



Application Note

Connecting Networks

29 April 2008

Table of Contents

1	WHAT IS A DIRECTLY CONNECTED NETWORK?	1
2	WHAT IS A ROUTED NETWORK?	2
3	COMMON EXAMPLES	3
3.1	ONE DIRECTLY CONNECTED NETWORK.....	3
3.1.1	<i>Network & Computers</i>	3
3.1.2	<i>Inside (Eth0) Interface</i>	4
3.1.3	<i>Outside (Eth1) Interface</i>	5
3.2	TWO DIRECTLY CONNECTED LAN NETWORK – SAME INTERFACE.....	6
3.2.1	<i>Network & Computers</i>	7
3.2.2	<i>Inside (Eth0) Interface</i>	8
3.2.3	<i>Outside (Eth1) Interface</i>	9
3.3	ROUTED LAN NETWORK.....	10
3.3.1	<i>Network & Computers</i>	10
3.3.2	<i>Inside (Eth0) Interface</i>	11
3.3.3	<i>Outside (Eth1) Interface</i>	12
3.4	ROUTED WAN NETWORK.....	13
3.4.1	<i>Network & Computers</i>	13
3.4.2	<i>Inside (Eth0) Interface</i>	14
3.4.3	<i>Outside (Eth1) Interface</i>	15
3.5	ROUTED WAN NETWORK WITH 2 INTERFACES	16
3.5.1	<i>Network & Computers</i>	16
3.5.2	<i>Inside (Eth0) Interface</i>	17
3.5.3	<i>Outside (Eth1) Interface</i>	18
3.5.4	<i>Second Outside (Eth2) Interface</i>	19
3.6	DIRECTLY CONNECTED LAN NETWORK WITH 2 INTERFACES	20
3.6.1	<i>Network & Computers</i>	20
3.6.2	<i>Inside (Eth0) Interface</i>	21
3.6.3	<i>Outside (Eth1) Interface</i>	22
3.6.4	<i>Second Inside (Eth2) Interface</i>	23
4	APPENDIX – WAN NETWORK DEFINITION	24

Tested versions: Ingate Firewall/SIParator/MEDIAtor version 4.6.2

Revision History:

Revision	Date	Author	Comments
1	2008-04-29	Scott Beer	1 st Release

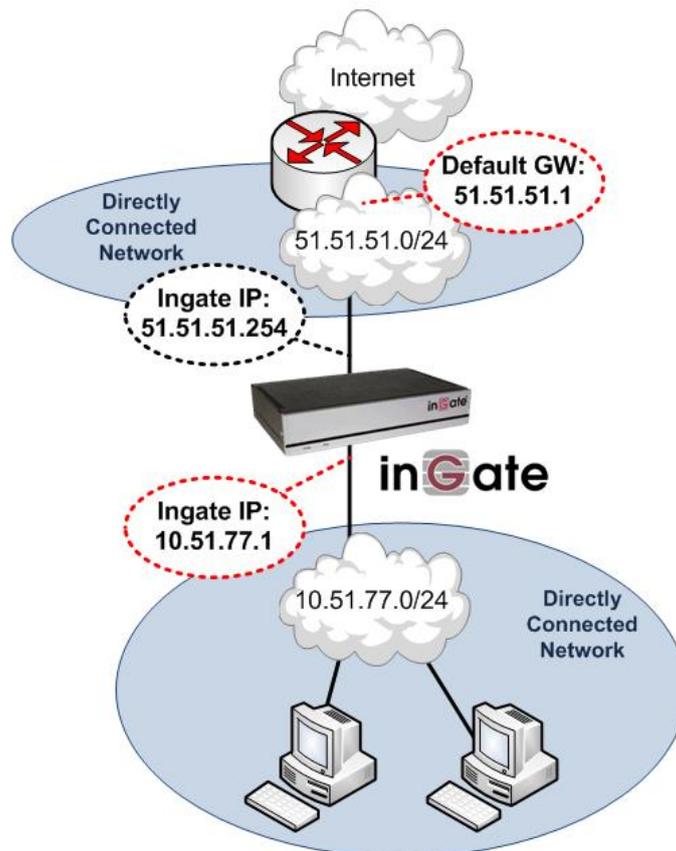
1 What is a Directly Connected Network?

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.

