 Tunnel Protocol (L2TP) tunnels, use 'a@DPthe Íclear l2tun counters tunnel l2tp ß command in privileged EXEC mode.
S†6 "a"ddclear l2tun counters tunnel l2tp ß ß[ß Ñauthentication ß ß | ß Ñid ß ß ß ß îlocal-id ß ß] €}ÀÿÿÂ;üNÀ|€\$?ÿ«öG«fZfK^«ÀÿÿÂ;üNÀ|€\$?ÿ?ÿ«fLf«:«W,0†^a%j^a««a«Cisco IOS XE Release 2.4

ÀÿÿÁR°Á}PÝö|6<&ÀÿÿÁR°Á}PÝšÿp%8,†*†a a †a
a d
Q†+ª©d

À@|-
ÀÍ?ÀAwø€|%%%}ÀÛÿÿÀĪ/Á@fg?ÿv%Š8^>^^ÀÛÿÿÀĪ/
Á@fg?ÿ?ÿ€€€€xW^†ª`A name for this connection.
€}ÀÿÿÀĪo1l?ÿv<Š8^]`_ÀÿÿÀĪo1l?ÿ?ÿ€€€€yW^
†ª`
interface
€}ÀÛÿÿÀĪoÁ@fg?ÿvŠ8^^`ÀÛÿÿÀĪoÁ@fg?ÿ?ÿ€€€€yW^-†ª`5Inte
rface on which a PVC connection will be defined.
€}ÀÿÿÀĪí1l>?povŠ8^`aÀÿÿÀĪí1l>?p?ÿ€€€€zW^
†ª`dlci
€}ÀÛÿÿÀĪíÁ@fg>?pv`Š8^^`bÀÛÿÿÀĪíÁ@fg>?p>?p€€€€zW^ †ª`
FData-link connection identifier (DLCI) number of the PVC that will be P•j@
connected.
€}ÀÿÿÀĪí1l>?pov"Š8^`a`cÀÿÿÀĪí1l>?p?ÿ€€€€€{W^!
†ª`

l2transport

€}ÀÛÿÿÁiÁ@fg>?pvv•š8^bÀÛÿÿÁiÁ@fg>?p>?pPEE€{^"†a%ja
GSpecifies that the PVC will not be a locally switched PVC, but will be
P•j@%tunneled over the backbone network.

€}ÀÿÿÁ•<Zl?ÿvvš8^eÀÿÿÁ•<Zl?ÿ?ÿ<|€F€|W^(†a%ja`Release

€}ÀÛÿÿÁ•<ZÁ@fg?ÿvvÿš8^d^fÀÛÿÿÁ•<ZÁ@fg?ÿ?ÿ<|€F€|W^†a%ja`
Modification

€}ÀÿÿÁ|Yl?ÿv;š8^e^gÀÿÿÁ|Yl?ÿ?ÿ<|€F€|W^*†a%ja` 12.1(2)T

€}ÀÿÿÁ|YÁ@fg?ÿvš8^f^hÀÛÿÿÁ|YÁ@fg?ÿ?ÿ<|€F€|W^†a%ja`This
command was introduced.

€}ÀÿÿÁ¾Xl?ÿvš8^g^iÀÿÿÁ¾Xl?ÿ?ÿ<|€F€~W^,†a%ja`
12.0(23)S

€}ÀÛÿÿÁ¾XÁ@fg?ÿvš8^h^jÀÛÿÿÁ¾XÁ@fg?ÿ?ÿ<|€F€~W^-†a%ja`.The
Èl2transport Bkeyword was added.

€}ÀÿÿÁÁÛwL?ÿvš8^i^kÀÿÿÁÁÛwL?ÿ?ÿ<|€F€W^†a%ja`
12.2(14)S

€}ÀÛÿÿÁÁÛwÁ@fg?ÿv«š8^j^lÀÛÿÿÁÁÛwÁ@fg?ÿ?ÿ<|€F€W^/†a%ja`?This
command was integrated into Cisco IOS Release 12.2(14)S.

€}ÀÿÿÁÀ<Vl?ÿv-š8^k^mÀÿÿÁÀ<Vl?ÿ?ÿ<|€F€W^0†a%ja`
12.2(15)T

€}ÀÛÿÿÁÀ<VÁ@fg?ÿv-š8^l^nÀÛÿÿÁÀ<VÁ@fg?ÿ?ÿ<|€F€W^1†a%ja`?This
command was integrated into Cisco IOS Release 12.2(15)T.

€}ÀÿÿÁÁ|Ul?ÿv±š8^m^oÀÿÿÁÁ|Ul?ÿ?ÿ<|€F€W^2†a%ja`

12.2(33)SRA

€}ÀûÿÿÁá|UÁ@fg□?ÿ□□v³□□Š8^n^p□□□ÀûÿÿÁá|UÁ@fg□?ÿ□?ÿ□□<|€F□□□□W^3□†^a%j^a□□□`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}ÀûÿÿÁá¼Tl§?ÿ□□□vμ□□Š8^o^q□□□ÀûÿÿÁá¼Tl§?ÿ□?ÿ□□<|€F□□□□W^4□†^a%j^a□□□`□12.2SX

€}ÀûÿÿÁá¼TÁ@fg§?ÿ□□□v.□□Š8^p□□□□ÀûÿÿÁá¼TÁ@fg§?ÿ§?ÿ□□<|€F□□□□W^5□†^a%j^a□□□ IThis command is supported in the Cisco IOS Release 12.2SX train. Support p•j@□□□□□Hin a specific 12.2SX release of this train depends on your feature set, □□□@!platform, and platform hardware.

€}ÀûÿÿÀ/□À€fg□?ÿ□□□vÁ□□€□□^s□□□ÀûÿÿÀ/□À€fg□?ÿ□?ÿ□□€€H□□□□W^@□†^a%j^a□□□`□Comma nd

€}ÁffÀ/□Á%fg□?ÿ□□□vÇ□□€□□^r^t□□□ÁffÀ/□Á%fg□?ÿ□?ÿ□□€€H□□□□W^A□†^a%j^a□□□`

Description

€}ÀÿÿÀ-oÀEfg?ÿvÉE^s^uÀÿÿÀ-oÀEfg?ÿ?ÿEECHW^B:†a%ja`fram
e-relay switching

€}ÁffÀ-oÁ%fg?ÿvËE^t^vÁffÀ-oÁ%fg?ÿ?ÿEECHW^C†a%ja`3Enab
les PVC switching on a Frame Relay DCE or NNI.

€}ÀÿÿÀ»-ÀEfg?ÿvÍE^u^wÀÿÿÀ»-ÀEfg?ÿ?ÿEECHW^D:†a%ja`mpls
l2transport route

€}ÁffÀ»-Á%fg?ÿvİE^vÁffÀ»-Á%fg?ÿ?ÿEECHW^E†a%ja`<Enabl
es routing of Frame Relay packets over a specified VC.

□□Âd□□Ã□□□□□□vÛ□□□□□□□□□□^z^z5□□□□□□□□□□

ÀTMÀazÁ°Àn¥ö·%CŠAÀTMÀazÁ°Àn¥šÿp%E,
J†^{a a a}d
Q†K^{-a}@d

²ffÄÏ/□Â

™™™¹ ¿ü□□□ö½□□%L^|‰□□□□²ffÄÏ/□Â

™™™¹ ¿ü¹¿ü□□□□□□□;□□^□^□%N, \$□□□^□^□^□□□□€}Á

€Â;üNÁ3ý§?ýöI fZ^Y%Á

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™™™™Â□□□□^z%8^

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™™™□□□□ó□□□%L□<7□□□²ffQÂ

™™™□□□□□□□□□□□□%N,!□□□□W‡L□

l.À·À, clp-bit
^"ñU@;ÝbM€, %:%:D%:^^"ñU@;ÝbM}À™Àó/1?ÿvÿ
ŠB%À™Àó/1?ÿ?ÿ<}MWW^L
†^a%j^a `connection-name
€}Àí™Àó/Á@fg?ÿw
ŠB%

%Äí™™Äó/Ä@fg?ÿ?ÿ<}€MW^M†^a%j^a`=Connection name. Enter as a string of 15 characters maximum.

€}Ä™™Äol³?üw

ŠB%%Ä™™Äol³?ü?ÿ<}€MW^N

†^a%j^a`vc-group îgroup-name

€}Äí™™ÄoÄ@fg³?üw

ŠB%%Äí™™ÄoÄ@fg³?ü³?ü<}€M^O†^a%j^a JVC group name for a many-to-one FRF.5 connection. Enter as a string of 11 •j@Icharacters maximum. (If the pvc-group keyword ßis specified, the -ÿpIinterworking type is always network-interworking and does not need to be P-ÿp@

set as such.)

€}À^{TMTM}Á5⁻

l[?]ÿ[?]w

ŠB%[%]À^{TMTM}Á5⁻

l[?]ÿ[?]ÿ[?]< }€M[?]W[^]P

† a a% j a[?]

fr-interface

€}À^{TMTM}Á5⁻

Á@fg[?]ÿ[?]w

ŠB%[%]À^{TMTM}Á5⁻

Á@fg[?]ÿ[?]ÿ[?]< }€M[?]W[^]Q† a a% j a[?] IFrame Relay interface type and number; for example, pserial1/0 f.

€}À^{TMTM}ÁDⁱ

l > ?p□□□w

□

ŠB%□%□□□□À□™™ÁDï

l>?p□?ÿ□□<}€M□□ □W^R
†^a%j^a□□□`□fr-dlci
€}Àí™™ÁDï

Á@fg>?p□□□w

□

ŠB%□%□□□□Àí™™ÁDï

Á@fg>?p>?p<}€M S†ªja KFrame Relay data-link connection
identifier (DLCI) in the range from 16 to P•j@1007.

€}À™Á`/

l?ÿw

ŠB%™Á`/

l?ÿ?ÿ<}€M

W^T

†ªja`

atm-interface

€}Àí™™Á`/

Á@fg?ÿw

ŠB%‰‰‰‰‰Àí™™Á`/

Á@fg?ÿ?ÿ<}€M

W^U†^a%j^a`>ATM interface type and number; for example, p[atm1/0
S.

€}À™™Áoo l>?pww

ŠB%‰‰‰‰‰À™™Áoo l>?p?ÿ<}€M

W^V

†^a%j^a`atm-vpi p/ i vci

€}Àí™™Áoo Á@fg>?pww

ŠB%‰‰‰‰‰Àí™™Áoo Á@fg>?p?p<}€M

W†^a%j^a NATM virtual path identifier/virtual channel identifier
(VPI/VCI). If a VPI is P•j@%not specified, the default VPI is 0.

€}À™™ÁŠ-1³?üww

ŠB%‰‰‰‰‰À™™ÁŠ-1³?ü?ÿ<}€M

□W^X

†^a%j^a□□□`□network-interworking

€}Àí™™ÁŠ-□Á@fg³?ü□□w□□

ŠB%□□□□Àí™™ÁŠ-□Á@fg³?ü³?ü□□<}€M□□

^Y†^a%ja HFRF.5 network interworking connection. This keyword is not valid if the

- j@vc-group keyword is specified. (If the Ñvc-group keyword is specified, the -ÿpinterworking type is always network-interworking and does not need to be P-ÿp@

set as such.)

€}ÀÿÿÂ.üNl?ÿw!ŠB%ÀÿÿÂ.üNl?ÿ?ÿ€€N

W^_†a%ja`Release

€}ÀÿÿÂ.üNÁ@fg?ÿw#ŠB%-ÀÿÿÂ.üNÁ@fg?ÿ?ÿ€€N

W^_†a%ja`

Modification

€}ÀÿÿÂ><Ml?ÿw%ŠB%ÀÿÿÂ><Ml?ÿ?ÿ€€N

W^a t a a % j a ` 12.1(2)T
€}ÀÛÿÿÂ><MÁ@fg?ÿw'ŠB%-& ÆÀÛÿÿÂ><MÁ@fg?ÿ?ÿ€€N

W^b^t^a^%j^a^`^This command was introduced.

€}ÀÿÿÂ|Ll\$?ý(w)ŠB%:%!ÀÿÿÂ|Ll\$?ý?ý€€N^c^t^a^%j^a^`
12.2(8)YN

€}ÀÿÿÂ|LÁ@fg\$?ýw+ŠB% %"ÀÿÿÂ|LÁ@fg\$?ý\$?ý€€N^d^t^a^%j^a^`

CEnhanced QoS features were added for Cisco 1720, Cisco 1750, Cisco
p•j@D1751, Cisco 1760, Cisco 2610XM-2651XM, Cisco 3640, Cisco 3640A, and
@

Cisco 3660.

