

Add Additional Ethernet Interfaces on the PGW Platform

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Introduction

This document describes procedures for how to add a second Ethernet interface (hme1) on the Cisco PGW platform.

Prerequisites

Requirements

Before you attempt this configuration, ensure that you meet these requirements:

- Mitigate all IP issues.
- Back up current configurations and the Cisco PGW database.
- Schedule this process during a maintenance window (ensure sufficient time is available for configuration changes and system testing).
- Any second IP interfaces required should be configured and validated on the gateway and Cisco Signaling Link Terminal (SLT) before you proceed to the Step-by-Step Instructions section of this document.
- Mitigate all alarms.

Components Used

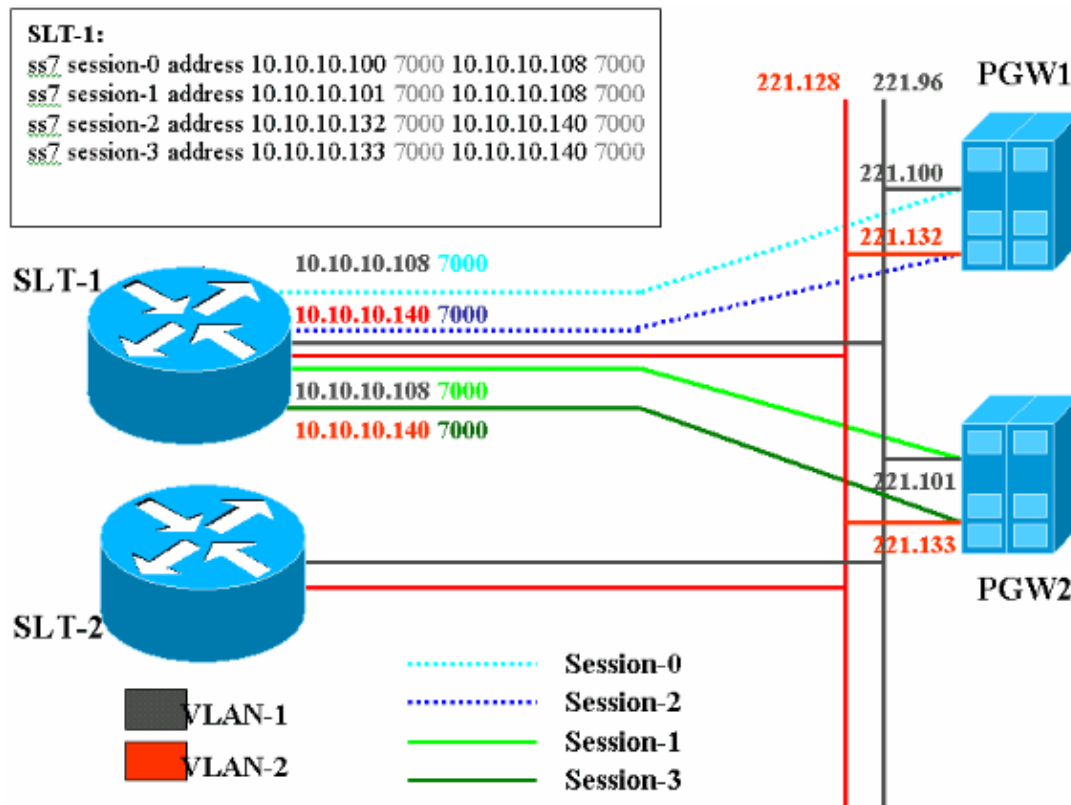
The information in this document is based on these software and hardware versions:

- Cisco PGW version 9.3(2)
- Netra T 1400/1405, Sunfire V120/Netra 120
- Standard solution components

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Network Diagram

This document uses the network setup shown in this diagram:



Conventions

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

Background Theory

In this service configuration, four backhaul sessions are created, two on each Ethernet network. Only one of these sessions is active at a time and is determined by the Cisco PGW identification message, either `SM_active` or `SM_standby`. The sessions between the active Cisco PGW and the Cisco SLT are Session 0 and Session 2. If Session 0 and Session 2 are in-service, then one is active and the other standby. If Session 0 goes out-of-service, the Cisco PGW makes Session 2 active. Thereby, Session 2 provides redundancy for a backhaul communication path between the Cisco PGW and the Cisco SLT. The standby Cisco PGW has Session 1 and Session 3 established with the Cisco SLT, and both of these sessions are in the standby state.

When failover occurs between the active and the standby Cisco PGW, one of the sessions on the standby Cisco PGW becomes active. Upon recovery of the active Cisco PGW, Sessions 0 and 2 are in the standby state.