Directly Connected Network

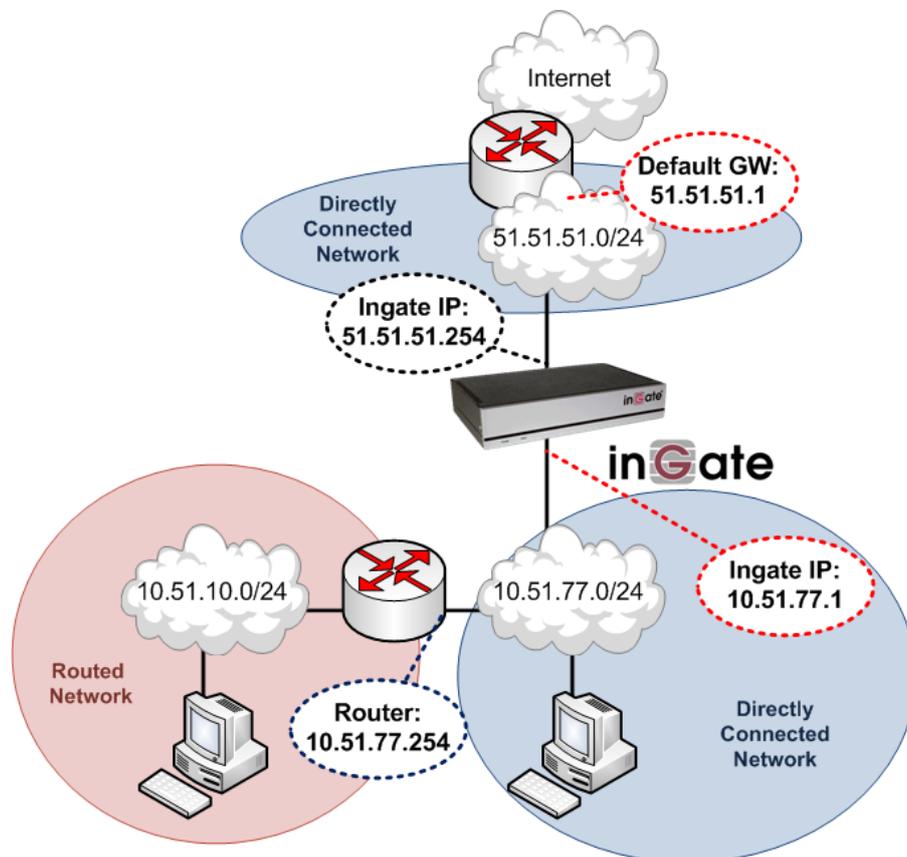


2 What is a Routed Network?

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.

Routed LAN Network

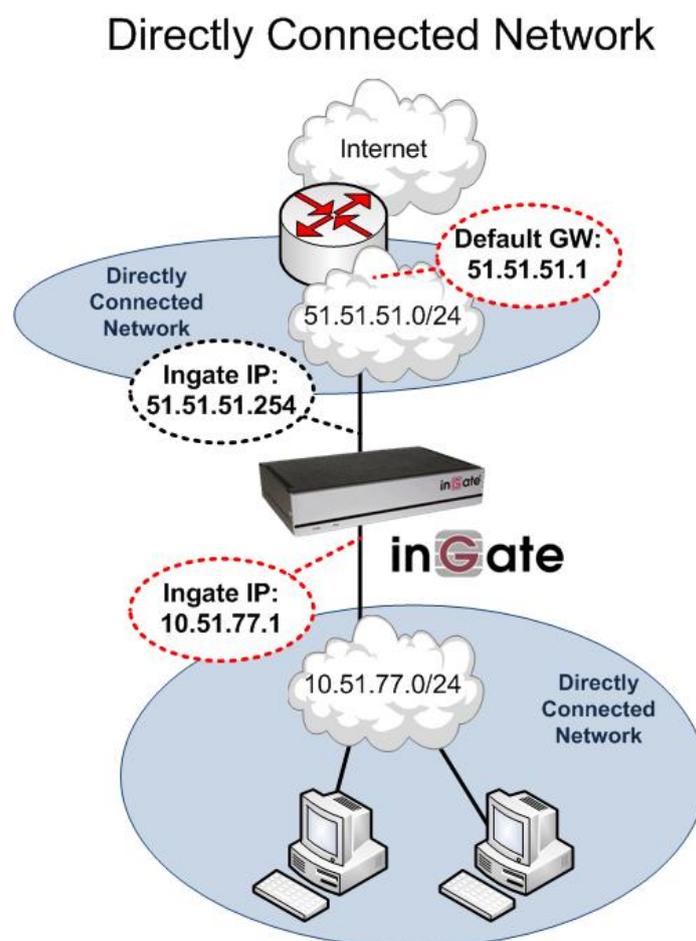


3 Common Examples

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.

Networks and Computers Default Gateways All Interfaces VLAN Eth0 Eth1 Eth2 Interface Status PPPoE Surroundings

Networks and Computers

Name	Subgroup	Lower Limit		Upper Limit (for IP ranges)		Interface/VLAN	Delete
		DNS Name or IP Address	IP Address	DNS Name or IP Address	IP Address		
+ ITSP_IP	-	0.0.0.0	0.0.0.0	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>
+ LAN	-	10.51.77.0	10.51.77.0	10.51.77.255	10.51.77.255	inside (eth0 untagged)	<input type="checkbox"/>
+ PBX	-	10.51.77.200	10.51.77.200			-	<input type="checkbox"/>
+ WAN	-	0.0.0.0	0.0.0.0	127.0.0.0	127.0.0.0	outside (eth1 untagged)	<input type="checkbox"/>
	-	127.0.0.2	127.0.0.2	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>

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.

Networks and Computers Default Gateways All Interfaces VLAN **Eth0** Eth1 Eth2 Interface Status PPPoE Surroundings

General

Physical device: **eth0**

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF
 DHCP client ON
 PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
inside	10.51.77.1	10.51.77.1	255.255.255.0	10.51.77.0	10.51.77.255		-	<input type="checkbox"/>

rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

rows.

Static Routing [\(Help\)](#)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	

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.

Networks and Computers Default Gateways All Interfaces VLAN Eth0 **Eth1** Eth2 Interface Status PPPoE Surroundings

General

Physical device: **eth1**

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF
 DHCP client ON
 PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
outside	51.51.51.254	51.51.51.254	255.255.255.0	51.51.51.0	51.51.51.255		-	<input type="checkbox"/>

Add new rows rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

Add new rows rows.