€}ÀÿÿÂt¼I1³?üw-ŠB%!%#ÀÿÿÂt¼I1³?ü?ÿCCENW^e†ª%jª` 12.3(2)T
€}ÀÿÿÂt¼IÁ@fg³?üw/ŠB%."ÀÿÿÂt¼IÁ@fg³?ü³?üCCEN^f†ª%jª DThis
feature was integrated into Cisco IOS Release 12.3(2)T for the
p•j@Efollowing platforms: Cisco 1720, Cisco 1721, Cisco 1750, Cisco 1751,
>Cisco 1760, Cisco 2610-2651, Cisco 2610XM-2651XM, Cisco 2691,
@5Cisco 3620, Cisco 3640, Cisco 3640A, and Cisco 3660.
€}ÀTMTMÀ`?ÿl?ÿw1%%ÀTMTMÀ`?ÿl?ÿ?ÿ^ENW^g†ª%jª`

12.2(33)SRA

€}Àí™™À`?ÿÁ@fg□?ÿ□□w3□□%□%\$%&□□□Àí™™À`?ÿÁ@fg□?ÿ□?ÿ□□^□€N□□□□W^h□†^a%j^a□□□`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}À™™Ào□pl§?ÿ□□□w5□□%□%□%'□□□À™™Ào□pl§?ÿ□?ÿ□□^□€N□□□□W^i□†^a%j^a□□□`□12.2SX

€}Àí™™Ào□pÁ@fg§?ÿ□□□w7□□%□%&□□□Àí™™Ào□pÁ@fg§?ÿ§?ÿ□□^□€N□□□□^j□†^a%j^a□□□ IThis command is supported in the Cisco IOS Release 12.2SX train. Support p•j@□□□□Hin a specific 12.2SX release of this train depends on your feature set, □□□@!platform, and platform hardware.

€}À™™À}Í l□?ÿ□□□w]□

%□□%)□□□À™™À}Í l□?ÿ□?ÿ□□□(€O□□□□W%

␣†ªªjª␣␣␣`␣Command
€}Àí™™Â}Í Á@fg␣?ÿ␣␣w_␣
%␣%(%*␣␣Àí™™Â}Í Á@fg␣?ÿ␣?ÿ␣␣(€O␣␣␣W%␣␣†ªªjª␣␣␣`

Description

```

€}ÀTMTMÂ
l?ÿwa%%)%+ÀTMTMÂ
l?ÿ?ÿ(€OWWW%:†ªjª`clp-bit
€}ÀíTMTMÂ
À@fg?ÿwc%%*%,ÀíTMTMÂ
À@fg?ÿ?ÿ(€OWWW%:†ªjª`/Sets the ATM CLP field in the ATM cell
header.
€}ÀTMTMÂαMl>?pwe%%%+%-ÀTMTMÂαMl>?p?ÿ(€OWWW%:†ªjª`de-bit
€}ÀíTMTMÂαMÁ@fg>?pwg%%%,ÀíTMTMÂαMÁ@fg>?p>?p(€OWWW%:†ªjª`KSets
the Frame Relay DE bit field in the Frame Relay cell header for FRF.5 P•j@
and FRF.8 service interworking.
€}ÀÿÿÀ`?ÿl>?pwi
EF%/ÀÿÿÀ`?ÿl>?p?ÿEW€OWWW%:†ªjª`encapsulation aal5
€}ÀÿÿÀ`?ÿÁ@fg>?pwk
EF%.%0ÀÿÿÀ`?ÿÁ@fg>?p>?pEW€OWWW%:†ªjª`BConfigures the AAL and
encapsulation type for an ATM PVC, SVC, VC P•j@class, or VC bundle.
€}ÀÿÿÀ{ÿl>?pwmEF%/1ÀÿÿÀ{ÿl>?p?pEW€OWWW%:†ªjª`

```

frame-relay P•j@interface-dlci switched
€}ÀûÿÿÀ{ÿÁ@fg>?pwoEF%0%2ÀûÿÿÀ{ÿÁ@fg>?pÿÿEWEO%W%+a%ja`/Indi
cates that a Frame Relay DLCI is switched.
€}ÀÿÿÿÀ-¿ûl>?pwwq
EF%1%3ÀÿÿÿÀ-¿ûl>?pÿÿEWEO%W%+a%ja`pvc
€}ÀûÿÿÿÀ-¿ûÁ@fg>?pws
EF%2%4ÀÿÿÿÿÀ-¿ûÁ@fg>?p>?pEWEO%W%+a%ja` JCreates or assigns a name to
an ATM PVC, specifies the encapsulation type P•j@>on an ATM PVC, or enters
interface-AMT-VC configuration mode.
€}ÀÿÿÿÿÀ+ÿùl?ÿww
EF%3%5ÀÿÿÿÿÀ+ÿùl?ÿÿEWEO%W%+a%ja` vc-group
€}ÀûÿÿÿÿÀ+ÿùÁ@fg?ÿww
EF%4ÀûÿÿÿÿÀ+ÿùÁ@fg?ÿÿEWEO%W%+a%ja`2Assigns multiple Frame Relay
DLCIs to a VC group.

AdÃw%8%87€}Á

€Âc<kÁ3ý?ÿöMfz%Á

€Âc<KÁ3ý?ÿ?ÿfLf;W,3†ª%jªaJThis command was integrated into Cisco
IOS Release 12.2(33)S BCF. B
²ffQÂ
TMTMÂw,,%6²ffQÂ
TMTMÂ%
%E^^[ŠìàRìí

ÂzÂôs~-7-<ÕT€...ÂzÂôs~-7-
<ÕT%ÿÿ%;;W, \$†^{a a}†^{a a}lÀæWAN-3Àç
²ffÂñ"ÄÄ
¹€†
%;%>%D%;%>²ffÂñ"ÄÄ
¹Ä>xÂñ"Ä²ffÂñ"Ä²ffÂñÀ´j^~€†
%=%?%D%=%?²ffÂñÀ´j^~¼÷bÂé33ÁÎŠ%i€^

□%>%A%D%>%A□□¼÷bÂé33ÁÂÏŠ%ï□□□□%@@-□□□□□□□1□□□

¼÷bÂé33ÁÂÏŠ%i□□□□€%□
□□□□¼÷bÂé33ÁÂÏŠ%i□†ÿp□□□□□□□□□□%?□□□□□W,
"...UT...UT□□□h;□□Àè□Cisco IOS Wide-Area Networking Command Reference□□Àé□
□»q9Âô,QÁ□k†%i□□□□€Š□

□%?%D%D%?□□□»q9Âô , QÁ□k†%ï□□□□%B%B . □□□□□□□□1□□□

»q9Âô, QÁk+‰i€<

»q9Âô, QÁk+‰i+ÿp%A W, : "...UT...UThÀê March 2011Àë

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äA-¹€E%A²ffÄé33Ä
äA-¹%
%A\$QÄ
TMÄw'C\$QÄ
TMÄ%8%N<3^{
 ŠÏÏÀRÏÍ€}ÄíTMÄ^¼^ÁD??ÿÉ^ES%ÄíTMÄ^¼^ÁD??ÿ?ÿL€~
,W€†^a%j^a `This command was introduced.
€}ÄTMÄ)ôl?ÿöV
f_%JÄTMÄ)ôl?ÿ?ÿ„6g<WŽ†^a%j^a `Command
€}ÄíTMÄ}<KÁ@ff?ÿÓ™„C^6%xÄíTMÄ}<KÁ@ff?ÿ?ÿ...}BWS)†^a%j^a `JThis
command was modified. The ŠÏsplit-horizon Š keyword was added.
²ffQÄ
TMÄî%²ffQÄ
TMÄ#EH^ (ŠÏÏÀRÏÍ€}ÄíTMÄ)ôÁD??ÿöx
f_%GÄíTMÄ)ôÁD??ÿ?ÿ„6g<WŽ†^a%j^a `

Description

ÀTMÀïÁ°[°]ÂNêó%M<ÀTMÀïÁ°ÂNê%ÿÿ%Q,1W†v†^a†^a
a d

□□Âd□□Ã□□□□□□w> □□□□□□□□□□%N%N9□□□□□□□□□□

□□Âd□□Ã□□□□□w£□□□□□□□□□□%Q%Q:□□□□□□□□ ²ffQÂ
™™™Â□□□□□wž□□□%L□□□□□ ²ffQÂ
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      fl□?ÿ□?ÿ□□□€□□,□□W€
□†^a%j^a□□□`□Command
€}Àí™™™ÁD/
Á@ff□?ÿ□□□Óî□□€ ,fW%p□□□Àí™™™ÁD/
Á@ff□?ÿ□?ÿ□□€I€
□□)□W%]□†^a%j^a□□□`,A name for this local switching connection.
□$QÂ
™™™À□□□□□□w|□□%M□□□□□$QÂ
™™™À□□□□%NŠ□^V%K  □□□□□□ŠììÀRìí□□□€}À□™™™Àó/□l□?ÿ□□□w±□
€(□%S□□□À□™™™Àó/□l□?ÿ□?ÿ□□□+€R□□□□W%"
†^a%j^a□□□`□connection-name
€}Àí™™™Àó/□Á@fg□?ÿ□□□w³□
€(□R%T□□□Áí™™™Áó/□Á@fg□?ÿ□?ÿ□□□+€R□□□□W%#□†^a%j^a□□□`ESpecifies a connection name.
Enter as a 15-character maximum string.
€}À□™™™Á□o□l>?p□□□wµ□
€(%S%U□□□À□™™™Á□o□l>?p□?ÿ□□□+€R□□□□W%$
†^a%j^a□□□`
FR-interface
€}Àí™™™Á□o□Á@fg>?p□□□w.□
€(%T%V□□□Áí™™™Á□o□Á@fg>?p>?p□□□+€R□□□□□%□†^a%j^a□□□ BSpecifies the Frame Relay
interface type and number, for example, R:•j©□□□@□serial1/0□□  ß□.
€}À□™™™Á□-□l>?p□□□w¹□
€(%U%W□□□À□™™™Á□-□l>?p□?ÿ□□□+€R□□□□W%&
†^a%j^a□□□`□FR-DLCI
€}Àí™™™Á□-□Á@fg>?p□□□w»□
€(%V%X□□□Áí™™™Á□-□Á@fg>?p>?p□□□+€R□□□□□%'□†^a%j^a□□□ HSpecifies the Frame Relay
data-link connection identifier (DLCI) in the P•j©□□□@□range 16 to 1007.
€}À□™™™Á8i
l□?ÿ□□□w½□
€(%W%Y□□□À□™™™Á8i
l□?ÿ□?ÿ□□□+€R□□□□W%(
†^a%j^a□□□`

```

ATM-interface

€}Àí™™Á8i

Á@fg□?ÿ□□□w¿□

€(%X%Z□□□Àí™™Á8i

Á@fg□?ÿ□?ÿ□□□+€R□□□□W%)□†^a%j^a□□□`K Specifies the ATM interface type and number,
for example □□ p□atm1/0□□ ß□.

€}À□™™ÁH/

l > ?p□□□wÁ□
E(%Y%[□□□À□™™ÁH/

l > ?p□?ÿ□□□+€R□□-□W%*
† a a%j a□□□ `

ATM-VPI/VCI
€}Àí™™ÁH/

Á@fg>?p□□□wÃ□
E(%Z%\□□□Àí™™ÁH/

Á@fg>?p>?p+€R-%%+†ªja ESPECIFIES the ATM virtual path identifier/virtual channel identifier P•j@<(VPI/VCI). If a VPI is not specified, the default VPI is 0.

€}À™Áco

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€(%[%]À™Áco

l?ÿ?ÿ+€Rw%,

†ªja`service-interworking

€}À™Áco

Á@fg?ÿwÇ

€(%\À™Áco

Á@fg?ÿ?ÿ+€Rw%-†ªja`&SPECIFIES FRF.8 service interworking.

€}À™Á¼Tl?ÿwİ(€(%_À™Á¼Tl?ÿ?ÿ)€S W%3†ªja`Release

€}À™Á¼TÁ@fg?ÿwÑ(€(%^`À™Á¼TÁ@fg?ÿ?ÿ)€S W%4†ªja`

Modification

€}À™Ádüs1?ÿwÓ(€(%_aÀ™Ádüs1?ÿ?ÿ)€S!W%5†ªja` 12.1(2)T

€}À™ÁdüsÁ@fg?ÿwÖ(€(%`bÀ™ÁdüsÁ@fg?ÿ?ÿ)€S!W%6†ªja`This command was introduced.

€}À™Á<Rl?ÿwx(€(%%cÀ™Á<Rl?ÿ?ÿ)€S" W%7†ªja`

Description

€}ÀÿÿÀÖ^#l?ÿwñ
EX%g%iÀÿÿÀÖ^#l?ÿ?ÿ"€T%W%J:†ª%j`clp-bit
€}ÀÿÿÀÖ^#Á@fg?ÿwó
EX%h%jÀÿÿÀÖ^#Á@fg?ÿ?ÿ"€T%W%K†ª%j`/Sets the ATM CLP field in the ATM cell header.
€}ÀÿÿÀž"l?ÿwó
EX%i%kÀÿÿÀž"l?ÿ?ÿ"€T&W%L:†ª%j`de-bit map-clp
€}ÀÿÿÀž"Á@fg?ÿw÷
EX%j%lÀÿÿÀž"Á@fg?ÿ?ÿ"€T&W%M†ª%j`0Sets the EFCI bit field in the ATM cell header.
€}ÀÿÿÀð!l>?pù
EX%k%mÀÿÿÀð!l>?p?ÿ"€T'W%N:†ª%j`encapsulation aal5
€}ÀÿÿÀð!Á@fg>?pù
EX%l%nÀÿÿÀð!Á@fg>?p>?p"€T'Q†ª%j`EConfigures the AAL and encapsulation type for an ATM PVC, SVC, or VC P•j@@class.
€}ÀÿÿÁ-l>?pwý
EX%m%oÀÿÿÁ-l>?p?ÿ"€T(W%P:†ª%j`pvc
€}ÀÿÿÁ-Á@fg>?pwý
EX%nÀÿÿÁ-Á@fg>?p>?p"€T(Q%Q†ª%j`?Creates an ATM PVC on a main interface or subinterface; enters P•j@@%interface-ATM-VC configuration mode.
€}À™ÁSo

l > ?p□□□Óđ□□□E, %P%q□□□À□™™ÁSo

l>?p□?ÿ□□€I€
□□*□W%^{^3†^a%j^a□□□`□type}
€}Àí™™ÁSo

Á@ff>?pÓðE,%p%rÀí™ÁSo

