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Configuring DLSw Backup Peer Using an ISDN DDR Connection

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Introduction

The behavior of the Data Link Switching (DLSw) backup peer has changed from Cisco IOS® Software version 11.1. Prior to this version, the backup peer connection was torn down as soon as the primary peer became available. All the circuits across the backup peer then had to re-establish across the primary peer, resulting in end users losing their sessions.

The previous DLSw backup peer behavior could also cause the sessions to toggle up and down if instabilities in the network caused the primary peer connection to flap.

To overcome this, Cisco IOS Software release 11.1 introduced the *linger* parameter on the **dlsw remote-peer backup** command. If *linger=x* is specified (where x ranges from 0 to 1440 minutes), the backup peer remains connected for x minutes, after the primary peer connection is re-established, before it gets torn down. This time can be set for a duration long enough to prevent the connection from flapping unnecessarily.

If x=0, the peer behaves exactly as it did in releases prior to software release 11.1 code. In prior releases, the backup peer connection is torn down immediately once the primary peer is restored. If the *linger* parameter is not specified, the backup peer connection remains up indefinitely as long as there are circuits using it. Any new circuits, however, are established using the primary peer.

The *linger* parameter is as follows (where the linger value is expressed in minutes):

```
dlsw remote-peer 0 tcp ip address of backup peer backup-peer ip address of primary linger 0-1440
```

Before You Begin

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

Prerequisites

There are no specific prerequisites for this document.

Components Used

The information in this document is based on the software and hardware versions below.

- Two Cisco 2504s running Cisco IOS Software version 12.0(7)T.
- Cisco 7206 running 12.1(5)T1.

Note: Cisco IOS Software versions 11.1 and later should support this feature.

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live network, ensure that you understand the potential impact of any command before using it.

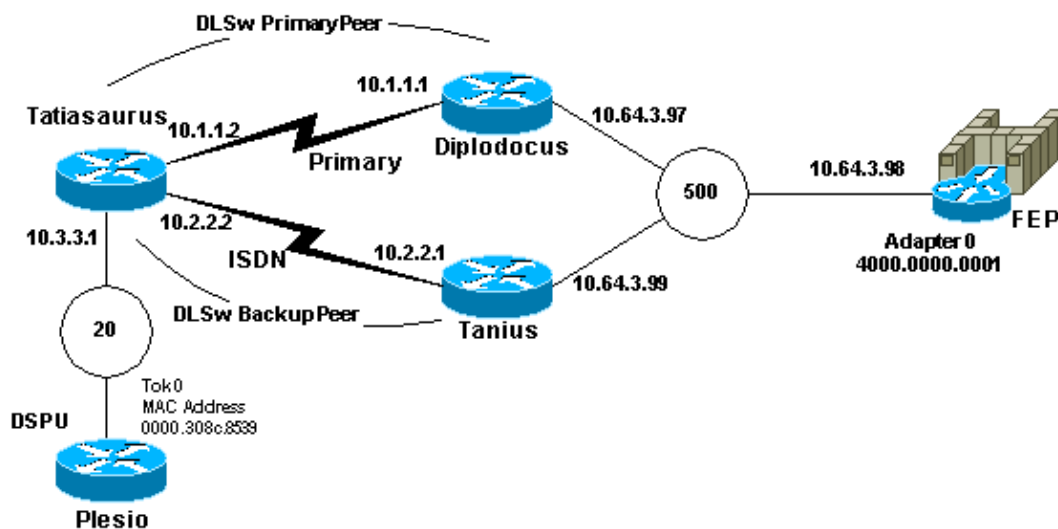
Configure

In this section, you are presented with the information to configure the features described in this document.

Note: To find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only) .

Network Diagram

This document uses the network setup shown in the diagram below.



Note: FEP and Plesio are not strictly relevant for the DLSw configuration. They are, however, used to provide the mainframe connectivity and generation of DLSw traffic through the Downstream Physical Unit (DSPU), respectively.

Configurations

The relevant parts of all the router configurations are shown below. Note that the dialer-list is set up to define only DLSW as interesting traffic, (port number 2065). Only DLSw traffic brings up the ISDN connection. If you prioritize within DLSw, it would also be necessary to specify port numbers 1981,1982, and 1983 as interesting traffic. Also, note the floating static routes in Tanius and Tatiasaurus pointing to the remote peer address through the Basic Rate Interface (BRI).