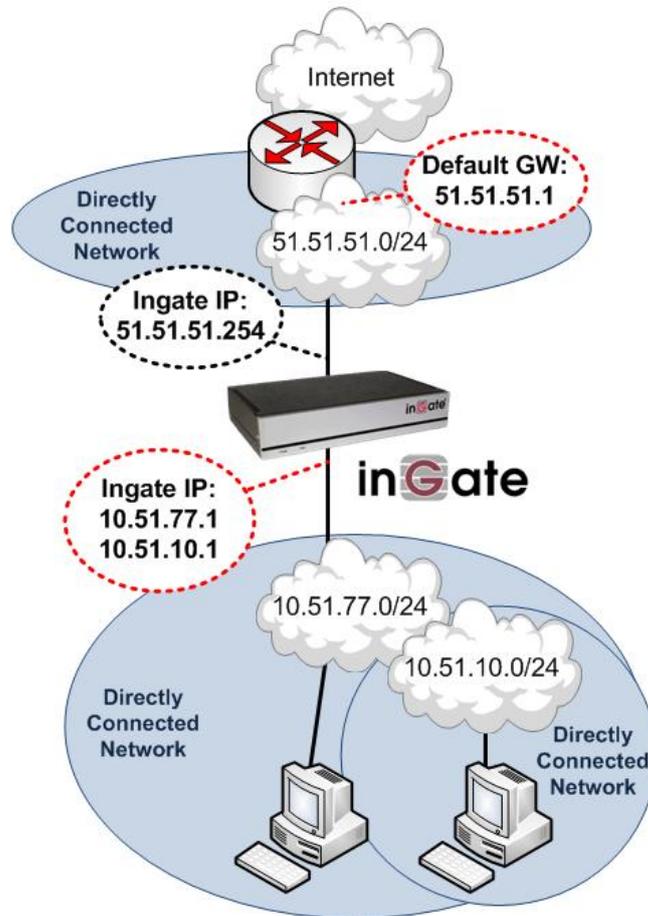
Static Routing [\(Help\)](#)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	
default	default		51.51.51.1	51.51.51.1	<input type="checkbox"/>

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.

Two Directly Connected Networks – One Interface



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.

Networks and Computers Default Gateways All Interfaces VLAN Eth0 Eth1 Eth2 Interface Status PPPoE Surroundings

Name	Subgroup	Lower Limit		Upper Limit (for IP ranges)		Interface/VLAN	Delete
		DNS Name or IP Address	IP Address	DNS Name or IP Address	IP Address		
+ ITSP_IP	-	0.0.0.0	0.0.0.0	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>
+ LAN	-	10.51.10.0	10.51.10.0	10.51.10.255	10.51.10.255	inside (eth0 untagged)	<input type="checkbox"/>
	-	10.51.77.0	10.51.77.0	10.51.77.255	10.51.77.255	inside (eth0 untagged)	<input type="checkbox"/>
+ Mitel	-	10.51.77.200	10.51.77.200			-	<input type="checkbox"/>
+ WAN	-	0.0.0.0	0.0.0.0	127.0.0.0	127.0.0.0	outside (eth1 untagged)	<input type="checkbox"/>
	-	127.0.0.2	127.0.0.2	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>

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.

Networks and Computers Default Gateways All Interfaces VLAN **Eth0** Eth1 Eth2 Interface Status PPPoE Surroundings

General

Physical device: eth0

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF

DHCP client ON

PPPoE client ON

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

Directly Connected Networks (Help)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
inside_10.0	10.51.10.1	10.51.10.1	255.255.255.0	10.51.10.0	10.51.10.255		-	<input type="checkbox"/>
inside_77.0	10.51.77.1	10.51.77.1	255.255.255.0	10.51.77.0	10.51.77.255		-	<input type="checkbox"/>

Add new rows rows.

Alias (Help)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

Add new rows rows.

Static Routing (Help)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	

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.

Administration
Basic Configuration
Network
SIP Services
SIP Traffic
Failover
Virtual Private Networks
Quality of Service
Logging and Tools
About

Networks and Computers
Default Gateways
All Interfaces
VLAN
Eth0
Eth1
Eth2
Interface Status
PPPoE
Surroundings

General

Physical device: **eth1**

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF

DHCP client ON

PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
outside	51.51.51.254	51.51.51.254	255.255.255.0	51.51.51.0	51.51.51.255		-	<input type="checkbox"/>

rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

rows.

