

Using Two Ethernet Network Interface Cards with Dialogic® PowerMedia™ Extended Media Server (XMS)

Introduction

While Dialogic® PowerMedia™ Extended Media Server's (PowerMedia XMS) default configuration is centered around a single Ethernet NIC, it may be desirable on a system with multiple NICs to use different interfaces for SIP signaling and RTP media streaming. The recommended way to do this is to use the default NIC for media streaming and then reassign the IP address used for SIP to a secondary NIC. Policy-based routing must then be set up in the Linux kernel to complete the routing of outbound packets to the appropriate NIC.

Configuring a Second NIC

Here is an outline of the procedure. Note that there is a combination of commands – some must be done directly logged into the PowerMedia XMS system as root, and some done using the web-based PowerMedia XMS management console. This procedure covers an IPV4 class C network scheme, (192.168.1.0/24), where both NICs are on the same subnet.

- Install a PowerMedia XMS 2.0 ISO on bare-metal system with two (2) NICs. While a virtual machine could be used, there is an additional layer of software between the physical NICs and the logical NICs used by the virtual systems that is controlled by the virtual machine manager. This would have to be incorporated in the process in setting up dual NICs, and is not addressed in this Technote. As part of the initial PowerMedia XMS ISO installation, set a static IP address on eth0. This address should be the one to be used for RTP streaming. In this example, 192.168.1.20 is used for eth0. Network mask is set to 255.255.255.0.
- Following the default installation, eth0 is the configured NIC for both SIP and RTP. The PowerMedia XMS Network screen shows a single active network interface with the static address assigned.
- Log into the PowerMedia XMS system using secure shell (ssh) with user/password root/powermedia. Once there, configure eth1 using the CentOS "setup" command line utility:
 - Choose Network configuration
 - Choose Device configuration
 - Choose eth1
 - Fill in the require information, including a second static IP address to be used for SIP signaling. In this example, 192.168.1.21 is used for the NIC carrying SIP. Network mask is set to 255.255.255.0
 - Save all changes and quit the utility
- Restart network services with "service network restart" from the command line
- The PowerMedia XMS management console's Network screen now shows both Ethernet interfaces as assigned addresses. Eth1 will be disabled.
- Enable eth1 using the Network screen.
- From the command line, check the networks with "ifconfig". Both network interfaces will be up and have addresses assigned.
- From the command line, edit /etc/xms/xmserver and change the "bindaddr" parameter to the Eth1 address.
- Restart PowerMedia XMS system services using the management consoles' System/Services screen.
- This completes the PowerMedia XMS configuration

Configuring Policy-Based Routing

While there are now two active Ethernet interfaces, each with its own IP address, there still must be a way for the Linux kernel to decide how to route packets to the appropriate interface, depending on the packet's source address. Otherwise all packets will be sent to the first usable interface in the system's routing table. This can be done using policy-based routing. While this can be done ad-hoc using the "ip" command, it is generally easier to create a series of permanent configuration files that will implement the policy.

In the file /etc/iproute2/rt_tables:

```
#
# reserved values
#
255    local
254    main
253    default
0      unspec
#
# local
#
#1     inr.ruhep
```

Add lines with two unique table IDs not already in use. For example:

```
200    rtptbl
201    siptbl
```

In the directory /etc/sysconfig/network-scripts, create two files, rule-eth0 and rule-eth1. These files will determine the routing table number to use according to a packet's source IP address. rule-eth0 should contain:

```
# RTP
from 192.168.1.20 table rtptbl
```

and rule-eth1:

```
# SIP
from 192.168.1.21 table siptbl
```

In the same directory, create two additional files: route-eth0 and route-eth1. These files contain the source routes.

route-eth0 should contain:

```
# RTP
default src 192.168.1.20 table rtptbl dev eth0
```

and route-eth1 should contain:

```
# SIP
default src 192.168.1.21 table siptbl dev eth1
```

Once all of the files are done, restart the system's network services to put the changes into effect:

```
> service network restart
```

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Tech Note

Check that the changes have been put into effect with:

```
> ip rule show
```

This should include the two rules just added:

```
32764: from 192.168.1.21 lookup siptbl1
32765: from 192.168.1.20 lookup rtptbl1
```

Follow this with:

```
> ip route show
```

The following two routes should be included:

```
192.168.1.0/24 dev eth0 proto kernel scope link src 192.168.1.20
192.168.1.0/24 dev eth1 proto kernel scope link src 192.168.1.21
```

Calls now made to PowerMedia XMS should be directed to 192.168.1.21 on eth1. However, RTP will use 192.168.1.20 on eth0. If desired, “tcpdump” can be run on the PowerMedia XMS system (one session on each interface) to verify that the packets are using the desired interface:

```
> tcpdump -s 10000 -i eth0 -w eth0-out.pcap
> tcpdump -s 10000 -i eth1 -w eth1-out.pcap
```

Examine the .pcap files produced with Wireshark. eth0-out.pcap will contain RTP packets and eth1-out.pcap will contain SIP packets.

Dialogic®

www.dialogic.com

Dialogic Inc
1504 McCarthy Boulevard
Milpitas, California 95035-7405
USA

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