This document is intended for Toshiba authorized dealers and AT&T use ONLY.

Only Toshiba certified dealers are authorized to program the IPedge system. Please contact Toshiba's Telecommunication System Division to locate a dealer.

HTTP://WWW.TELECOM.TOSHIBA.COM/TELEPHONE_SYSTEMS_SUPPORT/DEALER_LOCATOR.CFM
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# 1 Introduction

The purpose of this guide is to provide the details of configuring Toshiba’s IPedge system to connect to AT&T’s IP Flexible reach service. Before proceeding with the configuration, please ensure that all system requirements are met as outlined in the “System Requirements” section.

# 2 Special Notes

When using AT&T IP Flex Reach service:

- G729 payload size will be 20 bytes (in both directions) for inbound and outbound calls. On outbound calls (i.e. call initiated by IPEdge), IPEdge may be configured to request 30 bytes from the IP Flexible Reach Network. This configuration option is described later in this document.

- The IPedge does not support SIP Asserted Identity (RFC3325)
  - As a result, the Toshiba IPedge system does not support Calling Number Privacy on Toshiba IPedge originated calls.

- Translate 10 digit called number to private extension
  - When the IPedge system receives the call, the IPedge treats the last 1-7 digits of the called number as a DID number.
  - The destination of the incoming call to the IPedge system is mapped by DID number.

- CPE Failover
  - The IPedge system acquires server information by the IPedge trunk settings and the DNS solution. The IPedge system can preserve one server by the trunk setting, and can preserve multiple servers by using the DNS solution. ATT specification does not require the use of domain names.
  - Currently, there is no tested configuration with the Toshiba IPedge system SIP trunk for connecting to an alternate AT&T Border Element if the primary border element is not available.

- CPE Calling Name Delivery: IP PBX pass display name
  - Calling name will not be generated by the Toshiba IPedge system

- When using multiple IPedge servers at a single site AT&T requires multiple trunks.
• Toshiba’s IPedge system uses 3rd party FXS gateways to perform G.711 for fax.
  o Configure the FXS gateways to use only G.711 codec.
  o Fax tested using Audiocodes MP118 (Reference I&M for more detail programming)

• SonicWall routers will cause issues with some call transfer functions due to Sonicwall design constraints. SonicWall routers can also cause voice quality issues when used with ATT IP Flexible Reach Service. This is due to SonicWall routers changing the UDP port assignments.

• When faxing from a station connected to the IPedge out onto a SIP trunk to another station on the same IPedge system the following programming needs to be substituted. (This is an unlikely scenario.)
  o Set the SIP trunk > Service definition “Connection to Media Relay Server” = Auto
  o Set all IPT’s “Connection to Media Relay Server” = Manual
  o Set all FAX station extensions “Connection to Media Relay Server” = Auto

• To avoid substitution programming for faxing to another station on the same IPedge, use the station number rather than the 10 digit TN.

**Note:** Due to inhomogeneous hardware standards among fax machines and also among customer-provided equipment such as PBX’s, fax is inherently unreliable. No guarantees can be given for functionality or reliability even in the PSTN between any two locations with any two models of fax machine connected to any two PBX’s.

• Emergency 911/E911 Services Limitations and Restrictions - Although AT&T provides 911/E911 calling capabilities, AT&T does not warrant or represent that the equipment and software (e.g., IP PBX) reviewed in this customer configuration guide will properly operate with AT&T IP Flexible Reach to complete 911/E911 calls; therefore, it is Customer’s responsibility to ensure proper operation with its equipment/software vendor.

• While AT&T IP Flexible Reach services support E911/911 calling capabilities under certain Calling Plans, there are circumstances when that E911/911 service may not be available, as stated in the Service Guide for AT&T IP Flexible Reach found at: [http://new.serviceguide.att.com](http://new.serviceguide.att.com).
  Such circumstances include, but are not limited to, relocation of the end user's CPE, use of a non-native or virtual telephone number, failure in the broadband connection, loss of electrical power, and delays that may occur in updating the Customer’s location in the automatic location information database. Please review the AT&T IP Flexible Reach Service Guide in detail to understand the limitations and restrictions.
3 Overview

This document describes the configuration procedures required for the Toshiba IPedge system to be interoperable with AT&T IP Flexible Reach service. The IPedge system is an IP-PBX that uses the Session Initiation Protocol (SIP) to communicate with AT&T IP Flexible Reach for call control.