```

Á@ff>?p>?p
**%_†^aj NString that identifies the type of interface used to create a
local switching P.j@5connection; for example, serial or Gigabit Ethernet.
}ÀÁn
l>?pÓöE,%q%$ÀÁn
l>?p?ÿE
+W%`3†^aj`number
}ÀÁn
Á@ff>?pÓöE,%r%tÀÁn
Á@ff>?p>?pE
+%%a†^aj NInteger that identifies the number of the interface; for
example, 0/0/0.1 for P.j@-a Gigabit Ethernet interface.
}ÀÁ%ïï?ÿÓøE,%s%uÀÁ%ïï?ÿ?ÿE
, W%b3†^aj`
circuit-id
}ÀÁ%ïïÁ@ff?ÿÓúE,%t%vÀÁ%ïïÁ@ff?ÿ?ÿE
, W%c†^aj`9CEM group ID. This option is used for CEM circuits only.
}ÀÁ™/ïl>?pÓüE,%u%yÀÁ™/ïl>?p?ÿE
- W%d
†^aj`dlci

```


12.2(33)SRE

€}Àí™™Á™/Á@ff>?pÓp„C,%v%}Àí™™Á™/Á@ff>?p>?p€€

–%e†ª F(Optional) The data-link connection identifier (DLCI) assigned to the P•j@ interface.

€}Àí™™Á™|JÁ@ff>?pÓ„,C%{Àí™™Á™|JÁ@ff>?p>?p...}CŠ+†ª A This command was modified. Support for this command was added in P•j@&MAC-in-MAC tunnel configuration mode.

€}À™™Á\$¼Hl>?pÓŸ„,C%z%|À™™Á\$¼Hl>?p>?p...}DŠ,†ª

Cisco IOS XE P•j@

Release 3.2S

€}Àí™™Á\$¼HÁ@ff>?pÓ;„,C%{Àí™™Á\$¼HÁ@ff>?p?Ÿ...}DWŠ–†ª`<This command was integrated into Cisco IOS XE Release 3.2S.

€}À™™Á´o1>?pÔ„,yŠÀ™™Á´o1>?p?Ÿ€€

•.W%f

†ª`pvc

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?ÿ??...
~??E?WšB?†^a%j^a????`?Command
?^ffQÂ
TMTMÂ?????x????%~?????^ffQÂ
TMTMÂ?????Qš2<B<) ? ????šììÀRìí????€}ÀTMTMÂ[?+l??ÿ????ôó?
f3?š1????ÀTMTMÂ[?+l??ÿ??ÿ??,!???,C?Wž??†^a%j^a????`?Command
€}ÀíTMTMÂ´o?Á@ff>?p????ô????€,%)š????ÀíTMTMÂ´o?Á@ff>?p>?p????€
??..??%g?†^a%j^a???? J(Optional) The permanent virtual circuit (PVC) assigned to
the interface, P•j@????@Iexpressed by its vpi/vci (virtual path and virtual
channel identifiers).
€}ÀTMTMÂí-?l??ÿ????ô????€,ššš????ÀTMTMÂí-?l??ÿ??ÿ????€
??/?W%h
†^a%j^a????`?pvp
€}ÀÿÿÁç°@ÁEWÁ??ÿ????ó°??...??%š????ÀÿÿÁç°@ÁEWÁ??ÿ??ÿ??...
~??E?WšC?†^a%j^a????`

Description

€}ÀÿÿÁ+ð?1>?pÓ¼...ŠŠÀÿÿÁ+ð?1>?p>?p...
~FÆW:†ª%jª

```
bridge-domain R0•j@#####(### pconfig### #)
€}Àí™™ÁĪ~Á@ff?ÿ####Ô####€ ,ŠŠ#####Àí™™ÁĪ~Á@ff?ÿ?ÿ####€
##/W%i†^a%j^a###`H(Optional) The permanent virtual path (PVP) assigned to the
interface.
€}À™™ÁPiłÀ\?ù####Ô####€ ,ŠŠ#####À™™ÁPiłÀ\?ù?ÿ####€
##0W%j
†^a%j^a###`interworking ip
€}Àí™™ÁPi~Á@ffÀ\?ù####Ô
##€ ,ŠŠ #####Àí™™ÁPi~Á@ffÀ\?ùÀ\?ù####€
##0##%k†^a%j^a### L(Optional) Specifies that this local connection enables
different transport 0•j@#####Vtypes to be switched locally ##
```


and causes IP packets to be extracted from the attachment circuit and sent over the pseudowire. Attachment circuit frames that do not contain IPv4 packets are dropped.

This keyword is not necessary for configurations that locally switch the same transport type, such as ATM to ATM, or Frame

Relay to Frame Relay.

Example:

```
interface
```

```
  encapsulation atm
```

```
  local-connection
```

```
  transport ethernet
```

```
  local-connection L
```

(Optional) Specifies that this local connection enables different transport types to be switched locally and causes Ethernet frames to be extracted from the attachment circuit and sent over the pseudowire. Ethernet end-to-end transmission is assumed. Attachment circuit frames that do not contain Ethernet frames are dropped. In the case of VLAN, the VLAN tag is removed, leaving a pure Ethernet frame.

This keyword is not necessary for configurations that locally switch the same transport type, such as ATM to ATM, or Frame

Relay to Frame Relay.

Example:

```
interface
```

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Kl□?ÿ□?ÿ□□€€

□□2□W%u□t^a%j^a□□□`□Release

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KÁ@ff□?ÿ□□□ô□□□□/Š

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□□□ÀûÿÿÀ|

KÁ@ff□?ÿ□?ÿ□□€€

□□2□W%v□† a a%j a □□□`

Modification

€}À ÿÿÀµMJl□?ÿ□□□ô□□□□/Š

ÀÿÿÀµMJ1?ÿ?ÿ€€

□□3□W%w□†^a%j^a□□□`

12.0(27)S

€}ÀûÿÿÀµMJÁ@ff□?ÿ□□□ô-□□□/Š

Š□□□□ÀûÿÿÀµMJÁ@ff□?ÿ□?ÿ□□€D€

3W%x†ª%ja`2This command was introduced for local switching.
€}ÀÿÿÄÄI1?ÿÔ /Š

Š□□□□À□ÿÿÀÄ□I□l□?ÿ□?ÿ□□€€€

4W%y†ª%ja`

12.2(25)S

€}ÀûÿÿÄÄIA@ff?ÿ" /ŠŠÀûÿÿÄÄIA@ff?ÿ?ÿ€€

4W%z†ª%ja`>This command was integrated into Cisco IOS Release 12.2(25)S.
€}ÀÿÿÀÓÍH1?ÿÔ\$Œ/ŠŠÀÿÿÀÓÍH1?ÿ?ÿ€€

□□5□W%{□†^a%j^a□□□`

12.0(30)S

€}ÀûÿÿÀÓÍHÁ@ff□?ÿ□□□ô&□□□/ŠŠ□□□□ÀûÿÿÀÓÍHÁ@ff□?ÿ□?ÿ□□€D€

5W%|+^a%ja`>This command was integrated into Cisco IOS Release 12.0(30)S.
}ÀÿÿÃ
Gl?ÿô(/ŠŠÀÿÿÃ
Gl?ÿ?ÿ€

□□6□W%}□†^a%j^a□□□`

12.2(28)SB

€}ÀûÿÿÃã

GÁ@ff□?ÿ□□□ô*□□□/Š□Š□□□□ÀûÿÿÃã

GÁ@ff□?ÿ□?ÿ□□€€€

6W%~†ª%ja`?This command was integrated into Cisco IOS Release
12.2(28)SB.
}ÀÿÿÀðMF1?ÿô, /ŠŠÀÿÿÀðMF1?ÿ?ÿ€€

0070W%00† a%j a 000`

12.4(11)T

€}ÀûÿÿÀðMFÁ@ff0?ÿ000ô.000/ŠŠ0000ÀûÿÿÀðMFÁ@ff0?ÿ0?ÿ00€DE

7wŠ†ªja`>This command was integrated into Cisco IOS Release 12.4(11)T.
€}ÀÿÿÁE1?ÿÔ0/ŠŠÀÿÿÁE1?ÿ?ÿ€€

8wŠ†ªj`

12.2(33)SRB

€}ÀûÿÿÁ□□EÁ@ff□?ÿ□□□Ô2□□□/Š□Š□□□□ÀûÿÿÁ□□EÁ@ff□?ÿ□?ÿ□□€€

8WŠ†ª%ja`@This command was integrated into Cisco IOS
Release 12.2(33)SRB.
€}ÀÿÿÁÍDl?ÿÔ4/ŠŠÀÿÿÁÍDl?ÿ?ÿ€€

□□=□wŠ□□† a a%j a □□□`

12.2(33)SXH

€}ÀûÿÿÁÍÁ@ff?ÿÔ6/ŠŠÀûÿÿÁÍÁ@ff?ÿ?ÿ€€

WŠ†ª%jª`@This command was integrated into Cisco IOS
Release 12.2(33)SXH.
}ÀÿÿÁ
Cl>?pô8/ŠŠÀÿÿÁ
Cl>?p>?p€€

```
00>00Š00†ª%jª000  
Cisco IOS XE P•j©000@
```


Release 2.5

€}ÀÛÿŸÁ

CÁ@ff>?pô: /ŠŠQÀÛÿŸÁ

CÁ@ff>?p?ÿ€€

²ffÁLü`Â

™™ÀTÿúó¹%~<Š,²ffÁLü`Â

™™ÀTÿúÀTÿú>@^GŠ,;@^B^D^F

²ffQÂ

TM™□□□□ê´□□^;□^1□□□²ffQÂ

TM™□□□□□□□□□□□□□□^=□d□□□□□W†Y□