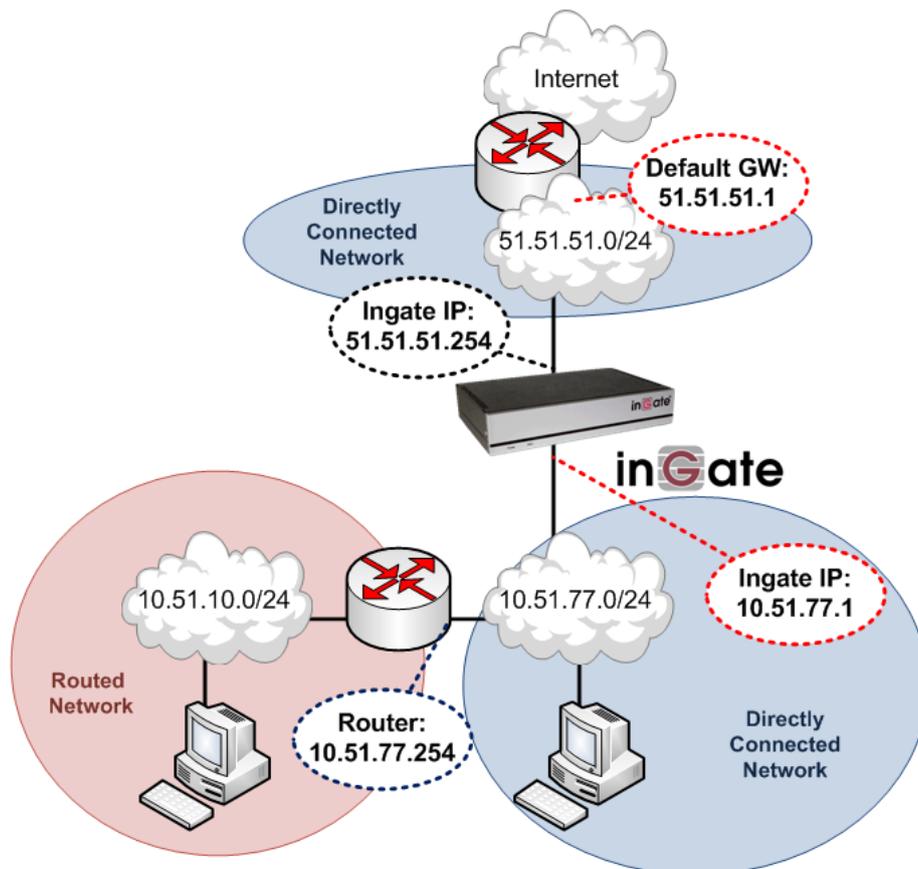
Static Routing [\(Help\)](#)

DNS Name or Network Address	Routed Network		Router		Delete
	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	
default	default		51.51.51.1	51.51.51.1	<input type="checkbox"/>

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



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.

Administration	Basic Configuration	Network	SIP Services	SIP Traffic	Failover	Virtual Private Networks	Quality of Service	Logging and Tools	About
Networks and Computers	Default Gateways	All Interfaces	VLAN	Eth0	Eth1	Eth2	Interface Status	PPPoE	Surroundings
Networks and Computers									
Name	Subgroup	Lower Limit		Upper Limit (for IP ranges)		Interface/VLAN	Delete		
		DNS Name or IP Address	IP Address	DNS Name or IP Address	IP Address				
+ ITSP_IP	-	0.0.0.0	0.0.0.0	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>		
+ LAN	-	10.51.10.0	10.51.10.0	10.51.10.255	10.51.10.255	inside (eth0 untagged)	<input type="checkbox"/>		
	-	10.51.77.0	10.51.77.0	10.51.77.255	10.51.77.255	inside (eth0 untagged)	<input type="checkbox"/>		
+ Mitel	-	10.51.77.200	10.51.77.200			-	<input type="checkbox"/>		
+ WAN	-	0.0.0.0	0.0.0.0	127.0.0.0	127.0.0.0	outside (eth1 untagged)	<input type="checkbox"/>		
	-	127.0.0.2	127.0.0.2	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>		

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.

Administration	Basic Configuration	Network	SIP Services	SIP Traffic	Failover	Virtual Private Networks	Quality of Service	Logging and Tools	About
Networks and Computers	Default Gateways	All Interfaces	VLAN	Eth0	Eth1	Eth2	Interface Status	PPPoE	Surroundings
General									
Physical device: eth0		Obtain IP Address Dynamically			Speed and Duplex				
This interface is: <input checked="" type="radio"/> On <input type="radio"/> Off		<input checked="" type="radio"/> OFF			<input checked="" type="radio"/> Automatic negotiation				
Interface name: inside		<input type="radio"/> DHCP client ON			<input type="radio"/> 100 Mbit/s, full duplex				
		<input type="radio"/> PPPoE client ON			<input type="radio"/> 100 Mbit/s, half duplex				
					<input type="radio"/> 10 Mbit/s, full duplex				
					<input type="radio"/> 10 Mbit/s, half duplex				
Directly Connected Networks (Help)									
Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete	
inside_77.0	10.51.77.1	10.51.77.1	255.255.255.0	10.51.77.0	10.51.77.255		-	<input type="checkbox"/>	
Add new rows <input type="text" value="1"/> rows.									
Alias (Help)									
Below are the ranges from which you can select aliases.									
<input type="text" value="10.51.77.1-10.51.77.254"/>									
Name	DNS Name or IP Address	IP Address	Delete						
Add new rows <input type="text" value="1"/> rows.									
Static Routing (Help)									
Routed Network			Router		Delete				
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address					
10.51.10.0	10.51.10.0	255.255.255.0	10.51.77.254	10.51.77.254	<input type="checkbox"/>				

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.

Administration
Basic Configuration
Network
SIP Services
SIP Traffic
Failover
Virtual Private Networks
Quality of Service
Logging and Tools
About

Networks and Computers
Default Gateways
All Interfaces
VLAN
Eth0
Eth1
Eth2
Interface Status
PPPoE
Surroundings

General

Physical device: **eth1**

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF

DHCP client ON

PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
outside	51.51.51.254	51.51.51.254	255.255.255.0	51.51.51.0	51.51.51.255		-	<input type="checkbox"/>