Add Additional Ethernet Interfaces on the PGW Platform

Step-by-Step Instructions

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

1. On the standby Cisco PGW (PGW2), add a second interface at the UNIX level.

The primary Ethernet interface is configured during the operating system installation. All additional Ethernet interfaces must be configured separately.

For more information, refer to the "Configuring Additional Ethernet Interfaces" section of Sun Solaris 8 Operating System Installation.

Note: For Ethernet interface information for each platform type, refer to "Table 2–2: Device Names on Supported Platforms" in Sun Solaris 8 Operating System Installation.

In order to configure additional Ethernet interfaces, perform these steps:

- a. Add the IP address and hostname of the additional Ethernet interfaces to the `/etc/hosts` file with this command for each Ethernet port:

```
echo IP address <tab> Hostname-? >> /etc/hosts
```

Note: In sub-step A, the `<tab>` portion of the command you are instructed to enter is a reference to actually pressing the Tab key.

Note: The `Hostname-?` for `hme1` is different than `hme0`, for example:

If the existing Cisco PGW hostname is `U60-1`, which normally correlates to `hme0`, then the entry made for `hme1` would resemble this:

```
echo 10.10.10.132<tab>U60-2>>/etc/hosts
```

- b. Create a new file named `/etc/hostname.devicex`, where *device* represents the Ethernet device type and *x* represents the interface instance. On the first and only line of the file, place the IP address or hostname for the additional Ethernet interfaces with this command for each Ethernet port:

```
echo 10.10.10.132 > /etc/hostname.hme1
```

Note: This example applies to a second Ethernet interface of `hme1` and an IP address of `10.10.10.132`.

- c. Add a line to the `/etc/netmasks` file for each unique subnet of the interfaces that is added. Multiple subnets of the same network address must have individual lines in the `/etc/netmasks` file.

```
echo subnet address subnet mask >> /etc/netmasks
```

- d. The machine has to be rebooted with a `-r` option to complete the configuration. Issue the `reboot -- -r` command.
- e. When the machine finishes rebooting, log in as root and issue the `ifconfig -a` command. Verify that the new Ethernet interfaces appear in the output.

A screen similar to this is displayed:

```

lo0: flags=849<UP,LOOPBACK,RUNNING,MULTICAST> mtu 8232
inet 127.0.0.1 netmask ff000000
hme0: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST> mtu 1500
inet 172.24.235.53 netmask ffffffff broadcast 172.24.235.255
ether 8:0:20:9a:76:6c
hme1: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST> mtu 1500
inet 172.24.237.53 netmask ffffffff broadcast 172.24.237.255
ether 8:0:20:9a:76:6c

```

Note: IP addresses are for demonstration purposes only. Actual addresses differ in each application.

2. Verify the second interface on the PGW2.

a. Verify that the PGW2 is in standby state with these commands:

```

◇ rtrv-ne-health
◇ rtrv-alm
◇ rtrv-softw:all

```

b. Mitigate any issues before you proceed.

c. Ping from the first interface to the second interface on the PGW2.

d. Ping from the PGW1 to the new Ethernet interface hme1 on the PGW2.

e. Ensure that other equipment (such as the gateway and the Cisco SLT) can ping the second interface on the PGW2.

f. Ensure that hme interfaces are in full duplex mode with the **ndd get** command.

For example:

```

/usr/sbin/ndd -get /dev/hme link_mode

```

◇ 0 – half duplex This output means the interface is in half duplex mode.

◇ 1 – full duplex This output means the interface in full duplex mode.

3. On the active Cisco PGW (PGW1), issue the **sw-over::confirm** command.

Ensure that the previous standby PGW2 is in the active state and the previous PGW1 is in the standby state. Alarms and issues need to be mitigated on both Cisco PGWs before you proceed.

4. On the PGW1 (standby), shut down the Cisco PGW application software with the **/etc/init.d/CiscoMGC stop** command. Add the second interface at the UNIX level.

For more information, refer to the "Configuring Additional Ethernet Interfaces" section of Sun Solaris 8 Operating System Installation.

Note: For Ethernet interface information for each platform type, refer to "Table 2–2: Device Names on Supported Platforms" in the Sun Solaris 8 Operating System Installation.

In order to configure additional Ethernet interfaces, perform these steps:

a. Add the IP address and hostname of the additional Ethernet interfaces to the `/etc/hosts` file with this command for each Ethernet port:

```

echo IP address <tab> Hostname-? >> /etc/hosts

```

Note: The `Hostname-?` for hme1 is different than that for hme0, for example:

If the existing Cisco PGW hostname is U61-1, which normally correlates to hme0, then the entry made for hme1 would be similar to this:

```
echo 10.10.10.133<tab>U61-2>>/etc/hosts
```

- b. Create a new file named `/etc/hostname.device.x`, where *device* represents the Ethernet device type and *x* represents the interface instance. On the first and only line of the file, place the IP address or hostname for the additional Ethernet interfaces with this command for each Ethernet port:

```
echo 10.10.10.133> /etc/hostname.hme1
```

Note: This example applies to a second Ethernet interface of hme1 and an IP address of 10.10.10.133.