```
clear vpdn ^ tunnel pppoe
```

AdÃÁBŠŠF<€}Àú_ěÁKR ÁBíe?ÿ+™„^PŠ*Àú_ěÁKR
ÁBíe?ÿ?ÿ„QEZHWfP†ª%jª`Interface type.

²ffÁ...ü[Â

™™™ÀTÿúöööÃ%LŠ'Š+²ffÁ...ü[Â

™™™ÀTÿúÀTÿú<^^^\$%N,*^^^!#€}ÀÿÿÁZ'-

Àj_ì?ÿ±>„Š&Š9ÀÿÿÁZ'Àj_ì?ÿ?ÿ„QEZIWS!

†ª%jª`number

²ffÁ½üzÀRìíïïïïïó°ïï%~Š"...zïïï²ffÁ½üzÀRìíïïïïïïïïïïïïïïïŠ, <ïïïïïW^
ï†ªŠ™Äïïïïdï

Description

Ad - , Š2Š2=€}À™™ÀIç1?ÿÉ-
SS. Š5À™™ÀIç1?ÿ?ÿT€, W

† a % j a □ □ □ `

lz entropy

€ } Ì í ™ ™ Á [@ ÷ Á D □ □ □ ? ÿ □ □ □ ó õ □

f 3 Š □ € N □ □ □ Ì í ™ ™ Á [@ ÷ Á D □ □ □ ? ÿ □ ? ÿ □ □ „ ! □ □ □ , C □ W Ž □ □ † a % j a □ □ □ `

Description

Q^

TM^--...Š/ Q^

TM^Š <

<+< ŠÏÀRÍ

□□Âd□□Ã□□□□□□³

:†ª%jª parameter-map type P•j©@ªwaas
€}Àí™™Â"%;ÁD>?pÉœŠŠ;Àí™™Â"%;ÁD>?p?ÿT€,
W€†ª%jª`&Defines a WAAS Express parameter map.

\$Â@ÚfÂ

™™žp□□□iú□□%C^y^{□□□\$Â@ÚfÂ

™™žpžp□□□□□□□□:□□‡□^□%E, □□□‡□^□□□□

WCE t a a % j a ` `
tfo optimize
e } A y y A i / A l e a ? p A \ + S M A y y A i / A l e a ? p ? y ... u e u \ W <
t a a % j a ` ` class-map-name
e } A u y y A U B i A D ? y + s , S : S G A u y y A U B i A D ? y ? y f] e n J W S M t a a % j a ` `
Modification
\$ Q A
T M T M A A E S % \$ Q A
T M T M A <
< - < 2 S i i A R i i e } A y y A e h j ? y + c , S E S T A y y A e -
h j ? y ? y f] e n K W S N t a a % j a ` ` 10.3
e } A i T M T M A \ I A D ? y E " S S C A i T M T M A \ I A D ? y ? y T e ,

WE+^%j`)Configures compression for WAAS Express.


```

ÀÿÿÂ ënÁ°À- 'öç%LŠIÀÿÿÂ
ënÁ°À- 'ÄvDb%N,.†g+†UTŠÄdFRF.5: Example
†h†a™o†dKThe following example sets the CLP field in the ATM header to 1
for FRF.5:
†i(...UT@ÁdFRouter(config)#
connect network-1 vc-group network-1 ATM3/0 1/35
†j3¿d$Router(config-frf5)#
clp-bit 1
†k+†UTÀK½dFRF.8: Example
†l†aÄYi†dKThe following example sets the CLP field in the ATM header to 1
for FRF.8:
†m(...UTÀi™°dTC3640(config)#
connect service-1 Serial1/0 16 ATM3/0 1/32 service-interworking
Q†nÄs™,†d#C3640(config-frf8)#
clp-bit 1

```

AdÃt<-<-@e}Ã™Ã/Àlèα?ÿÇ

^<ŠfÀ™™À/Àlèα?ÿ?ÿ†k€yccW<&
†ª%jª`closed-connections
€}Àüè>Àİ/Ácc ?pÁ^†ŠDÀüè>Àİ/Ácc ?p ?p...u€u\<†ª%jª`Name
of the class map.
Q<Šj@`=The only class-map type supported is Íwaas_global ß.
€}Àí™™À¹/ÁD>?pª
†`†=Š_Àí™™À¹/ÁD>?p?ÿ†€YQQWŠb†ª%jª`Ball tunnels with the
specified L2TP class name will be torn down.
€}ÀÿÿÁ`|^l?ÿÁg†ŠPÀÿÿÁ`|^l?ÿ?ÿ†Q€v]W<
†ª%jª`Release
€}ÀÿÿÁ`|^ÁDæf?ÿÁi†ŠŠRÀÿÿÁ`|^ÁDæf?ÿ?ÿ†Q€v]W<

□† a a%j a □□□`

Modification

€}À□ÿÿÁ;MA1□?ÿ□□□ô<□□□/Š□Š□□□À□ÿÿÁ;MA1□?ÿ□?ÿ□□€€€

□, □□wŠ□□† a a%j a □□□ ` 15.1(1)S

€} Ì ÿÿÁo%ll□?ÿ□□□Ák□□†□ŠPŠb□□□Á Ì ÿÿÁo%ll□?ÿ□?ÿ□□†Q€v□□^□W<□□† a a%j a □□□ ` 15.1(2)T

€} Ì ûÿÿÁ;MAÁ@ff□?ÿ□□□ô>□□□/ŠQ□□□Á Ì ûÿÿÁ;MAÁ@ff□?ÿ□?ÿ□□€D€

□,□□WŠ□□†^{a a%}j^a□□□`HThis command was modified. The □□ Ĥ□circuit-id□□ ß□
argument was added.
€}ÀùÿÿÁêhÁD□□□?ÿ□□□±«□□„□ŠGŠU□□□ÀùÿÿÁêhÁD□□□?ÿ□?ÿ□□f]€n□□K□WŠ□□†^{a a%}j^a□□□`□This
command was introduced.
€}ÀÿÿÿÁù_gj□?ÿ□□□±-□□„□ŠTŠV□□□ÀÿÿÿÁù_gj□?ÿ□?ÿ□□f]€n□□L□WŠ□□†^{a a%}j^a□□□`□12.2
€}ÀùÿÿÁù_gÁD□□□?ÿ□□□±`□□„□ŠU□□□□ÀùÿÿÁù_gÁD□□□?ÿ□?ÿ□□f]€n□□L□WŠ□□†^{a a%}j^a□□□`!This
command became unsupported.
€}ÀÿÿÿÁ[^]½-j□?ÿ□□□±¶□□„□□ŠX□□□ÀÿÿÿÁ[^]½-j□?ÿ□?ÿ□□„"€o□□M□WŠV9†^{a a%}j^a□□□`□Command
€}ÀùÿÿÁ[^]½-ÁD□□□?ÿ□□□±,□□„□ŠŠY□□□ÀùÿÿÁ[^]½-ÁD□□□?ÿ□?ÿ□□„"€o□□M□WŠW9†^{a a%}j^a□□□`

Description

```

€}ÀÿÿÂmý•j?ÿ±°„ŠXŠZÀÿÿÂmý•j?ÿ?ÿ„€oNWSX
+^%j^`encapsulation x25
€}ÀÿÿÂmý•ÁD?ÿ±;„ŠYŠ[ÀÿÿÂmý•ÁD?ÿ?ÿ„€oNWSY+^%j^`=Spec
ifies operation of a serial interface as an X.25 device.
€}ÀÿÿÂ}="j>?p±Á„ŠZŠ\ÀÿÿÂ}="j>?p?ÿ„€oOWSZ:+^%j^`x25 bfe-
decision
€}ÀÿÿÂ}="ÁD>?p±Æ„Š[Š]ÀÿÿÂ}="ÁD>?p>?p„€oOŠ[+^%j^`
GSpecifies how a router configured for X.25 BFE emergency decision will
P•j@participate in emergency mode.
€}ÀÿÿÂ~}'j>?p±È„Š\Š^ÀÿÿÂ~}'j>?p?ÿ„€oPWS\:+^%j^`x25 bfe-
emergency
€}ÀÿÿÂ~}'ÁD>?p±Í„Š]ÀÿÿÂ~}'ÁD>?p>?p„€oPŠ[+^%j^`
DConfigures the circumstances under which the router participates in
P•j@emergency mode.
€}À™™™Ào1?ÿ±æ
+`ŠNŠ`À™™™Ào1?ÿ?ÿ±€YORWSç +^%j^`tunnel id 00 Îtunnel-id
€}À™™™ÀoÁD?ÿ±æ-
+`Š_ŠaÀ™™™ÀoÁD?ÿ?ÿ±€YORWSd+^%j^`;The tunnel with the
specified tunnel ID will be torn down.
€}À™™™Àã~1?ÿ±æ
+`Š`ŠnÀ™™™Àã~1?ÿ?ÿ±€YSWSē +^%j^`local ip 00 Îip-address
€}ÀÿÿÂo%]ÁDaf?ÿ±Ám±ŠRÀÿÿÂo%]ÁDaf?ÿ?ÿ±QEv^W<+^%j^`This
command was introduced.
€}ÀÿÿÂ Ÿ1?ÿ±Áy±ŠdÀÿÿÂ
Ÿ1?ÿ?ÿ±0€w_W<+^%j^`Command
€}ÀÿÿÂ ŸÁÇÀ
?ÿ±{±ŠÇSeÀÿÿÂ ŸÁÇÀ
?ÿ?ÿ±0€w_W<+^%j^`

```

Description

```
€}ÀÿÿÂ,Ižl?ÿÁ}+ŠdŠgÀÿÿÂ,Ižl?ÿ?ÿ+0€w`W<+a%j`  
class-map  
€}Àî,5Å/Ác?ÿÇ^<ŠLŠmÀî,5Å/Ác?ÿ?ÿ+k€y`W<'+a%j`-  
Clears information about closed connections.  
€}ÀÿÿÂ,IžÁÀ  
?ÿÁ+ŠeŠhÀÿÿÂ,IžÁÀ  
?ÿ?ÿ+0€w`W<+a%j`?Defines a class map for matching packets to a  
specified class.  
€}ÀÿÿÂ;%l?ÿÁ+ŠgŠiÀÿÿÂ;%l?ÿ?ÿ+0€w`aW<-+a%j`  
match tcp  
€}ÀÿÿÂ;%ÁÀ  
?ÿÁf+ŠhŠjÀÿÿÂ;%ÁÀ  
?ÿ?ÿ+0€w`aW<+a%j`9Matches traffic based on the IP address or port  
options.  
€}ÀÿÿÂJÉœl>?pÁ...+ŠiŠkÀÿÿÂJÉœl>?p>?p+0€w`bW< +a%j`  
parameter-map type P•j@@waas  
€}ÀÿÿÂJÉœÁÀ  
>?pÁ+ŠjÀÿÿÂJÉœÁÀ  
>?p?ÿ+0€w`bW<!+a%j`+Configures WAAS Express global parameters.
```


Release 2.6

€}Àí™™Áw

@ÁD>?pæ:†`ŠwÀí™™Áw

@ÁD>?p?ÿ†;€qXWŠs†ª%jª` ;This command was integrated into Cisco IOS XE Release 2.6.

€}À™™Áèknl?ÿæA

†`ŠzÀ™™Áèknl?ÿ?ÿ†5€rYWŠx†ª%jªaCommand

€}Àí™™ÁèknÁD?ÿæC

†`ŠyŠ{Àí™™ÁèknÁD?ÿ?ÿ†5€rYWŠy†ª%jªa

Description

