Quintum Technologies Tenor Configuration Guide For Use with AT&T's IP Flexible Reach Service

> Version 2/ Issue 2 Date: 4/24/08

TABLE OF CONTENTS

1	Introduction	3
2	Special Notes	4
	2.1 Emergency 911/E911 Services Limitations	4
	2.1.1 911 Service Routing with Analog Key System and Tenor	4
	2.1.2 911 Service Routing with Analog PBX with Tenor	6
	2.1.3 911 Service Routing with Analog Phones with Tenor	8
	2.2 Tenor Transfer Feature Must be Turned Off	10
	2.3 Session Description Protocol in Session Progress and Ringing Messages	10
3	Capabilities Overview	11
	3.1 Calling Scenarios Supported	11
	3.2 Routing Scenarios Supported	12
	3.3 Codecs Supported	12
	3.4 Features Supported	12
4	Configuration Component Overview	12
	4.1 Tenor AX Overview	13
	4.2 Tenor AF Overview	15
5	Configuration Guide	17
	5.1 Tenor Software Version	17
	5.2 Standard Configuration	19
6	Survivability	57
	6.1 MultiPath Survivability	57
	6.1.1 Configuring MultiPath Survivability	57
	6.1.2 Testing MultiPath Survivability	68
	6.2 Automatic Protection Switching (APS) Survivability	69
	6.2.1 Configuring APS Survivability	70
	6.2.2 Testing APS Survivability	70
7	Support for IP Flexible Reach Calling Plan A Dial Plan	72
	7.1 Tenor ByPass Routing Capability	74
	7.1.1 Configuring the ByPass Routing Capability	74
8	Troubleshooting	84
9	Acronyms List	84
10	O Additional References	85

1 Introduction

This Guide describes the steps for configuring Quintum Analog Tenors, Tenor AF, or Tenor AX to work with AT&T's Flexible Reach Service. The Quintum Tenor AF/AX provides VoIP capability to <u>Analog</u> Telephones, <u>Analog</u> Key Systems and <u>Analog</u> PBXs. Tenor Software release P104.12.02 was tested with the AT&T IP Flexible Reach Service.

The Tenor AF/AX is a gateway device that converts <u>Analog</u> Telephones, <u>Analog</u> Key Systems and <u>Analog</u> PBXs to Voice Over IP (VoIP). The Tenor AF/X uses SIP signaling to complete VoIP telephone calls over the AT&T IP Flexible Reach network. Under normal conditions, calls from Analog devices (Telephones, FAX Machines, Key Systems, PBXs) are converted into VoIP packets by the Tenor AF/AX and sent through the AT&T IP network. The Tenor AF/AX can also use a PSTN connection to bypass the IP data network (AT&T and Customer) if there is an outage.

Tenor	MultiPath	Station	Enterprise
AX Series	AXM Series	AXG Series	AXE Series
8 Simultaneous	8 FXS/8 FXO	8 FXS/0 FXO	8 FXS/2 FXO
VoIP Calls			
12 Simultaneous	12 FXS/8 FXO	12 FXS/0 FXO	12 FXS/2 FXO
VoIP Calls			
16 Simultaneous	16 FXS/16 FXO	16 FXS/0 FXO	16 FXS/2 FXO
VoIP Calls			
24 Simultaneous	24 FXS/24 FXO	24 FXS/0 FXO	24 FXS/2 FXO
VoIP Calls			
48 Simultaneous	N/A	N/A	N/A
VoIP Calls			

References in this Service Guide to "Tenor" refer to the Tenor AF or Tenor AX.

TenorMultiPathAF SeriesAFM Series		Station AFG Series	Enterprise AFE Series
6 VoIP Calls	N/A	N/A	6 FXS/2 FXO
8 VoIP Calls	N/A	8 FXS/0 FXO	N/A

2 Special Notes

2.1 Emergency 911/E911 Services Limitations

While AT&T IP Flexible Reach services support E911/911 calling capabilities in certain circumstances, there are significant limitations on how these capabilities are delivered. Please review the AT&T IP Flexible Reach Service Guide in detail to understand these limitations and restrictions.

The AT&T IP Flexible Reach Calling Plan A does not support 911 calling. See Section 7 of this document for more details on configuring the Tenor to work with AT&T Calling Plan A.

With AT&T Calling Plans B & C the customer must choose how to route 911 calls based on the dial-plan intelligence capabilities resident in the Customer Premises Equipment (CPE), including Analog Key System, Analog PBX, Analog Phones, and Quintum Tenor. The following scenarios are provided as examples but do not represent a comprehensive list of alternatives. Each customer installation will be unique based on the communications facilities available, the dial-plan intelligence in the CPE, and the service reliability and availability needs of the customer.

2.1.1 911 Service Routing with Analog Key System and Tenor

The customer can choose to route 911 Service calls to the AT&T IP Flexible Reach Network or may alternately deploy (purchase) additional PSTN Lines to provide the 911 calling service. The dial plan intelligence to route 911 calls to AT&T IP Flexible Reach or the PSTN Lines can be provided by the Analog Key System or the Quintum Tenor. Some of the possible scenarios are illustrated below.

Figure 1 illustrates the scenario where the customer Analog Key System and Tenor are configured to route 911 calls to AT&T IP Flexible Reach. Note that this is scenario utilizes the standard Tenor configuration defined in Section 5.2. In this scenario, the network can process as many 911 calls as the customer's Concurrent Call capacity.



Figure 1 - 911 Calls Routed to AT&T

Figure 2 illustrates the scenario where the customer Tenor is configured to route 911 calls to the PSTN. Note that this scenario utilizes the Tenor ByPass Routing Configuration defined in Section 7.1.1. In this scenario, the system will only be able to handle as many simultaneous 911 calls as there are POTS lines connected to the Tenor.



Figure 2 – 911 calls routed to LEC by Quintum Tenor

Figure 3 illustrates the scenario where the customer Analog Key System is configured to route 911 calls to the PSTN. In this scenario, the system will only be able to handle as

many simultaneous 911 calls as there are POTS lines connected to the Analog Key System.



Figure 3 - 911 calls routed to LEC by Analog Key System

2.1.2 911 Service Routing with Analog PBX with Tenor

Figure 4 illustrates the scenario where the customer Analog Key System and Tenor are configured to route 911 calls to AT&T IP Flexible Reach. Note that this is scenario utilizes the standard Tenor configuration defined in Section 5.2. In this scenario, the network can process as many 911 calls as the customer's Concurrent Call capacity.



Figure 4 – 911 Calls Routed to AT&T

Figure 5 illustrates the scenario where the customer Tenor is configured to route 911 calls to the PSTN. Note that this scenario utilizes the Tenor ByPass Routing Configuration defined in Section 7.1.1. In this scenario, the system will only be able to handle as many simultaneous 911 calls as there are POTS lines connected to the Tenor.



Figure 5 -911 Calls Routed to LEC by Quintum Tenor

© 2007 AT&T Knowledge Ventures. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Knowledge Ventures. Subsidiaries and affiliates of AT&T Inc. provide products and services under the AT&T brand Page 7 of 87

Figure 6 illustrates the scenario where the customer Analog PBX is configured to route 911 calls to the PSTN. In this scenario, the system will only be able to handle as many simultaneous 911 calls as there are POTS lines connected to the Analog PBX.



Figure 6 -911 calls routed to LEC by Analog Key System

2.1.3 911 Service Routing with Analog Phones with Tenor

Figure 7 illustrates the scenario where the Tenor is configured to route 911 calls to AT&T IP Flexible Reach. Note that this is scenario utilizes the standard Tenor configuration defined in Section 5.2. In this scenario, the network can process as many 911 calls as the customer's Concurrent Call capacity.





Figure 8 illustrates the scenario where the customer Tenor is configured to route 911 calls to the PSTN. Note that this scenario utilizes the Tenor ByPass Routing Configuration defined in Section 7.1.1. In this scenario, the system will only be able to handle as many simultaneous 911 calls as there are POTS lines connected to the Tenor.



Figure 8 - 911 Calls Routed to LEC by Quintum Tenor

2.2 Tenor Transfer Feature Must be Turned Off

The Tenor IP transfer feature must be turned off. Quintum and AT&T do not currently have a compatible mechanism for handling IP transfers.

2.3 Session Description Protocol in Session Progress and Ringing Messages

Session description protocol in the session progress and ringing messages must be turned off in the Tenor.

3 Capabilities Overview

The Quintum Technologies Tenor supports the following capabilities in conjunction with the AT&T Flexible Reach service.

3.1 Calling Scenarios Supported

Inbound Calls to the Quintum Tenor

- Offnet gateway inbound to TENOR

 Local, Long Distance, International, FAX
- TENOR to TENOR
 - o Local, Long Distance, International, FAX
- TDM PBX to TENOR

 Local, Long Distance, International, FAX

Outbound Calls from the Tenor

- TENOR to PSTN Offnet gateway
 Local, Long Distance, International, FAX
- TENOR to TENOR

 Local, Long Distance, International, FAX
- TENOR to TDM PBX
 - o Local, Long Distance, International, FAX

Support for AT&T IP Flexible Reach Calling Plan A Dial Plan

The AT&T IP Flexible Reach Calling Plan A will only provide calling service to On-NET end-points and Off-Net calling to Long Distance and International locations. The AT&T Calling Plan A will not terminate calls to N11 (ex. 211, 311, 411, 511, 611, 711, 811, 911), 8YY-XXX-XXXX, 500-NPA-NXX-XXXX, 700-NPA-NXX-XXXX, 900-NPA-NXX-XXXX, NPA-555-XXXX, and Operator (0, 0+, 00, 01) numbers. See the AT&T Business VoIP Service Guide for more details.

With Calling Plan A, the customer is responsible for providing PSTN lines to support 911 and the other calling services (N11, 8YY, etc.) not provided by AT&T. The customer must provision/configure his premise equipment (Analog PBX, Analog Phones, Key System, Tenor, etc.) to properly route 911 and other non AT&T supported calling services to the PSTN lines.

Section 7 of this document provides details on how the Tenor can be configured to support the AT&T IP Flexible Reach Calling Plan A.