- c. Add a line to the `/etc/netmasks` file for each unique subnet of the interfaces added. Multiple subnets of the same network address must have individual lines in the `/etc/netmasks` file (if required).

```
echo subnet address subnet mask >> /etc/netmasks
```

- d. The machine must be rebooted with a **-r option** to complete the configuration. Issue the **reboot -- -r** command.
- e. When the machine has rebooted, log in as root and issue the **ifconfig -a** command. Verify that the new Ethernet interfaces appear in the output.

A screen similar to this is displayed:

```
lo0: flags=849<UP,LOOPBACK,RUNNING,MULTICAST> mtu 8232
inet 127.0.0.1 netmask ff000000
hme0: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST> mtu 1500
inet 172.24.235.53 netmask ffffffff broadcast 172.24.235.255
ether 8:0:20:9a:76:6c
hme1: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST> mtu 1500
inet 172.24.237.53 netmask ffffffff broadcast 172.24.237.255
ether 8:0:20:9a:76:6c
```

5. Verify the second interface on the PGW1 by following these steps:

- a. Ping from the first interface to the second interface on the PGW1.
- b. Ping from the PGW2 to the new Ethernet interface hme1 on the PGW1.
- c. Ensure that other equipment (such as the gateway and the Cisco SLT) can ping to the second interface.
- d. Ensure that hme interfaces are in full duplex mode with the **ndd get** command.
- e. Mitigate any issues before you proceed.

6. Populate XECfgParm.dat on the PGW1 (standby).

- a. Populate the second IP address fields in XECfgParm.dat:

```
*.ipAddrLocalA = 10.10.10.100      # MIGRATED
*.ipAddrLocalB = 10.10.10.132      # MIGRATED

!--- Populate the field above.

*.ipAddrPeerA = 10.10.10.101      # MIGRATED
*.ipAddrPeerB = 10.10.10.133      # MIGRATED

!--- Populate the field above.
```

```

*.IP_Addr1 = 10.10.10.100      # MIGRATED
*.IP_Addr2 = 10.10.10.132      # MIGRATED

!--- Populate the field above.

*.IP_Addr3 = 0.0.0.0          # MIGRATED
*.IP_Addr4 = 0.0.0.0          # MIGRATED

foverd.ipLocalPortA = 1051    # MIGRATED
foverd.ipPeerPortA = 1052     # MIGRATED
foverd.ipLocalPortB = 1053    # MIGRATED
foverd.ipPeerPortB = 1054     # MIGRATED

```

b. Restart the Cisco PGW application on the PGW1 with the **/etc/init.d/CiscoMGC start** command.

c. Verify that the PGW1 is in the standby state with these commands:

```

◇ Rtrv-ne-health
◇ Rtrv-alms
◇ Rtrv-softw:all

```

d. Mitigate any issues before you proceed.

7. Make the Cisco PGW1 active with the **Sw-over::confirm** command.

a. Ensure the PGW1 is active and the PGW2 is in the standby state with these commands:

```

◇ Rtrv-ne-health
◇ Rtrv-alms
◇ Rtrv-softw:all

```

b. Mitigate any issues before you proceed.

8. On the PGW2 (standby), shut down the Cisco PGW application software with the **/etc/init.d/CiscoMGC stop** command.

9. Populate XECfgParm.dat on the PGW2 (standby).

a. Populate the second IP address fields in XECfgParm.dat:

```

*.ipAddrLocalA = 10.10.10.101    # MIGRATED
*.ipAddrLocalB = 10.10.10.133    # MIGRATED

!--- Populate the field above.

*.ipAddrPeerA = 10.10.10.100     # MIGRATED
*.ipAddrPeerB = 10.10.10.132     # MIGRATED

!--- Populate the field above.

*.IP_Addr1 = 10.10.10.101        # MIGRATED
*.IP_Addr2 = 10.10.10.133        # MIGRATED

!--- Populate the field above.

*.IP_Addr3 = 0.0.0.0             # MIGRATED
*.IP_Addr4 = 0.0.0.0             # MIGRATED
foverd.ipLocalPortA = 1051       # MIGRATED
foverd.ipPeerPortA = 1052        # MIGRATED
foverd.ipLocalPortB = 1053       # MIGRATED
foverd.ipPeerPortB = 1054        # MIGRATED

```

b. Restart the Cisco PGW application on the PGW2 with the **/etc/init.d/CiscoMGC start** command.