```

€}À™™Á÷«ml»?pæE
+`ŠzŠ|™™Á÷«ml»?p?ý+5ErZŴšz:†ª%jªa show l2tun session
€}À™™Á÷«mÁD»?pæG
+`Š{Š}™™Á÷«mÁD»?p>?p+5ErZŠ{†ª%jª!EDisplays the current state
of Layer 2 sessions and displays protocol P•j@A+information about an L2TP
control channel.
€}À™™Á÷«kls?ýæI+`Š|Š~™™Á÷«kls?ý?ý+5Er[Ŵš|:†ª%jª` show l2tun
tunnel
€}À™™Á÷«kÁD$?ýæK+`Š}™™Á÷«kÁD$?ý$?ý+5Er[Š}†ª%jª
IDisplays the current state of a Layer 2 tunnels and displays information
p•j@Dabout currently configured tunnels, including local and remote L2TP
@?hostnames, aggregate packet counts, and L2TP control channels.

```


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ïdï

\$QÂ

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TM TM 0000000000000000 Š F , T 000000 W 5 0

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\$ÃÑ/□Â
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™™™™Ãxÿ÷Ãxÿ÷□□□□□□□5□□†(†I%
,□□□□†(†D†F†H□□□€}Ã™™™™Ãðï□Ãlèα>?p□□□Ç□□□^<□<
□□□Ã™™™™Ãðï□Ãlèα>?p□?ÿ□□†k€y□□f□W<,
† a a%j a□□□`□token
€}Ãî,5Ãðï□ÁC□c>?p□□□Ç□□□^<<
<

EClears the WAAS Express configuration token used by the WAAS Central P•j@Manager (WCM).

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,S W3 (...UT...UTd
²ffQÂ
™™Â³Š4²ffQÂ
™™ÂŠ2ŠFŠ?<

□ □□□□ŠììÀRìí□□□€}À□™™Á

/Àlèœ?ÿÇ-^^<<
<À™™Á

/Àlèα?ÿ?ÿk€yggW<.
† a%j a`
statistics

\$\hat{A}^1 / \square \hat{A}\$

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TMžpžp□□□□□□□□8□□†s†v%E, □□□□†s†u□□□□

/ÁCç?ÿ Ç ^<<

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/ACc?y?y+keygW</+a%ja`%Clears all WAAS Express statistics.
e}ÀTMTMÁoÀlèæ>?pÇ"^^<<ÀTMTMÁoÀlèæ>?p>?p+keyh<0
+a%ja auto-discovery } [} blackP•j@
list }]
e}Àî,5ÁoÁc>?pÇ\$^^<<Àî,5ÁoÁc>?p>?p+keyh<1+a%ja
JClears autodiscovery and autodiscovery blacklist information for the WAAS
P•j@Express device.

□ † a Š™Ä□□□d□

Àlèα?ÿ□□□Ç*□□^<□<□□□À□™™ÁGï

Àlèα?ÿ?ÿ□□†k€y□□j□W<4
†^a%j^a□□□`□class
€}Àî,5ÁGi

ÁC□c□?ÿ□□□Ç,□□^<-< □□□Àî,5ÁGï

ÁC□c□?ÿ□?ÿ□□†k€y□□j□W<5□†ªª%jª□□□`&Clears the statistics for each class.
€}À□™™ÁW/
Àlèα□?ÿ□□□Ç.□□^<<<!□□□À□™™ÁW/
Àlèα□?ÿ□?ÿ□□†k€y□□k□W<6
†ªª%jª□□□`□dre
€}Àî,5ÁW/
ÁC□c□?ÿ□□□Ç0□□^<< <"□□□Àî,5ÁW/
ÁC□c□?ÿ□?ÿ□□†k€y□□k□W<7□†ªª%jª□□□`5Clears Data Redundancy Elimination (DRE)
statistics.
€}À□™™Áfo
Àlèα□?ÿ□□□Ç2□□^<<<!<5□□□À□™™Áfo
Àlèα□?ÿ□?ÿ□□†k€y□□l□W<8
†ªª%jª□□□`□global

ÀÿÿÁóërÁ°|ïöæ%~<<\$ÀÿÿÁóërÁ°|ï|ïŠ,?^
†^aŠ™Äd<The following example enables CMNS on Ethernet interface 0:
^

```
(...UTšDm□□□d□interface ethernet 0
Q^□□Dk□□□d
□cmns enable
```


²ffÀé/

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²ffÂ8 Â

™™ª ÿöè%~<\$<)²ffÂ8 Â

™™ª ÿªÿ?^H^KŠ,A^H^J

ÀÿÿÂd%Á°Àkvcööé%~<'ÀÿÿÂd%Á°ÀkvcšÿpŠ,B^†a†a
a d
Q^—a@d

À™Á%

Á°íóíŠ%(<4À™Á%

Á°ííŠF,YWk†ªŠÄdNo WAAS metrics are collected.

\$QÂ

TM TM öêš/Œ\$QÂ

TM TM Š2, CŒe

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ÀTMÁ³-#Á°^oï^oö^oŠ%<4<.ÀTMÁ³-#Á°^oï^oŠF,[W^oM^o†^aŠTMÄ
d@Flexible NetFlow flow record configuration (config-flow-record)
²ffQÄ
TMÄ^oÄ^wŠK^o²ffQÄ
TMÄ^oŠŠ@<8<: □ □□□□ŠìÀRìí□□□

\$Â¼SÀRÌÍïïïïïöýïïŠ%<D<0ïïï\$Â¼SÀRÌÍïïïïïïïïïïïïïïïŠF,^ïïïïïWïSï† a Š™Äïïïdï

À™™À¼SÁ°ÀBïöpŠ%</<1À™™À¼SÁ°ÀBïÀBïŠF,_T†^{a a}
Š™ÄdbUse the Ícollect waas x ßcommand to collect the various
metrics associated with WAAS.

U>™Ä\$^The Measurement, Aggregation, and Correlation Engine (MACE) measures
TCP and non-TCP traffic. pš™Ä_WAAS performs operations like compression on
the matched packet and stores the statistics in a database. MACE uses a
poll mechanism to receive the statistics collected by WAAS each time it needs
D'to prepare the records for exporting.

\$Âb«hÂ

TM.TM.£öÿŠ%<0<2\$Âb«hÂ

TM.TM.£.£ŠF,`V†^{a a}~M¼\$UIf a flow matches both global WAAS and MACE policies, MACE exports both pre-WAAS and p¼`post-WAAS metrics for the flow. If a flow matches the global MACE policy and does not match the @global WAAS policy, MACE does not export the post-WAAS metrics.

\$QÂ

TM™ □□□□êê□□%C□ < 6□□□\$QÂ

TM™ □□□□□□□□□□□□□□%E, □□□□□W‡, □

□□□l□□□À²□clear xot□□□À³□

□ □

□□local□□

□ □ \hat{I} ip-address port

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,bX†ªªªeBMetrics that are collected by MACE can be categorized as follows:
Y-ª©%\Metrics that are provided by the MACE engine, for example, the number of packets and bytes, fª"\Application ID, Differentiated Services Code Point (DSCP), System Resource Check (SRC), and ¥URªªE

MACE address.

Metrics that are provided by the ART engine, for example, network delay. These metrics are available only for TCP flows.

Metrics that are provided by WAAS, for example, DRE input bytes. These metrics are available only when WAAS is configured and MACE is monitoring the WAAS traffic.

```
ÀÿÿÁ°|ï÷ŠK†<;ÀÿÿÁ°|ï|ï<-  
,e^†ªŠÄe=The following example shows how to collect all WAAS  
metrics:  
_(...UTŠDm;Router(config)#  
flow record type mace my-waas-record  
Q`Dk2Router(config-flow-record)#  
collect waas all
```

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l%ÂÃconnect (Frame RelaÄy)
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†^a%j^a`l_z

Àlèæ?ÿ?ÿ†kEy^mW<:

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\$gTo define connections between Frame Relay permanent virtual circuits (PVCs),
use the `connect` command in global configuration mode.
To remove connections, use the `no` form of this command.
^ "a"dyconnect Ê connection-name interface dlci

```
{
i
interface dlci 1001 & 1001 | 1001    p12transport
```

```
}
C^|no
    connect Ê connection-name interface dlci
```



```
{
interface dlci      Ê  |  p12transport
```

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Š8<?<AÀ™Á@/Á°ïïŠ@,mW^%†ªŠÄd-No default
behavior or values

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lcmns enable
}Â,5Au- ACc?ÿÇ8^<=<IÂ,5Au-
ACc?ÿ?ÿ+kEyW<;†a%j`#Clears Lempel-Ziv (LZ) statistics.

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ÀÿÿQÁ°í'Š4Š?ÈÀÿÿQÁ°íí<
,JW†^aŠ™Ä@d@Flexible NetFlow flow record configuration (config-flow-
record)

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Description

```

€}ÀÿÿÀo1l?ÿÇ\^x<R<TÀÿÿÀo1l?ÿ?ÿ €{sW<R  †ª%jª`
debug waas
€}ÀÿÿÀoÁÀ
?ÿÇ^x<S<UÀÿÿÀoÁÀ
?ÿ?ÿ €{sW<S†ª%jª`CDisplays debugging information for different WAAS
Express modules.
€}ÀÿÿÀp-1l?ÿÇ`^x<T<VÀÿÿÀp-1l?ÿ?ÿ €{tW<T  †ª%jª`show waas
alarms
€}ÀÿÿÀp-ÁÀ
?ÿÇb^x<U<WÀÿÿÀp-ÁÀ
?ÿ?ÿ €{tW<U†ª%jª`)Displays WAAS Express status and alarms.
€}ÀÿÿÀi1l>?pÇd^x<V<XÀÿÿÀi1l>?p>?p €{u<V  †ª%jª`show waas
auto-P•j@
discovery
€}ÀÿÿÀiÁÀ
>?pÇf^x<W<YÀÿÿÀiÁÀ
>?p?ÿ €{uW<W†ª%jª`7Displays information about WAAS Express
autodiscovery.
€}ÀÿÿÀ>/1l?ÿÇh^x<X<ZÀÿÿÀ>/1l?ÿ?ÿ €{vW<X  †ª%jª`show waas
connection
€}ÀÿÿÀ>/ÁÀ
?ÿÇj^x<Y<[ÀÿÿÀ>/ÁÀ
?ÿ?ÿ €{vW<Y†ª%jª`5Displays information about WAAS Express
connections.
€}ÀÿÿÀªo1l>?pÇl^x<Z<\ÀÿÿÀªo1l>?p>?p €{w<Z  †ª%jª`show waas
statistics P•j@aaim
€}ÀÿÿÀªoÁÀ
>?pÇn^x<[<]ÀÿÿÀªoÁÀ
>?p?ÿ €{wW<[†ª%jª`DDisplays WAAS Express peer information and
negotiated capabilities.
€}ÀÿÿÀª-1l>?pÇp^x<\<^ÀÿÿÀª-1l>?p>?p €{x<\  †ª%jª`show waas
statistics P•j@

```

application
€}ÀÛÿÿÀÀ-ÁÇÀ
>?pÇr^x<|<_ÀÛÿÿÀÀ-ÁÇÀ
>?pÿ €{xW<|t^a%j^`5Displays WAAS Express policy application statistics.
€}ÀÿÿÀÀi1l>?pÇt^x<^<`ÀÿÿÀÀi1l>?p>?p €{y<^ t^a%j^ show was statistics P.j@auto-discovery
€}ÀÛÿÿÀÀi-ÁÇÀ
>?pÇv^x<_<aÀÛÿÿÀÀi-ÁÇÀ
>?pÿ €{yW<_t^a%j^`0Displays WAAS Express autodiscovery statistics.
€}ÀÿÿÀÛ/
l>?pÇx^x<`<bÀÿÿÀÛ/
l>?p>?p €{z<` t^a%j^ show was statistics P.j@class
€}ÀÛÿÿÀÛ/
ÁÇÀ
>?pÇz^x<a<cÀÛÿÿÀÛ/
ÁÇÀ
>?pÿ €{zW<a_t^a%j^`4Displays statistics for the WAAS Express class map.
€}ÀÿÿÁo
l>?pÇ|^x<b<dÀÿÿÁo
l>?p>?p €{b t^a%j^ show was statistics P.j@dre
€}ÀÛÿÿÁo
ÁÇÀ
>?pÇ~^x<c<eÀÛÿÿÁo
ÁÇÀ
>?pÿ €{W<c_t^a%j^`&Displays WAAS Express DRE statistics.
€}ÀÿÿÁ2- l>?pÇe^x<d<fÀÿÿÁ2- l>?p>?p €{|<d_t^a%j^ show was statistics P.j@errors
€}ÀÛÿÿÁ2- ÁÇÀ
>?pÇ,^x<e<gÀÛÿÿÁ2- ÁÇÀ
>?pÿ €{|W<e_t^a%j^` (Displays WAAS Express error statistics.
€}ÀÿÿÁMi1l>?pÇ,^x<f<hÀÿÿÁMi1l>?p>?p €{|<f t^a%j^ show was statistics P.j@global
€}ÀÛÿÿÁMi-ÁÇÀ
>?pÇt^x<g<iÀÛÿÿÁMi-ÁÇÀ
>?pÿ €{|W<g_t^a%j^`)Displays global WAAS Express statistics.
€}ÀÿÿÁi/1l?ÿÇ^x<h<jÀÿÿÁi/1l?ÿ?ÿ €{~W<h t^a%j^` show was statistics lz
€}ÀÛÿÿÁi/-ÁÇÀ
?ÿÇš^x<i<kÀÛÿÿÁi/-ÁÇÀ
?ÿ?ÿ €{~W<i_t^a%j^`%Displays WAAS Express LZ statistics.
€}ÀÿÿÁxo1l>?pÇe^x<j<lÀÿÿÁxo1l>?p>?p €{<j t^a%j^ show was statistics P.j@
pass-through
€}ÀÛÿÿÁxo-ÁÇÀ
>?pÇž^x<k<mÀÛÿÿÁxo-ÁÇÀ
>?pÿ €{W<k_t^a%j^`ADisplays WAAS Express connections placed in a pass-through mode.
€}ÀÿÿÁ"-1l>?pÇ^x<l<nÀÿÿÁ"-1l>?p>?p €{, <l t^a%j^ show was statistics P.j@peer
€}ÀÛÿÿÁ"-ÁÇÀ
>?pÇ' ^x<m<oÀÛÿÿÁ"-ÁÇÀ
>?pÿ €{, W<m_t^a%j^`HDisplays inbound and outbound statistics for peer WAAS Express devices.
€}ÀÿÿÁ@i1l?ÿÇ" ^x<n<pÀÿÿÁ@i1l?ÿ?ÿ €{, W<n_t^a%j^` show was status
€}ÀÛÿÿÁ@i-ÁÇÀ
?ÿÇ- ^x<o<qÀÛÿÿÁ@i-ÁÇÀ
?ÿ?ÿ €{, W<o_t^a%j^`%Displays the status of WAAS Express.
€}ÀÿÿÁ%.ÿl>?pÇ~ ^x<p<rÀÿÿÁ%.ÿl>?p>?p €{, W<p t^a%j^` show was

token

€}ÀûÿÿÁ¼.ÿÁÇÀ

>?pÇš^x<q<sÀûÿÿÁ¼.ÿÁÇÀ

>?p>?p €{, <q†^a%j^a GDisplays the value of the configuration token used by the WAAS Central P•j©@ Manager.

€}ÀÿÿÿÁÛñl?ÿÇæ^x<r<tÀÿÿÿÁÛñl?ÿ?ÿ €{, W<r †^a%j^a`waas cm-register url

€}ÀûÿÿÿÁÛñÁÇÀ

?ÿÇž^x<sÀûÿÿÿÁÛñÁÇÀ

?ÿ?ÿ €{, W<s†^a%j^a`2Registers a device with the WAAS Central Manager.

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\$bTo configure an FRF.5 one-to-one or many-to-one connection between two Frame
Relay end users over a@ian intermediate ATM network, use the
Íconnect ß command in global configuration mode. To remove a
ÿpL<connection, use the pno ß form of this command.Àì
^J ^a\$€connect Ê Íconnection-name ß{ Ñvc-group
Î group-name