3.2 Routing Scenarios Supported

- Failover from Primary to Secondary AT&T IP Border Element
- Failover to PSTN when IP network unavailable
- Routing 911 calls for these scenarios:
 - o IP FR with Key system and Tenor
 - IP FR with Analog phones
 - o IP FR with analog PBXs

3.3 Codecs Supported

- G.729AB 8.0 Kbps
- G.711 A-law 64Kbps
- G.711 Mu-law 64Kbps

3.4 Features Supported

Virtual Telephone Number Support Calling Name Delivery Call Hold and Resume DTMF Relay (midcall digits) In Band DTMF FAX over IP Survivability Via PSTN on select models (AFM, AFE, AXM and AXE)

4 Configuration Component Overview

This section provides a service overview of the Vendor integration with AT&T IP Flexible Reach.



The customer premises equipment shall consist of the following components.

 Customer PBX or Key System with standard 2-wire Analog interface connections for FXO ports.
 Note: The Tenor AX provides a standard Centronics 50 pin male interface.

Note: The Tenor AX provides a standard Centronics 50 pin male interface (50 pin / 25 pair male Amphenol connector).

OR

Customer Analog Phones and/or FAX machines with RJ11 interfaces. Note: The Tenor AX provides standard RJ11 interfaces.

- AT&T Managed Router
- Customer optional Firewall
- Quintum Technologies Tenor Analog Gateway (AX or AF).

Tenor Software release P104.12.02 was used when conducting interoperability testing with the AT&T IP Flexible Reach Service.

4.1 Tenor AX Overview

The *Tenor AX* is a high-density VoiP (Voice over Internet Protocol) SIP/H.323 switch that compresses and packetizes voice, fax, and modem data and transmits it over the IP network. The *Tenor AX* gives larger businesses with analog voice infrastructure a means to use Voice over IP (VoIP).

The Tenor's MultiPath architecture enables it to intelligently route calls between the FXS, FXO, and the VoIP network. The *Tenor AX* also routes calls over IP to reduce costs, and then transparently "hop off" to the PSTN, to reach off-net locations. Calls can be routed in any direction between any of the ports.

The unit's plug and play embedded system architecture brings VoIP technology to your network without changing your existing telephony infrastructure. The Customer's network stays as is, and the call type is transparent to the user.



Figure 9 - Tenor AX Back Panel

- **Phone/FXS port** Provides a 50 Pin Telco connector which supports up to 24 Phone/FXS connections for connecting to the analog PBX, Keyphone or phones.
- Line/FXO port Provides a 50 Pin Telco connector which supports up to 24 Line/FXO connections for connection to the Central Office (connection to the PSTN).
- LAN port 10/100 Base-T Ethernet port. This port provides an RJ-45 jack for individual connection to a 10/100 Ethernet LAN switch or hub via RJ-45 cable; it is individually configured with a unique IP and MAC address.

The Tenor AX will support 8, 16, 24 or 48 Simultaneous VoIP Calls.

AX GENERAL SPECIFICATIONS

Dimensions: 1U High Chassis W 17 3/8" x H 1 3/4" x D 10 3/4" W 44.5cm x H 4.5cm x D 27.6cm

- Maximum weight: 10 lbs. (4.55kg)
- AC Power: 100-240 Volts AC, 50/60 Hz, 60 watts

- Operating temperature: $40^{\circ} 104^{\circ} F (5^{\circ} 40^{\circ} C)$
- Operating humidity: 20% 80% non-condensing
- Telco: FCC Part 68, TS-016, TBR4, TS-038, CS03
- EMC: FCC Part 15 EN55022, EN55024, EN61000-2-3, EN61000-3-3, AS/NZS3260
- Safety: UL60950, EN60950, AS/NZS60950

TENOR AX CONFIGURATIONS

Tenor	MultiPath	Station	Enterprise
AX Series	AXM Series	AXG Series	AXE Series
8 Simultaneous VoIP Calls	8 FXS/8 FXO	8 FXS/0 FXO	8 FXS/2 FXO
12 Simultaneous VoIP Calls	12 FXS/8 FXO	12 FXS/0 FXO	12 FXS/2 FXO
16 Simultaneous VoIP Calls	16 FXS/16 FXO	16 FXS/0 FXO	16 FXS/2 FXO
24 Simultaneous VoIP Calls	24 FXS/24 FXO	24 FXS/0 FXO	24 FXS/2 FXO
48 Simultaneous VoIP Calls	N/A	N/A	N/A

For more details on the Tenor AX, consult with document [1].

4.2 Tenor AF Overview

The *Tenor AF* is a VoIP (Voice over Internet Protocol) H.323/SIP switch that digitizes voice, fax, and modem data and transmits it over the IP network. The *Tenor AF* gives small to medium sized businesses with analog voice infrastructure a means to use Voice over IP (VoIP).

The Tenor's MultiPath architecture enables it to intelligently route calls between the FXS, FXO, and the VoIP network to achieve the best combination of cost and quality. The *Tenor AF* also routes calls over IP to reduce costs, and then transparently "hop off" to the PSTN, to reach off-net locations. Calls can be routed in any direction between any of the ports.

The Tenor can be installed without upgrades to the existing voice or data network. You can install the unit in a home or office environment, without affecting the network infrastructure you already have in place.



Figure 10 - Tenor AF Back Panel

- **Power Adapter jack -** Connection port to external power supply.
- **DIAG** Enables you to perform software diagnostic procedures.
- **CONSOLE port** This RS-232 connector is used for connection to a PC's serial port via a DB-9 serial cable at 38400 bps 8 N 1, no flow control.
- LAN port 10/100 Base-T Ethernet port. This port provides an RJ-45 jack for an individual connection to a 10/100 Ethernet LAN switch or hub via RJ-45 cable; the interface is individually configured with a unique IP and MAC address.
- **Port Label (Phone/FXS or Line/FXO ports) For Phone/FXS,** provides an RJ-11 jack for connection to an analog PBX, Keyphone or analog phone. **For Line/FXO,** enables connection to another piece of equipment that houses your telephone lines running to the PSTN, such as the patch panel.

AF GENERAL SPECIFICATIONS

Dimensions: 1U High Chassis W 8 1/4" x H 2" x D 7"

W 21cm x H 5.1cm x D 18.73cm

- Maximum weight: 1.3 lbs. (0.6kg)
- AC Power: 100-240 Volts AC, 50/60 Hz, 22 watts
- Operating temperature: $40^{\circ} 104^{\circ} F (5^{\circ} 40^{\circ} C)$
- Operating humidity: 20% 80% non-condensing
- Telco: FCC Part 68, AS/ACIF S003, CS03, JATE, AS/ACIFS002:2001
- EMC: FCC Part 15 Class B, EN55022, EN55024,

- EN61000-2-3, EN61000-3-3, AS/NZS3260
- Safety: UL60950, EN60950, AS/NZS60950

The Tenor AF will support 6 or 8 Simultaneous VoIP Calls based on the configuration purchased.

TENOR AF CONFIGURATIONS

Tenor AF Series	MultiPath AFM Series	Station AFG Series	Enterprise AFE Series
6 VoIP Calls	N/A	N/A	6 FXS/2 FXO
8 VoIP Calls	N/A	8 FXS/0 FXO	N/A

For more details on the Tenor AF, consult with document [2].

5 Configuration Guide

5.1 Tenor Software Version

The version of the Tenor Software can be obtained via the Tenor Configuration Manager GUI or the Command Line Interface (CLI).



© 2007 AT&T Knowledge Ventures. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Knowledge Ventures. Subsidiaries and affiliates of AT&T Inc. provide products and services under the AT&T brand Page 17 of 87

From the Configuration Manager View Menu, click on "Tenor Version". A text file will open in a new window displaying the Software version as shown below.

🍘 U	ltra	Edit-32 - [C:\Program Files\Quintum\Tenor Configuration Manager\Reports\version.txt] 📃 🖬	X
🔞 Fil	e E	idit Search Project View Format Column Macro Advanced Window Help	J X
4	\$		
	_		
× ve	rsion	,bxt	
			_
Ē.	1	······································	-
Ha I	2	Tenor AS [0]	
1	3		
	4	System Software P104-12-02 May 18 2006, 11:59:46	
	5	H323 Module : 3.1.1	
	6	SIP Module : 2.1.0	
		Boot Software P103-06-06	
		Serial Number: A012-20000A	
	10		
	11	FXS Cards: 2 [1 0]	~
	12	FXO Cards: 2 [2 0]	
	13		
	14		
	15	Cli Error file version is 1.22	
	16	Cli Help Tile Version 18 1.125	
	19	CIT OBject THE VERSION IS 1.15	
	19	Database Version: DB CMS M10 A013 V8.0.00 120105	
	20		
	23		
			~
	< ا	III (>
	B	1 回 寺 田 田 山 二 省 省 省 回 コ 岡 画 屋 際 区 ◎ 国 電 🕹 結 從 🐕	
	1		
For Hel	p, pi	ess F1 Ln 1, C0l. 1, C0 DOS Mod: 8/1/2006 5:15:18PM File Size: 478 INS	

As shown below, the CLI Command to display the Tenor Software version information is "show -v".

🛃 12.176.187.252 - PuTTY		- DX
<47f1d529> Login:admin		~
Password:		
Quintum# show -v		
Tenor AS [0]		
System Software	P104-12-02 May 18 2006, 11:59:46	
H323 Module :	3.1.1	
SIP Module :	2.1.0	
Boot Software	P103-08-08	
Serial Number: A012-20000A	nı	
FXO Cards: 2 [2	01	
Cli Error file version is Cli Help file version is Cli Object file version is	1.22 1.125 1.15	
Database Version: DB_CMS_M10_j	A013_V8.0.00_120105	
Quintum# 🗌		

For technical support on the Quintum Tenor AF and Tenor AX, contact Quintum at 877-435-7553, and also refer to <u>www.quintum.com</u>

5.2 Standard Configuration

The following steps describe the configuration for the Tenor AF Multipath Gateway Switch verified to work with the AT&T IP Flexible Reach service. Configuration for the Tenor AX is the same as the Tenor AF described below. For detailed information on installing and running Tenor Configuration Manager, consult documents [1], [2] and [3].