10. Ensure the PGW1 is active and the PGW2 is in the standby state. (At this point the IP interfaces have

been added and XECfgParm.dat has been populated.)

a. Issue these commands:

```
◇ Rtrv-ne-health  
◇ Rtrv-alm  
◇ Rtrv-softw:all
```

b. Mitigate any issues before you proceed.

11. Add additional session sets on Cisco SLT.

An example is shown here:

```
ss7 session 2 address 10.10.10.132 7000 10.10.10.140 7000  
session-set 0  
  
ss7 session 3 address 10.10.10.133 7000 10.10.10.140 7000  
session-set 0
```

12. Make Redundant Link Manager (RLM) changes in the gateways.

An example on one gateway is shown here (configuration additions in bold):

```
rlm group 0  
server netra1  
link address 10.10.10.100 source Loopback0 weight 1  
link address 10.10.10.132 source Loopback0 weight 1  
server netra2  
link address 10.10.10.101 source Loopback0 weight 1  
link address 10.10.10.133 source Loopback0 weight 1  
  
!  
rlm group 1  
protocol rlm port 3002  
server netra1  
link address 10.10.10.100 source Loopback0 weight 1  
link address 10.10.10.132 source Loopback0 weight 1  
server netra2  
link address 10.10.10.101 source Loopback0 weight 1  
link address 10.10.10.133 source Loopback0 weight 1
```

13. Make configuration changes on the PGW1 (active).

Follow these steps:

- a. Verify that you are on the active Cisco PGW.
- b. Make sure the standby box is in the standby state.
- c. Mitigate all alarms.
- d. Start a provisioning session with the
mml>prov-sta::srcver= active ,dstver= config_123 command.

a. Add an Ethernet interface card.

For more information, refer to the "Adding an Ethernet Interface" section of Adding Components with MML.

An example is shown here:

```
prov-add:ENETIF:NAME="eth-itf1",DESC="interface"
```

for the 2nd ethernet card in sc2200",CARD="eth1"

- b. Add IP_ADDR 2 information in session sets.

For more information, refer to the "Adding a Session Set" section of Adding Components with MML.

Note: Review the notes for how to add a session set for IP_ADDR 2. The Man-Machine Language (MML) commands in the link are for one IP address only.

An example is shown here:

```
prov-ed:SESSIONSET:Name="c7sset3",IPADDR2="IP_Addr2",PEERADDR2="10.10.10.10",  
NEXTHOP2="0.0.0.0",NETMASK2="255.255.255.255"
```

```
prov-ed:SESSIONSET:Name="c7sset4",IPADDR2="IP_Addr2",PEERADDR2="10.10.10.10",  
NEXTHOP2="0.0.0.0",NETMASK2="255.255.255.255"
```

- c. Add the second IP link with IP Addr 2 for all applicable gateways.

An example is shown here:

```
prov-add:IPLNK:NAME="iplk-csc504-origB",DESC="orig Link B between  
csc504 and sc2200",SVC="csc504-rlm-orig",IF="eth-itf1",IPADDR="IP_Addr2",  
PEERADDR="10.10.11.4",PEERPORT=3001,PRI=2,NEXTHOP="0.0.0.0",NETMASK="255.255.255.255"
```

```
prov-add:IPLNK:NAME="iplk-csc504-termB",DESC="term Link B between  
csc504 and sc2200",SVC="csc504-rlm-term",IF="eth-itf1",IPADDR="IP_Addr2",  
PEERPORT=3003,PRI=2,NEXTHOP="0.0.0.0",NETMASK="255.255.255.255"
```

14. Deploy a provisioning session with the **prov-dply** command.
15. Verify through MML that the session sets and IPLNKs added with IP_Addr 2 are in the IS state and have taken effect.

Set C7IPLNK to IS, and verify the final configuration with these MML commands:

- ◆ **Rtrv-ne-health**
- ◆ **Rtrv-softw:all**
- ◆ **Rtrv-alm**
- ◆ **Rtrv-c7lnk:all**
- ◆ **Rtrv-iplnk:all**
- ◆ **Rtrv-dest:all**
- ◆ **Rtrv-tc:all**

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

For troubleshooting information, refer to the Solution Troubleshooting Guide.

Related Information

- [Cisco PGW 2200 Softswitch Tech Notes](#)
 - [Cisco PGW 2200 Softswitch Configuration Examples](#)
 - [Release Notes for the Cisco Media Gateway Controller Software Release 9](#)
 - [Cisco Media Gateway Controller Software Release 9 Provisioning Guide](#)
 - [Voice Technology Support](#)
 - [Voice and IP Communications Product Support](#)
 - [Recommended Reading: Troubleshooting Cisco IP Telephony](#)
 - [Technical Support – Cisco Systems](#)
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