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Tested versions: Ingate Firewall/SIParator/MEDIAtor version 4.6.2

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<th>Date</th>
<th>Author</th>
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<tr>
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<td>Scott Beer</td>
<td>1st Release</td>
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1 What is a Directly Connected Network?

A “Directly Connected Network” is a network physically connected to an interface on the Ingate Firewall/SIParator and which IP address(es) the Firewall/SIParator should have on that network. For example, the network address of 10.75.5.0/24 on the inside (or LAN) Ethernet Interface means there is a network containing an IP address range from 10.75.5.0 to 10.75.5.255. The Ingate inside (or LAN) interface must have an IP address within this range. The Ingate Firewall/SIParator can have more than one directly connected network, and thus the Firewall/SIParator must have an IP address on every network to which it is directly connected. This applies to all networks on the same physical network to which this interface is connected.

For detailed programming instructions, please refer to the Ingate Firewall & SIParator Reference Manuals - Chapter 6: Network.

Here is an example of one Directly Connected Network on both the LAN and WAN side of the Ingate Firewall/SIParator.
2 What is a Routed Network?

If there is a router between the Ingate Firewall/SIParator and a network, you have to tell the SIParator how direct traffic there. If there is at least one router between the Firewall/SIParator and the network, you should enter the router IP address under Static Routes. If there is more than one router, you should enter the router located on the directly connected network for this interface.

For detailed programming instructions, please refer to the Ingate Firewall & SIParator Reference Manuals - Chapter 6: Network.
3 Common Examples

For detailed programming instructions, please refer to the Ingate Firewall & SIParator Reference Manuals - Chapter 6: Network.

3.1 One Directly Connected Network

Here is an example of one Directly Connected Network on both the LAN and WAN side of the Ingate Firewall/SIParator.

3.1.1 Network & Computers

Here, you group computers and networks. This example shows the Directly Connected Networks defined on each interface. The LAN has a range of IP addresses from 10.51.77.0 to 10.51.77.255 associated with “inside (Eth0)”. The WAN has a range of IP addresses from 0.0.0.0 to 255.255.255.255 associated with “outside (Eth1)”, with the exception of 127.0.0.1.
3.1.2 Inside (Eth0) Interface

The “inside (Eth0)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the LAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. There is no Static Routing required in this example.
### 3.1.3 Outside (Eth1) Interface

The “outside (Eth1)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the WAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. The Static Routing contains the Default Gateway information to ensure connectivity to the Internet.

<table>
<thead>
<tr>
<th>Physical device: eth0</th>
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<tr>
<td>This interface is: On Off</td>
</tr>
<tr>
<td>Interface name: inside</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Name</th>
<th>DNS Name or IP Address</th>
<th>IP Address</th>
<th>Netmask / Bits</th>
<th>Network Address</th>
<th>Broadcast Address</th>
<th>VLAN Id</th>
<th>VLAN Name</th>
<th>Delete</th>
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<tr>
<td>inside</td>
<td>10.51.77.1</td>
<td>10.51.77.1</td>
<td>255.255.255.0</td>
<td>10.51.77.0</td>
<td>10.51.77.255</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Directly Connected Networks**

**Static Routing**

#### Speed and Duplex
- Automatic negotiation
- 100 Mbit/s, full duplex
- 100 Mbit/s, half duplex
- 10 Mbit/s, full duplex
- 10 Mbit/s, half duplex
3.2 Two Directly Connected LAN Network – Same Interface

Here is an example of two Directly Connected Networks on the LAN side of the Ingate Firewall/SIParator.
3.2.1 Network & Computers

This example shows the Directly Connected Networks defined on each interface. The LAN has a range of IP addresses from 10.51.77.0 to 10.51.77.255 AND 10.51.10.0 to 10.51.10.255 associated with “inside (Eth0)”. The WAN has a range of IP addresses from 0.0.0.0 to 255.255.255.255 associated with “outside (Eth1)”, with the exception of 127.0.0.1.
3.2.2 Inside (Eth0) Interface

The “inside (Eth0)” interface of the Ingate Firewall/SIParator contains **TWO** IP addresses on the directly connected network located on the LAN. With the Netmask for each address, the Firewall/SIParator knows the range of IP addresses that are connected. There is no Static Routing required in this example.
3.2.3 Outside (Eth1) Interface

The “outside (Eth1)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the WAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. The Static Routing contains the Default Gateway information to ensure connectivity to the Internet.
### 3.3 Routed LAN Network

Here is an example of Routed Networks on the LAN side of the Ingate Firewall/SIParator. In this example there is a router located on the LAN to direct traffic to another network.

**Routed LAN Network**

![Routed LAN Network Diagram](image)

**3.3.1 Network & Computers**

This example shows the networks defined on each interface. The LAN has a range of IP addresses from 10.51.77.0 to 10.51.77.255 AND 10.51.10.0 to 10.51.10.255 associated with “inside (Eth0)”. The WAN has a range of IP addresses from 0.0.0.0 to 255.255.255.255 associated with “outside (Eth1)”, with the exception of 127.0.0.1.
3.3.2 Inside (Eth0) Interface

The “inside (Eth0)” interface of the Ingate Firewall/SIParator contains ONE IP addresses on the directly connected network located on the LAN. With the Netmask for each address, the Firewall/SIParator knows the range of IP addresses that are connected. There is also Static Routing required to direct traffic to 10.51.10.0/24 Network to the router located at 10.51.77.254.
### 3.3.3 Outside (Eth1) Interface

The “outside (Eth1)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the WAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. The Static Routing contains the Default Gateway information to ensure connectivity to the Internet.
3.4 Routed WAN Network

Here is an example of Routed Networks on the WAN side of the Ingate Firewall/SIParator. In this example there is a router located on the WAN to direct traffic to another network.