In this example, the backup router is Tanius while the primary peer router is Diplodocus. This is accomplished by issuing the **configuring dlsw remote-peer 0 tcp 10.64.3.99 backup-peer 10.64.3.97** command on Tatiasaurus. Notice the use of the **dlsw remote-peer 0 tcp 10.3.3.1** command on Diplodocus, while Tanius is running in promiscuous mode, **dlsw local-peer peer-id 10.64.3.99 promiscuous**.

```

FEP
version 12.1
service timestamps debug datetime
service timestamps log datetime
no service password-encryption
!
hostname FEP
!
!
microcode CIP flash slot0:cip27-8.bin
microcode reload
!
source-bridge ring-group 60
!
!
interface TokenRing0/1
ip address 10.64.3.98 255.255.255.240
no ip route-cache cef
no ip mroute-cache
ring-speed 16
source-bridge 500 1 60
source-bridge spanning
!
!
!
interface Channel5/0
no ip address
no keepalive

csna 0100 40
!
interface Channel5/1
no ip address
no keepalive
shutdown
!
interface Channel5/2
no ip address

lan TokenRing 0
source-bridge 600 1 60
adapter 0 4000.0000.0001
!
router eigrp 1
network 10.0.0.0
!
!
```

```
line con 0
exec-timeout 0 0
transport input none
line aux 0
line vty 0 4
exec-timeout 0 0
password cisco
login
!
end
```

Diplodocus

```
version 12.1
no service single-slot-reload-enable
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname diplodocus
!
source-bridge ring-group 1
dlsw local-peer peer-id 10.64.3.97
dlsw remote-peer 0 tcp 10.3.3.1
!
!
interface Serial1/0
ip address 10.1.1.1 255.255.255.0
no ip route-cache
no ip mroute-cache
!
!
interface TokenRing5/0
ip address 10.64.3.97 255.255.255.240
no ip route-cache
no ip mroute-cache
ring-speed 16
source-bridge 500 1 1
source-bridge spanning
!
!
!
router eigrp 1

network 10.0.0.0
auto-summary
no eigrp log-neighbor-changes
!
!
line con 0
exec-timeout 0 0
transport input none
line aux 0
line vty 0 4
password cisco
login
end
```

Tanius

```
Current configuration:
!
```

```

version 12.0
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname tanius
!
!
username tatiasaurus password 0 cisco
!
!
!
ip subnet-zero
!
isdn switch-type basic-ts013
isdn voice-call-failure 0
cns event-service server

!
source-bridge ring-group 8
dlsw local-peer peer-id 10.64.3.99 promiscuous
!
!
interface Serial0
no ip address
no ip directed-broadcast
no ip mroute-cache
shutdown
no fair-queue
!
interface Serial1
no ip address
no ip directed-broadcast
encapsulation sdlc
no keepalive
shutdown
!
interface TokenRing0
ip address 10.64.3.99 255.255.255.240
no ip directed-broadcast
ring-speed 16
source-bridge 500 1 8
!
interface BRI0
ip address 10.2.2.1 255.255.255.0
no ip directed-broadcast
encapsulation ppp
dialer map ip 10.2.2.2 name tatiasaurus broadcast
dialer-group 1
isdn switch-type basic-ts013
ppp authentication chap
!
router eigrp 1
network 10.0.0.0
!
ip classless
ip route 10.3.3.1 255.255.255.255 10.2.2.2 150
no ip http server
!
access-list 100 deny eigrp any any
access-list 100 permit tcp any eq 2065 any
access-list 100 permit tcp any any eq 2065
dialer-list 1 protocol ip list 100

```

```
!  
!  
line con 0  
exec-timeout 0 0  
transport input none  
line aux 0  
line vty 0 4  
login  
!  
end
```

Tatiasaurus

Current configuration:

```
!  
version 12.0  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
!  
hostname tatiasaurus  
!  
!  
username tanius password 0 cisco  
!  
!  
!  
ip subnet-zero  
!  
isdn switch-type basic-ts013  
isdn voice-call-failure 0  
cns event-service server  
!  
source-bridge ring-group 1  
dlsw local-peer peer-id 10.3.3.1  
dlsw remote-peer 0 tcp 10.64.3.97  
dlsw remote-peer 0 tcp 10.64.3.99 backup-peer 10.64.3.97  
!  
!  
interface Serial0  
ip address 10.1.1.2 255.255.255.0  
no ip directed-broadcast  
no ip mroute-cache  
clockrate 64000  
!  
interface Serial1  
no ip address  
no ip directed-broadcast  
shutdown  
!  
interface TokenRing0  
ip address 10.3.3.1 255.255.255.0  
no ip directed-broadcast  
ring-speed 16  
source-bridge 20 1 1  
source-bridge spanning  
!  
interface BRI0  
ip address 10.2.2.2 255.255.255.0  
no ip directed-broadcast  
encapsulation ppp  
dialer map ip 10.2.2.1 name tanius broadcast 94598140
```

```

dialer-group 1
isdn switch-type basic-ts013
ppp authentication chap
!
router eigrp 1
network 10.0.0.0
!
ip classless
ip route 10.64.3.99 255.255.255.255 10.2.2.1 150
no ip http server
!
access-list 100 deny eigrp any any
access-list 100 permit tcp any eq 2065 any
access-list 100 permit tcp any any eq 2065
dialer-list 1 protocol ip list 100
!
!
line con 0
exec-timeout 0 0
transport input none
line aux 0
line vty 0 4
!
end