```
|  fr-interface fr-dlci    }  atm-interface atm-vpi    p/
  vci
@a|  network-interworking
^K  AV^$yno connect    E  connection-name    {  ~vc-group
  group-name | fr-interface fr-dlci    }  atm-interface R
Ab^  D5atm-vpi    p/  vci    {  ~network-interworking
```


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e following example shows how to enable Frame Relay switching and define a
connection called 'a@DPðoneÓ between DLCI 16 on serial interface 0 and DLCI
100 on serial interface 1.
^>(…UTçURdframe-relay switching
Q^-UPd#connect one serial0 16 serial1 100

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enable the Connection-Mode Network Service (CMNS) on a nonserial
interface, use the `cmns enable` form of this command. To disable this capability, use the `no` form
of this command.

cmns enable
S+z¹URdno Ícmns enable

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ïïïïGlobal configuration

ÀÿÿÀ²;ûÁ°ÀGiô9%EEÀÿÿÀ²;ûÁ°ÀGiÀGi%If^m†ª
Š™Ä\$ÿUse the `connect` command to connect a group of Frame Relay
DLCIs to an ATM permanent virtual circuit (PVC).
^nš™Ä\$çTo connect to the Frame Relay DLCI that has been configured on the
interface, the Frame Relay DLCI `frame-relay interface-dlci` must be configured on the interface
using the `frame-relay interface-dlci` command.
Q^òÀD™ÀdpTo disconnect the FRF.5 interworking connection, use the `shutdown`
`shutdown` command in FRF.5 connect mode.

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□□□□Š2,D□□□□□□□□f□+a+a+a□□□□%nTo collect Application Response Time (ART) metrics, use the □□ Í□collect art□□ ß□ command in Flexible NetFlow □'a□□□□□□□□flow record configuration mode. To disable the collecting of ART metrics, use the □□

p□no□□ ß□ form of this □-ýp□□□□E command.

□Eg ^a§□□□□%€7collect art □□ ß□{□□ Ñ□all □□ ß□|□□ Ñ□ client □□ ß□{□□

Ñ□bytes□□ ß□ |□□ Ñ□ network time □□ ß□{□□ Ñ□maximum □□

ß□|□□ Ñ□ minimum □□ ß□|□□ Ñ□ sum□□ ß□} | □□ Ñ□packets□□ ß□} | □□

Ñ□count □□À@a|□□□□□€□{□□ Ñ□late responses □□ ß□|□□ Ñ□ new connections

□□ ß□|□□ Ñ□ responses histogram □□ ß□|□□ Ñ□ retransmissions □□ ß□|□□ Ñ□

transactions□□ ß□} |□□ Ñ□ □

µUQ□□□□□€□network time □□ ß□{□□ Ñ□maximum □□ ß□|□□ Ñ□minimum □□

ß□|□□ Ñ□ sum□□ ß□} | □□ Ñ□response time □□ ß□{□□ Ñ□maximum □□

ß□|□□ Ñ□ minimum □□ ß□|□□ Ñ□sum□□ ß□} □□°a|□□□□□€7|□□ Ñ□

server□□ ß□ {□□ Ñ□bytes □□ ß□|□□ Ñ□ packets □□ ß□| {□□

Ñ□network□□ ß□ |□□ Ñ□ response□□ ß□}□□ Ñ□ time □□ ß□{□□

Ñ□maximum □□ ß□|□□ Ñ□ minimum □□ ß□|□□ Ñ□ sum□□ ß□} |□□ Ñ□

total □□°a|□□□□Ev{□□ Ñ□response □□ ß□|□□ Ñ□transaction□□ ß□}□□ Ñ□

time □□ ß□{□□ Ñ□maximum □□ ß□|□□ Ñ□minimum □□ ß□|□□

Ñ□sum□□ ß□}}

□Eh Àz^aç□□□□%€?no collect art □□ ß□{□□ Ñ□all □□ ß□|□□ Ñ□ client □□

Ê□{□□ Ñ□bytes□□ Ê□ □□ ß□|□□ Ñ□ network time □□ ß□{□□ Ñ□maximum □□

ß□|□□ Ñ□ minimum □□ ß□|□□ Ñ□ sum□□ ß□} | □□ Ñ□packets□□ ß□} | □□

Ñ□count □□À+^a;□□□□□€□{□□ Ñ□late responses □□ ß□|□□ Ñ□ new connections

□□ ß□|□□ Ñ□ responses histogram □□ ß□|□□ Ñ□ retransmissions □□ ß□|□□ Ñ□

transactions□□ ß□} |□□ Ñ□ □

<UP□□□□□€□network time □□ ß□{□□ Ñ□maximum □□ ß□|□□ Ê□ □□ Ñ□minimum □□

ß□|□□ Ñ□ sum□□ ß□} |□□ Ê□ □□ Ñ□response time □□ ß□{□□

Ñ□maximum □□ ß□|□□ Ñ□ minimum □□ ß□|□□ Ê□ □□ Ñ□sum□□ ß□}

□□ýýùUR□□□□□€A|□□ Ñ□ server□□ Ê□ {□□ Ñ□bytes □□ ß□|□□ Ñ□ packets □□

ß□|□□ Ê□ □□ ß□{□□ Ñ□network□□ Ê□ |□□ Ñ□ response□□ ß□}□□ Ñ□ time

□□ ß□{□□ Ñ□maximum □□ ß□|□□ Ñ□ minimum □□ Ê□|□□ Ñ□ sum□□ ß□} |□□

Ñ□ total Pýýî^a"□□□□□€□{□□ Ñ□response □□ ß□|□□ Ê□ □□

Ñ□transaction□□ ß□}□□ Ñ□ time □□ ß□{□□ Ñ□maximum □□ ß□|□□ Ê□ □□

Ñ□minimum □□ ß□|□□ Ê□ □□ Ñ□sum□□ ß□}}

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ÀÿÿÁ-Á°ÁIîà÷)%%EÀÿÿÁ-Á°ÁIîàÁIîà-
 %If^q†ªŠ™Ä\$KThe following example shows how to create an FRF.5
 one-to-one connection (not using the `vc-group` `frf` keyword):

```

r\...UT|Dl)Router(config)#
interface serial0/0
s°DjER iouter(config-if)#
frame-relay interface-dlci 100 switched
t)R iouter(config-if)#
interface atm1/0
u)R iouter(config-if)#
pvc 0/32
v)FR iouter(config-if-atm-vc)#
encapsulation aal5mux frame-relay
w( Router (config-if-atm-vc)#

exit
x)Router (config-if)#
exit
y\QRouter(config)#
connect frf5 serial0/0 100 atm1/0 0/32 network-interworking
z)R iouter(config-frf5)#
clp-bit 1
{)R iouter(config-frf5)#
de-bit map-clp
|(
}†ªªÄ•™-)$hThe following example shows how to create an FRF.5 many-to-one
connection (using the vc-group frf keyword):

```

~\...UTÄ+DT)Router(config)#
 interface serial1/0
 Ä»DRER iouter(config-if)#
 frame-relay interface-dlci 100 switched
 %)(Router (config-if)#
 exit
 %)\&Router(config)#
 vc-group friends
 %)(Router(config-vc-group)#
 serial1/0 16 16
 %)(Router(config-vc-group)#
 serial1/0 17 17
 %)(Router(config-vc-group)#
 serial1/0 18 18
 %)(Router(config-vc-group)#
 serial1/0 19 19
 %)(Router (config-vc-group)#
 exit
 %)\&Router(config)#
 interface atm1/0
 %)(&R iouter(config-if)#
 pvc 0/32
 % FR iouter(config-if-atm-vc)#
 encapsulation aal5mux frame-relay
 %
 (Router (config-if-atm-vc)#
 exit
 %
)Router (config-if)#
 exit
 %