Add new rows rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

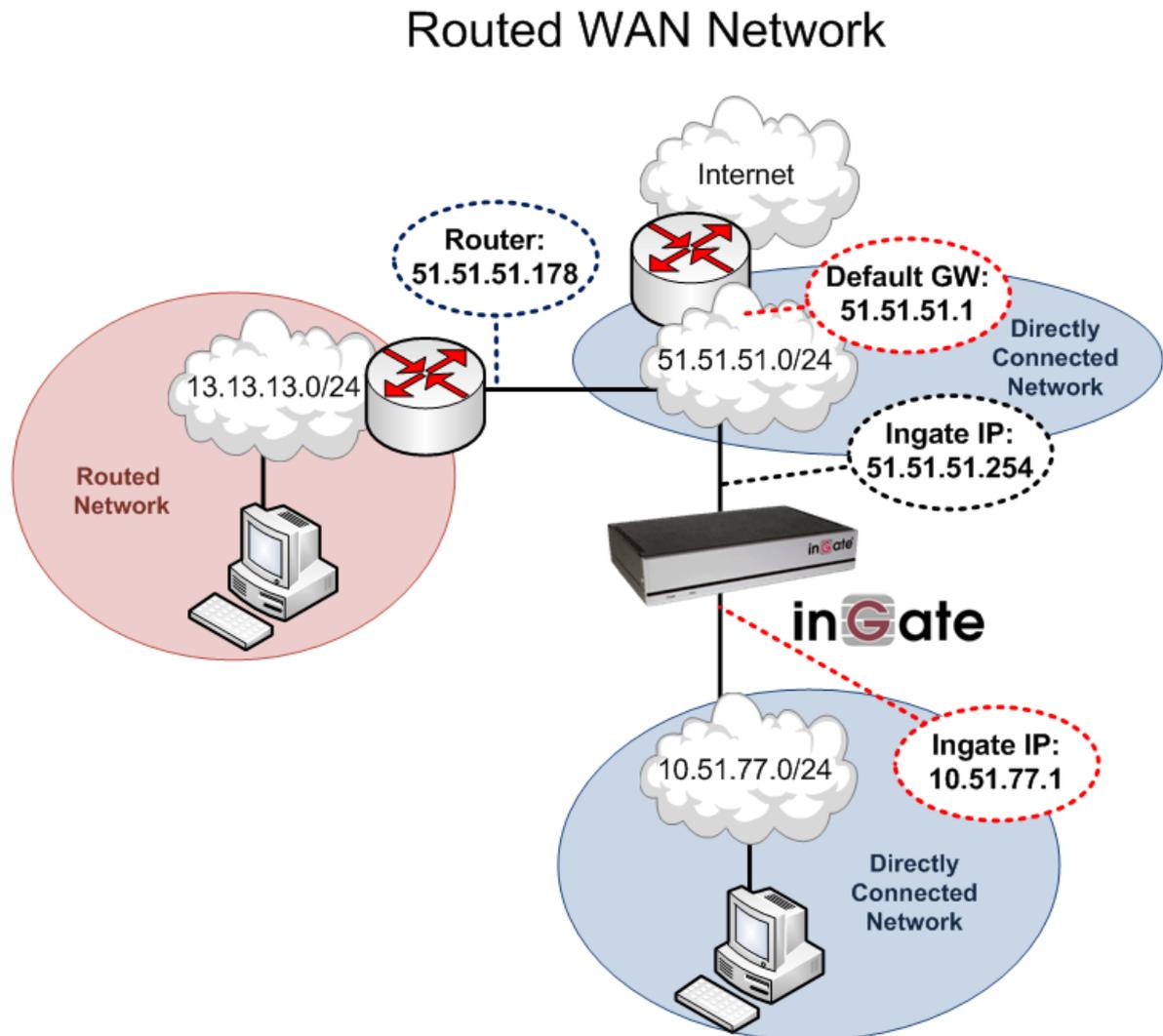
Add new rows rows.

Static Routing [\(Help\)](#)

DNS Name or Network Address	Routed Network		Router		Delete
	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	
default	default		51.51.51.1	51.51.51.1	<input type="checkbox"/>

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.

Networks and Computers Default Gateways All Interfaces VLAN Eth0 Eth1 Eth2 Interface Status PPPoE Surroundings

Networks and Computers

Name	Subgroup	Lower Limit		Upper Limit (for IP ranges)		Interface/VLAN	Delete
		DNS Name or IP Address	IP Address	DNS Name or IP Address	IP Address		
+ ITSP_IP	-	0.0.0.0	0.0.0.0	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>
+ LAN	-	10.51.77.0	10.51.77.0	10.51.77.255	10.51.77.255	inside (eth0 untagged)	<input type="checkbox"/>
+ PBX	-	10.51.77.200	10.51.77.200			-	<input type="checkbox"/>
+ WAN	-	0.0.0.0	0.0.0.0	127.0.0.0	127.0.0.0	outside (eth1 untagged)	<input type="checkbox"/>
	-	127.0.0.2	127.0.0.2	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>

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.

Administration Basic Configuration **Network** SIP Services SIP Traffic Failover Virtual Private Networks Quality of Service Logging and Tools About

Networks and Computers Default Gateways All Interfaces VLAN **Eth0** Eth1 Eth2 Interface Status PPPoE Surroundings

General Obtain IP Address Dynamically Speed and Duplex

Physical device: eth0
 This interface is: On Off
 Interface name: inside

Obtain IP Address Dynamically: OFF
 DHCP client ON
 PPPoE client ON

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

Directly Connected Networks (Help)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
inside	10.51.77.1	10.51.77.1	255.255.255.0	10.51.77.0	10.51.77.255		-	<input type="checkbox"/>

Add new rows 1 rows.

Alias (Help)
 Below are the ranges from which you can select aliases.
 10.51.77.1-10.51.77.254

Name	DNS Name or IP Address	IP Address	Delete

Add new rows 1 rows.