Step		Description
1.	Run the Tenor Configurat From the File Menu click	tion Manager. a on Connect .
	Tenor Configuration Manager (Connected File View Tools Help Connect Ctrl+N Reload Ctrl+R Submit Changes	I to Tenor AS 12.176.187.253)
	Discard Changes Password Address Book Ctrl+B Exit Ctrl+E -Line Port Configuration -VoIP Routing Configuration - SIP Configuration	Specify how your Tenor will obtain an IP Address Obtain an IP address automatically • Specify a static IP address • Obtain an IP address using PPPoE Static IP Address IP Address IP Address: 10 • 176 • 187 • 253 Subnet Mask: 255 • 255 • 255 • 0 • 0 • 0
		DNS Server IP Address Obtain Dt IS Server addresses automatically Primary DNS Server IP Address: 0.0.0.0 Secondary DNS Server IP Address: 0.0.0.0 Confirm/OK Cancel Refresh Help

Step	Description
2.	Click on Add.
	Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253)
	File View Tools
	Basic The current Tenor AS IP Address is 12.176.187.253. Please specify/select a new Tenor DX/BX/AX/AS/AF/CMS.
	- Time Server Col
	-Dial Plan Config Discover Canvel Add Delate Edit
	Phone Port Con Tenor IP Address Server Port Description Serial Number Software Version Login
	-VolP Routing Cc
	L SIP Configuratic
	Connect: Close Export Import
	Confirm/OK Cancel Refresh Help

Ston	Description		
Step	Description		
3.	Enter the Tenor IP Address , a Description , and the Login ID and Password .		
	Click on OK .		
	File View Tools		
	Address Book		
	Add Address		
	Basic The surrent Tony 6		
	-IP Address Com		
	- Time Server Col		
	-Dial Plan Config Discover Can Tenor Server Port: 8080		
	Phone Port Con Tenor IP Address Description: Quintum Tenor AX on Login		
	- Line Port Confin		
	-SIP Configuratic		
	Login: admin Default Password "admin"		
	Password: *****		
	Confirm Password:		
	E Demember Decoverd		
) V IXEIIEIIIUEI F dasword		
	OK		
	Confirm/OK Cancel Refresh Help		

Step	Description
4.	Connect to the Tenor from the Tenor Configuration Manager. Highlight the Tenor switch
	and click on Connect .
	Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253)
	File View Tools
	Basic The current Tenor & ID Address is 12 176 187 253. Dease specifi/(select a new Tenor DX/BX/0X/0S/0E/CMS
	-IP Address Con
	- Dial Plan Config Discover Cancel Add Delete Edit
	-Phone Port Con
	-Multi Path Confi 10.176.187.253 8080 Quintum Tenor AX admin
	- Line Port Config
	Connect Close Export Import
	Confirm/OK Cancel Refresh Help

Step	Description
5.	Enter values for the Primary and Secondary DNS Server IP Address. If not using DNS enter: 0.0.0.0
	Click Confirm/OK then the sunburst icon on the menu bar to implements the change.
	Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253)
	File View Tools Help
	Basic Configuration Configuration Image: Provide the server Configuration Specify how your Tenor will obtain an IP Address Dial Plan Configuration Obtain an IP address automatically Phone Port Configuration Obtain an IP address automatically Multi Path Configuration Obtain an IP address submatically Vul Port Configuration Obtain an IP address Vul Port Configuration Obtain an IP address Static IP Address ID Subnet Mask 255 SiP Configuration IP Address: IP Address: ID Subnet Mask 255 Default Gateway: ID External NAT IP Address: ID Obtain DHB Gener address: ID O ID Secondary DNS Server IP Address: ID INS Server IP Address: ID ID ID
	Confirm/OK Cancel Refresh Help
	Confirm OK

Step		Description
6.	Click on the Advanced	Explorer icon on the menu bar.
	Tenor Configuration Manager (Connect	ted to Tenor AS 12.176.187.253)
	Basic Configuration	IP Address Configuration
	-IP Address Configuration	Specify how your Tenor will obtain an IP Address
	- Dial Plan Configuration	O Obtain an IP address automatically
	-Phone Port Configuration	Specify a static IP address Other address using PPPoE
	-Multi Path Configuration -Line Port Configuration	Static ID Address
	-VoIP Routing Configuration	IP Address: 10 . 176 . 187 . 253
	on configuration	Subnet Mask: 255 . 255 . 0
		Default Gateway: 10 . 176 . 187 . 1
		External NAT IP Address: 0 , 0 , 0 , 0
		DNS Server IP Address
		Obtain DHS Server addresses automatically Otse manually configured DNS Servers
		Primary DNS Server IP Address: 0 . 0 . 0
		Secondary DNS Server IP Address: 0 . 0 . 0
		Confirm/OK Cancel Refresh Help
		Submit OK

Step	Description
7.	From the Advanced Explorer panel on the left, highlight the Dial Plan field. Select the desired Dial Plan Country from the drop down menu. The sample configuration uses <i>None</i> .
	Select the desired Progress Tone Country setting from the drop down menu. The sample configuration uses <i>USA</i> .
	Enter values for the Minimum and Maximum dial digit string length.
	Click Confirm/OK then the sunburst icon on the menu bar to implements the change.
	Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253) File View Tools Help Image: Contract of the second se
	Advanced Explorer Configuration System-Wide Configuration SNMP Server Dial Plan Country: None Progress Tone Country: USA Dial Plan Country Code: Maximum Dial Digit Length: 15 NR File Server ONS Server Minimum Dial Digit Length: 15 DNS Server ONS Servers Minimum Dial Digit Length: 7 Carrier Prefix Pattern: Add Center Entr Maximum Dial Digit Length: 7 7 Maximum Dial Digit Length: 7 7 Maximum Dial Digit Length: 7 7 ONS Servers Carrier Prefix Pattern: Add Center Entr Long Distance Prefix International Prefix International Prefix VolP Configuration Maxing Interface-phone Analog Interface-phone Analog Interface-line
	Confirm/OK Cancel Refresh Help

ep	Description		
8.	From the Advanced Explorer panel on the left, click on the + sign next to VoIP Configuration \rightarrow SIP Signal Groups to expand the field. Highlight the SIP Signaling Group-1 field. Under the General tab, enter the Primary SIP Server IP Address and the Secondary SIP Server IP Address (IP Addresses of AT&T Primary and Secondary IP Border Elements). To disable Registration, enter the Register Expiry Time of 0.		
	Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253)		
	Advanced Explorer Site Statustic Underst Advanced Explorer Site Statustic Underst System-Wide Configuration Register Expiny Time (in sec.) General MWI & Session Timer Advanced User Agent Bit Signaling Group Primary SIP Server Port: SIP Signaling Groups Primary SIP Server: IP Signaling Groups Secondary SIP Server: IP Signaling Groups Primary Outbound Server: Sateway Fax Profile End Point Address Directory Secondary Outbound Server: Secondary Outbound Server: Secondary Outbound Server Port: Sole Primary Outbound Server: Primary Outbound Server: Secondary Outbound Server Port: Sole Primary Outbound Server: Secondary Outbound Server: Secondary Outbound Server Port: Sole Primary Outbound Server: Secondary Outbound Server: Secondary Outbound Server Port: Sole Primary Outbound Server: Secondary Outbound Server: Secondary Outbound Server Port: Sole Primary Outbound Server: Secondary Outbound Server: Secondary Outbound Server Port:		
	Phone (FXS)/Line (FXO) Configure DSP Configuration Confirm/OK Cancel Refresh Help OK		

Step		Description	
9.	Click on the Advanced t • "SDP in 180 Rin • "SDP in 183 Pro • "Proxy Address	ab. Un-check the boxes for: ging" gress" in From Header"	
	Tenor Configuration Manager (Connected File View Tools Help File View Tools Help System-Wide Configuration System-Wide Configuration Configuration System-Wide Configuration Configuration System-Wide Configuration System-Wide Configuration	SIP Signaling Group-1 General MWI & Session Timer Advanced User Agent ✓ User Name in Contact Request Retransmit Count 11 Maximum Forwards: 70 User Agent Header: Quintum/1.0.0 Proxy Fail-Over Behavior: • No Fail-Over (Always try the 1st Proxy) SDP in 180 Ringing Must not be checked SDP in 183 Progress • No Fail-Over (Always try the 1st Proxy)	 User Name As URI Include Quintum Header Allow Only Proxy Calls SIP No Connect Timeout (in sec.): 180 Fail-Over on Error Response Send 180 Ringing Send 183 Progress
	Profiles Profiles Profiles Proventing Prouting Groups Proventing Protection Provention Profile Phone (FXS)/Line (FXO) Configure	Proxy Address in From Header PRACK Method: Supported Send Remote Party ID Confirm/OK Cancel Refresh H	SIP-PSTN Interworking SIP Info Format: Nortel
		ок	

Step	Description
10.	Click on the User Agent tab. Click the Add button to add display the Add User Agent
	pop-up window.
	We will create One User Agent for each physical Analog Line that will be attached to the
	Tenor. In this configuration example we will create two User Agents.
	Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253)
	File View Tools Help
	Advanced Explorer SIP Signaling Group-1
	E System-Wide Configuration General MWI & Session Timer Advanced User Agent
	E SIP Signaling Groups
	SIP Signaling Group-1
	- DN Channel Map
	- Gateway
	- Fax Profile
	- End Point Address Directory
	P III IP Dial Plans
	Contacts[1]:
	Contacts[2]:
	P Circuit Configuration
	Phone (FXS)/Line (FXO) Configur

Step		Description
11.	In the Add User Agent p PrimaryUser - The usern Registration were enabled and From headers of the B Primary User: User	pop-up window, enter the following information: name for Registration and Authentication purposes. If d, the "username" will appear in the URI populated in the To REGISTER message.
	SIP Registration and Aut	hentication are not applicable to the AT&T IP Flexible Reach
	Click OK to continue.	to Tenor AS 12.176.187.253)
		Edit User Agent
	Advanced Explorer Advanced Explorer System-Wide Configuration Configuration Gatekeeper/Border Element H323 Signaling Group SIP Signaling Groups LSIP Signaling Group-1 DN Channel Map Gateway Fax Profile End Point Address Directory Voice Codecs Signification Codec Profiles Displication Codec Profiles Codec Profiles Displication Dis	UA: 101 SIP Listen Port: 5060 Primary User: User1 Primary Password:

Step		Description
12.	At the SIP Signal Group-1 icon to implement the chan	anel click Confirm/OK to complete and the sunburst ge in the Tenor.
	Tenor Configuration Manager (Connected to File View Tools Help	Tenor AS 12.176.187.253)
	Advanced Explorer	SIP Signaling Group-1-
	System-Wide Configuration	Seneral MWI & Session Timer Advanced User Agent
	P VolP Configuration	Add Delate Edit
	- Gatekeeper/Border Element	UA Listen Pott Primary User Primary Password 2ndary User 2ndary Password MWI User Name MWI Password
	SIP Signaling Groups	101 5060 User1
	SIP Signaling Group-1	
	- Gateway	
	- Fax Profile	
	Voice Codecs	
	Codec Profiles	
	P 1 IP Routing Groups	
	brand and the second s	Contacts[1]:
	Phone (FXS)/Line (FXO) Configur	Contacts[2]:
	DSP Configuration	
		Confirm/OK Cancel Refresh Help
		ОК

Step	Description
<u>Step</u> 13.	Description Click the Add button to create the 2 nd User Agent. The Add User Agent pop-up window will appear. The Configuration Manager (Connected to Tenor AS P=12.176.187.253 SN=A012-2000A SW=P105-13-00) File View Tools Help File View Tools Help File View Tools Help File View Tools Help Configuration Configuration Configuration Configuration Configuration Configuration Configuration Contacts[1] Contacts[2] Contacts[2] Contacts[2] Contacts[2]
	Confirm/OK Cancel Refresh Help

Step		Description
14.	In the Add User Ag	ent pop-up window, enter the following information:
	Primary User: SIP Registration and service. Click OK to continu	<i>User2</i> < Any alpha-numeric string may be entered because Authentication are not applicable to the AT&T IP Flexible Reach ne.
	Tenor Configuration Manager (C File View Tools Help	onnected to Tenor AS IP=12.176.187.253 SN=A012-20000A SW=P105-13-00)
		Id User Agent
	Advanced Explorer	UA: 102 SIP Listen Port: 5061 Primary User: User2 Primary Password: Secondary User. Secondary Vser. Secondary Password: MWI User Name: MWI User Name: Contacts[1]: Contacts[2]:
	₽ / I Phone (FXS)/Line (FXO) C B W DSP Configuration	OK Cancel Help
		Confirm/OK Cancel Refresh Help

Step	Description
15.	At the SIP Signal Group-1 panel click Confirm/OK to complete and the sunburst icon to implement the change in the Tenor .
	Tenor Configuration Manager (Connected to Tenor AS IP=12.176.187.253 SN=A012-20000A SW=P105-13-00) File View Tools Help File
	Advanced Explorer SIP Signaling Advanced Explorer General MWI & Session Timer Advanced User Agent
	General MWI & Session Timer Advanced User Agent General MWI & Session Timer Advanced User Agent General MWI & Session Timer Advanced User Agent Add Perer Ear VolP Configuration Gatekeeper/Border Element H323 Signaling Groups SIP Signaling Groups SiP Signaling Groups SiP Signaling Group SiP Sig
	Confirm/OKI Cancel Refresh Help



17.	Each of the physical Channels/Ports on the Tenor must be associated with a 10-digit TN (Telephone Number) or a 10-digit VTN (Virtual Telephone Number) provided by AT&T. When the Tenor initiates a call to the AT&T IP Flex Reach service the 10-digit TN / VTN is signaled to AT&T in the outgoing SIP INVITE message. When AT&T routes a call to the Tenor, the signaled DN will be a 10-digit VTN or a subset of the 10-digit TN (4 to 7 digits). The AT&T network can not presently signal the full 10-digit TN to the Tenor. But the AT&T network can signal the full 10-digit VTN to the Tenor.		
	The consequence of this asymmetric digit string length for sending vs. receiving calls from the AT&T IP Flex Reach service requires that the Tenor be provisioned with multiple DN's for a given physical Channel/Port. To support outbound calling (from Tenor) the full 10-digit TN/VTN must be configured for the given channel/port. To support inbound calling to the Tenor, the channel/port must also be configured with the appropriate subset of the full TN (4 to 7 digits) or VTN (4 to 10 digits).		
	For the sample configuration documented here, Channel 1 is assigned a 10-digit VTN (732-368-0414). When the Tenor Channel 1 places a call to the AT&T IP Flex reach service it will include the 10-digit VTN (732-368-0414) in the SIP signaling message. When the AT&T IP Flex Reach service routes a call to the Tenor Channel/Port 1 the SIP signaling message from AT&T will include the 10-digit VTN (732-368-0414).		
	Channel 2 is assigned a 10-digit TN (732-368-0416). When the Tenor Channel 2 places a call to the AT&T IP Flex reach service it will include the 10-digit TN (732-368-0416) in the SIP signaling message. When the AT&T IP Flex Reach service routes a call to the Tenor Channel/Port 2 the SIP signaling message from AT&T will include a 4-digit subset of the TN (0416).		
	At the Add DN Channel Map pop-up window, enter the following information.Channel:1Channel:1I< Physical port used on TenorDN:7323680414Calling Name:Kevin HonigUser Agent:101Calling Name:< User Agent defined in Step 11.Public DNcheckedChecked< defaultRegister DNcheckedComparison< default		
		Edit DN Channel Map	
---	---	---------------------	---
			TN / VTN provided
		Slot:	2 by AT&T
		Span:	1
		Channel:	1
		DNI	7223680414
		DIN.	
		Calling Name:	Kevin Honig
		User Agent:	101
		Public DN	
		Register DN	
		OK	Cancel Help
		<u>.</u>	
	Click OK to continue. At the	DN Channel Ma	p panel click Confirm/OK and the sunburst
	icon implements the chang	ge.	
l			
	Note:	T A	
	Slot and Span are not rele	vant to the And	log Tenor.
	Channel: Denotes the physical sector of the	sical port that i	the analog device will be connected.
	DN: <i>IN number provided</i>	by AT&T. Pop	pulated in outgoing INVITE message (to AT&T)
	as the user part of the URI	in the From a	id Contact headers. On inbound calls to Tenor,
	used to determine routing	of calls to phys	ical line. Should appear as user part of Request
	URI of incoming INVIIE.		
	Cauing Name: will appea	ar as the Disple	iy name in the From header in outgoing
	INVIIE messages.	the an an a statist	is a Dublic DN
	Fuduc DN: Indicates whe	erner or not this	is a Public DIN
	kegister DN: Only releva	nt to H.323	



10			
19.	At the Add D	N Channel Ma	p pop-up window, enter the following information.
	Channel:	2	< Physical port used on Tenor
	DN:	7323680416	< Phone Number (number provided by AT&T)
	Calling Name	e: Tim Thornto	on< Display Name
	User Agent:	102	< User Agent defined in Step 14.
	Public DN	checked	< default
	Register DN	checked	< default
	Click OK to cor icon to impler	ntinue. At the DM nent the change	<pre>it DN Channel Map</pre>





© 2007 AT&T Knowledge Ventures. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Knowledge Ventures. Subsidiaries and affiliates of AT&T Inc. provide products and services under the AT&T brand Page 41 of 87

22.	From the Advanced Explorer panel on the left, highlight the Gateway. Enter a				
	Description and <i>check</i> the SIP only radio button for the Outgoing IP Routing field				
	under the Gateway screen panel on the right.				
	Click Confirm/OK then the sunburst icon on the menu bar to implements the change.				
	🙍 Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253)				
	File View Tools Help				
	Advanced Explorer Gateway				
	- Remote Tenor Manager				
	Description: Tenor AS Gateway				
	B SysLog Servers Modern Bypass Retention Hours: 168				
	Utgoing IP Routing: CH323 only Canfouration				
	Gatekeeper/Border Element				
	- H323 Signaling Group				
	E SIP Signaling Groups				
	L SIP Signaling Group-1				
	- DN Channel Map				
	- Gateway				
	- Fax Profile				
	- End Point Address Directory				
	Voice Codec-2				
	Confirm/OK Cancel Refresh Help				
	ОК				

23.	From the Advanced Explorer panel on the left, click on the + sign to expand the Voice				
	Codecs field. Highlight the Voice Codec-1 field. Select the desire Voice Codec field				
	from the drop down menu. The sample configuration uses the G.729 codec.				
	Click Confirm/OK then the sunburst icon on the menu bar to implements the change.				
	Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253)				
	File View Tools Help				
	Advanced Explorer Voice Codec-1				
	- Remote Tenor Manager				
	E B Radius Servers Description:				
	Voice Codec: G.729AB 8.0 Kbps 💌				
	Ethernet Configuration Codec Payload Size: 20 ms				
	P ^m VolP Configuration				
	- Gatekeeper/Border Element				
	– H323 Signaling Group				
	E SIP Signaling Groups				
	SIP Signaling Group-1				
	– DN Channel Map				
	- Gateway				
	- Fax Profile				
	Voice Codec-2				
	Confirm/OK Cancel Refresh Help				
	ОК				

24. From the Advanced Explorer panel on the left, highlight the IP Routing Group-default field under IP Routing Groups. Under the General tab in the IP Routing Groupdefault panel on the right, select *Out-of-Band RFC 2833* for SIP Digit Relay from the drop down menu.

