

Application Note

3Com VCX Connect with SIP Trunking - Configuration Guide

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3Com VCX Connect Solution - SIP Trunking

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5	3COM 5.1 VCX TROUI 6.1 INGA 6.2 STAF 6.2.1 6.2.2 6.2.3 6.2.4 6.2.5 6.2.6 6.2.7 6.3 DNS 6.4 INGA 6.4.1	VCX CONNECT SETUP	32 32 42 43 43 43 43 44 45 46 46 46 47 48 49 49
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Tested versions:Ingate Firewall and SIParator version 4.6.4Startup Tool version 2.4.2VCX and VCX Connect 7.1.21c and 8.0.7e1

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	2009-05-28	Scott Beer	First Draft

1 3Com VCX Connect and Ingate

The 3Com® VCX® Connect IP Communications Platform offers an economical Session Initiation Protocol (SIP) IP telephony and messaging platform. This platform delivers powerful phone features and supports multimedia communications through devices, such as SIP-based video phones. The platform supports organizations with up to 250 phone users.

The platform's practical design and affordability allow businesses to replace antiquated PBXs with Voice Over IP (VoIP) solutions that

- Handle unified voicemail and email messaging.
- Support a full range of IP phones.
- Interoperate with the PSTN.

Migration from legacy PBXs to cost-effective IP-based telephony is facilitated by numerous VoIP gateway options. As well, redundant configuration options help ensure business continuity even in the event of power or network disruption.

Ingate offers SIParators and Firewalls, an Enterprise level SIP Session Border Controller (E-SBC) and SIP Security device. A powerful tool that offers enterprises a controlled and secured migration to VoIP and other live communications, based on SIP. With the SIParator and Firewall, even the largest of businesses, with branch offices around the world and remote workers, can easily harness the productivity and cost-saving benefits of VoIP and other IP-based communications while maintaining current investments in security technology.

In this application, above and beyond the E-SBC capabilities that the Ingate products provide, the SIParator and Firewall are providing a number of additional features to enable SIP Trunking connectivity to the 3Com VCX Connect Business Edition IP-PBX solution. The Ingate products offer the use of the SIP Trunking Module, where there are features such as Routing Rules, basic Security Policies, Client/Server Registrar, B2BUA capabilities, SIP Protocol 'Normalization' and more. These features allow the Ingate to connect with any ITSP in a secure and reliable manner.



1.1 SIP Trunking Support

In this application, the 3Com VCX Connect IP Communications Platform is the IP-PBX and SIP Domain Server. It is the call control server processing the phone features and PBX functionality required for an enterprise. It resides on the private LAN segment of enterprise, away from the Internet and protected by the Ingate from any attacks.

The Ingate SIParator or Firewall sits on the Enterprise network edge, providing a security solution for data and SIP communications with E-SBC functionality. It is responsible for all SIP communications security by providing Policy and Routing Rules to allow specific SIP traffic intended for the Enterprise.

The Internet Telephony Service Provider can be of any vendor, located anywhere across the Internet or any remote private networks.

Requirements:

• The Ingate must have the SIP Trunking Module to provide Routing Rules, basic Security Policies, Client/Server Registrar, B2BUA capabilities, SIP Protocol 'Normalization' and more.



VCX Connect setup instructions. These instructions are specific to the Ingate & 3Com deployment with SIP Trunking.

2 Ingate Startup Tool

The Ingate Startup Tool is an installation tool for Ingate Firewall® and Ingate SIParator® products using the Ingate SIP Trunking module or the Remote SIP Connectivity module, which facilitates the setup of complete SIP trunking solutions or remote user solutions.

Note: For this solution the Startup Tool does not adequately program everything necessary for proper integration with the 3Com VCX Connect. There are several manual steps required for completion.

The Startup Tool is designed to simplify the initial "out of the box" commissioning and programming of the Network Topology, SIP Trunk deployments and Remote User deployments. The tool will automatically configure a user's Ingate Firewall or SIParator to work with the IP-PBX, SIP trunking service provider of their choice, and sets up all the routing needed to enable remote users to access and use the enterprise IP-PBX. Thanks to detailed interoperability testing, Ingate has been able to create this tool with pre-configured set ups for several of the leading IP-PBX vendors and ITSPs.

Download Free of Charge: The Startup Tool is free of charge for all Ingate Firewalls and SIParators. Get the latest version of the Startup Tool at http://www.ingate.com/Startup_Tool.php

For more detailed programming instructions consult the Startup Tool – Getting Started Guide, available here: http://www.ingate.com/appnotes/Ingate Startup Tool Getting Started Guide.pdf

Make sure that you always have the latest version of the configuration tool as Ingate continuously adds new vendors once interoperability testing is complete. If you don't find your IP-PBX vendor or ITSP in the lists, please contact Ingate for further information.

The Startup Tool will install and run on any Windows 2000, Windows XP, Windows Vista, and Wine on Linux operating systems.

Keep in mind, this Ingate Startup Tool is a commissioning tool, not an alternate administration tool. This tool is meant to get an "out of the box" Ingate started with a pre-configured setup, enough to make your first call from IP-PBX to an ITSP. Additional programming and administration of this Ingate unit should be done through the Web Administration.

3 Connecting the Ingate Firewall/SIParator

From the factory the Ingate Firewall and SIParator does not come preconfigured with an IP address or Password to administer the unit. Web administration is not possible unless an IP Address and Password are assigned to the unit via the Startup Tool or Console port.

The following will describe a process to connect the Ingate unit to the network then have the Ingate Startup Tool assign an IP Address and Password to the Unit.

Configuration Steps:

- 1) Connect Power to the Unit.
- 2) Connect an Ethernet cable to "Eth0". This Ethernet cable should connect to a LAN network. Below are some illustrations of where "Eth0" are located on each of the Ingate Model types.

Ingate 1190 Firewall and SIParator 19 (Back)



Ingate 1500/1550/1650 Firewall and SIParator 50/55/65



Ingate 1900 Firewall and SIParator 90



3) The PC/Server with the Startup Tool should be located on the same LAN segment/subnet. It is required that the Ingate unit and the Startup Tool are on the same LAN Subnet to which you are going to assign an IP Address to the Ingate Unit.

Note: When configuring the unit for the first time, avoid having the Startup Tool on a PC/Server on a different Subnet, or across a Router, or NAT device, Tagged VLAN, or VPN Tunnel. Keep the network Simple.



4) Proceed to Section 4: Using the Startup Tool for instructions on using the Startup Tool.

4 Using the Startup Tool

There are three main reasons for using the Ingate Startup Tool. First, the "Out of the Box" configuring the Ingate Unit for the first time. Second, is to change or update an existing configuration. Third, is to register the unit, install a License Key, and upgrade the unit to the latest software.

4.1 Configure the Unit for the First Time

From the factory the Ingate Firewall and SIParator does not come preconfigured with an IP address or Password to administer the unit. Web administration is not possible unless an IP Address and Password are assigned to the unit via the Startup Tool or Console port.

In the Startup Tool, when selecting "Configure the unit for the first time", the Startup Tool will find the Ingate Unit on the network and assign an IP Address and Password to the Ingate unit. This procedure only needs to be done ONCE. When completed, the Ingate unit will have an IP Address and Password assigned.

Note: If the Ingate Unit already has an IP Addressed and Password assigned to it (by the Startup Tool or Console) proceed directly to Section 4.2: "Change or Update Configuration".

Configuration Steps:

- 1) Launch the Startup Tool.
- 2) Select the Model type of the Ingate Unit, and then click Next.



3) In the "Select first what you would like to do", select "Configure the unit for the first time".

igate Startup Tool Version	Help	
You are running the latest version of this tool.		Help
rst select what you would like to do: O configure the unit for the first time Change or update configuration of the unit Check SIP configuration and logs Register this unit with Ingate Upgrade this unit V Enable SIP module Configure Remote SIP Connectivity Configure SIP trunking Backup the created configuration	Assign IP address and pas Inside (Interface Eth0) IP Address: MAC Address: Select a password Password: Confirm Password:	sword, establish contact 10 51 77 100 00-d0-c9-a2-44-55
Create a coning without connecting to a unit This tool remembers passwords		Contact
Ingate Startup Tool Version 2.4.0 Startup tool version available on the Ingate web: 2. You are running the latest version of the Startup too More information is available here: http://www.ingat	4.0 ol. te.com/startuptool.php	

4) Other Options in the "Select first what you would like to do",

	First select what you would like to do:
	 Configure the unit for the first time
	O Change or update configuration of the unit
	O Check SIP configuration and logs
	Register this unit with Ingate
	Upgrade this unit
	Enable SIP module
	Configure Remote SIP Connectivity
	Configure SIP trunking
	Backup the created configuration
	Create a config without connecting to a unit
	This tool remembers passwords
O	
ാററ്റ്	

a. Select "Configure SIP Trunking" if you want the tool to configure SIP Trunking between the 3Com server and ITSP.