Static Routing (Help)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	

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 51.51.51.178, as well as the Default Gateway for connectivity to the internet.

Administration
Basic Configuration
Network
SIP Services
SIP Traffic
Failover
Virtual Private Networks
Quality of Service
Logging and Tools
About

Networks and Computers
Default Gateways
All Interfaces
VLAN
Eth0
Eth1
Eth2
Interface Status
PPPoE
Surroundings

General

Physical device: eth1

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF

DHCP client ON

PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
outside	51.51.51.254	51.51.51.254	255.255.255.0	51.51.51.0	51.51.51.255		-	<input type="checkbox"/>

Add new rows rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

Add new rows rows.

Static Routing [\(Help\)](#)

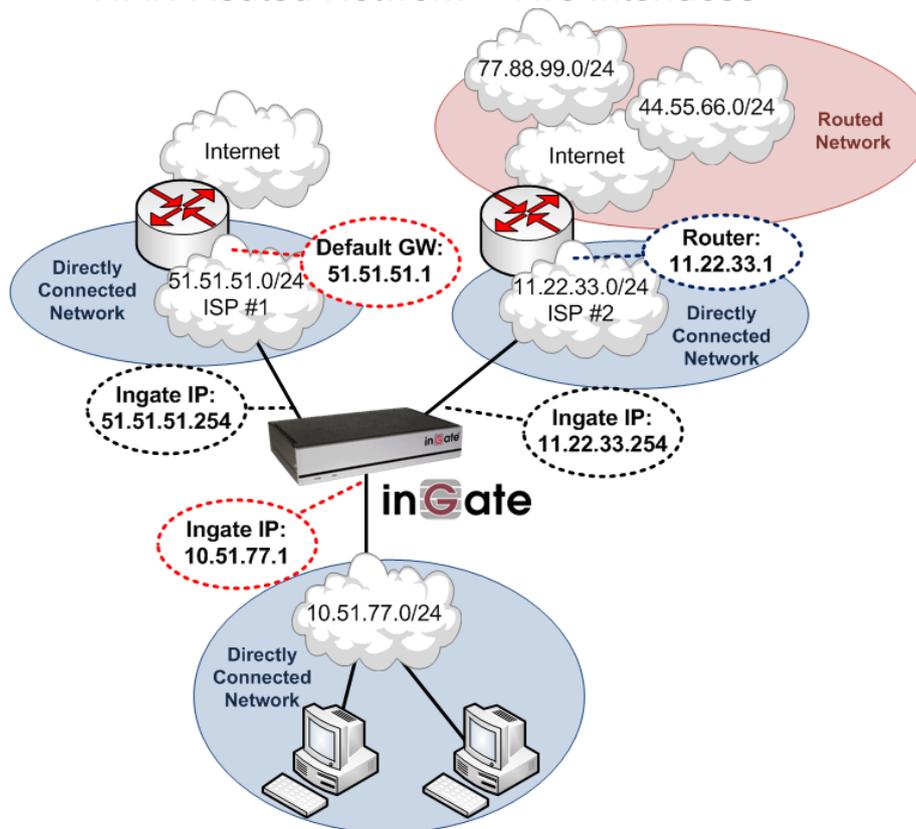
Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	
13.13.13.0	13.13.13.0	255.255.255.0	51.51.51.178	51.51.51.178	<input type="checkbox"/>
default	default		51.51.51.1	51.51.51.1	<input type="checkbox"/>

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.

Directly Connected WAN Network and WAN Routed Network – Two Interfaces



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)”.

Networks and Computers Default Gateways All Interfaces VLAN Eth0 Eth1 Eth2 Interface Status PPPoE Surroundings

Networks and Computers

Name	Subgroup	Lower Limit		Upper Limit (for IP ranges)		Interface/VLAN	Delete
		DNS Name or IP Address	IP Address	DNS Name or IP Address	IP Address		
+ ITSP_IP	-	0.0.0.0	0.0.0.0	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>
+ LAN	-	10.51.77.0	10.51.77.0	10.51.77.255	10.51.77.255	inside (eth0 untagged)	<input type="checkbox"/>
+ Mitel	-	10.51.77.200	10.51.77.200			-	<input type="checkbox"/>
+ WAN	-	0.0.0.0	0.0.0.0	127.0.0.0	127.0.0.0	outside (eth1 untagged)	<input type="checkbox"/>
	-	127.0.0.2	127.0.0.2	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>
+ WAN_2	-	11.22.33.0	11.22.33.0	11.22.33.255	11.22.33.255	Ethernet2 (eth2 untagged)	<input type="checkbox"/>
	-	44.55.66.0	44.55.66.0	44.55.66.255	44.55.66.255	Ethernet2 (eth2 untagged)	<input type="checkbox"/>
	-	77.88.99.0	77.88.99.0	77.88.99.255	77.88.99.255	Ethernet2 (eth2 untagged)	<input type="checkbox"/>

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.

Administration Basic Configuration **Network** SIP Services SIP Traffic Failover Virtual Private Networks Quality of Service Logging and Tools About

Networks and Computers Default Gateways All Interfaces **VLAN Eth0** Eth1 Eth2 Interface Status PPPoE Surroundings

General Obtain IP Address Dynamically Speed and Duplex

Physical device: eth0

This interface is: On Off

Interface name:

Obtain IP Address Dynamically: OFF DHCP client ON PPPoE client ON

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

Directly Connected Networks (Help)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
inside	10.51.77.1	10.51.77.1	255.255.255.0	10.51.77.0	10.51.77.255		-	<input type="checkbox"/>

Add new rows rows.