File View Tools Help			
Advanced Explore Basic Config		IP Routing Group-defa	ault
⊕ 🔄 System-Wide Configuration	General Advanced ANI Fax/QOS		
Catakeener/Porder Element	Description:		Silence Suppression
	SIP Digit Relay: Out-of-Ban	d RFC 2833	Packet Saver Enabled
⊖—SIP Signaling Groups └──SIP Signaling Group-1	SIP DR Payload Type: 101		
	Maximum Incoming Calls Allowed:	-1	Inbound Access Level: 0
End Point Address Directory	Maximum Outgoing Calls Allowed:	-1	Outbound Access Level: 0
Codecs Codec Profiles Trift IP Dial Plans	Maximum Talk Time (in minutes):	0	Trunk ID:
日 通 IP Routing Groups IP Routing Group-default	IP Dial Plan:	IP Dial Plan-default	IP Dial Plan-default
	Codec Profile:	Codec Profile-default	Codec Profile-default
 and a circle. Configuration and a circle. (XS)/Line (FXO) Configuration and a circle. (XS)/Line (FXO) 			
		Confirm/OK Cancel Refresh	Help
		ок	

Select <i>Relay ANI</i> for Select <i>Relay CNAM</i> Click Confirm/OK to change.	Default ANI Prese <i>in INVITE</i> for Rel hen the sunbur	entation Indica ay Calling Nam st icon on the m	tor from the drop the from the drop d thenu bar to implem	down menu. own menu. nents the
Tenor Configuration Manager (Connect File View Tools Help	ted to Tenor AS IP=12.176.187.253	SN=A012-1035E0 SW=P10	4-12-02)	
Advanced Explore Basic Config Image: System-Wide Configuration Image: System-System Image: System Configuration Image: System Configuration Image: System Configuration Image: System Configuration Image: System Configurati	General Advance ANI Fax/QOS Relay ANI: Default ANI: Default ANI Screen Indicator: Default ANI Presentation Indicator. Relay Calling Name:	Relay ANI Pass-through Relay ANI Relay CNAM in INVITE	fresh Help	
		OK		

-
ng: Disabled
undancy: 0
on Mode
(0x00-fe): b0

27.	 From the Advanced Explorer panel on the left, expand Circuit Configuration → Line Routing Configuration → Line Circuit Routing Groups, and highlight the Line Circuit Routing Group-phone field. Click on the General tab under the Line Circuit Routing Group-phone panel on the right. From the SIP User Agent drop down menu, select SIPUserAgent-101 and check the boxes for Overlap Dial and Provide Progress Tone. 			
	Click Confirm/OK then the I sunburst icon on the menu bar to implements the			
	change.			
	Click the Call Services tab.			
	Tenor Configuration Manager (Connected to Tenor AS 12.176.187.253) File View Tools Help Advanced Explorer Advanced Explorer Ethernet Configuration View Configuration Circuit Configuration Person Provide Progress Tone Pasts Through: Disabled Hunt LDN Directories Hunt LDN Directories Honer (KS)(Line (fXS) Configuration For DSP Configuration In Circuit Routing Configuration In Circuit Routing Configuration In Circuit Routing Configuration In Decretories Hum LDN Directories In Partial Trunk Oroup In Circuit Routing Configuration In DSP Configuration <t< th=""></t<>			

28.	 From the Call Services tab under the Line Circuit Routing Group-phone panel on right. Check to enable Hold, and Call Waiting. Disable Unattended Transfer and Attended Transfer if checked. Click Confirm/OK then the sunburst icon on the menu bar to implements the change. 			
	Tener Configuration Manager (Connected to Tenor AS 12.176.187.253) File View Tools Help Advanced Explorer Advanced Explorer General Trunk ID/Caller ID NR Numbering Call Services Bypass/Hunt Advanced Interface VolP Configuration Caller ID Translation Directories Binbound DNIS Translation Dire			
	Confirm/OK Cancel Refresh Help			



© 2007 AT&T Knowledge Ventures. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Knowledge Ventures. Subsidiaries and affiliates of AT&T Inc. provide products and services under the AT&T brand Page 49 of 87

30.	From the Advanced Explorer panel on the left, expand Circuit Configuration \rightarrow Line				
	Routing Configuration \rightarrow Line Circuit Routing Groups, and highlight the Line				
	Circuit Routing Group-nhone? field				
	Circuit Kouung Group-pilone2 neiu.				
	Click on the General tab under the Line Circuit Routing Group-phone panel on the				
	right. From the SIP User Agent drop down menu, select SIPUserAgent-101 and check				
	the boxes for Overlan Dial and Provide Progress Tone				
	Click Confirm/OK then the R support icon on the menu har to implements the				
	shows				
	change.				
	Click the Call Services tab.				
	Tenor Configuration Manager (Connected to Tenor AS IP=12.176.187.253 SN=A012-20000A SW=P105-13-00)				
	File View Tools Help				
	Advanced Explorer				
	General Trunk ID/Caller ID IVR Numbering Call Services Bypass/Hunt Advanced Interface				
	Description: Direction: Both				
	Right Signaling Configuration Channel Hunting Algorithm: Ascending Round Robin ▼ ✓ Overlap Dial				
	- Nuto Switch Configuration				
	Caller ID Translation Directories				
	🔁 Inbound DNIS Translation Directori				
	🕫 💭 Trunk Routing Configuration 🔰 Pass Through: Disabled 🔽 Inbound Access Level: 0				
	Bypass Number Directories				
	🕀 Hunt LDN Directories 🗾 🗌 🔽 🏳 Partial Trunk Group				
	E Line Circuit Routing Groups				
	- Line Circuit Routing Group-pn				
	- Analog Interface-line				
	B Configuration				
	Confirm/OK Cancel Refresh Help				
	Line Circuit Routing Group-phone2 Added.				

From the Call Services tab under the Line Circuit Routing Group-phone panel on the 31. right. Check to enable Hold, and Call Waiting. Disable Unattended Transfer and Attended Transfer if checked. Click **Confirm/OK** then the sunburst icon on the menu bar to implements the change. 🙍 Tenor Configuration Manager (Connected to Tenor AS -- IP=12.176.187.253 -- SN=A012-20000A -- SW=P105-13-00) File View Tools Help ~ ⋇ 퇴 -Advanced Explorer-🖶 🔟 IP Dial Plans General Trunk ID/Caller ID IVR Numbering Call Services Bypass/Hunt Advanced Interface 🖶 🌁 IP Routing Groups ± ∰ VoIP Routing 🔽 Hold 46 Hold Keystroke: 🗄 🗊 Circuit Configuration Unattended Transfer Bignaling Configuration - 🛐 Auto Switch Configuration Attended Transfer Caller ID Translation Directories Call Waiting ↓ ₽ Inbound DNIS Translation Directori HOND Trunk Routing Configuration 🧕 Line Routing Configuration 白 Bypass Number Directories Hunt LDN Directories Line Circuit Routing Groups Line Circuit Routing Group-ph Line Circuit Routing Group-ph 🏢 Phone (FXS)/Line (FXO) Configu Analog Interface-phone Analog Interface-line 🖽 👹 DSP Configuration -┫ Þ Confirm/OK Cancel Refresh Help... Line Circuit Routing Group-phone2 Added.

Under the Advanced Explorer panel on the left, highlight the Phone (FXS)/Line (FXO) 32. Configuration. Check the box to enable Phone-Line 1 and Phone-Line 2. Click **Confirm/OK** then the **Suburst** icon on the menu bar to implements the change. 🚾 Tenor Configuration Manager (Connected to Tenor AS -- IP=12.176.187.253 -- SN=A012-20000A -- SW=P105-13-00) - 🗆 🗙 File View Tools Help 퇴 ⇐| Advanced Explorer-🖶 🛄 IP Dial Plans IP Routing Groups Slot Number ± ∰→ VoIP Routing Description 🖫 Circuit Configuration Bignaling Configuration Analog Online Setting for Phone-Line/FXS-FXO Pair - 🛐 Auto Switch Configuration Caller ID Translation Directories Phone-Line 1 Phone-Line 2 Inbound DNIS Translation Director Trunk Routing Configuration Line Routing Configuration Bypass Number Directories Hunt LDN Directories Line Circuit Routing Groups - Line Circuit Routing Group-ph Line Circuit Routing Group-ph 📲 Phone (FXS)/Line (FXO) Configur Analog Interface-phone L Analog Interface-line 🗄 👹 DSP Configuration • Confirm/OK Cancel Refresh Help... OK

33.	Under the Advanced Explorer panel on the left, expand Phone (FXS)/Line (FXO)
	Configuration, and highlight the Analog interface-phone field. Highlight Channel
	Group-phone then click Add.
	Tanor Configuration Managor (Connected to Tanor AS 12, 176, 187, 253)
	File View Tools Help
	Advanced Explorer Analog Interface-phone
	Bystem-Wide Configuration General IP Extension
	Ethernet Configuration
	VolP Configuration Add Delete Edit
	Phone (FXS)/Line (FXO) Configurati
	- Analog Interface-phone
	Analog Interface-line
	Associated Signaling Group:
	Associated Routing Group:
	Confirm/OK Cancel Refresh Help
	ОК
34.	Enter a description "phone" for the Channel Group and click OK to continue.
	Specify a Unique Name
	Chappel Group
	OK Cancel

35.	In the Add Channel Group-Channel Group phone pop-up window, see following information.	lect the
	Associated Signaling Group:CAS Signaling Group-phoneAssociated Routing Group:Line Circuit Routing Group-phoneFXS Channel AssignmentCheck radio button for 1	
	Click OK to complete.	_
	Add Channel Group-Channel Group phone	×
	Selected Analog Interface: Analog Interface-phone	
	Associated Signaling Group CAS Signaling Group-phone	
	Associated Routing Group: Line Circuit Routing Group-phone	
	FXS Channel Assignment	
	Select All De-select All Reset	
	OK Cancel Help	



In the A followin	dd Channel Group-Channel Group phone2 pop-up window, sele g information.	ect the
Associa Associa FXS Cl	ated Signaling Group:CAS Signaling Group-phoneated Routing Group:Line Circuit Routing Group-phone2hannel AssignmentCheck radio button for 2	
Click Ol Edit Cha	K to complete. annel Group-phone2	
	Selected Analog Interface: Analog Interface-phone	
	Associated Signaling Group CAS Signaling Group-phone	1
	Associated Routing Group: Line Circuit Routing Group-phone2	
	Select All De-select All Reset	
	Select All Available De-select All Available OK Cancel Help	

6 Survivability

Select Quintum Tenor models (AFM, AFE, AXM and AXE) offer protection from catastrophic IP network outages and power failures. The Tenor MultiPath Call Routing architecture provides the ability to complete calls via PSTN lines when the IP network is not available. What about the 911 calls? How are those calls routed when IP is not available ? The Tenor Automatic Protection Switching (APS) capability provides PSTN connectivity in the event of a power failure.

This section describes the Tenor Survivability features and provides a guide for enabling and testing these capabilities.

6.1 MultiPath Survivability

The Tenor MultiPath Call Routing architecture available in select Tenor models, provide the ability to complete calls via PSTN lines when the IP network is not available. With AT&T IP Flexible Reach the Tenor will attempt to complete a call via the Primary and Secondary AT&T IP Border Element before trying the PSTN line. What about the 911 calls? How are those calls routed when IP is not available ?

6.1.1 Configuring MultiPath Survivability

To enable MultiPath Survivability, requires that at least one FXO line be attached to the Tenor. The following steps describe how to configure MultiPath Survivability on the Tenor.