- b. Select "Register this unit with Ingate" if you want the tool to connect with <u>www.ingate.com</u> to register the unit. If selected, consult the Startup Tool – Getting Started Guide.
- c. Select "Upgrade this unit" if you want the tool to connect with <u>www.ingate.com</u> to download the latest software release and upgrade the unit. If selected, consult the Startup Tool Getting Started Guide.
- d. Select "Backup the created configuration" if you want the tool to apply the settings to an Ingate unit and save the config file.
- e. Select "Creating a config without connecting to a unit" if you want the tool to just create a config file.
- f. Select "The tool remembers passwords" if you want the tool to remember the passwords for the Ingate unit.
- 5) In the "Inside (Interface Eth0)",
 - a. Enter the IP Address to be assigned to the Ingate Unit.
 - b. Enter the MAC Address of the Ingate Unit, this MAC Address will be used to find the unit on the network. The MAC Address can be found on a sticker attached to the unit.

Inside (Interface Eth0)		
IP Address:	10 . 51 . 77 . 100	
MAC Address:	00-D0-C9-A2-44-55	

6) In the "Select a Password", enter the Password to be assigned to the Ingate unit.

Select a password	
Password:	•••••
Confirm Password:	••••

7) Once all required values are entered, the "Contact" button will become active. Press the "Contact" button to have the Startup Tool find the Ingate unit on the network, assign the IP Address and Password.

Inside (Ir IP Addre	nterface EthC ss:)) 10 . 51 . 77 . 100
MAC Add	Iress:	00-D0-C9-A2-44-55
Select a	password	
Password	4:	••••
Confirm F	^o assword:	••••

8) Proceed to Section 4.3: Network Topology.

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4.2 Change or Update Configuration

When selecting the "Change or update configuration of the unit" setting in the Startup Tool the Ingate Unit must have already been assigned an IP Address and Password, either by the Startup Tool – "Configure the unit for the first time" or via the Console port.

In the Startup Tool, when selecting "Change or update configuration of the unit", the Startup Tool will connect directly with the Ingate Unit on the network with the provided IP Address and Password. When completed, the Startup Tool will completely overwrite the existing configuration in the Ingate unit with the new settings.

Note: If the Ingate Unit does not have an IP Addressed and Password assigned to it, proceed directly to Section 4.1: "Configure the Unit for the First Time".

Configuration Steps:

- 1) Launch the Startup Tool.
- 2) Select the Model type of the Ingate Unit, and then click Next.



3) In the "Select first what you would like to do", select "Change or update configuration of the unit".

ngate-stantup root - netps configure your in	ngare-timt	
Ingate Startup Tool Version You are running the latest version of this tool.	Нер	Help
First select what you would like to do: Configure the unit for the first time Change or update configuration of the unit Check SIP configuration and logs Register this unit with Ingate Upgrade this unit Enable SIP module Configure Remote SIP Connectivity Configure SIP trunking Backup the created configuration Create a config without connecting to a unit This tool remembers passwords	Establish contact Inside (Interface Eth0 IP Address: Enter the password — Password:) 10 , 51 , 77 , 100 ••••••
Status Ingate Startup Tool Version 2.4.0 Startup tool version available on the Ingate web: 2.4 You are running the latest version of the Startup too More information is available here: http://www.ingat	4.0 Jl. ze.com/startuptool.php	
		<u>v</u>

4) Other Options in the "Select first what you would like to do",

	First select what you would like to do:
	O Configure the unit for the first time
	 Change or update configuration of the unit
	O Check SIP configuration and logs
	Register this unit with Ingate
	Upgrade this unit
	Enable SIP module
	Configure Remote SIP Connectivity
	Configure SIP trunking
	Backup the created configuration
	Create a config without connecting to a unit
	This tool remembers passwords
3COM	

a. Select "Configure SIP Trunking" if you want the tool to configure SIP Trunking between the 3Com server and ITSP.

- b. Select "Register this unit with Ingate" if you want the tool to connect with <u>www.ingate.com</u> to register the unit. If selected, consult the Startup Tool – Getting Started Guide.
- c. Select "Upgrade this unit" if you want the tool to connect with <u>www.ingate.com</u> to download the latest software release and upgrade the unit. If selected, consult the Startup Tool Getting Started Guide.
- d. Select "Backup the created configuration" if you want the tool to apply the settings to an Ingate unit and save the config file.
- e. Select "Creating a config without connecting to a unit" if you want the tool to just create a config file.
- f. Select "The tool remembers passwords" if you want the tool to remember the passwords for the Ingate unit.
- 5) In the "Inside (Interface Eth0)",
 - a. Enter the IP Address of the Ingate Unit.

-Inside (Interface Eth0)-		
IP Address:	10 . 51 . 77 . 100	

6) In the "Enter a Password", enter the Password of the Ingate unit.

Enter the password	
Password:	•••••

7) Once all required values are entered, the "Contact" button will become active. Press the "Contact" button to have the Startup Tool contact the Ingate unit on the network.

Establish contact Inside (Interface Eth0) – IP Address:	10 . 51 . 77 . 100
Enter the password Password:	•••••
	Contact

8) Proceed to Section 4.3: Network Topology.

4.3 Network Topology

The Network Topology is where the IP Addresses, Netmask, Default Gateways, Public IP Address of NAT'ed Firewall, and DNS Servers are assigned to the Ingate unit. The configuration of the Network Topology is dependent on the deployment (Product) type. When selected, each type has a unique set of programming and deployment requirements, be sure to pick the Product Type that matches the network setup requirements.

s and Upgrades	Network Topology	IP-PBX ITSP_1	Upload Configuration			
Product Type:	Standalone SIPara	ator 🔽		\sim		
Inside (Interface	Eth0)			Internet		
IP address:	10 . 51 . 7	77 . 100		n		
Netmask:	255 . 255 . 2	55.0				
Outside (Interfac	e Eth1)				Exist	ing firewall
Use DHCP to (obtain IP		Ingate SIPa	rator		
IP Address:	172 . 51 .	77 . 100	LAN			
Netmask:	255 . 255 . 2	:55 . 0	6			
Allow https ac	cess to web interfac	e from Internet	IP-	PBX		
Gateway:	170 51	77 1				
			DNS server			
			DNS server Primary:	4 . 2 . 2	. 2]
			DNS server Primary: Secondary: (Optional)	4 . 2 . 2	. 2 . 0]
Status	Tool Verries 2.4.0	concepted to 100	DNS server Primary: Secondary: (Optional)	4 . 2 . 2 0 . 0 . 0	. 2 . 0]
Status Ingate Startup	Tool Version 2.4.0,	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	. 2 . 0]
Status Ingate Startup VoIP Survival VPN	Tool Version 2.4.0,	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	. 2]
Status Ingate Startup VoIP Survival VPN QoS Expansed Soc	Tool Version 2.4.0,	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	. 2]
Status Ingate Startup Ven QoS Enhanced Sec 10 SIP Traver	Tool Version 2.4.0, urity sal Licenses	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	. 2]
Status Ingate Startup VPN QoS Enhanced Sec 10 SIP Traver 10 SIP User Ro	. Tool Version 2.4.0, urity sal Licenses agistration Licenses	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	. 2]
Status Ingate Startup VPN QoS Enhanced Sec 10 SIP Traver: 10 SIP User Ro Software Vers	Tool Version 2.4.0, urity sal Licenses agistration Licenses ion: 4.6.2]	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	. 2]
Status Ingate Startup VoIP Survival VPN QoS Enhanced Sec 10 SIP Travers 10 SIP User R Software Vers	Tool Version 2.4.0, sal Licenses sgistration Licenses ion: 4.6.2	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	. 2]
Status Ingate Startup VoIP Survival VPN QoS Enhanced Sec 10 SIP User R 10 SIP User R Software Vers	Tool Version 2.4.0, al Licenses agistration Licenses ion: 4.6.2	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	. 2	
Status Ingate Startup VoIP Survival VPN QoS Enhanced Sec IO SIP Traver IO SIP User Ru Software Vers	Tool Version 2.4.0, urity sal Licenses egistration Licenses ion: 4.6.2	connected to: Ing	DNS server Primary: Secondary: (Optional) ate SIParator 19, IG-092	4 . 2 . 2 0 . 0 . 0	· 2 · 0	

Configuration Steps:

1) In the Product Type drop down list, select the deployment type of the Ingate Firewall or SIParator.

Product Type:	Standalone SIParator	~
	Scalidatorie Stearacor	

Hint: Match the picture to the network deployment.

2) When selecting the Product Type, the rest of the page will change based on the type selected. Go to the Sections below to configure the options based on your choice.