Alias (Help)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

Add new rows rows.

Static Routing (Help)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	

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.

Administration
Basic Configuration
Network
SIP Services
SIP Traffic
Failover
Virtual Private Networks
Quality of Service
Logging and Tools
About

Networks and Computers
Default Gateways
All Interfaces
VLAN
Eth0
Eth1
Eth2
Interface Status
PPPoE
Surroundings

General

Physical device: **eth1**

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF

DHCP client ON

PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
<input type="text" value="outside"/>	<input type="text" value="51.51.51.254"/>	<input type="text" value="51.51.51.254"/>	<input type="text" value="255.255.255.0"/>	<input type="text" value="51.51.51.0"/>	<input type="text" value="51.51.51.255"/>	<input type="text"/>	<input type="text" value="-"/>	<input type="checkbox"/>

rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>

rows.

Static Routing [\(Help\)](#)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	
<input type="text" value="default"/>	<input type="text" value="default"/>	<input type="text"/>	<input type="text" value="51.51.51.1"/>	<input type="text" value="51.51.51.1"/>	<input type="checkbox"/>

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.

Administration
Basic Configuration
Network
SIP Services
SIP Traffic
Failover
Virtual Private Networks
Quality of Service
Logging and Tools
About

Networks and Computers
Default Gateways
All Interfaces
VLAN
Eth0
Eth1
Eth2
Interface Status
PPPoE
Surroundings

General

Physical device: **eth2**

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF

DHCP client ON

PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
Outside_2	11.22.33.254	11.22.33.254	255.255.255.0	11.22.33.0	11.22.33.255		-	<input type="checkbox"/>

Add new rows rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

Add new rows rows.

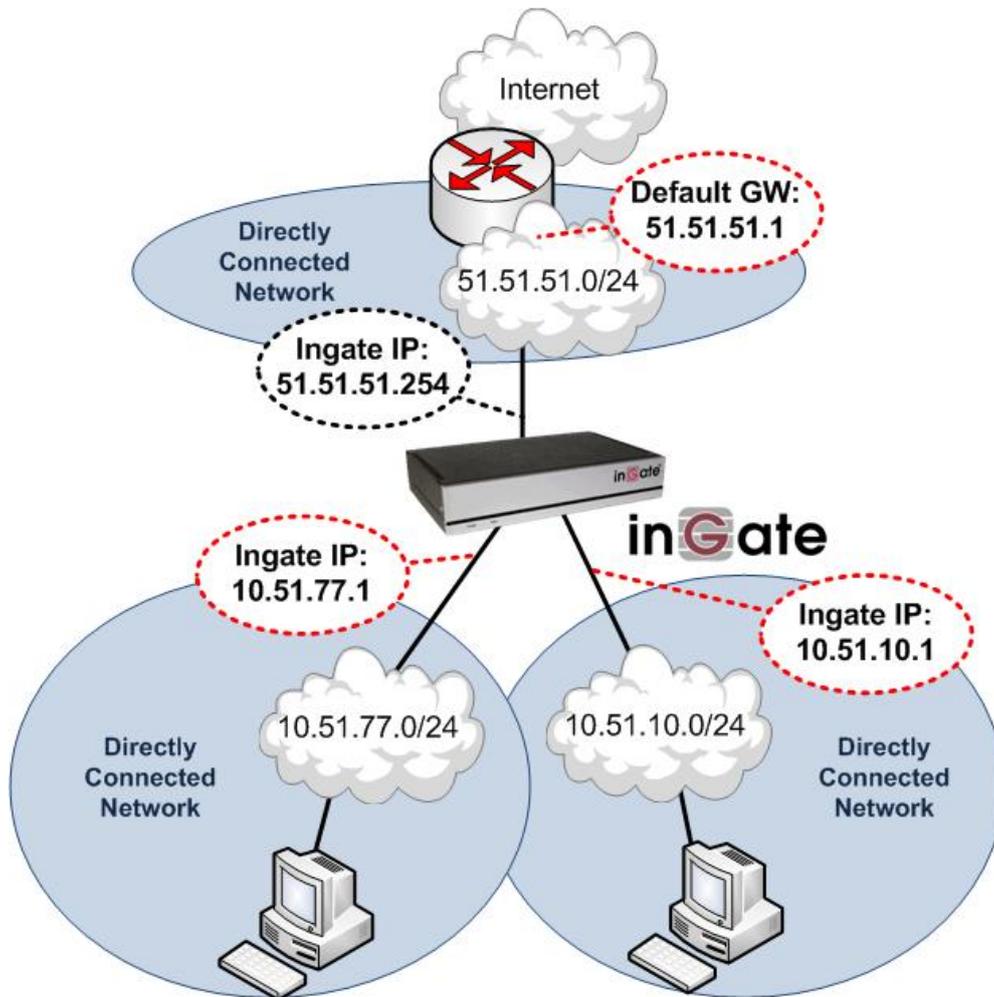
Static Routing [\(Help\)](#)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	
44.55.66.0	44.55.66.0	255.255.255.0	11.22.33.1	11.22.33.1	<input type="checkbox"/>
77.88.99.0	77.88.99.0	255.255.255.0	11.22.33.1	11.22.33.1	<input type="checkbox"/>

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.

Directly Connected Network – Two LAN 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)”.