The IPedge system will connect to a network switch which will connect to AT&T’s managed router as shown in figure 1. With the AT&T MIS package, the IP Address, Subnet Mask, Gateway and DNS values will be provided. With the AT&T SIP Trunk package, the IP domain name and URI will be provided. The domain name (IP Address) will be required in configuring the SIP Trunk on the IPedge using the SIP Trunking->Service definition Program. The URI information will be required in SIP Trunking->Service URI Program.

- **Signaling and Media Ports:**
  - The following signaling and media ports must be open to the AT&T IP Border Elements (IPBE).
  - Signaling SIP 5060
  - Media UDP 16384 to 32767 (RTP)

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**Figure 1**

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**Customer Premises**
- Phones and server in private address space,
- Managed Router does NAT.

**Customer sites connect to AT&T IP Border Element**

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**Customer**
- Private Side
  - Switch
  - AT&T Managed Router With NAT
  - FAX
  - Vendor PBX

**Public Side**
- Application Server
- Network Gateway Border Element
- Call Control Element
- AT&T Managed Cisco™ router With Voice GW
- Legacy Circuit

**PSTN**
4 System Requirements

- IPedge hardware: EP, EC, or EM server
- IPedge software: Enterprise Manager 1.0.0-01, GCP 1.0.59 or later
- Soft Switch: Sonus
- License: I-CP-TRUNK
- Analog FXS Gateway, if fax is required: Please contact the Toshiba Sales Applications Desk for supported gateways

This guide describes the specific configuration items that are important for use with AT&T IP Flexible Reach. It does not describe the purpose and use of all configuration items on the IPedge system. For those details, see the IPedge Installation Manual supplied by Toshiba TSD for Authorized Toshiba dealers.
5 IPedge System Configuration

The IPedge system is configured using Enterprise Manager, a web browser based application that resides on every IPedge server.

The Administration Terminal is a PC connected to the IPedge system network, no special software on the PC is required.

The Enterprise Manager can be accessed using a web browser such as Microsoft™ Internet Explorer version 7 or later. Refer to the IPedge Installation Manual for a list of the supported browsers.

The capabilities of the IPedge system have been verified for use with AT&T IP Flexible Reach service, based on the settings described in the following table. For more information on the meaning, purpose, and applicability of the individual configuration items, refer to the IPedge system Installation Manual and the Feature Description Manual.

5.1 System Level Configuration

This section describes system-wide configuration items that are generally required for each IPedge system to work with AT&T IP Flexible Reach. Refer to the IPedge Installation manual for complete setup details.

Refer to the IPedge system documentation for the access code, and trunk group setup.

Creating the Channel Group

1. Select Trunk > SIP Trunking.
2. In the Channel Group tab select the SIP Trunk Channel Group to be created.
3. Choose a Channel group number that has not been assigned in another section. When a Channel Group is selected for a SIP trunk that Channel group number cannot be used for IPedge Net.
4. In the SIP Trunk Channels box select the TOTAL number of ports to be dedicated to the SIP trunk channel group.
5. Click on the Save icon.

Service Definition

1. Click on the Service Definition tab.
2. Click on the New icon.
3. Enter the ILG and OLG created in the trunk group setup.
4. Select the number of trunks/channels provided by this SIP trunk provider as the Effective Channel Number.
5. Select a Service Definition Index number then, enter the following based on the SIP Trunk Provider:
   Registration mode = None
6. Domain name = Enter the IP Address for the domain name provided by AT&T. The customer will get the IP address from AT&T implementation group. No domain name will be given and no DNS is required.

7. SIP Server = For AT&T leave this field blank

8. Network Transfer= Enabled

9. Primary Audio codec = G729a (This depends on the user’s network configuration and carrier specification. Verify this is set on all the station, IPT data tab, for all stations.)

10. Primary Voice Packet Configuration = 1 (Voice packet configuration set to 30ms. Verify this is set to 1 on the station, IPT data tab, for all stations.)

11. Secondary Audio codec = G711u (This depends on the user’s network configuration and carrier specification. Verify this is set on all the station, IPT data tab, for all stations.)

12. Secondary Voice Packet Configuration = 1 (Voice packet configuration set to 30ms. Verify this is set to 1 on the station, IPT data tab, for all stations.)