3.4.1 Network & Computers

Here, you group computers and networks. This example shows the networks defined on each interface. The LAN has a range of IP addresses from 10.51.77.0 to 10.51.77.255 associated with “inside (Eth0)” . The WAN has a range of IP addresses from 0.0.0.0 to 255.255.255.255 associated with “outside (Eth1)”, with the exception of 127.0.0.1.
3.4.2 Inside (Eth0) Interface

The “inside (Eth0)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the LAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. There is no Static Routing required in this example.
3.4.3 Outside (Eth1) Interface

The “outside (Eth1)” interface of the Ingate Firewall/SIParator contains **ONE** IP addresses on the directly connected network located on the WAN. Included IP address is a Netmask for the interface, the Firewall/SIParator knows the range of IP addresses that are connected. There is also Static Routing required to direct traffic to 13.13.13.0/24 Network to the router located at 51.51.1.178, as well as the Default Gateway for connectivity to the internet.
3.5 Routed WAN Network with 2 Interfaces

Here is an example of Routed Networks on the WAN side of the Ingate Firewall/SIParator when using two Ethernet interfaces.

It is important to note that the Ingate Firewall/SIParator only supports one Default Gateway. This Default Gateway is only on one interface and will be used for all generic data traffic. Although another network can be connected to a second interface, only Static Routing can be used to route calls to specific networks.

3.5.1 Network & Computers

Here, you group computers and networks for each interface. This example shows the networks defined on each interface. The LAN has a range of IP addresses from 10.51.77.0 to 10.51.77.255 associated with “inside (Eth0)”. The WAN has a range of IP addresses from 0.0.0.0 to 255.255.255.255 associated with “outside (Eth1)”, with the exception of 127.0.0.1. In addition, another interface “Ethernet 2 (Eth2)” has been connected to direct traffic to specific networks. Contained here is the directly connected network of 11.22.33.0 to 11.22.33.255. Plus the other statically routed WAN IP address ranges from 44.55.66.0 to 44.55.66.255, plus 77.88.99.0 to 77.88.99.255 associated with “Ethernet 2 (Eth2)”.
3.5.2 Inside (Eth0) Interface

The “inside (Eth0)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the LAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. There is no Static Routing required in this example.
3.5.3 Outside (Eth1) Interface

The “outside (Eth1)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the WAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. The Static Routing contains the Default Gateway information to ensure connectivity to the Internet.
3.5.4 Second Outside (Eth2) Interface

The “Ethernet 2 (Eth2)” interface of the Ingate Firewall/SIParator contains **ONE** IP addresses on the directly connected network located on the WAN. With the Netmask for each address, the Firewall/SIParator knows the range of IP addresses that are connected. There is also Static Routing required to direct traffic to 44.55.66.0/24 and 77.88.99.0/24 networks to the router located at 11.22.33.1.
3.6 Directly Connected LAN Network with 2 Interfaces

Here is an example of a two Directly Connected Networks on the LAN side of the Ingate Firewall/SIParator when using two Ethernet interfaces.

3.6.1 Network & Computers

Here, you group computers and networks for each interface. This example shows the Directly Connected Networks defined on each interface. The LAN has a range of IP addresses from 10.51.77.0 to 10.51.77.255 associated with “inside (Eth0)”. The WAN has a range of IP addresses from 0.0.0.0 to 255.255.255.255 associated with “outside (Eth1)”, with the exception of 127.0.0.1. In addition, another interface “Ethernet 2 (Eth2)” has been connected to direct traffic to specific networks. Contained here is the directly connected network of 10.51.77.0 to 10.51.77.255 associated with “Ethernet 2 (Eth2)”.

3.6.2 Inside (Eth0) Interface

The “inside (Eth0)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the LAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. There is no Static Routing required in this example.
3.6.3 Outside (Eth1) Interface

The “outside (Eth1)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the WAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. The Static Routing contains the Default Gateway information to ensure connectivity to the Internet.
3.6.4 Second Inside (Eth2) Interface

The “Ethernet 2 (Eth2)” interface of the Ingate Firewall/SIParator contains an IP address on the directly connected network located on the LAN. With the Netmask, the Firewall/SIParator knows the range of IP addresses that are connected. There is no Static Routing required in this example.
4 Appendix – WAN Network Definition

In Networks and Computers, you group computers and networks. This example shows the Directly Connected Networks defined on each interface. The LAN has a range of IP addresses from 10.51.77.0 to 10.51.77.255 associated with “inside (Eth0)”. The WAN has a range of IP addresses from 0.0.0.0 to 255.255.255.255 associated with “outside (Eth1)”, with the exception of 127.0.0.1.

Why the exception of the 127.0.0.1 network?

The WAN network is used in the Startup Tool to block requests that are not explicitly allowed by the Dial Plan. For this purpose, you basically block requests from all IP addresses.

But as a consequence of our implementation of the B2BUA, requests that are looped inside the Ingate are sent from IP address 127.0.0.1 (generally known as the loopback address). If this IP address is included in the WAN network, all looped requests will be blocked while processed inside the Ingate.

For this reason, the loopback IP address is excluded from that network. If the network should not be used in the Dial Plan, there is no reason to exclude that IP.