```
\dARouter(config)#  
connect frf5-v vc-group friends atm1/0 0/32  
A%  
d.R outer(config-frf5)#  
de-bit map-clp
```


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□□□l□□ÀÉ□conn□□ÀÊ□ec□□ÀË□t (FRF.5)

Description

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€}ÁfeÂ
ë_Á%ff?ÿÔS/EÁfeÂ
ë_Á%ff?ÿEK€V,WEb†^aa%j^a`3Enables PVC switching on a Frame Relay DCE
or NNI.

ÀÿŸŽ- Á°iôY(EÈÀÿŸŽ-
Á°iifW%0†^aŠÄdNo default behavior or
values.

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,N"†ªŠÄd_Use the Ícollect art x ßcommand to collect the various metrics associated with ART.

#>™Ä\$^The Measurement, Aggregation, and Correlation Engine (MACE) measures TCP and non-TCP traffic. §™ÄDBMetrics that are collected by MACE can be categorized as follows:

\$,™Äd\Metrics that are provided by the MACE engine, for example, the number of packets and bytes.

%ÄCÿü\$[Metrics that are provided by the ART engine, for example, network delay. These metrics are ÄU™¿D-available only for TCP flows.

&Äf™¼\$VMetrics that are provided by Wide Area Application Services (WAAS), for example, Data Är™½XRedundancy Elimination (DRE) input bytes. These metrics are available only when WAAS is ÄsÍE4configured and MACE is monitoring the WAAS traffic.

'Ä™»\$dMACE leverages the capabilities of the ART engine to collect measurements associated with TCP-based PÄ>™°Dapplications.

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1/connect (L2VPN local switch<ching)

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AdÃ)EQEH}ÀÿÿÂÛ/Áiff?ÿÿì;E"E.ÀÿÿÂÛ/ÁI
ff?ÿ?ÿ^,
WE†^%j^`#(Optional) Specifies an ACR group.
€}ÀÿÿÂêc?ÿÿì;E-E/ÀÿÿÂêc?ÿ?ÿ^,

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† a a j a `

group-number

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WCE-+a%ja`'Number of the group. The default is 0.
€}ÀÿÿÁ_nc?ÿ%Ï%;E1ÀÿÿÁ_nc?ÿ?ÿe, WCE%+a%ja`Release
€}ÀðÿÿÁ_nÁM?ÿÏ' ;E0E2ÀðÿÿÁ_nÁM?ÿ?ÿe, WCE&+a%ja`
Modification
€}ÀÿÿÁ-ÿmc?ÿÏ) ;E1E3ÀÿÿÁ-ÿmc?ÿ?ÿe, WCE'+a%ja`11.1CC
€}ÀðÿÿÁ-ÿmÁM?ÿÏ+ ;E2E4ÀðÿÿÁ-ÿmÁM?ÿ?ÿe, WCE(+a%ja`This
command was introduced.
€}ÀÿÿÁ»Ûlc?ÿÏ- ;E3E5ÀÿÿÁ»Ûlc?ÿ?ÿe, WCE)+a%ja`

12.2(33)SRA

€}ÀðÿÁ»ßlÁM??ÿ??ÿ/??;€4€6??ÀðÿÁ»ßlÁM??ÿ??ÿ??e??,??W€*?+^a%j^a??`@This command was integrated into Cisco IOS Release 12.2(33)SRA.

€}ÀÿÿÁËkç\$?ÿ??ÿl??;€5€7??ÀÿÿÁËkç\$?ÿ??ÿ??e??,??W€+?+^a%j^a??`12.2SX

€}ÀðÿÿÁËkÁM??\$?ÿ??ÿl3??;€6€8??ÀðÿÿÁËkÁM??\$?ÿ\$?ÿ??e??,??€,?+^a%j^a??`LThis

command is supported in the Cisco IOS Release 12.2SX train. Support in

p•j@??Oa specific 12.2SX release of this train depends on your feature set,

platform, ??@and platform hardware.

€}ÀÿÿÁð_hç??ÿ??ÿl5??;€7€9??ÀÿÿÁð_hç??ÿ??ÿ??e??,??W€-?+^a%j^a??` 15.1(1)S

€}ÀðÿÿÁð_hÁM??ÿ??ÿl7??;€8??ÀðÿÿÁð_hÁM??ÿ??ÿ??e??,??W€.??+^a%j^a??`@This

command was modified. The ?? Ñ`acr?? ß keyword was added.

€}À`TMÁ{.èÀiÿð??ÿ??ÿl[??:€;??À`TMÁ{.èÀiÿð??ÿ??ÿ??j??,??W€P9+^a%j^a??`Command

€}Àë™ŽÁ{.èÁD??ÿ??ÿl]??:€:€<??Àë™ŽÁ{.èÁD??ÿ??ÿ??j??,??W€Q9+^a%j^a??`

Description

€}ÀTMÁŠñçÀiÿö?ÿ_{II}:€;€=TMÀTMÁŠñçÀiÿö?ÿ?ÿj, W€R:†^a%j^a`

aps protect

€}Àë™ŽÁŠñçÁD□□□?ÿ□□□Ìa□□:€<€>□□□Àë™ŽÁŠñçÁD□□□?ÿ□?ÿ□□j□□□,□□W€S□†ª%jª□□□`0Enable
s a POS interface as a protect interface.

€}À□™™Á™™@æÀiÿö□?ÿ□□□Ìc□□:€=€?□□□À□™™Á™™@æÀiÿö□?ÿ□?ÿ□□j□□□,□□W€T:†ª%jª□□□`

aps working

€}Àě™ŽÁ™@ǎÁD□□□?ÿ□□□İe□□:€>□□□□Àě™ŽÁ™@ǎÁD□□□?ÿ□?ÿ□□j□□□,□□W€U□†^a%j^a□□□`3Configu
res a POS interface as a working interface.

ÀÿÿÂT¼NÁ°À{C²÷=E(E+ÀÿÿÂT¼NÁ°À{C²žïEBf%o=†ªŠ™
ÄdOUse the Íconnect ß command to connect a Frame Relay DLCI to an ATM
PVC.
Q%>>™Äd`To disconnect the FRF.8 interworking connection, use the Í
Íshutdown ß connect subcommand.

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ÀTMÂiëiÁ°Àf-÷Š8EÀTMÂiëiÁ°Àf-
`iŠ@,u^:†^aŠÄ\$The following example shows how to define
a connection called Õfrompls1Ó with DLCI 100 on serial -TMÄDinterface 5/0.
^;(...UT|Dl+d+connect frompls1 Serial5/0 100 l2transport
W<†^a+TMÄd

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f3Š1ERÀ™™Äjîö1?ÿÿ,, !, JWŽ: † a %j a `

backup peer

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W^#†^aŠ™Ă@lÀĂ

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f3€N□□□□ÄíTM™ÄjîöÁD□□□?ÿ□?ÿ□□„!□□□,J□WŽ□□†ªª%ªª□□□`lConfigures a redundant peer for a pseudowire VC.

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+^Á°À°Ôç%ÿÿHf, WÇ\|+ a a + a a d
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\$mTo set the CPU threshold limit, use the Ícpu-threshold § command in
parameter-map configuration mode. 'a©DITo reset the threshold limit, use the
pno § form of this command.
<v "a"dd+cpu-threshold Ímaximum-threshold §
A<wdd.no cpu-threshold Ímaximum-threshold §

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Š/ÆGÆa□□□Àí™™Á;/

ÁD??ÿ?ÿ
j, jCollects all ART metrics.
}ÀÁJo
l?ÿã}
Š/É`ÉbÀÁJo
l?ÿ?ÿ
j, jk
t a%j aclient
}ÀÁÁJo
ÁD??ÿã
Š/ÉaÉcÀÁÁJo
ÁD??ÿ?ÿ
j, jEl t a%j aCollects ART client metrics.
}ÀÁÁY-
l?ÿãŠ/ÉbEdÀÁÁY-
l?ÿ?ÿ
j, jEm
t a%j abytes
}ÀÁÁY-
ÁD??ÿãfŠ/ÉcÉeÀÁÁY-
ÁD??ÿ?ÿ
j, jEn t a%j a/Measures the number of bytes sent by a client.
}ÀÁÁhí l?ÿã...Š/ÉdÉfÀÁÁhí l?ÿ?ÿ
j, -jEo
t a%j anetwork
}ÀÁÁhí ÁD??ÿã†Š/ÉcÉgÀÁÁhí ÁD??ÿ?ÿ
j, -jEp t a%j a%Collects ART client network metrics.
}ÀÁÁx/ol?ÿã%Š/ÉfÉhÀÁÁx/ol?ÿ?ÿ
j, jEq
t a%j atime
}ÀÁÁx/ÁD??ÿã<Š/ÉgÉiÀÁÁx/ÁD??ÿ?ÿ
j, jEr t a%j a)Collects ART client network time metrics
}ÀÁÁ†ol?ÿã%Š/ÉhÉjÀÁÁ†ol?ÿ?ÿ
j, jEs
t a%j amaximum
}ÀÁÁ†oÁD??ÿã%Š/ÉiÉkÀÁÁ†oÁD??ÿ?ÿ
j, jEt t a%j a*Measures the maximum client network time.
}ÀÁÁ-ol?ÿã`Š/ÉjÉlÀÁÁ-ol?ÿ?ÿ
j, !jEu
t a%j aminimum
}ÀÁÁ-ÁD??ÿã"Š/ÉkÉmÀÁÁ-ÁD??ÿ?ÿ
j, !jEv t a%j a4Measure s s the minimum client network time.
}ÀÁÁ¥i ol?ÿã•Š/ÉlÉnÀÁÁ¥i ol?ÿ?ÿ
j, "jEw
t a%j asum
}ÀÁÁ¥iÁD??ÿã-Š/ÉmÉoÀÁÁ¥iÁD??ÿ?ÿ
j, "jEx t a%j a(Measures the total client network time.
}ÀÁÁµ/ol?ÿã%Š/ÉnÉpÀÁÁµ/ol?ÿ?ÿ
j, #jEy
t a%j apackets
}ÀÁÁµ/ÁD??ÿã>Š/ÉoÉqÀÁÁµ/ÁD??ÿ?ÿ
j, #jEz t a%j a9Measure s s the number of packets sent by
client.
}ÀÁÁÄo ol?ÿã%Š/ÉpÉrÀÁÁÄo ol?ÿ?ÿ
j, \$jE{
t a%j acount
}ÀÁÁÄoÁD??ÿãÿŠ/ÉqÉsÀÁÁÄoÁD??ÿ?ÿ
j, \$jE| t a%j aCollects ART count metrics.
}ÀÁÁÓ-ol?ÿã;Š/ÉrÉtÀÁÁÓ-ol?ÿ?ÿ
j, %jE}
t a%j aolate

€}Àí™™ÁÓ-□ÁD□□□?ÿ□□□ãƒ□□Š/ƒsƒEu□□□Àí™™ÁÓ-□ÁD□□□?ÿ□?ÿ□□ƒ
□□□,%□Wƒ~□†ª%jª□□□a!Collects ART count late metrics.
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responses
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□□□,&□W□□□†ª%jª□□□a"Measures the number of responses.
€}À™™Áð/□l□?ÿ□□□ã©□□Š/ƒEvƒEx□□□À™™Áð/□l□?ÿ□?ÿ□□ƒ
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†ª%jª□□□a□new
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□□□,'□W□□□†ª%jª□□□a+Collects ART count new connection metrics.
€}À™™Áñÿl□?ÿ□□□ã-□□Š/ƒExƒEz□□□À™™Áñÿl□?ÿ□?ÿ□□ƒ
□□□,(□W□□
†ª%jª□□□a

†ª%ja"Collects the ART network metrics.
€}Àí™™Â\îùl?ÿãÄŠ/Àí™™Â\îùl?ÿ?ÿ
.,.W
ª%ja response
€}Àí™™Â\îùÁD?ÿãÇŠ/Àí™™Â\îùÁD?ÿ?ÿ
.,.Wª%ja. Collects the total ART response time metrics.
€}Àí™™Âl.øl?ÿãÉŠ/Àí™™Âl.øl?ÿ?ÿ
./W
ª%ja server
€}Àí™™Âl.øÁD?ÿãĚŠ/Àí™™Âl.øÁD?ÿ?ÿ
./Wª%ja!Collects the ART server metrics.
€}Àí™™Â{n÷l?ÿãÍŠ/
Àí™™Â{n÷l?ÿ?ÿ
.,.W
ª%ja total
€}Àí™™Â{n÷ÁD?ÿãĪŠ/
Àí™™Â{n÷ÁD?ÿ?ÿ
.,.Wª%ja Collects the total ART metrics.
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transaction

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□□□,1□W□□□†^a%j^a□□□a,Collects the total ART transaction metrics.

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Àÿÿ| -21?ÿ?ÿ<F, 2W†^%j^aRelease
€}Âÿÿ| -2ÁD?ÿãÝŠ4
Àÿÿ| -2ÁD?ÿ?ÿ<F, 2W†^%j^a
Modification
€}Àÿÿ<^11?ÿãßŠ4

15.1(4)M
This
command was introduced.
Command
`

Description

€}ÀÿÿÄÄëll?ÿöööãôš4ÀÿÿÄÄëll?ÿ?ÿ€ öö,5W.:+a%ja`
collect waas

€}ÀÿÿÄÄëlÁD?ÿöööãöš4ÀÿÿÄÄëlÁD?ÿ?ÿ€
ö,5W/|+a%ja`Collects the metrics provided by WAAS.

€}ÀÿÿÄÄ+kl>?pöööãø
š4ÀÿÿÄÄ+kl>?p?ÿ€ ö,6W0:+a%ja`flow record type mace

€}ÀÿÿÄÄ+kÁD>?pöööãú
š4ÀÿÿÄÄ+kÁD>?p>?p€ ö,6ö1|+a%ja KDefines the key and nonkey
fields that are collected and exported for flow P•j@record ö ßof ö
ßtype MACE.

À™™ÀžÿÁ°Á}nÞö^f_„5-À™™ÀžÿÁ°Á}nÞÁ}nÞ!„!fa€,,;†^{a a}
ŠÄ lThe following example shows how to configure a
Multiprotocol Label Switching (MPLS) xconnect with -™Ä@one redundant peer:
,<(...UT|Dl`+Router(config)#

```
□pseudowire-class mpls
□,=°Dj□□□`lRouter(config-pw-class)#□□□
```

```
encapsulation mpls
>
)?Router(config)#
```

```
interface serial0/0
, @Router(config-if)#
```

```
xconnect 10.0.0.1 100 pw-class mpls
,A`7Router(config-if-xconn)#
```

```
backup peer 10.0.0.2 200
```

```
B
```

The following example shows how to configure a local-switched connection between ATM and a frame relay network using Ethernet interworking. The frame relay network is backed up by an MPLS pseudowire.