4.3.1 Product Type: Firewall

When deploying an Ingate Firewall, there is only one way the Firewall can be installed. The Firewall must be the Default Gateway for the LAN; it is the primary edge device for all data and voice traffic out of the LAN to the Internet.

ate Startup Tool			
enses and Upgrades	Network Topology IP-PBX ITSP	Upload Configuration	
Product Type:	Firewall V	Internet	
IP address:	10 . 51 . 77 . 1	Internet	
Netmask:	255 . 255 . 255 . 0		
Outside (Interfa	ce Eth1)		
Use DHCP to	obtain IP		
IP Address:	12 . 23 . 34 . 45	Ingate Firewa	"
Netmask:	255 . 255 . 255 . 0	LAN	
Allow https a	ccess to web interface from Internet		
Gateway:	12 . 23 . 34 . 1	11.	
		DNS server Primary: 4 . 2 . 2 . 1	
		Secondary: 4 . 2 . 2 . 2	
Status			
Ingate Startu	o Tool Version 2.4.0, connected to: I	ngate Firewall 1190, IG-092-719-5012-4	
Remote SIP C VPN QoS Enhanced Sec 15 SIP Traver 20 SIP User R	ionnectivity surity sal Licenses egistration Licenses		~
Software Ver	sion: 4.6.2		~
		(
			Help

Configuration Steps:

1) In Product Type, select "Firewall".

roduct Type:	Firewall	*
--------------	----------	---

2) Define the Inside (Interface Eth0) IP Address and Netmask. This is the IP Address that will be used on the LAN side on the Ingate unit.

-Inside (Interface E	th0)
IP address:	10 . 51 . 77 . 1
Netmask:	255 . 255 . 255 . 0

- 3) Define the Outside (Interface Eth1) IP Address and Netmask. This is the IP Address that will be used on the Internet (WAN) side on the Ingate unit.
 - a. A Static IP Address and Netmask can be entered
 - b. Or select "Use DHCP to obtain IP", if you want the Ingate Unit to acquire an IP address dynamically using DCHP.

Outside (Interface	Eth1)	
Use DHCP to ob	tain IP	
IP Address:	12 . 23 . 34 . 45	
Netmask:	255 . 255 . 255 . 248	
Allow https acce	ess to web interface from Intern	et

- 4) **Optional:** To configure Secure Web (https) from the Internet to the Ingate Unit for remote administration,
 - a. Select "Allow https access to web interface from Internet"

Outside (Interfac	e Eth1)
Use DHCP to a	obtain IP
IP Address:	12 . 23 . 34 . 45
Netmask:	255 . 255 . 255 . 248
Allow https ac	cess to web interface from Internet

b. Create a Private Certificate for https access, enter the corresponding information required to generate a certificate.

G Create certificate for h	ittps access	
Common Name (CNI)		
(Required)	Your Name	ОК
Expire in (days): (Required)	365	Cancel
Country Code (C):	US	
Organisation (O):	Company Name	
State/province(ST):	NY	
Organizational Unit(OU):	Deptartment	
Email address:	admin@email.com	
Locality/town(L):	Your City	

5) Enter the Default Gateway for the Ingate Firewall. The Default Gateway for the Ingate Firewall will always be an IP Address of the Gateway within the network of the outside interface (Eth1).

Gateway:	12	•	23		34		41
		_		_		_	

6) Enter the DNS Servers for the Ingate Firewall. These DNS Servers will be used to resolve FQDNs of SIP Requests and other features within the Ingate. They can be internal LAN addresses or outside WAN addresses.

-DNS server							
Primary:	4		2	•	2		1
Secondary: (Optional)	4	•	2	•	2	•	2

4.3.2 Product Type: Standalone

When deploying an Ingate SIParator in a Standalone configuration, the SIParator resides on a LAN network and on the WAN/Internet network. The Default Gateway for SIParator resides on the WAN/Internet network. The existing Firewall is in parallel and independent of the SIParator. Firewall is the primary edge device for all data traffic out of the LAN to the Internet. The SIParator is the primary edge device for all voice traffic out of the LAN to the Internet.

rk Topology IP-	PBX ITSP	Upload Configuration	
Product Type:			\sim
Incide (Interface	Standalor	he SIParator	
mside (micen ace	cuio)		Internet
IP address:	10 .	51 . 77 . 100	
Netmask:	255 . 3	255 . 255 . 0	
Outside (Interfa	te Eth1)		Existing firewall
Use DHCP to	obtain IP		Ingate SIParator
IP Address:	12 .	23 . 34 . 45	LAN
Netmask:	255 .	255 . 255 . 248	
Allow https a	ccess to web	interface from Internet	IP-PRY
Catowaw			IFTDA
,	12 ,	23 . 37 . 11	
			CDNS server
			DNS server Primary: 4 2 2 1
			DNS server Primary: 4 . 2 . 2 . 1
			DNS server Primary: 4 . 2 . 1 Secondary: 4 . 2 . 1
Shahus			DNS server Primary: 4 . 2 . 1 Secondary: (Optional) 4 . 2 . 2
Status	Tool Version	n 2.4.0, connected for to	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2
Status Ingate Startup	o Tool Versio	n 2.4.0, connected to: In	DNS server Primary: 4 . 2 . 1 Secondary: 4 . 2 . 2 (Optional) 4 . 2 . 2
Status Ingate Startup VoIP Survival	o Tool Versio	n 2.4.0, connected to: In	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2 gate SIParator 19, IG-092-702-2122-0
Status Ingate Startup VoIP Survival VPN OoS	o Tool Versio	n 2.4.0, connected to: In	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2 gate SIParator 19, IG-092-702-2122-0
Status Ingate Startur VoIP Survival VPN QoS Enhanced Sec	o Tool Version	n 2.4.0, connected to: In	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2
Status Ingate Startup VeIP Survival VPN QoS Enhanced Sec 10 SIP Traver	o Tool Version urity sal Licenses	n 2.4.0, connected to: In	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2
Status Ingate Startup VoIP Survival VPN Qo5 Enhanced Sec 10 SIP Traver 10 SIP User R	o Tool Version urity sal Licenses egistration Li	n 2.4.0, connected to: In icenses	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2
Status Ingate Startu; VoIP Survival VPN QPS Enhanced Sec 10 SIP User R Software Ver:	o Tool Version urity sal Licenses egistration Li ion: 4.6.2	n 2.4.0, connected to: In icenses	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2
Status Ingate Startup VoIP Survival VPN Qo5 Enhanced Sec 10 SIP Traver 10 SIP User R Software Vers	o Tool Version urity sal Licenses egistration Li sion: 4.6.2	n 2.4.0, connected to: In icenses	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2
Status Ingate Startup VPN QoS Enhanced Sec 10 SIP Traver 10 SIP User R Software Vers 	o Tool Version sal Licenses egistration Li sion: 4.6.2	n 2.4.0, connected to: In icenses	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2
Status Ingate Startup VoIP Survival VPN QoS Enhanced Sec 10 SIP Traver 10 SIP User R Software Vers I	o Tool Version sal Licenses egistration Li ion: 4.6.2	n 2.4.0, connected to: In icenses	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2
Status Ingate Startup Ven Qo5 Enhanced Sec 10 SIP Traver 10 SIP User R Software Vers	p Tool Version sal Licenses egistration Li iion: 4.6.2	n 2.4.0, connected to: In icenses	DNS server Primary: 4 2 2 1 Secondary: 4 2 2 2 (Optional) 4 2 2 2

Configuration Steps:

1) In Product Type, select "Standalone SIParator".

Product Type:	Standalone SIParator	~

2) Define the IP Address and Netmask of the inside LAN (Interface Eth0). This is the IP Address that will be used on the Ingate unit to connect to the LAN network.

-Inside (Interface El	th0)
IP address:	10 . 51 . 77 . 100
Netmask:	255 . 255 . 255 . 0

- 3) Define the Outside (Interface Eth1) IP Address and Netmask. This is the IP Address that will be used on the Internet (WAN) side on the Ingate unit.
 - a. A Static IP Address and Netmask can be entered
 - b. Or select "Use DHCP to obtain IP", if you want the Ingate Unit to acquire an IP address dynamically using DCHP.

Outside (Interface	<mark>Eth1)</mark> - tain IP			
IP Address:	12	. 23	. 34	. 45
Netmask:	255	. 255	. 255	. 248
Allow https acce	ess to v	veb inte	rface fr	om Internet

- 4) **Optional:** To configure Secure Web (https) from the Internet to the Ingate Unit for remote administration,
 - c. Select "Allow https access to web interface from Internet"

Outside (Interface	Eth1)	
Use DHCP to ob	tain IP	
IP Address:	12 . 23 . 34 . 45	
Netmask:	255 . 255 . 255 . 248	
Allow https acce	ess to web interface from Interne	et

d. Create a Private Certificate for https access, enter the corresponding information required to generate a certificate.

G Create certificate for I	nttps access	
Common Name (CN): (Required)	Your Name	ОК
Expire in (days): (Required)	365	Cancel
Country Code (C):	US	
Organisation (O):	Company Name	
State/province(ST):	NY	
Organizational Unit(OU):	Deptartment	
Email address:	admin@email.com	
Locality/town(L):	Your City	

5) Enter the Default Gateway for the Ingate SIParator. The Default Gateway for the SIParator will be the existing Firewalls IP Address on the DMZ network.