```

Plesio

```

Current configuration:
!
version 12.0
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname plesio
!
!
!
!
!
!
ip subnet-zero
!
cns event-service server
!
source-bridge ring-group 2
!
!
dspu host DPU5 xid-snd 01700005 rmac 4000.0000.0001 rsap 4 lsap 12
!
interface Ethernet0
no ip address
no ip directed-broadcast
shutdown
!
interface Serial0
no ip address
no ip directed-broadcast
no ip mroute-cache
shutdown
no fair-queue
!
interface Serial1

```

```

no ip address
no ip directed-broadcast
shutdown
!
!
interface TokenRing0
no ip address
no ip directed-broadcast
ring-speed 16
source-bridge 20 1 2
source-bridge spanning
dspu enable-host lsap 12
dspu start DPU5
!
ip classless
no ip http server
!
!
!
line con 0
transport input none
line aux 0
line vty 0 4
!
end
plesio#

```

Verify

The following is an example of output showing the connected backup peer (10.64.3.99) and the active circuit going through it while the primary peer has just come up:

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

```

tatasaurus#show dlsw peer
Peers:
state      pkts_rx  pkts_tx  type  drops  ckts  TCP
uptime
TCP 10.64.3.99      CONNECT      2445      2449  conf      0      1      0
19:06:48
TCP 10.64.3.97      CONNECT      11        11  conf      0      0      0
00:04:35
Total number of connected peers: 2
Total number of connections: 2

```

```

tatasaurus#show dlsw cir
Index      local addr(lsap)  remote addr(dsap)  state
uptime
1912602630  0000.308c.8539(0C)  4000.0000.0001(04)  CONNECTED
18:50:11
Total number of circuits connected: 1

```

The above output shows that the primary peer has come up, however. There is a circuit still connected across the backup peer, and the **no linger** parameter is specified. This causes the backup peer to remain up.

Now, the circuit across the backup has been disconnected.

```

tatasaurus# show dlsw cir

```

As a result, the backup peer is torn down.

```
tatiasaurus#show dlsw peer
Peers:                state      pkts_rx  pkts_tx  type  drops  ckts  TCP
uptime
TCP 10.64.3.97        CONNECT      20       20  conf    0     0    0
00:09:35
TCP 10.64.3.99      DISCONN      0         0  conf    0     0    -
-
Total number of connected peers: 1
Total number of connections:    1
```

There is now no interesting traffic crossing the ISDN. The ISDN connection will be torn down once the idle-timeout value expires. This defaults to 120 seconds, as shown below.

```
tatiasaurus#show isdn stat
Global ISDN Switchtype = basic-ts013
ISDN BRI0 interface
dsl 0, interface ISDN Switchtype = basic-ts013
Layer 1 Status:
ACTIVE
Layer 2 Status:
TEI = 64, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
Layer 3 Status:
1 Active Layer 3 Call(s)
Activated dsl 0 CCBs = 1
CCB:callid=801E, sapi=0, ces=1, B-chan=2, calltype=DATA
The Free Channel Mask: 0x80000001
Total Allocated ISDN CCBs = 1
tatiasaurus#
```

```
tatiasaurus#show dialer
BRI0 - dialer type = ISDN
Dial String      Successes  Failures  Last DNIS  Last status
94598140         13         16       19:12:53   successful
0 incoming call(s) have been screened.
0 incoming call(s) rejected for callback.
BRI0:1 - dialer type = ISDN
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is idle
BRI0:2 - dialer type = ISDN
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Dial reason: ip (s=10.3.3.1, d=10.64.3.99)
Time until disconnect 57 secs
Connected to 94598140 (tanius)
tatiasaurus#
1d00h: %ISDN-6-DISCONNECT: Interface BRI0:2 disconnected from 94598140
tanius, call lasted 6922
9 seconds
1d00h: %LINK-3-UPDOWN: Interface BRI0:2, changed state to down
1d00h: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0:2, changed
state to down
```

Any new circuits come up through the primary peer connection as long as the backup remains disconnected.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [DLSw Support Page](#)
 - [Troubleshooting DLSw](#)
 - [Technical Support – Cisco Systems](#)
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