Step		Description	
1.	As in Section 5, Step 8 a Server are set to the IP a Elements.	bove, insure that the Primary SIP Server and Secondary addresses of the AT&T Primary and Secondary IP Border	SIP
	Tenor Configuration Manager (Connected File View Tools Help	d to Tenor AS 12.176.187.253)	
	Advanced Explorer	General MWI & Session Timer Advanced User Agent Register Expiry Time (in sec.)	060
		ок	

From the Advanced Explorer panel on the left, click on the + sign next to VoIP Configuration -> SIP Signal Groups to expand the field. Highlight the SIP Signaling Group-1 field. Under the Advanced tab, set the Request Retransmit Count to "3". Click Confirm/OK then the subsurst icon on the menu bar to implements the change.	2.	To avoid a long post dial Request Retransmit Cou	delay when completing a call over the at to "3"	PSTN line, set the
From the Advanced Explorer panel on the left, click on the + sign next to VoIP Configuration -> SIP Signal Groups to expand the field. Highlight the SIP Signaling Group-1 field. Under the Advanced tab, set the Request Retransmit Count to "3". Click Confirm/OK then the suburst icon on the menu bar to implements the change.				
Group-1 field. Under the Advanced tab, set the Request Retransmit Count to "3". Click Confirm/OK then the subsurve icon on the menu bar to implements the change. The Configuration Manager (Connected to Tenor AS - IP-12.176.187.253 - SH-4012-20000A - SW-P105-13-00) File Ver Tools Help File Ver Tools Help File Ver Tools Help File Ver Tools Help File Ver Configuration File Ver Confi		From the Advanced Exp Configuration \rightarrow SIP S	blorer panel on the left, click on the + s	sign next to VoIP
Click Confirm/OK then the suburst icon on the menu bar to implements the change.		Group-1 field. Under th	e Advanced tab, set the Request Retr	ansmit Count to "3".
Check Confirm/OK then the subburst icon on the menu bar to implements the change.				
Tenor Configuration Manager (Connected to Tenor A5 IP-12.176.187.253 SH-A012-20000A SW-P105-13-00) File View Toris Heip Wiew Toris Heip Wiew Toris Heip Weight Stream Vide Configuration Stream Vide Configuration VolP Configuration Stream Vide Configuration VolP Configuration Stream Vide Codes		change	the sunburst icon on the menu ba	r to implements the
Tenor Configuration Manager (connected to Tenor AS - P-12:176.187.253 - SN-A012-20000A - SW-P105-13-00) File: View: Tools Help: Advanced Explore: System-Wide Configuration Ethernet Configuration View: Vole Configuration Gate/sepen/Border Element H323 Signaling Group PIP Signaling Groups SDP In 180 Ringing SIP Portitie Proofile PIP Dial Plans PIP Porting Groups PIP Cuit Configuration Proofile PIP Cuit Configuration Proofile PIP Cuit Address Directories <td< th=""><th></th><th>change.</th><th></th><th></th></td<>		change.		
File Vew Tods Help Advanced Explorer Advanced Explorer System-Vide Configuration System-Vide Configuration Odskeeper/Border Element Hassing Groups SIP Signaling Group SIP Into Source (Always ty the 1st Proxy) Fac Profile End Point Address Directory SIP Post Nuteworking SIP Post Nuteworking SIP Acut Source of Super Singland Groups SIP Circuit Configuration Singlang Configuration Singlang Configuration Singlang Configuration Singlang Configuration Singland Configuration Singland Configuration Singlanel Configuration		Tenor Configuration Manager (Connected	1 to Tenor AS IP=12.176.187.253 SN=A012-20000A SW=P105-	13-00)
Advanced Explorer Advanced Explorer System/vide Configuration System/vide Configuration System/vide Configuration Gatekeeper/Border Element H323 Signaling Group SIP Signaling Group SIP Signaling Group SIP Signaling Group O Advanced Configuration O Advanced Signaling Group SIP Signaling Group SIP Signaling Group SIP Signaling Group SIP Signaling Group Fax Forlie End Point Address Directory Voice Codecs SiP Point 180 Ringing PRACK Method Supported SIP No Configuration Signaling Configuration Signaling Configuration Signaling Configuration Signaling Configuration Signaling Configuration Higher Instalion Directoreis Incound DNIS Tran		File View Tools Help		
Image: System-Wide Configuration Image: System-Wide Configuration Image: Configuration Image: System-Wide Configuration Image: System-Wide Configuration Image: System-Wide Confi		Advanced Explorer	SIP Signaling Group-1	
Image: Section Stress Section Stress Image: Section Stress Stress Image: Section Stress </th <th></th> <th>B System-Wide Configuration</th> <th>General MWI & Session Timer Advanced User Agent</th> <th></th>		B System-Wide Configuration	General MWI & Session Timer Advanced User Agent	
WolP Configuration WalP Configuration Gatekeeper/Border Element H323 Signaling Group BY Signaling Group SIP No Connect Timeout (in sec.): BY Signaling Group Fiel-Over Always try the 1st Proxy) Fiel-Over Always Fail-Over on Error Response BY Signaling Group SDP in 180 Ringing BY Signaling Group SDP in 180 Ringing Continuel Map SDP in 180 Ringing Gateway SDP in 180 Ringing End Point Address Directory SIP Signaling Groups SiP Oldec Codecs SIP-PSTN Interworking PRACK Method Supported Send Remote Party ID Send Remote Party ID Send Remote Party ID Send Remote Party ID Inbound DNIS Translation Directories Inbound DNIS Translation Directories		🕀 閛 Ethernet Configuration		National Township
Ostenseperiodidal Claimen User Agent Header: Juintum1.0.0 SIP No Connect Timeout (in sec.): 180 H 323 Signaling Groups SIP Signaling Groups Fail-Over Behavior: No Fail-Over (Always try the 1st Proxy) Fail-Over on Error Response SIP Signaling Groups SIP Signaling Groups SIP Signaling Groups SIP Signaling Groups SIP Signaling Groups SIP Signaling Groups SIP Signaling Groups SIP Signaling Groups SIP Fax Profile End Point Address Directory SIP Server in From Header SiP Server in From Header SIP P Duil Plans SIP In Dial Plans SIP Info Format: Nortel SIP Info Format: Sip Info Groups Sip Info Format: Nortel Sip Info Format: Nortel Signaling Groups Sip Info Format: Nortel Sip Info Format: Nortel Signaling Groups Sipnaling Groups Sip Info Format: Nortel Sip Info Format: Nortel Signaling Groups Sipnaling Groups Sipnaling Groups Sip Info Format: Nortel Sip Info Format: Nortel Signaling Groups Sipnaling Groups Sipnaling Groups Sipnaling Groups Sipnaling Groups Sipnaling Groups <		VoIP Configuration	Request Retransmit Count: 3	Maximum Forwards: 70
Proxy Fail-Over Behavior: No Fail-Over (Always try the 1st Proxy) Fail-Over on Error Response Proxy Fail-Over Behavior: No Fail-Over (Always try the 1st Proxy) Fail-Over on Error Response DN Channel Map Gateway Fax Profile End Point Address Directory Fail- Over Behavior: No Fail-Over (Always try the 1st Proxy) Fail-Over on Error Response SDP In 180 Ringing SDP In 180 Ringing SDP In 180 Ringing SDP In 183 Progress SIP Server in From Header SIP-PSTN Interworking PRACK Method: Supported SIP Info Format: Nortel Send Remote Party ID Send Remote Party ID Confirm/OK Cancel Refresh Help K		- H323 Signaling Group	User Agent Header: Quintum/1.0.0	SIP No Connect Timeout (in sec.): 180
SIP Signaling Group- DN Channel Map Gateway Fax Profile End Point Address Directory Fax Profile End Point Address Directory Fax Profiles Fire Point Routing Fire Point Routing Fire Point Routing Fire Circuit Configuration Caller ID Translation Directories Fire Inbound DNIS Translation Directories Fire Normal Stranslation		G SIP Signaling Groups	Proxy Fail-Over Behavior: C No Fail-Over (Always try the 1st Proxy)	 Fail-Over on Error Response
 DN Channel Map Gateway Gateway Fax Profile End Point Address Directory SIP Server in From Header SIP Server in From Header SIP-PSTN Interworking PRACK Method: Supported ▼ SIP Info Format: Nortel ▼ Send Remote Party ID Send Remote Party ID Signaling Configuration Calter ID Translation Directories Inbound DNIS Translation Directories Inbound DNIS Translation Directories Inbound DNIS Translation Directories 		SIP Signaling Group-1		
- Gateway - Fax Profile - End Point Address Directory - End Point Address Directories - End Point Address Directories - End Point Address Directories - Inbound DNIS Translation Directories		- DN Channel Map	SDP in 180 Ringing	✓ Send 180 Ringing
- End Point Address Directory -		– Gateway	SDP in 183 Progress	▼ Send 183 Progress
Image: Wolce Codecs Image: Wolce Codecs Image: Polal Plans Image		- End Point Address Directory	SIP Server in From Header	
Image: Codec Profiles Image: Provide Profiles Image: Provide Profiles Image: Provide Profiles Image: Profiles Image: Prof		Dice Codecs	☐ SIP-PSTN Interworking	
IP Dial Plans IP Dial Plans IP Routing Groups IP Circuit Configuration IP Circuit Configurati IP Circuit Configuration IP Circuit C		De W	PRACK Method: Supported	SIP Info Format: Nortel
Confirm/OK Cancel Refresh Help		🕀 🔟 IP Dial Plans	E Sand Romate Rate ID	
Confirm/OK Cancel Refresh Help		P Routing Groups	F Send Remote Party ID	
Signaling Configuration Signaling Configuration Caller ID Translation Directories Inbound DNIS Translation Directorie Model				
Auto Switch Configuration Caller ID Translation Directories Inbound DNIS Translation Directories Model Nis Translation Directories		Signaling Configuration		
Caller ID Translation Directories		- Auto Switch Configuration	Confirm/OK Cancel Refresh He	elp
OK		Caller ID Translation Directories		
ОК		Inbound DNIS Translation Directori		
			ок	