```
D(...UTA%D\+Router(config)#
```

```
□pseudowire-class mpls
□,EÀ"DZ□□□`lRouter(config-pw-class)#□□□
```

```
encapsulation mpls
F4Router(config-pw-class)#
```



```
interworking ethernet
"  `
...%`RRouter(config)#
```

```
□connect atm-fr atm1/0 100/100 s2/0 100 interworking ethernet
□$
```

Router(config-if)#

```

backup peer 10.0.0.2 100 pw-class mpls
$
The following example shows how to configure a
pseudowire with two backup pseudowires:
$ (...ADM)"interface ATM4/0.1 point-to-point
$ ÂDK` pvc 0/100 l2transport
$` encapsulation aal5snap
$& xconnect 10.1.1.1 100 pw-class mpls
$` backup peer 10.1.1.1 101
$(` backup peer 10.10.1.1 110 priority 2
$(` backup peer 10.20.1.1 111 priority 9
Ž
+†UTÁ4D?`Cisco CMTS Routers: Example
Ž
†aÁ`JThe following example shows how to set a redundant peer for a
pseudowire.
Ž

```

```
(...UTÁRÄ<□□□`□cable 12vpn 0011.0011.0011
□Ž
Á\Ä:□□□`□ service instance 1 ethernet
□Ž
```

```
encapsulation default
xconnect 10.2.2.2 22 encapsulation mpls
backup peer 10.3.3.3 33
```


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†^aŠ™™Á□□□, f□□ÀŒ The following example shows an Ethernet interface configured for Ethernet, plus an ATM interface 0-™™Á□□□□hconfigured for AAL5 Subnetwork Access Protocol (SNAP) encapsulation. The □□ Íconnect□□ Ê□ □□ Š□command □□□Deallows local switching between these two interfaces and specifies the interworking type as IP mode.

□Š

(...UT²Dk□□□d)Router(config)# □□

```
□interface atm 0/0/0
□$
¼Di□□□d.Router(config-if)#□□□
```

```
pvc 0/100 l2transport
$ d<Router(cfg-if-atm-l2trans-pvc)#
```

```
encapsulation aal5snap
$
$-d4Router(config)#
```

```
interface fastethernet 6/0/0.1
  Šd4Router(config-subif)#
```



```
encapsulation dot1q 100
$ d
A^d^Router(config)#
```

```
□connect atm-eth-con atm 0/0/0 0/100 fastethernet 6/0/0.1 interworking ip
```



```

The following example shows how to define a map class named slow-vcs
and apply it to DLCI 100:
interface serial 0.1 point-to-point
frame-relay interface-dlci 100
class slow-vcs

```


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™™ÀR2÷ÀTÿú□□□□□□E□□% (‰-‰If
□□□% (‰*‰, □‰.‰0‰2‰4□□

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To configure an FRF.8 one-to-one mapping between a Frame Relay data-link connection identifier (DLCI) and an ATM permanent virtual circuit (PVC), use the `connect` command in global configuration mode. To remove a connection, use the `no` form of this command.

```
connect connection-name FR-interface FR-DLCI ATM-  
interface ATM-VPI/VCI  
service-interworking  
no connect connection-name FR-interface FR-DLCI ATM-  
interface ATM-VPI/VCI R  
service-interworking
```


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™™™ Ì□□÷À□□÷□□□□□□F□□%R%]℄Bf□□□□%R%T%V%X%Z%\□□□

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l>?p□□□ä¥□□Š%□:□<□□□À□ÿŸÁ6⁻

l>?p□?ÿ□□<□□
□,=□W□E
†^a%j^a□□□a□input
€}ÀûÿÿÁ6⁻

ÁD□□>?p□□□ä§□□Š%□;□=□□□ÀûÿÿÁ6⁻

ÁD<>?p>?p<>

,=F†^a%j^a!Ameasures the number of WAAS input bytes metrics, or LZ P•j©Acompression metrics

§, DRE

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l>?pääŠ%<>ÀÿŸÁQï

l>?p□?ÿ□□<□□
□,>□W□G
†^a%j^a□□□`□output
€}ÀûÿÿÁQï

ÁD□□>?p□□□ä«□□Š%□=□□□□ÀûÿÿÁQï

ÁD>?p>?p<

>H†ªj BMeasures the number of WAAS output bytes ß, DRE
metrics, or LZ P•j@compression metrics ß.

€}ÀÿÁ<Ul?ÿä³Š%@ÀÿÁ<Ul?ÿ?ÿ<D

,?W†ªj`Release

€}ÀÿÁ<UÁD?ÿäµŠ%?AÀÿÁ<UÁD?ÿ?ÿ<D

,?W†ªj`

Modification

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,@W†ªj` 15.1(4)M

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,@WQ†ªj`This command was introduced.

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ŠKDÀÿÁ\Á6l?ÿ?ÿ<:

□, A□W□a□†^a%j^a□□□a□Command
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ŠK□C□E□□□ÀûÿŸÁ\Á6ÁD□□□?ÿ□?ÿ□□<:□

□, A□w□b□t^a□%□j^a□□□a

Description

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ŠK0D0F0000ÀÿÿÁ10510?ÿ0?ÿ00<:0

□,B□W□c:†^a%j^a□□□a□flow record type mace
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ŠK□E□□□□ÀûÿŸÁ1□5ÁD□□□?ÿ□?ÿ□□<:□

□,B□W□d□†^a%j^a□□□a#Configures a flow record for MACE.
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€6□□`□□□À□ÿÿÀÛ/□l□?ÿ□?ÿ□□□p□
□, D□W□4
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group-number
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™™™™Â□□□□□□EQEV†8GET □□□□□□□ŠììÀRìí□□□□

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his command is disabled by default.

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To create Layer 2 data connections between two ports on the same router, use the `connect` command in `global` configuration mode. To remove such connections, use the `no` form of this command.

Syntax for 12.0S, 12.2S and 12.4T Releases

`connect` `connection-name` `type` `number` `circuit-id`

`connect` `connection-name` `type` `number` `circuit-id`

□[□□ î□dlci | pvc | pvp□□

□]□□ ̂□ type number circuit-id □□

□[□□ î□dlci | pvc □
ÀM*¥□□□DQ| pvp□□

□]□□ î□ □□

□[□□ Ñinterworking□□ ß□ □□ p□ip□□

□ | □□

p□ethernet□□

]
%X Ac*no \$no Íconnect Íconnection-name type number
circuit-id

□[□□ î□dlci | pvc | pvp□□

□]□□ ̂□ type number circuit-id □□

□[□□ î□dlci | □
Ào*£□□□DUpvc | pvp□□

□]□□ î□ □□

[[[interworking]]]]

□ | □□

p□ethernet□□

□]

□%Y□†UTÀ†ÕL□□□d7Syntax for Cisco IOS XE Release 2.5 and Later Releases

□%Z †^aÀ^a □□□d:connect□□ ℘ □ □ Î□connection-name type number type number

Q%[À³À³□□□d=no connect□□ ℘ □ □ Î□connection-name type number type number

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fW%p%r%t%v%}ŠŠŠ W%p†ªŠ™Ä@lÀ

ÀÿÿÁ%ü]Á°™i÷oESOQÀÿÿÁ%ü]Á°™i™iEVf8E†aŠ™Ä
`Use this command to set the threshold limit for the CPU device using WAAS
Express. WAAS Express P-™ÄDaccelerates the WAAS optimized flow if the
router's CPU utilization exceeds the configured limit.

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d:The following example shows how to set the CPU threshold:
E(...UTšDmD9Router(config)#
parameter-map type waas waas_global
QE DkD.Router(config-profile)#
cpu-threshold 70

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ªÑÑÑdÑ

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€6ÑGÑÑÑÑÑÀûÿÿÀÛ/ÑÁDÑÑÑÑ?ÿÑÑÑÑÑpÑ

Ñ,DÑWÑfÑ†ªªªªªjªªªªªª;Interchassis Redundancy Manager (ICRM) group number.ÑÑ ÑÑ

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Modification

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□,F□W□o□t^a%j^a□□□aIThis command w□□ ß□as□□ □□ introduced□□ ß□ on Cisco
7600 series routers.
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€6□□f□□□□ÀÿÿÂÇ □l□?ÿ□?ÿ□□□|□□□,G□W□y□t^a%j^a□□□a□Command
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\\To enable Interchassis Stateful Switchover (IC-SSO) for Multilink PPP (MLPPP)
sessions with 0'a@iMultirouter Automatic Protection Switching (MR-APS), use
the Íaps interchassis group ß command in @icontroller
configuration mode. To disable this functionality, use the p no ß
form of this command.
Š 'a§`aps interchassis group Ígroup-number
AŠ`no aps interchassis group

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™Ä uThe Íaps interchassis group ßcommand Í ßassociates
an Automatic Protection Switching (APS) group with 0-™Ä_an ICRM group
sessions across the routers and avoiding session renegotiation in case of
APS switchover. This command @Mcan only be used on routers that have SONET
controllers configured on them.
Qs;™Ä`bThe ICRM group number is configured on the router using the
Íinterchassis group ß command.

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o >enable Address Resolution Protocol (ARP) entries for static routing over
the Switched Multimegabit 0'ª©ªªªªxData Service (SMDS) network, use the
following variation of the Ê? Ëarp Ì command in global
configuration @Mmode. To disable this capability, use the
no Ì form of this command.
U 'ª§`larp Ì Îip-address smds-address Ñsmds Ê
CV`3no Ì Í arp Ì Îip-address smds-address Ñsmds

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ÀÿÁ-Á°ïï,1LW€!†^aŠÄ`L2TP class configuration

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ÀTMÁÑ^P*Á°^oï^oï^o€^;Wa†^aŠTMÄ`Global configuration

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™™ÀTÿúÀTÿú JSE^=JLNP

šÁëüVÀRìíï□□□□øî□□>Ž

À™ÁëüVÁ°™iøĐ>ŽŽÀ™ÁëüVÁ°™i™i€^?m† a Š™Ä
cThis command requires a 12-digit (48-bit) dotted-format SMDS address. It does
not support 15-digit P-™Ä@SMDS addresses.
□□

The following example creates a static ARP entry that maps the IP address 172.20.173.28 to the MAC address C141.5797.1313 on interface serial 0:

```
interface serial 0
static ip arp 172.20.173.28 C141.5797.1313
```

°Dj□□□`'arp 172.20.173.28 C141.5797.1313 smds
□□

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AdÃ(024^;AdÃ)35^<AdÃ*46^xAdÃ+57%
AdÃ ,68%6AdÃ-
79%CAdÃ.8:%LAdÃ/9;%MAdÃ0:=%~AdÃ3>@Š
%AdÃ1;>Š/AdÃ2=<Š4AdÃ7BDŠBAdÃ4<AŠK
AdÃ5@BŠ8AdÃ6A?ÆAdÃ9DFÆFAdÃ8?C%Ad
AdÃ=HJ/AdÃ:CGÆ(AdÃ;FHÆXAdÃ<GEÆ,Ad
AdÃ>EÆS

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CRC_CmdRefCommandB1_Body1.

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Ex2_Example2.
 CHFC_CellHeadFigCall . \$

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 CE_CmdEnv
 ,

 % Body Body .

 % CellBody .
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Ex3_Example3

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ExW2_ExampleWide2
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Ex1_Example1.
.
-3B1_Body1.
.
- . ff
A
8 ff

NT_NoteTable
z_UnivBoldNote\tB1_Body1.
À@e@ee™Qÿÿü
- CRD_CmdRefDefaults
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<x:xapmeta xmlns:x='adobe:ns:meta/' x:xaptk='XMP toolkit 2.8.1-28, framework  
1.5'>  
<rdf:RDF xmlns:rdf='http://www.w3.org/1999/02/22-rdf-syntax-ns#' xmlns:iX='http://ns.adobe.com/iX/1.0/'>  
<rdf:Description about='' xmlns:pdf='http://ns.adobe.com/pdf/1.3/' pdf:CreatorTool='FrameMaker 7.0'></rdf:Description>  
<rdf:Description about='' xmlns:xap='http://ns.adobe.com/xap/1.0/' xap:CreateDate='2000-04-27T06:41:48.0Z' xap:ModifyDate='2011-08-25T07:17:10.0Z' xap:MetadataDate='2011-08-25T07:17:10.0Z' />  
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