13. SIP Trunk Option Interval = 0

14. SIP Trunk Message Option= IPU IP Address

15. SIP Trunk Message To Header Option= FQDN

16. SIP Trunk Register Message From Header Option= IPU IP Address

17. SIP Trunk Register Message To Header option= FQDN


19. Click on the Save icon.

Service Assignment

1. SIP trunk Channel Group = Channel Group tab number (Use the Channel group created above.)

2. Service number = Row number (Enter the digit 1 for the first assignment. Increment for each new assignment.)

3. Service Definition Index = Value create in service definitions tab.

Service URI

The SIP URI is the Telephone Number (TN) from the SIP trunk provider.

1. Click on the New icon.

2. Service Definition Index: The service index that defines the SIP provider. This is the number assigned in the Service Definition section above.

3. SIP URI Number: This is the inbound and outbound TN of the URI (Each TN will need to be entered 2 times, once as a 4 or 7 digit number for inbound, then another time as the 10 digit outbound number)

4. SIP URI User Name: AT&T does not use a username. Leave blank

5. SIP URI password: AT&T does not use a username. Leave blank

6. SIP URI Channel Group enter the SIP Trunk Channel Group number created in the Creating Channel Groups section above.
7. SIP URI Attribution: MAIN. (Set 10 digit URI’s to MAIN, set four or seven digit URI’s to SUB)

8. Click on OK.

Media Relay Server

Setup MRS use IPedges IP address, otherwise some blind transfer scenarios may not work properly when using with AT&T IP Flex Reach Service.

1. Select System > Media Relay Server
   Click on the New icon
   Router Integration = Enable
   Media Relay Server Service IDs = 1
   Router IP Address = IPedge IP Address of the Firewall
   - Click on OK

2. Select the Port Forwarding Configuration
   Router Public Port Range Low = Lowest port number 21000
   Router Public Port Range High = Highest port number 22999
   Media Relay Server Service ID = 1
   Media Relay Server Private Port Range Low = Lowest port number 21000
   Media Relay Server Private Port Range High = Highest port number 22999
   Note: Typically; the Router Public Port Range values and the Media Relay Server Private Port Range values are the same.

3. Click on OK.

Station Assignment for IPT Data

In Enterprise Manager select Station > Station Assignment then select the IPT Data tab.

1. Base UDP Port for IPT Media Channel = 16384 (unique for each phone, a value between 16384 – 32767)

2. Audio codec = G729a (This depends on the user’s network configuration and carrier specification. Verify this is set on all the station, IPT data tab, for all stations.)

3. Voice Packet Configuration = 1 (Voice packet configuration set to 30ms. Verify this is set to 1 on the station, IPT data tab, for all stations.)

4. Secondary Audio codec = G711u (This depends on the user’s network configuration and carrier specification. Verify this is set on all the station, IPT data tab, for all stations.)

5. Secondary Voice Packet Configuration = 1 (Voice packet configuration set to 30ms. Verify this is set to 1 on the station, IPT data tab, for all stations.)

NOTE:

AT&T can send four digits, seven digits or, an assigned three digit prefix plus seven Digits (ten digits). AT&T expects to receive a ten digit number from the IPedge system. Enter the full ten digit URI for outbound calls to work and for caller ID. When AT&T is sending a four digit number and is receiving a 10 digit number both will need to be added to the IPedge URI table. Since the digits do not match, two (or more)
URI entries on IPedge will be required. (EXAMPLE: Enter the four and 10 digit numbers such as 3000 and 9495833000 in the URI table).
If the number received from AT&T matches the same digits sent then only one URI table entry is required. (EXAMPLE: Enter the 10 digit number such as 9495833000 if the number sent is 9495833000 and number received is 9495833000).

6 References

[1] IPedge Configuration

The Toshiba IPedge system is configured using a browser-based GUI administration application, Enterprise Manager. SIP Trunk capability is a function of the system. Specific SIP Trunk configuration information is found in the SIP Trunk Configuration section of the system installation manual. The manual is available to Toshiba Authorized dealers on Toshiba’s FYI web site.


7 Troubleshooting

Please contact Toshiba’s Technical Support Department for any support issues concerning the IPedge SIP Trunk setup. The phone number for technical support is 800-777-4873.

Please note that before calling technical support, the technician needs to be IPedge System certified and the IPedge system must have current maintenance license. Callers without current certification or current maintenance license will not be eligible for support.

Provide the following information:

**Basic information**
- System model (EP, EC, EM)
- Network topology
- AT&T provided URI and domain name (IP Address)

**Capture files**
- Packet capture (i.e. Wireshark) between the IPedge and the network switch
- IPedge log files
This Customer Configuration Guide ("CCG") is offered as a convenience to AT&T's customers and Toshiba authorized dealers. 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.

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