Routing Configuration Circuit Routing Group Click on the Advanced to Click Confirm/OK then change.	→ Line Circuit Routing Groups, a -phone field. Tab and <i>check</i> the boxes for Enable N the sunburst icon on the menu \mathbb{R}	and highlight the Line Multi Path. bar to implements the
Tenor Configuration Manager (Connected)	to Tenor AS IP=12.176.187.253 SN=A012-20000A SW=P105-	13-00)
File View Tools Help		
	Line Oyeut Routing Group	-nhane-
Tone Profile CAS Signaling Groups CAS Signaling Group-phone CAS Signaling Group-line Auto Switch Configuration Caller ID Translation Directories nbound DNIS Translation Directories Trunk Routing Configuration Hopoff Number Directories Trunk Circuit Routing Groups	Forced Routing Number Type: Public	
L Trunk Circuit Routing Group-line	Modem Bypass: Disabled	
Line Routing Configuration	Stop/Radius Account ID: IP Address	F Play 1700 Prompt
Bypass Number Directories Hunt L DN Directories	Auto Switch Number Type: DID received	🔽 Enable Multi Path
3 Line Circuit Routing Groups	Auto Switch Nuroher (F 164):	
Line Circuit Routing Group-phone		
Phone (FXS)/Line (FXO) Configuration		
Analog Interface-phone		
	Confirm/OK Cancel Refresh H	elp
	ОК	
4. Enable one or more FXC) lines on the Tenor. The configurati	on example in Section 5

5.	Under the Advanced Explorer panel on the left, expand Phone (FXS)/Line (FXC))
	Configuration , and highlight the Analog interface-line field then click Add .	
	Tenor Configuration Manager (Connected to Tenor AS IP=12.176.187.253 SN=A012-20000A SW=P105-13-00) File View Tools Help	
	Analog Interface-line	1
	E System-Wide Configuration	
	Ethernet Configuration	
	P To VolP Configuration Add Delete Edit	
	Associated Channel Group	
	- Auto Switch Configuration	
	Caller ID Translation Directories	
	₽ ĴĴĴ Trunk Routing Configuration	
	Bypass Number Directories	
	E Line Circuit Routing Groups Associated Signaling Group:	
	Line Circuit Routing Group-ph Associated Routing Group:	
	Prome (FXS)/Line (FXO) Configur	
	- Analog Interface-phone	
	- Analog Interface-line	
	Confirm/OK Cancel Refresh Help	
	ОК	
6	Enter a description " I ine " for the Channel Group and click OK to continue	
0.	Enter a description Enter for the channel Group and enex OK to continue.	
	Specify a Unique Name	
	Channel Group - Line	
	OK Cancel	
	Childer	

Associa Associa FXO Cl Click OK	ted Signaling Group:Cted Routing Group:Thannel AssignmentCK to complete.	CAS Signaling Group-line Frunk Circuit Routing Group-line " Theck radio button for 1
Add Cha	nnel Group-Line	
	Selected Analog Interface:	Analog Interface-line
	Associated Signaling Group	CAS Signaling Group-line
	Associated Routing Group:	Trunk Circuit Routing Group-line
	Select All Select All	De-select All Reset
		Cancel Help

Circuit Configuration Signaling Configuration Signaling Configuration Caller ID Translation Directories Inbound DNIS Translation Directories Inbound DNIS Translation Directories Hopoff Number Directories Hopoff Number Directory-1 Trunk Circuit Routing Groups Trunk Circuit Routing Group-II Sypass Number Directories Hunt LDN Directories Line Circuit Routing Groups Line Circuit Routing Group-ph Phone (FXS)/Line (FXO) Configur Analog Interface-phone Analog Interface-line Sypastion	General IP Extension Add Defete Edit Associated Channel Group FXO Channel Assignment Channel Group-Line I 2 Image: State of the state o
---	---



figuration Manager (Connected				
ools Help	d to Tenor AS IP=12.176.	187.253 SN=A012-2000	0A SW=P105-13-00)	
Advanced Explorer		Hopoff N	umber Directory-1	
m-Wide Configuration				
et Configuration	Description:		Register	DN
Configuration	Honoff Pouting Priority	0.265):	_	
t Configuration	Hopoli Rodung Phony i	(J-200).	_	
naling Configuration	,			
uto Switch Configuration			Add	d Delete Edit
ID Translation Directories				
d DNIS Translation Directories	Number Pattern	Replacement Number [Description Type	TON NPI
Trunk Routing Configuration				
off Number Directories				
opoff Number Directory-1				
k Circuit Routing Groups				
ne Routing Configuration				
ne (FXS)/Line (FXO) Configurati				
' Configuration				
	4			
	Advanced Explorer In-Wide Configuration et Configuration et Configuration to Configuration naling Configuration to Switch Configuration D Translation Directories d DNIS Translation Directories frunk Routing Configuration off Number Directory k Circuit Routing Groups he Routing Configuration he (FXS)/Line (FXO) Configurati 'Configuration	Advanced Explorer Wide Configuration et Configuration configuration th Configuration naling Configuration to Switch Configuration D Translation Directories d DNIS Translation Directories runk Routing Configuration off Number Directory-1 k Circuit Routing Groups the Routing Configuration the (FXS)/Line (FXO) Configurati Configuration	Advanced Explorer Wide Configuration et Configuration Configuration naling Configuration to Switch Configuration D Translation Directories d DNIS Translation Directories runk Routing Configuration off Number Directory-1 k Circuit Routing Groups ne Routing Configuration te (FXS)/Line (FXO) Configurati Configuration	Advanced Explorer The Wide Configuration et Configuration the Confi

Add Hopoff Numl	ier 👔	
Number Pattern	: 1	
Replacement:	1	
Description:		
Type:	Public	
TON:	Unknown	
NPI:	Unknown	

change. Tenor Configuration Manager (Connecte	ed to Tenor AS IP=12.17	6.187.253 SN=A012-20	000A SW=P10	95-13-00)	
File View Tools Help					
PE N 99					
Advanced Explorer		Норо	ff Number Director	y-1	
System-Wide Configuration				Register DN	
Enernet Configuration	Description:		_	Register DN	
	Hopoff Routing Priorit	ty (0-255):	8		
Ginaling Configuration					
- Auto Switch Configuration				Add De	lete Edit
Caller ID Translation Directories					
	1	1	Description	Public Unknown	Unknown
FUC Trunk Routing Configuration	2	2		Public Unknown Public Unknown	Unknown Unknown
Hopoff Number Directories	4	4		Public Unknown	Unknown
Hopoff Number Directory-1	6	5		Public Unknown	Unknown
Trunk Circuit Routing Groups	7	7 8		Public Unknown Public Unknown	Unknown Unknown
Line Routing Configuration	9	9		Public Unknown	Unknown
🖶 📲 Phone (FXS)/Line (FXO) Configurati	l l			Tuble Online	Cillatomi
DSP Configuration					
	•				F
	<u> </u>				
		Confirm/OI/	Defrech	Liele	
		Commok	ncer Reiresn	Help	

6.1.2 Testing MultiPath Survivability

Note: The following test procedure will disconnect all in progress VoIP calls. Please contact Quintum Technologies customer support if a non-disruptive test procedure is required.

The easiest way to test the operation of MultiPath Survivability is to temporally disconnect the cable from the LAN port. See the diagram below.



Figure 11 – Testing MultiPath by Disconnecting LAN port

Place a call while the Tenor is in this state and confirm that the call is completed. A visual indication that the call is being completed via the Tenor MultiPath capability will be two Analog Port LED's illuminating green, showing activity. See the figure below.

222							111	11
			A	tive		2	Active	
	QUINTUM				NALOG	5 POR	5.	
	Tenor AF Series	STATUS	ACTIVITY	9	•	8	•	

Figure 12 - Testing MultiPath – Active LED's

6.2 Automatic Protection Switching (APS) Survivability

The Tenor Automatic Protection Switching (APS) capability available in select Tenor models (AFM, AFE, AXM and AXE), provides the ability to complete calls via PSTN lines when power is disrupted or disconnected from the Tenor.

Within the Tenor mechanical relays are used to provide the APS capability. When power is removed from the Tenor's relays, the relays close, connecting the FXS ports directly to the FXO ports. This operational state is referred to as "Bypass Mode" and is depicted in the following diagram.



Figure 13 – Tenor with APS capability in Bypass mode

© 2007 AT&T Knowledge Ventures. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Knowledge Ventures. Subsidiaries and affiliates of AT&T Inc. provide products and services under the AT&T brand Page 69 of 87

6.2.1 Configuring APS Survivability

Tenors that are manufactured with the APS capability require no additional configuration to enable the Power Off switch to Bypass Mode.

6.2.2 Testing APS Survivability

Note: The following test procedures will disconnect all in progress VoIP calls. This survivability feature can not be tested without disrupting active calls.

The easiest way to test the operation of APS Survivability is to temporally disconnect the power from the Tenor. See the diagrams in this guide for the location of the power cord/adapter.

It is also possible to put the Tenor into Bypass Mode by setting all the Tenor ports "offline" via the Configuration Manager.

Under the **Advanced Explorer** panel on the left, highlight **Phone (FXS)/Line (FXO) Configuration**, and **Un-Check** the **Analog Online Setting for Phone-Line/FXS-FXO Pair**.

Click **Confirm/OK** then the sunburst icon on the menu bar to implements the change.

An auditable click will be heard as the relays close and the Front Panel Port Activity LED's will blink on and off.

Tenor Configuration Manager (Connecte	d to Tenor AS IP=12.176.187.253 SN=A012-20000A SW=P105-13-00)	
File View Tools Help		
Advanced Explorer	Phone (FXS)/Line (FXO) Configuration	
Enternite Configuration	Stot Number 2 Description: Analog Tenor FXS and FXO Cards	
B DSP Configuration	Analog Online Setting for Phone-Line/FXS-FXO Pair	
	Confirm/OK Cancel Refresh Help	
	ОК	

7 Support for IP Flexible Reach Calling Plan A Dial Plan

The AT&T IP Flexible Reach Calling Plan A will only provide calling service to On-NET end-points and Off-Net calling to Long Distance and International locations. The AT&T Calling Plan A will not terminate calls to N11 (ex. 211, 311, 411, 511, 611, 711, 811, 911), 8YY-XXX-XXXX, 500-NPA-NXX-XXXX, 700-NPA-NXX-XXXX, 900-NPA-NXX-XXXX, NPA-555-XXXX, and Operator (0, 0+, 00, 01) numbers. See the AT&T Business VoIP Service Guide for more details.