6) Enter the DNS Servers for the Ingate Firewall. These DNS Servers will be used to resolve FQDNs of SIP Requests and other features within the Ingate. They can be internal LAN addresses or outside WAN addresses.

4.3.3 Product Type: DMZ SIParator

When deploying an Ingate SIParator in a DMZ configuration, the Ingate resides on a DMZ network connected to an existing Firewall. The Ingate needs to know what the Public IP Address of the Firewall. This existing Firewall must be the Default Gateway for the DMZ network; the existing Firewall is the primary edge device for all data and voice traffic out of the LAN and DMZ to the Internet. SIP Signaling and Media must be forwarded to the Ingate SIParator, both from the Internet to the SIParator and from the DMZ to the LAN.

enses and Lingrades	Network Topology	IP-PBX ITSP 1		
crises and opgrades		1 100 1101 _1	opida coningeration	_
Product Type:	DMZ SIParator	*	\frown	
DMZ (Interface El	:h0)		Internet	
IP address:	10 . 51 . 7	7 . 100	internet	
Netmask:	255 , 255 , 25	5.0		
-LAN IP address ra	ange		DMZ Existing firewall	
Low IP:	192 . 168 .	1.1	Ingate SIParator	
High IP:	192 . 168 .	1 . 255		
Gateway:	10 . 51 . 7	7.1	IP-PBX	
Firewall extern IP	12 . 23 . 3	4 . 45		_
			CDNS server	
			Primary: 4 . 2 . 2 . 2	
			Secondary: 4 . 2 . 2 . 1 (Optional)	
Status Ingate Startup	Tool Version 2.4.0, a	connected to: Inga	ate SIParator 19, IG-092-702-2122-0	
VoIP Survival VPN QoS Enhanced Sect 10 SIP Travers 10 SIP User Re	urity al Licenses :gistration Licenses			
Software Versi	on: 4.6.2			
			He	elp

Configuration Steps:

1) In Product Type, select "DMZ SIParator".

Product Type: DMZ SIParator

2) Define the IP Address and Netmask of the DMZ (Interface Eth0). This is the IP Address that will be used on the Ingate unit to connect to the DMZ network side on the existing Firewall.

-DMZ (Interface Eth	0)	
IP address:	192 . 168 . 100 . 100	
Netmask:	255 . 255 . 255 . 0	

3) Define the LAN IP Address Range, the lower and upper limit of the network addresses located on the LAN. This is the scope of IP Addresses contained on the LAN side of the existing Firewall.

∼LAN IP address ran	ige							
Low IP:	10	•	10	•	10	•	1	
High IP:	10	•	10	•	10	•	255	

4) Enter the Default Gateway for the Ingate SIParator. The Default Gateway for the SIParator will be the existing Firewalls IP Address on the DMZ network.

Gateway: 192 . 186 . 100 . 1

5) Enter the existing Firewall's external WAN/Internet IP Address. This is used to ensure correct SIP Signaling and Media traversal functionality. This is required when the existing Firewall is providing NAT.

Firewall extern IP:	98		87	•	76	•	65]
	_	_		_		_	_	

6) Enter the DNS Servers for the Ingate Firewall. These DNS Servers will be used to resolve FQDNs of SIP Requests and other features within the Ingate. They can be internal LAN addresses or outside WAN addresses.



7) On the Existing Firewall, the SIP Signaling Port and RTP Media Ports need to be forwarded to the Ingate SIParator. The Ingate SIParator is an ICSA Certified network edge security device, so there are no security concerns forwarding network traffic to the SIParator.

On the existing Firewall:

- a. Port Forward the WAN/Internet interface SIP Signaling port of 5060 with a UDP/TCP Forward to the Ingate SIParator
- b. Port Forward the a range of RTP Media ports of 58024 to 60999 with a UDP Forward to the Ingate SIParator
- c. If necessary; provide a Rule that allows the SIP Signaling on port 5060 using UDP/TCP transport on the DMZ network to the LAN network
- d. If necessary; provide a Rule that allows a range of RTP Media ports of 58024 to 60999 using UDP transport on the DMZ network to the LAN network.

4.3.4 Product Type: DMZ-LAN SIParator

When deploying an Ingate SIParator in a DMZ-LAN configuration, the Ingate resides on a DMZ network connected to an existing Firewall and also on the LAN network. The Ingate needs to know what the Public IP Address of the Firewall. This existing Firewall must be the Default Gateway for the DMZ network; the existing Firewall is the primary edge device for all data and voice traffic out of the LAN and DMZ to the Internet. SIP Signaling and Media must be forwarded to the Ingate SIParator, from the Internet to the SIParator. The voice traffic from the LAN is directed to the SIParator then to the existing Firewall.

Startup Tool				
ork Topology IP-F	BX ITSP Upload Configuration			
Product Type:	DMZ-LAN SIParator		\sim	
Inside (incentace			Internet	
IP duuress:	10 . 51 . 77 . 100			
Netmask:	255 . 255 . 255 . 0			
-DMZ (Interface El	h1)		DMZ	
Use DHCP to d	btain IP	-	Existing f	irewall
IP Address:	192 . 168 . 100 . 100	Ingate SIParato	or 🗸	
Netmask:	255 . 255 . 255 . 0	LAN		
Allow https ac	cess to web interface from Internet			
Gateway:	192 . 186 . 100 . 1	IP-PB	x	
Firewall extern IP	98 . 87 . 76 . 65			
		DNS server		
		Primary:	4 . 2 . 2 . 1	
		Secondary: (Optional)	4 . 2 . 2 . 2	
Status				
Ingate Startup	Tool Version 2.4.0, connected to: Inq	jate SIParator 19, IG-09	2-702-2122-0	
VoIP Survival				~
005				
Enhanced Secu	irity			
10 SIP Travers 10 SIP User Re	ai Licenses gistration Licenses			
Coffmana Manai	-			
Jui tival e vel si	011. 4.0.2			

Configuration Steps:

1) In Product Type, select "DMZ-LAN SIParator".

Product Type:	DMZ-LAN SIParator	~
---------------	-------------------	---

2) Define the IP Address and Netmask of the inside LAN (Interface Eth0). This is the IP Address that will be used on the Ingate unit to connect to the LAN network.

Inside (Interface Eth0)					
IP address:	10 . 51 . 77 . 100				
Netmask:	255 . 255 . 255 . 0				

3) Define the IP Address and Netmask of the DMZ (Interface Eth1). This is the IP Address that will be used on the Ingate unit to connect to the DMZ network side on the existing Firewall.

- a. A Static IP Address and Netmask can be entered
- b. Or select "Use DHCP to obtain IP", if you want the Ingate Unit to acquire an IP address dynamically using DCHP.

-DMZ (Interface Eth	n1) Jutain IP
IP Address:	192 . 168 . 100 . 100
Netmask:	255 . 255 . 255 . 0
Allow https acce	ess to web interface from Internet

4) Enter the Default Gateway for the Ingate SIParator. The Default Gateway for the SIParator will be the existing Firewalls IP Address on the DMZ network.

Gateway:	192 . 186 . 100 . 1
----------	---------------------

5) Enter the existing Firewall's external WAN/Internet IP Address. This is used to ensure correct SIP Signaling and Media traversal functionality. This is required when the existing Firewall is providing NAT.

Firewall extern IP:	98		87	•	76	•	65]
	_	_		_		_	_	

6) Enter the DNS Servers for the Ingate Firewall. These DNS Servers will be used to resolve FQDNs of SIP Requests and other features within the Ingate. They can be internal LAN addresses or outside WAN addresses.



7) On the Existing Firewall, the SIP Signaling Port and RTP Media Ports need to be forwarded to the Ingate SIParator. The Ingate SIParator is an ICSA Certified network edge security device, so there are no security concerns forwarding network traffic to the SIParator.

On the existing Firewall:

- a. Port Forward the WAN/Internet interface SIP Signaling port of 5060 with a UDP/TCP Forward to the Ingate SIParator
- b. Port Forward the a range of RTP Media ports of 58024 to 60999 with a UDP Forward to the Ingate SIParator

4.3.5 Product Type: LAN SIParator

When deploying an Ingate SIParator in a LAN configuration, the Ingate resides on a LAN network with all of the other network devices. The existing Firewall must be the Default Gateway for the LAN network; the existing Firewall is the primary edge device for all data and voice traffic out of the LAN to the WAN/Internet. SIP Signaling and Media must be forwarded to the Ingate SIParator, from the Internet to the SIParator. The voice traffic from the LAN is directed to the SIParator then to the existing Firewall.

ate Startup Tool		
twork Topology IP-F	PBX ITSP Upload Configu	ation
Product Type: LAN (Interface Et	LAN SIParator	
IP address:	10 . 51 . 77 . 100	Internet
Netmask:	255 . 255 . 255 . 0	Existing firewall
Gateway:	10 . 51 . 77 . 1	IP-PBX Ingate SIParator
Firewall extern IP	98 . 87 . 76 . 65	
		DN5 server
		Primary: 4 . 2 . 2 . 1
		Secondary: (Optional) 4 . 2 . 2 . 2
Status Ingate Startup	Tool Version 2.4.0, connected	to: Ingate SIParator 19, IG-092-702-2122-0
VoIP Survival VPN QoS Enhanced Secu 10 SIP Travers 10 SIP User Re	urity al Licenses Igistration Licenses	
Software Versi	on: 4.6.2	

Configuration Steps:

1) In Product Type, select "LAN SIParator".