Networks and Computers Default Gateways All Interfaces VLAN Eth0 Eth1 Eth2 Interface Status PPPoE Surroundings

Name	Subgroup	Lower Limit		Upper Limit (for IP ranges)		Interface/VLAN	Delete
		DNS Name or IP Address	IP Address	DNS Name or IP Address	IP Address		
ITSP_IP	-	0.0.0.0	0.0.0.0	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>
LAN	-	10.51.77.0	10.51.77.0	10.51.77.255	10.51.77.255	inside (eth0 untagged)	<input type="checkbox"/>
LAN_2	-	10.51.10.0	10.51.10.0	10.51.10.255	10.51.10.255	Ethernet2 (eth2 untagged)	<input type="checkbox"/>
Mitel	-	10.51.77.200	10.51.77.200			-	<input type="checkbox"/>
WAN	-	0.0.0.0	0.0.0.0	127.0.0.0	127.0.0.0	outside (eth1 untagged)	<input type="checkbox"/>
	-	127.0.0.2	127.0.0.2	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>

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.

Administration Basic Configuration **Network** SIP Services SIP Traffic Failover Virtual Private Networks Quality of Service Logging and Tools About

Networks and Computers Default Gateways All Interfaces VLAN **Eth0** Eth1 Eth2 Interface Status PPPoE Surroundings

General

Physical device: **eth0**

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF
 DHCP client ON
 PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
inside	10.51.77.1	10.51.77.1	255.255.255.0	10.51.77.0	10.51.77.255		-	<input type="checkbox"/>

rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

rows.

Static Routing [\(Help\)](#)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	

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.

Administration
Basic Configuration
Network
SIP Services
SIP Traffic
Failover
Virtual Private Networks
Quality of Service
Logging and Tools
About

Networks and Computers
Default Gateways
All Interfaces
VLAN
Eth0
Eth1
Eth2
Interface Status
PPPoE
Surroundings

General

Physical device: **eth1**

This interface is: On Off

Interface name:

Obtain IP Address Dynamically

OFF

DHCP client ON

PPPoE client ON

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

Directly Connected Networks [\(Help\)](#)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
outside	51.51.51.254	51.51.51.254	255.255.255.0	51.51.51.0	51.51.51.255		-	<input type="checkbox"/>

rows.

Alias [\(Help\)](#)

Below are the ranges from which you can select aliases.

Name	DNS Name or IP Address	IP Address	Delete

rows.

Static Routing [\(Help\)](#)

DNS Name or Network Address	Routed Network		Router		Delete
	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	
default	default		51.51.51.1	51.51.51.1	<input type="checkbox"/>

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.

The screenshot shows the configuration page for the 'Eth2' interface. The navigation menu at the top includes 'Administration', 'Basic Configuration', 'Network' (selected), 'SIP Services', 'SIP Traffic', 'Failover', 'Virtual Private Networks', 'Quality of Service', 'Logging and Tools', and 'About'. Below this, a sub-menu shows 'Networks and Computers', 'Default Gateways', 'All Interfaces', 'VLAN', 'Eth0', 'Eth1', 'Eth2' (selected), 'Interface Status', 'PPPoE', and 'Surroundings'.

The main configuration area is divided into three sections:

- General:** Physical device: eth2. This interface is: On Off. Interface name: Ethernet2.
- Obtain IP Address Dynamically:** OFF. DHCP client ON. PPPoE client ON.
- 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.

Directly Connected Networks (Help)

Name	DNS Name or IP Address	IP Address	Netmask / Bits	Network Address	Broadcast Address	VLAN Id	VLAN Name	Delete
Inside_2	10.51.10.1	10.51.10.1	255.255.255.0	10.51.10.0	10.51.10.255		-	<input type="checkbox"/>

Add new rows rows.

Alias (Help)

Below are the ranges from which you can select aliases.

10.51.10.1-10.51.10.254

Name	DNS Name or IP Address	IP Address	Delete
------	------------------------	------------	--------

Add new rows rows.

Static Routing (Help)

Routed Network			Router		Delete
DNS Name or Network Address	Network Address	Netmask / Bits	DNS Name or IP Address	IP Address	

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.

The screenshot shows the 'Networks and Computers' configuration page. At the top, there are navigation tabs: Administration, Basic Configuration, Network (selected), SIP Services, SIP Traffic, Failover, Virtual Private Networks, Quality of Service, Logging and Tools, and About. Below these are sub-tabs: Networks and Computers (selected), Default Gateways, All Interfaces, VLAN, Eth0, Eth1, Eth2, Interface Status, PPPoE, and Surroundings. The main content area is titled 'Networks and Computers' and contains a table with the following data:

Name	Subgroup	Lower Limit		Upper Limit (for IP ranges)		Interface/VLAN	Delete
		DNS Name or IP Address	IP Address	DNS Name or IP Address	IP Address		
ITSP_IP	-	0.0.0.0	0.0.0.0	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>
LAN	-	10.51.77.0	10.51.77.0	10.51.77.255	10.51.77.255	inside (eth0 untagged)	<input type="checkbox"/>
PBX	-	10.51.77.200	10.51.77.200			-	<input type="checkbox"/>
WAN	-	0.0.0.0	0.0.0.0	127.0.0.0	127.0.0.0	outside (eth1 untagged)	<input type="checkbox"/>
	-	127.0.0.2	127.0.0.2	255.255.255.255	255.255.255.255	outside (eth1 untagged)	<input type="checkbox"/>

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.