The customer is responsible for providing PSTN lines to support 911 and the other calling services (N11, 8YY, etc.) not provided by AT&T. The customer must provision/configure his premise equipment (Analog PBX, Analog Phones, Key System, Tenor, etc.) to properly route 911 and other non AT&T supported calling services to the PSTN lines.

Typically the customer's PBX will provide the necessary dial-plan intelligence to route 911 and other non AT&T supported calling services to the PSTN circuits. Similarly, the customer's key system will provide the necessary user selective options that would allow the 911 calls to be routed to a PSTN line. This architecture is show below in figure 14.





© 2007 AT&T Knowledge Ventures. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Knowledge Ventures. Subsidiaries and affiliates of AT&T Inc. provide products and services under the AT&T brand Page 72 of 87
If the customer Key System does not have the capability or port capacity to route 911 calls and other non AT&T supported calling services to the PSTN circuits, the Quintum Tenors can be configured to provide this functionality. Figure 15 below shows this architecture.



Figure 15 - Tenor routes calls to POTS lines

If the customer has Analog Phones the Quintum Tenor can be configured to route 911 calls and other non AT&T supported calling services to PSTN circuits. Figure 16 below shows this architecture.



Figure 16 - Tenor routes calls to POTS lines

7.1 Tenor ByPass Routing Capability

The Tenor ByPass Routing Capability available in select Tenor models (AFM, AFE, AXM and AXE), provide the ability to complete calls via PSTN / POTS circuits instead of via the VoIP network.

A Bypass Directory Number (BND) is a telephone number that is automatically sent to the trunk-side (PSTN); it will not be routed by VoIP. Some examples of typical bypass numbers include toll-free calls, emergency calls (911), or high security calls. A bypass number should be specified in the format dialed from the line-side (Key System / PBX). It is permissible to use a "*" as a wildcard digit (e.g., 1800*).

7.1.1 Configuring the ByPass Routing Capability

To enable ByPass routing requires that at least one FXO line be attached to the Tenor. The following steps describe how to configure ByPass Routing on the Tenor to support the AT&T IP Flexible Reach Calling Plan A.

In order for the Bypass Number Directory (BND) to function, the following conditions should be met:

- The Trunk Circuit Routing Group (TCRG) and Line Circuit Routing Group (LCRG) should have a matching PassThroughID.
- The dialed number should match a number in the BND.

The literal characters "." (period) and "*" (asterisk) are supported. The "." matches a single digit (e.g., ".11" will match all N11 calls: 011, 111, 211, 311, 411 511, 611,711, 811, 911 calls). The "*" (asterisk) is interpreted as a wild card for 0 or more digits at the end of a string (e.g., 800* will match all 800 calls).

Step	Description
1.	Enable one or more FXO lines on the Tenor. Steps 5 through 8 in section 6 give the
	details on how to enable an FXO line.

2.	Enable PassThrough and c	onfigure matching PassThroughII	Ds in the LCRG and TCRG.
	From the Advanced Explo Routing Configuration – Circuit Routing Group-p	orer panel on the left, expand Cire → Line Circuit Routing Groups, → hone field.	cuit Configuration → Line and highlight the Line
	Click on the General tab uright. From the Pass Through ID field.	under the Line Circuit Routing G Dugh drop down menu, select <i>Ena</i>	roup-phone panel on the <i>bled</i> and enter a "1" in the
	Click Confirm/OK then the change.	he sunburst icon on the menu	bar to implements the
	Click the Bypass/Hunt Ta	b. ⊤Tenor AS IP=12.176.187.253 SN=A012-20000A SW=I	P105-13-00)
	File View Tools Help	Line Circuit Routing Gro	up-phone I
	System-Wide Configuration Central Central Configuration Central Central Configuration Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central Central	General Trunk ID/Caller ID IVR Numbering Call Services E Description:	Advanced Interface Direction: Both ✓ Overlap Dial ✓ Provide Progress Tone Inbound Access Level: 0 Outbound Access Level: 0 PSignalingGroup-1
	EF Line Circuit Routing Groups	Confirm/OK Cancel Refrest OK	n Help

3.	Associate a Bypass Num	ber Directory with the Line Circuit Routing Group-phone.
	From the Bypass/Hunt ta right. Highlight the Bypa button to move the B Click Confirm/OK then change.	ab under the Line Circuit Routing Group-phone panel on the ass Number Directory-1 in the Defined List and click the arrow ypass Number Directory-1 Selected List. the sunburst icon on the menu bar to implements the
	Tenor Configuration Manager (Connected File View Tools Help Advanced Explorer System-Wide Configuration System-Wide Configuration Circuit Configuration Signaling Configuration Circuit Configuration Circuit Configuration Circuit Configuration Caller ID Translation Directories Inbound DNIS Translation Directories Line Routing Configuration System Routing Configuration System Routing Configuration Phone (FXS)/Line (FXO) Configuration Note (FXS)/Line (FXO) Configuration Circuit Routing Groups Circuit Routing Groups	to Tenor AS IP=12.176.187.253 SN=A012-20000A SW=P105-13-00)
	• • • •	Confirm/OK Cancel Refresh Help





5.	In the Add Bypass Number pop-up window, enter the number or number patterns that can not be completed via that AT&T IP Flex Reach VoIP Network.
	Click OK to continue.
	A Bypass Directory Number is a telephone number that is automatically sent to the Trunk Side (PSTN); it will not be routed via VoIP. Some examples of Bypass Numbers include local calls, emergency calls (911), or high security calls. A Bypass Number should be specified in the format dialed from the line-side (Key System / PBX).
	The literal characters "." and "*" are supported. The "." (period) matches a single digit. The "*" (asterisk) is interpreted as a wild card for 0 or more digits at the end of a string (e.g., 1800*).
	The Tenor will support 8 Bypass Directories with 32 numbers per directory.
	You may associate all 8 BypassNumberDirectories on the Tenor with a LCRG.
	For a BypassNumberDirectory to be "in effect," you must associate it with a Line Circuit Routing
	For a BypassNumberDirectory to be "in effect," you must associate it with a Line Circuit Routing Group. Add Bypass Number
	For a BypassNumberDirectory to be "in effect," you must associate it with a Line Circuit Routing Group. Add Bypass Number Number Pattern: 911
	For a BypassNumberDirectory to be "in effect," you must associate it with a Line Circuit Routing Group.

7.	The customer must evaluate his businesses calling needs and local line connectivity to
	populate the BypassNumberDirectory with the correct numbers. Below are example
	entries:

Entry	Description
911	Bypass Emergency calls
911#	Note: The "#" (pound sign) is defined as the End of
	Dial Digit by default.
.11	Bypass all N11 calls
.11#	Note: The "#" (pound sign) is defined as the End of
	Dial Digit by default.
800*	Bypass Toll Free calls
1800*	
866*	
1866*	
877*	
1877*	
888*	
1888*	
700*	Bypass 700 calls (special network)
1700*	
500*	Bypass 500 calls (one number service)
1500*	
5551212	Bypass directory assistance calls
15551212	
0*	Bypass Operator calls
900*	Bypass pay for service calls
1900*	
976	
1976	
976	
1 976	



Enable PassThrough and From the Advanced Exp Trunk Routing Configu Trunk Circuit Routing Click on the General tab right. From the Pass Th Pass Through ID field. SIPUserAgent-101.	configure matching PassThrough configure panel on the left, expand + iration \rightarrow Trunk Circuit Routin Group-line field. o under the Trunk Circuit Routin rough drop down menu, select <i>E</i> From the SIP User Agent drop down	The the TCRG and LCRG. Circuit Configuration \rightarrow and Groups, and highlight the and Group-line field" on the mabled and enter a "1" in the lown menu, select
Click Confirm/OK then change.	the sunburst icon on the me	nu bar to implements the w=P105-13-00)
Advanced Explorer Advanced Expl	General Trunk ID/Caller ID IVR Call Services Hopoff A Description:	Avanced Interface dvanced Interface Direction: Both Overlap Dial Provide Progress Tone Hairpinning Inbound Access Level: 0 Outbound Access Level: 0 SIPSignalingGroup-1
	Confirm/OKI Cancel Re OK	fresh Help

8 Troubleshooting

For technical support on the Quintum Tenor AF and Tenor AX, contact Quintum at 877-435-7553, and also refer to <u>www.quintum.com</u>

9 Acronyms List

<u>Acronym</u>	Definition
DTMF	Dual Tone Multi Frequency – (midcall digits)
FXO	Foreign eXchange Office - Interface that receives telephone service,
	typically from a Central Office of the Public Switched Telephone
	Network (the plug on the phone).
FXS	Foreign eXchange Subscriber - Interface that delivers telephone service
	from the local phone company's Central Office (the plug on the wall).
LCRG	Line Circuit Routing Group
POTS	Plain Old Telephone Service
PSTN	Public Switched Telephone Network
TCRG	Trunk Circuit Routing Group

10 Additional References

[1] Tenor AX VoIP Multipath/Gateway Switch Product Guide, P/N 480-0062-00-12 http://www.quintum.com/support/products/2G/tenor_2G/sysdoc/Tenoraxuserguide.pdf

[2] Tenor AF VoIP Multipath/Gateway Switch Product Guide, P/N 480-0084-00-11 http://www.quintum.com/support/products/2G/tenor_2G/sysdoc/TenorAFUserGuide.pdf

[3] Tenor Configuration Manager/Tenor Monitor Product Guide. P/N 480-0028-00-05 http://www.quintum.com/support/mgmt/TenorConfigManagerUsersGuide.pdf

This Customer Configuration Guide ("CCG") is offered as a convenience to AT&T's customers. The specifications and information regarding the product in this CCG are subject to change without notice. All statements, information, and recommendations in this CCG are believed to be accurate but are presented without warranty of any kind, express or implied, and are provided "AS IS". Users must take full responsibility for the application of the specifications and information in this CCG.

In no event shall AT&T or its suppliers be liable for any indirect, special, consequential, or incidental damages, including, without limitation, lost profits or loss or damage arising out of the use or inability to use this CCG, even if AT&T or its suppliers have been advised of the possibility of such damage.

Appendix 1 Dump of Tenor Database Configuration

The following embedded document contains a complete printout of the Tenor database configuration used for testing with the AT&T IP Flexible Reach Service.