Product Type:	LAN SIParator	~
---------------	---------------	---

2) Define the IP Address and Netmask of the inside LAN (Interface Eth0). This is the IP Address that will be used on the Ingate unit to connect to the LAN network.

LAN (Interface Eth	0)
IP address:	10 . 51 . 77 . 100
Netmask:	255 . 255 . 255 . 0

3) Enter the Default Gateway for the Ingate SIParator. The Default Gateway for the SIParator will be the existing Firewalls IP Address on the DMZ network.

Gateway:	10	•	51	•	77	•	1]
_	_	-	-	-	-	-	-	

4) Enter the existing Firewall's external WAN/Internet IP Address. This is used to ensure correct SIP Signaling and Media traversal functionality. This is required when the existing Firewall is providing NAT.



5) Enter the DNS Servers for the Ingate Firewall. These DNS Servers will be used to resolve FQDNs of SIP Requests and other features within the Ingate. They can be internal LAN addresses or outside WAN addresses.

-DNS server								
Primary:	4	•	2	•	2	•	1	
Secondary: (Optional)	4	•	2	•	2	•	2]

6) On the Existing Firewall, the SIP Signaling Port and RTP Media Ports need to be forwarded to the Ingate SIParator. The Ingate SIParator is an ICSA Certified network edge security device, so there are no security concerns forwarding network traffic to the SIParator.

On the existing Firewall:

- a. Port Forward the WAN/Internet interface SIP Signaling port of 5060 with a UDP/TCP Forward to the Ingate SIParator
- b. Port Forward the a range of RTP Media ports of 58024 to 60999 with a UDP Forward to the Ingate SIParator

4.3.6 Product Type: LAN SIParator - "SBE SIParator Only"

This section is specific to the Ingate SBE SIParator when deploying in a LAN SIParator configuration, the Ingate SBE resides on a LAN network with all of the other network devices. The existing Firewall must be the Default Gateway for the LAN network; the existing Firewall is the primary edge device for all data and voice traffic out of the LAN to the WAN/Internet. SIP Signaling and Media must be forwarded to the Ingate SIParator, from the Internet to the SIParator. The voice traffic from the LAN is directed to the SIParator then to the existing Firewall.

Ingate Startup Tool						
Network Topology IP-P	BX ITSP (Upload Configuration				
Product Type: LAN (Interface ET IP address:	LAN SIParato	or 💌		Interne		
Netmask:	255 . 255	; . 255 . 0		~	Existing fir	rewall
Gateway:	10 . 51	. 77 . 1		IP-PBX	Ingate SIP	arator
Firewall extern IP: Port range:	98 . 87 58024	. 76 . 65 - 60999				
Allow DHCP Se	rver, (setup in	web GUI)	DNS server Primary:	4.2.	2.1	
Chabura			(Optional)	4.2.	2.2	
Ingate Startup	Tool Version 2.	.4.0, connected to: Ing	ate SIParator SBE,			
Ingate Startup Startup tool ve You are runnin More informatio	Tool Version 2 rsion available g the latest ver on is available l	.4.0 on the Ingate web: 2.4 rsion of the Startup too here: http://www.ingat	4.0 I. e.com/startuptool.php			
						M
						Help

Configuration Steps:

1) In Product Type, select "LAN SIParator".

Product Type: LAN SIParator	~
-----------------------------	---

2) Define the IP Address and Netmask of the inside LAN (Interface Eth0). This is the IP Address that will be used on the Ingate unit to connect to the LAN network.

LAN (Interface Eth	0)
IP address:	10 . 51 . 77 . 100
Netmask:	255 . 255 . 255 . 0

3) Enter the Default Gateway for the Ingate SIParator. The Default Gateway for the SIParator will be the existing Firewalls IP Address on the DMZ network.

Gateway:	10	51	77	1	
_	_				

4) Enter the existing Firewall's external WAN/Internet IP Address. This is used to ensure correct SIP Signaling and Media traversal functionality. This is required when the existing Firewall is providing NAT.

5) Enter a Port Range of media ports you need to configure the firewall to forward to the LAN SIParator.

6) Enter the DNS Servers for the Ingate Firewall. These DNS Servers will be used to resolve FQDNs of SIP Requests and other features within the Ingate. They can be internal LAN addresses or outside WAN addresses.

DNS server							
Primary:	4	•	2	•	2	•	1
Secondary: (Optional)	4	•	2	•	2	•	2

7) On the Existing Firewall, the SIP Signaling Port and RTP Media Ports need to be forwarded to the Ingate SIParator. The Ingate SIParator is an ICSA Certified network edge security device, so there are no security concerns forwarding network traffic to the SIParator.

On the existing Firewall:

- a. Port Forward the WAN/Internet interface SIP Signaling port of 5060 with a UDP/TCP Forward to the Ingate SIParator
- b. Port Forward the a range of RTP Media ports of 58024 to 60999 with a UDP Forward to the Ingate SIParator

4.4 IP-PBX

The IP-PBX section is where the IP Addresses and Domain location are provided to the Ingate unit. The configuration of the IP-PBX will allow for the Ingate unit to know the location of the 3Com VCX Connect server as to direct SIP traffic for the use with SIP Trunking. The IP Address of the IP-PBX must be on the same network subnet at the IP Address of the inside interface of the Ingate unit. Ingate has confirmed interoperability with the 3Com VCX Connect server.

Ingate Startup Too		- L 🔼
Network Topology I	-PBX ITSP Upload Configuratio	n
- IP-PBX (should	be located on the LAN)	
Type:	2Com	PBX registers at the Ingate
	JCom	
IP Address:	10 . 51 . 77 . 10	
SIP Domain	n name	
Sar Bondari	asterisklingate.com	
Status		
Ingate Start	up Tool Version 2.4.2, connected to:	Ingate Firewall 1190, IG-092-719-5012-4
Remote SIP	Connectivity	
QoS		
Enhanced Se 20 SIP Trave	ecurity ersal Licenses	
20 SIP User	Registration Licenses	
Software Ve	rsion: 4.6.4	
		Help

Configuration Steps:



1) In the IP-PBX Type drop down list, select "3Com". Ingate has confirmed interoperability the 3Com VCX Connect, the unique requirements of the testing are contained in the Startup Tool.

Type:	3Com	~



2) Enter the IP Address of the 3Com VCX Connect. The IP Address should be on the same LAN subnet as the Ingate unit.

|--|

3) This solution requires the use of an FQDN for the SIP Domain of 3Com VCX Connect. This domain name is used to route SIP Requests to the 3Com VCX Connect associated with that domain. Select "Use domain name" and enter the FQDN.

🗹 Use domain	name	Ŀ.
SIP Domain:	vcx.ingate.com	
-		

4.5 ITSP

The ITSP section is where all of the attributes of the SIP Trunking Service Provider are programmed. Details like the IP Addresses or Domain, DIDs, Authentication Account information, Prefixes, and PBX local number. The configuration of the ITSP will allow for the Ingate unit to know the location of the ITSP as to direct SIP traffic for the use with SIP Trunking. Ingate has confirmed interoperability many of the leading ITSP vendors.

Ingate Startup Tool	
Network Topology IP-PBX ITSP_1 Upload Configuration	
Name: Generic ITSP	DID (start of range) (user name): DID range size: 1
Provider address IP Address: 0 . 0 . 0 . 0 Use domain name Advanced Prefix to match and remove from inbound calls Prefix:	Account information: Use account Authentication name: (same as DID if blank) Increment authentication name for ranges Domain: Password:
Prefix to add to outbound calls Prefix:	Use user account on incoming call PBX local numbers (advanced) Local numbers(tart of range, use same as DID if local numbers are not used): Password (only used if PBX registers at the Ingate): PBX registers at the Ingate
Status Ingate Startup Tool Version 2.4.0, connected to: Ingate SIPara	ator 19, IG-092-702-2122-0
VPN QoS Enhanced Security 10 SIP Traversal Licenses 10 SIP User Registration Licenses Software Version: 4.6.2	
	Нер

Configuration Steps:

1) In the ITSP drop down list, select the appropriate ITSP vendor. Ingate has confirmed interoperability several of the leading ITSP vendors, the unique requirements of the vendor testing are contained in the Startup Tool. If the vendor choice is not seen, select "Generic ITSP".

Name:	Generic ITSP	*

When you select a specific ITSP vendor, the Startup Tool will have the individual connection requirements predefined for that ITSP, the only additional entries may be the specific site requirements.

- 2) Service Providers come in one of two flavors, either they have a trusted IP deployment or they require a Registration account.
 - a. In the case where the Service Provider uses a Trusted IP deployment, all that is required is to enter the IP Address or Domain of the Service Providers SIP Server or SBC. Enter the IP Address here, or select "Use domain name" and enter the FQDN of the Service Provider.

Provider address	0	0	0	•	0]
Use domain nam	ne					
Provider address Domain:	ne]

b. In the case where the Service Provider requires the Ingate to Register with the Service Providers SIP Server or SBC, select "Use Account".
When "Use Account" is selected, the Registration Account information from the Service Provider is required. Information such as Username/DID, Service Providers Domain, Authentication Username, and Authentication Password.

Account information:
Use account
Authentication name:
(same as DID if blank)
Increment authentication name for ranges
Domain:
Password:
Use user account on incoming call

i. Enter a DID (Username) in which the Ingate will register with the Service Provider. The Startup Tool also has the ability to program a sequential range of DIDs.

DID (start of range) (user name):	
DID range size:	1

ii. Registrations often require the use of an Authentication Username and Password. Also enter the Domain or IP Address of the Service Provider.

~Account information:						
Use account						
Authentication name:						
(same as DID if Diank)						
Domain:						
Password:						
Use user account on incoming call						

3) The Ingate has the ability to add/remove digits and characters from the Request URI Header. A typical scenario is the addition/removal of ENUM character "+". Many IP-PBX and ITSPs either need to add or remove this character prior to sending or receiving SIP requests. Here you can enter values to Match and remove from the Request URI.

Prefix:	
Prefix to add to Prefix:	o outbound calls
Forward 3xx m	lessages
🗹 Enable	

4.6 Upload Configuration

At this point the Startup Tool has all the information required to push a database into the Ingate unit. The Startup Tool can also create a backup file for later use.

	•
ork Topology IP-PBX ITSP_1 Upload Configuration	
Disclaimer and Self-Certified vendor, every possible configuration, combination and/or software version has not been tested. For technical assistance regarding end-to-end interoperability	Verbose Logging (SIP debug)
	 Final step Logon to web GUI and apply settings Apply settings directly using serial interface Backup the configuration
Status Ingate Startup Tool Version 2.4.0, connected to: Ingate S 10 SIP Traversal Licenses 10 SIP User Registration Licenses	Upload
Sortware version: +.0.2 Error: Please enter number, name and domain. Error: Please enter number, name and domain.	

Configuration Steps:

 Press the "Upload" button. If you would like the Startup Tool to create a Backup file also select "Backup the configuration". Upon pressing the "Upload" button the Startup Tool will push a database into the Ingate unit.



2) When the Startup has finished uploading the database a window will appear and once pressing OK the Startup Tool will launch a default browser and direct you to the Ingate Web GUI.



3) Although the Startup Tool has pushed a database into the Ingate unit, the changes have not been applied to the unit. Press "Apply Configuration" to apply the changes to the Ingate unit.

Administration	Basic Configuration	Network R	ules and Relays	SIP Services	SIP Traffic	Failover	Virtual Private Networks	Quality of Service	Logging and Tools	About
Save/Load Configuration	Show Configuration	User Administration	n Upgrade	Table Look	Date and Time	Restart	Change Language			
Test Ru	n and App	ly Conf (Help)	Sh	ow Mes	ssage A	About Unap	plied Ch	anges	
Duration of	limited test m	ode:) ۞	On every	page				
30	seconds			00	On the Sa	ave/Load	d Configuration	page		
Apply of	configuration			01	Never					
Backup	(Help)									
The perman	nent configura	tion is not affe	ected.							
Save to	local file	Load from	n local file	Lo	ocal file:			Browse		
Save/Lo	ad CLI Co	ommand F	ile (He	<u>lp)</u>						
The perman	nent configura	tion might be	affected 1	by load	ing a CL	I file.				
Save	config to CLI fil	e Loa	ad CLI file	Loc	al file:			Browse	_	
Abort A	ll Edits (Help)		Re	load Fa	ictory	Configurati	on <u>(Help</u>	<u>))</u>	
The perman	nent configura	tion is not affe	ected.	The p	ermaner	nt configu	uration is not af	fected.		
Abort all	edits				Load fac	tory con	figuration			

4) A new page will appear after the previous step requesting to save the configuration. Press "Save Configuration" to complete the saving process.



5 3Com VCX Connect Setup

The following configuration details represent the configuration under test. The Ingate SIParator provides Telco communications for all outbound and inbound PSTN calls. In addition the SIParator provided NAT translation services for any remote phones or Teleworkers wanting to register a phone to their work extension.

The VCX is configured with the SIParator IP address as a trusted endpoint. Therefore no authentication or registration is needed between these 2 devices. The SIParator is configured with the both the VCX Primary and Secondary IP addresses as the SIP Proxy. All inbound Telco calls i.e. DID's are redirected by the SIParator to VCX. Remote phone are configured to use the SIParator public IP address as their SIP Proxy address. All phone SIP registrations received by the SIParator are forwarded to the VCX for authentication. Once authenticated these remote phones can make outbound calls using their office extension and receive inbound calls to their office extension at home, all of these calls are carried over their office Telco connection.

5.1 VCX Configuration

Defining a device on the VCX 8.0.7e as a "Trusted Endpoint" can now be done using the Web interface.

Note: In versions prior to 8.x, creating a trusted endpoint was a 2 step process please refer to documentation for these version for details

Using VCX Web Configuration GUI

1. Point a browser to VCX Server IP address (e.g.:http://158.101.74.100) The VCX login screen appears. Select the Central Management Console option.



2. Enter a VCX username and password with administrative access. (New VCX installations have a default username **admin** and password **besgroup**.) Click **Submit**.



3. Select the site name you wish to work on.



4. Select Directory from the top menu

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5. Click "**Trusted End Points**" Tab on Right of the screen to add a device IP addresses

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a. Click the Add Trusted End Point button.

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- b. Enter the endpoint configuration as follows:
 - **IP Address:** IP address of SIParator
 - Netmask: Use Host mask of 255.255.255.255
- 6. Click "**End Points**" Tab on Right of the screen to add a device name for each i.e. "Aspect" to the list as an endpoint
 - a. Select "Add End Point" button

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b. The endpoint configuration window is displayed

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- c. Enter the endpoint configuration as follows:
 - **Type:** Set to Gateway
 - Active: Set to Yes.
 - Name: Enter the name of the device i.e. SIParator B2BUA
 - **Description:** Enter a description of the device i.e. Ingate
 - Site Id: Enter your VCX site ID.
 - IP Address: Enter the SIParator IP address
 - **Port Number:** port number (usually 5060)
 - Click the **Save** button.
- d. The **List of End Points** table appears, listing the new endpoint.

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7. Click Routes Tab to create a Route with one or more endpoints

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a. Select the "Add Route" button and give it a name i.e. SIParator B2BUA and select "Save"

🖉 Add / Edit Route - Windo	ows Internet Explorer	_ P 🗙
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b. Select the "End Points" button on Right

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c. Select the "Assign End Points" button

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d. From the list of available endpoints put a check mark next to "SIParator B2BUA" and select the "**Assign Selected**" button

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e. Confirm the "OK"

🖉 Route unassigned Endpoints List - Windows Internet Explorer									
💽 🗢 🖻 http://158.10	01.74.100/voipadmin/dir/routeendpoin	/Dispatch.do?pageno=1&sortby=EP_NAME&sort	type : 💌 🗟 😽 🗙 🚼 Google	P-					
File Edit View Favorites Tools Help									
👷 Favorites 🖉 Route unassigned Endpoints List									
VCXTM Connect Data Server: VCXCONNECTQ198.101.74.100 Users Directory Menu > Route Plans > Routes > End Points Directory Menu > Route Plans > Routes > End Points Search Preferences Main Main Menu > Route Plans > Routes > End Points Out Dial Patterns Could Plans Preferences Main Main Message from webpage Its Route: SIPerator B2BUA Or you really want to assign the selected record(s)?									
		OK Cancel	Go	A-6					
		Name A	Description	Acuve Acuon					
	Gateway	Aspect	Cali Center	Yes Assign					
Log out		inmog primogr	Gateway on Pri connect	Yee Assign					
- E	Cateway	ipmsg.socondon		Voc Assign					
Copyright © 2004-2008		SIRector P2RLA	Ingoto	Yes Assign					
3Com® Corporation	Call Brasspace	VCV Enterprise Bri	Entermine @ 202	Yes Assign					
All Rights Reserved		VCX Enterprise Sec	Enterprise @ 202	Voc Assign					
	Call 100essor	Prov. Dogo 1	af 4 Next	103 <u>Applyin</u>					
/routeendpoint/Dispatch.do?page	eno=1&sortby=EP_NAME&sorttype=as	c	G Internet	√2 • € 100% • .					

f. The Endpoint "Aspect" should be listed as shown

🖉 Route Endpoints List - W	indows Internet Explorer
💽 🗢 🖻 http://158.10	11.74.100/voipadmin/dir/routeendpoint/Dispatch.do?action=list&routeId=74000002&routeNa 🔽 🗟 🐓 🗙 🔀 Google
File Edit View Favorites	Tools Help
🔶 Favorites 🏾 🏀 Route Endp	oints List
Ger O.	VCX™ Connect
3COM	Data Server: VCXCONNECT@158.101.74.100
	Route Plans Patterns Routes End Points Trusted End Points Out Dial Patterns
Users >	
Directory Search	This page lists the end points assigned to the selected route.
Preferences	An end point specifies a route destination.
Main	 Select an end point and click Assign End Points to assign the end point to the route.
	 Select an end point and click Activate Selected of Deactivate Selected to enable of disable use of the end point by the route. This operation changes the value of the Active column for the selected end point.
	 If multiple end points are assigned to the route, specify the order of call processing within a route. If available, the end point with the highest priority (0 is the highest) processes all calls.
	Click Out Dial Patterns to assign an Out Dial pattern to the end point. An Out Dial pattern determines how
	an outbound number is modified (translated).
	Help
	Route - Assigned End Points
	Route: SIPerator B2BUA
	Found 1 End Point(s)
	Assign End Points Unassign Selected Activate Selected Deactivate Selected Update Cancel
Log out	Filter : Name Go
Ð	□ <u>Name</u> Description <u>Type</u> <u>Active</u> <u>Network Address</u> <u>Sort Order</u> Actions
Copyright © 2004-2008	SIPerator B2BUA Ingate Gateway Yes V 158.101.74.1:5060 0 Out Dial Patterns Unassion
3Com® Corporation All Rights Reserved	Prev Page 1 v of 1 Next
	🚱 Internet 🧼 👻 🕄 100% 🔻

8. Click **Patterns** Tab and create a pattern if needed that a call must match in order for VCX to send the call to the SIParator server.

Note: This step was skipped because the most common patterns are already defined by default on the VCX. Therefore an existing pattern of "**81***" was used in testing

9. Click **Routes** Tab, and create a route that lets VCX send calls to Aspect Unified IP. Click the **Add Route Plan** button.

🖉 Route Plans List - Windo	ws Internet Explore	r										_ 7 🛛
🚱 🗢 🙋 http://158.10	1.74.100/voipadmin/dir/	uriroutemap/	/Dispatch.do	?action=list8page	io=18sortby=N	AME8sori		67 × (Soogle 🖁			P -
File Edit View Favorites	Tools Help											
🔶 Favorites 🏾 🏀 Route Plans	List											👌 • »
Very Very Very Very Very Very Very Very												
					Rou	te Plan	s					
		_			Found 4	Route Pla	in(s)					
		Ŀ	Add Rout	e Plan Activ	ate Selected	Deact	ivate Se	lected	Delete Sel	ected		
				Filter : Name	×				Go			
	□ <u>Name</u> ▲	Active	Pattern	Route	Indirec Request	t P or P	hone Profile	Holiday	Week Day Band	Day / Time Band	Calendar Band	Action
Copyright © 2004-2008	Aspect	Yes 6	i02* spect	Aspect								Delete
All Rights Reserved	🔲 ipmsq	Yes 5	*	<u>ipmsq</u>								Delete
	Outbound 9	Yes 9	*	Connect.100 Gateway								Delete
	Dutbound SIP	Yes <u>8</u>	11:	SIPerator B2BU/	5							Delete
Done					Drov Dano	1 v of	1 Novi		Internet			100%

🖉 Add / Edit Route Plan - V	Windows Internet Explorer	- 7 🛛
🕞 🗢 🖉 http://158.10	01.74.100/voipadmin/dir/uriroutemap/Dispatch.do?action=load&routeMapId=74000002&page 💟 🗟 分 🗙 🚼 Google	P -
🔶 Favorites 🏾 🏉 Add / Edit R	Route Plan	🟠 - »
Users Directory Search Preferences	Directory Menu > Route Plans > Route Plans Route Plans Patterns Routes End Points Trusted End Points Out Dial Patterns Use this page to configure a route plan. You must specify a name, pattern, and route for the route plan.	
Main	Enabling the Source Based checkbox allows you to select source-based routing input parameters. These parameters determine which route the VCX call processor uses for destination numbers identified by the selected pattern.	
	Edit Route Plan	
	* Name Outbound SIP Trunk Pattern 81* Route SIPerator B2BUA	
Log out	Active Source Based	
Copyright © 2004-2008 3Com® Corporation All Rights Reserved	Phone Profile Phone Profile Day / Time Band	
	Week Day Band V Day Time Band V Calendar Band V	
	Save Cancel Reset Fields marked with an asterisk * are required	~

- a. In the Name field, enter a name for the routes i.e. Outbound SIP Trunk
- b. Under Pattern field select the pattern "81*"
- c. Under Route field select the route "SIParator B2BUA" just created
- d. Under Active select the button to enable with a check mark.
- 10. Click save which will return back to the Routes screen where the route "Aspect" should now be displayed

🏉 Route Plans List - Wind	Route Plans List - Windows Internet Explorer										PX
💽 🗢 🙋 http://158.	101.74.100/voipadmin/dir/u	1.74.100/voipadmin/dir/uriroutemap/Dispatch.do?action=list&pageno=1&sortby=NAME&sor 🔽 🗟 🄄 🗙 😽 Google							P -		
🚖 Favorites 🏾 🏀 Route Pla	ns List									ł	💁 - »
Ger O. 3COM	VCX TM Con Data Server: VCXCONNECT Directory Menu : Route Plans Patter	nect @158.101.74.10 > Route F	00 Plans > R	Route Plans	nd Points Out D	ial Patterns					
Users Directory Search Preferences Main	 This page lists the route plans configured on this site. A route plan associates a dial pattern with a route (a route identifies one or more end points). A route plan determines how a call processor directs a call b an end point. Click Add Route Plan to create a route plan. Select a route plan and click Activate Selected or Deactivate Selected to enable or disable the route plan. Click a name in the Name column to modify that route plan. Click a name in the Name column to modify that route plan. Click a name in the Name column to modify that route plan. Click a name in the Name column to modify that route plan. Help 										
					Found 4 Route	e Plan(s)					
			Add Route	Plan Activate	e Selected D	eactivate Se	lected	Delete Sele	cted		
		_	F	ilter : Name	~			Go			
Log out	□ <u>Name</u> ▲	Active P	Pattern	Route	Indirect Requestor	Phone Profile	Holiday	Week Day Band	Day / Time Band	Calendar Band	Action
Copyright © 2004-2008	Aspect	Yes 60	pect As	pect							<u>Delete</u>
3Com® Corporation All Rights Reserved	ipmsq	Yes <u>5*</u>	ipr	nsq							Delete
	Outbound 9	Yes <u>9*</u>		onnect.100 ateway							Delete
	Outbound SIP Trunk	Yes <u>81</u>	<u>*</u> <u>SI</u>	Perator B2BUA							Delete
				I	Prev Page 1 🔽	of 1 Next	t				

6 Troubleshooting

6.1 Ingate – 3Com VCX Connect Calling

The incoming call starts at the Service Provider, they will deliver a DID, contained in the Request URI header of a SIP INVITE. Typically the ITSP will send an INVITE to the SIP URI address of "DID@IP_Address_of_Ingate". The Ingate then processes this through the Dial Plan and forwards the INVITE to the SIP URI address "DID@IP_3Com".

The outgoing call starts at the 3Com, they will deliver a PSTN Number, contained in the Request URI header of a SIP INVITE. Typically the ITSP will send an INVITE to the SIP URI address of "PSTN#@LAN_IP_Address_of_Ingate". The Ingate then processes this through the Dial Plan and forwards the INVITE to the SIP URI address "PSTN#@IP_ITSP".



6.2 Startup Tool

6.2.1 Status Bar

Located on every page of the Startup Tool is the Status Bar. This is a display and recording of all of the activity of the Startup Tool, displaying Ingate unit information, software versions, Startup Tool events, errors and connection information. Please refer to the Status Bar to acquire the current status and activity of the Startup Tool.

- St	atus	
	Ingate Startup Tool Version 2.4.0 Startup tool version available on the Ingate web: 2.4.0 You are running the latest version of the Startup tool. More information is available here: http://www.ingate.com/startuptool.php	

6.2.2 Configure Unit for the First Time

Right "Out of the Box", sometimes connecting and assigning an IP Address and Password to the Ingate Unit can be a challenge. Typically, the Startup Tool cannot program the Ingate Unit. The Status Bar will display **"The program failed to assign an IP address to eth0"**.

Ingate Startup Tool Startup tool versior You are running the More information is The program failed	Version 2.4.0 available on the Ingate web: 2.4.0 latest version of the Startup tool. available here: http://www.ingate.com/startuptool.php to assign an IP address to eth0	
		~

Possible Problems	Possible Resolution
Ingate Unit is not Turned On.	Turn On or Connect Power
	(Trust me, I've been there)
Ethernet cable is not connected to	Eth0 must always be used with the
Eth0.	Startup Tool.
Incorrect MAC Address	Check the MAC address on the Unit
	itself. MAC Address of Eth0.

Possible Problems	Possible Resolution
An IP Address and/or Password have already been assigned to the Ingate Unit	It is possible that an IP Address or Password have been already been assigned to the unit via the Startup Tool or Console
Ingate Unit on a different Subnet or Network	The Startup Tool uses an application called "Magic PING" to assign the IP Address to the Unit. It is heavily reliant on ARP, if the PC with the Startup Tool is located across Routers, Gateways and VPN Tunnels, it is possible that MAC addresses cannot be found. It is the intension of the Startup Tool when configuring the unit for the first time to keep the network simple. See Section 3.
Despite your best efforts	 Use the Console Port, please refer to the Reference Guide, section "Installation with a serial cable", and step through the "Basic Configuration". Then you can use the Startup Tool, this time select "Change or Update the Configuration" Factory Default the Database, then try again.

6.2.3 Change or Update Configuration

If the Ingate already has an IP Address and Password assigned to it, then you should be able use a Web Browser to reach the Ingate Web GUI. If you are able to use your Web Browser to access the Ingate Unit, then the Startup should be able to contact the Ingate unit as well. The Startup Tool will respond with **"Failed to contact the unit, check settings and cabling"** when it is unable to access the Ingate unit.

Ingate Startup Tool Version 2.4.0 Startup tool version available on the Ingate web: 2.4.0 You are running the latest version of the Startup tool. More information is available here: http://www.ingate.com/startuptool.php Failed to contact the unit, check settings and cabling	<u>×</u>
	<u> </u>

Possible Problems and Resolutions

Possible Problems	Possible Resolution
Ingate Unit is not Turned On.	Turn On or Connect Power
Incorrect IP Address	Check the IP Address using a Web
	Browser.
Incorrect Password	Check the Password.
Despite your best efforts	 Since this process uses the Web (http) to access the Ingate Unit, it should seem that any web browser should also have access to the Ingate Unit. If the Web Browser works, then the Startup Tool should work. If the Browser also does not have access, it might be possible the PC's IP Address does not have connection privileges in "Access Control" within the Ingate. Try from a PC that have access to the Ingate Unit, or add the PC's IP Address into "Access Control".

6.2.4 Network Topology

There are several possible error possibilities here, mainly with the definition of the network. Things like IP Addresses, Gateways, NetMasks and so on.



Possible Problems	Possible Resolution	
Error: Default gateway is not	The Default Gateway is always the way	
reachable.	to the Internet, in the Standalone or	
	Firewall it will be the Public Default	
	Gateway, on the others it will be a	
	Gateway address on the local network.	
Error: Settings for eth0/1 is not	IP Address of Netmask is in an Invalid	
correct.	format.	
Error: Please provide a correct	Netmask is in an Invalid format.	
netmask for eth0/1		
Error: Primary DNS not setup.	Enter a DNS Server IP address	

6.2.5 IP-PBX

The errors here are fairly simple to resolve. The IP address of the IP-PBX must be on the same LAN segment/subnet as the Eth0 IP Address/Mask.



Possible Problems and Resolutions

Possible Problems	Possible Resolution	
Error: The IP PBX IP does not	The IP Address of the IP-PBX must be	
seem to be on the LAN.	on the same subnet as the inside	
	interface of the Ingate Eth0.	
Error: You must enter a SIP	Enter a Domain, or de-select "Use	
domain.	Domain"	
Error: As you intend to use RSC	Enter a Domain or IP Address used for	
you must enter a SIP domain.	Remote SIP Connectivity. Note: must	
Alternatively you may configure a	be a Domain when used with SIP	
static IP address on eth1 under	Trunking module.	
Network Topology	_	

6.2.6 ITSP

The errors here are fairly simple to resolve. The IP address, Domain, and DID of the ITSP must be entered.



Possible Problems	Possible Resolution
Error: Please enter a domain name	Enter a Domain, or de-select "Use
for your provider	Domain"
Error: Please enter number, name	Enter a DID and Domain, or de-select
and domain.	"Use Account"

6.2.7 Apply Configuration

At this point the Startup Tool has pushed a database to the Ingate Unit, you have Pressed "Apply Configuration" in Step 3) of Section 4.7 Upload Configuration, but the "Save Configuration" is never presented. Instead after a period of time the following webpage is presented. This page is an indication that there was a change in the database significant enough that the PC could no longer web to the Ingate unit.



Possible Problems	Possible Resolution
Eth0 Interface IP Address has	Increase the duration of the test mode,
changed	press "Apply Configuration" and start a
	new browser to the new IP address, then
	press "Save Configuration"
Access Control does not allow	Verify the IP address of the PC with the
administration from the IP address	Startup Tool. Go to "Basic
of the PC.	Configuration", then "Access Control".
	Under "Configuration Computers",
	ensure the IP Address or Network
	address of the PC is allowed to HTTP to
	the Ingate unit.

6.3 DNS Benefits and Issues

As this solution is reliant on the resolution of a FQDN for the SIP Domain, the SIP Phones, the Ingate, and the 3Com VCX Connect all need to be able to resolve the FQDN.

DNS Standard Lookup

Ensure that SIP Phones, PCs and servers all have a DNS Server to which they can query a host name. There are some enterprises that have an internal DNS Server to manage internal host names.

PING tests using a domain is a good test to see if a network can resolve FQDNs.

DYN DNS

Dynamic DNS is a tool that can be use to provide smaller enterprises the ability to use a FQDN in a Dynamic Public IP environment. Visit dyndns.org to get your free Domain name with Dynamic updating of the Enterprise IP address.

DNS SRV Records

DNS Service Records offer the ability to do Load Balancing and Residency to any SIP Phone deployment. It offers the ability to use one FQDN and break the FQDN into multiple services, one for Web and another for SIP communications.

6.4 Ingate Troubleshooting Tools

6.4.1 Display Logs

Administration Basic Network SIP SIP Failover Virtual Private Quality Services Traffic Failover Vetworks Servic	of Logging and Tools About	
Display Log Capture Network Configuration Classes Sending		[
Search the Log (Help) Display log 2000 rows/page (timeout seconds) Periodica erch 180 seconds until next search	Support Report (Help) Include configuration database: ○ Yes ⊙ No Make sure the Log class for SIP	
Press "Display Log" to see internal logs sections below will be selected a subsection only nave effect on the IP packets as selected choice.	debug messages is set to Local f you have a SIP-related problem. Export support report Time Limits Show log from: (clear) date (YYYY- time DDDD)- (ULADDASE)	Always create a "Support Report" for Ingate Support
Packet Type Selection All packets IP Address Selection (Help) A: In not this address	Show log until: (clear) date (YYYY- time MM-DD) (HH:MM:SS)	
B: not this address A src A dst A any A to B B to A Between A&B not this combination Protocol/Port Selection	 ✓ Show newest at top Show This Select: <u>All</u>, <u>None</u>, <u>SIP</u>. ✓ IP packets as selected 	Show newest log on top
All IP protocols TCP UDP ICMP	Configuration server logins Administration and configuration Manual reconfigurations and reboots Time changes	
ESP Protocol number;(Help) not	 DHCP/PPPoE client RADIUS errors SNMP problems Hardware errors 	
SIP Packet Selection (Help) Call-ID: ☑ Show internal SIP signaling SIP Methods: □ IP addresses: □ From Header: □ To Header: □ Specific fields □	 Mail errors Negotiated IPsec tunnels IPsec key negotiations IPsec key negotiation debug messages IPsec user authentication PPTP negotiations ✓ SIP errors 	
specific fields	 SIP signaling SIP packets SIP license messages SIP media messages SIP debug messages 	Filter on SIP traffic only
Export the Log (Help) Export log TAB-separated file 20 MB max	Clear form	

6.4.2 Packet Capture

Administration Basic Network SIP SIP Failover Virtual Private Quality of Configuration Network Services Traffic Failover Virtual Private Service and Tools
Display Packet Check Logging Log Log Log Capture Network Configuration Classes Sending
Capture status: Inactive
Captured data size: 7 kB
Lagate SIDarator has a built-in packet capture function which produces pean trace files
You can select to capture traffic on one specific interface or on all interfaces.
For contacts with the Ingate Support Team, a packet capture is not what is usually expected (sometimes it is even not useful). For these purposes, please always send a <u>Support Report</u> .
Network Interface Selection
All interfaces V
You can also select the type of IP pack cook multiple captures
port. from multiple interfaces
IP Address Selection (Help)
A: not this address
B: not this address
$\bigcirc A \text{ src } \bigcirc A \text{ dst } \odot A \text{ any}$ $\bigcirc A \text{ to } B \bigcirc B \text{ to } A \bigcirc Between A\&B \square \text{ not this combination}$
Protocol/Port Selection
All IP protocols
O TCP
O UDP Filter on Port,
O ICMP other criteria
O ESP
OProtocol number:(Help)
Start capture Download captured data
Stop capture Delete captured data
Start Capture, reproduce the problem, then Stop Capture

6.4.3 Check Network

