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## Automatic External (Public) IP Discovery Through NAT

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## Introduction

This document describes the Quintum feature that allows a Tenor installed behind a NAT (Network Address Translation) switch with a private IP to access the public IP when DHCP or Dynamic IP assignment is used on the public IP network.

This document only discusses the commands and information directly related to this feature and does not discuss other configuration parameters on the Tenor. You are encouraged to review our NAT/Firewall document (available on our web site) for more information on installing and using a Tenor behind a NAT/Firewall with our NATAccess feature.

For more information and questions, contact the QTAC at 1-877-435-7553 (Toll Free in the U.S.), 1-732-460-9399 (Internationally), or by email at [service-ticket@quintum.com](mailto:service-ticket@quintum.com).

### NOTE

This is a proprietary feature and will only work when using Quintum Gateways with Quintum Gatekeepers (or Quintum Gateways configured as Gatekeepers).

## Existing Situation

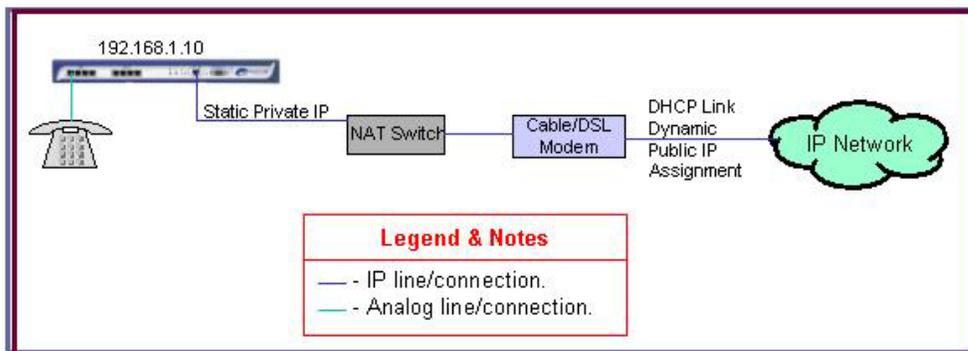
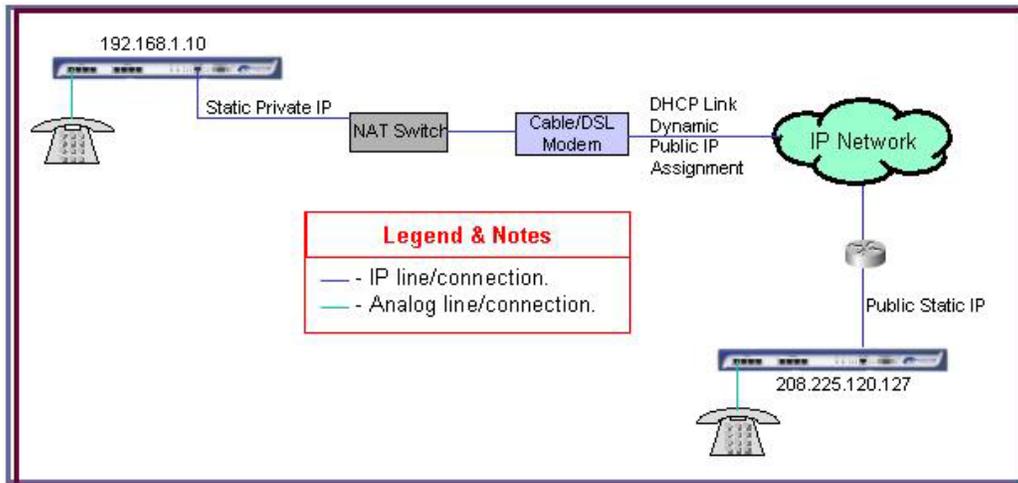


Figure 1

As shown in Figure 1, a customer wants to install a Tenor behind a NAT switch and assign a private IP address to the Tenor. The Tenor needs to send and receive VoIP calls from the public IP. In this case, the customer's ISP is providing a public IP using DHCP or Dynamic IP assignment. This means that the public IP address can and will change over time.

Typically, the Tenor would be configured for NATAccess, where you would configure the public IP in the Tenor. You would make sure that the NAT switch is configured to "map" the public IP to the Tenor's private IP. However, since the public IP will change over time, you would need to keep changing the Tenor's setting each time the public IP changes. This can be quite cumbersome to do, and you may not know when the IP address changes.

## Feature Setup



**Figure 2**

In order to resolve the issue described on the previous page, you need to have a Tenor that is configured as a Gatekeeper installed on a static public IP address in the network.

**1G Tenor:** Set the config `gksys#` primary border element to the Tenor's IP address.

**2G Tenor:** Set the `GateKeeperParam-1 PrimaryBEIPAddr` to the Tenor's IP address.

Once this is done, configure the Tenor on the private network to register to the Gatekeeper on the public. The new feature allows the Gatekeeper to get the public IP from the IP header on the incoming registration packet from the private Tenor, and send this public IP back to the private Tenor in the Registration Confirmation packet. The private Tenor then automatically configures its external IP (`extip`) based on this information.

Then, when the public IP changes to the private Tenor, the Tenor sends the GK keep alive signal to the Gatekeeper, the Gatekeeper replies with the new public IP, and the private Tenor updates itself with this information. Keep in mind that this could take up to 12 minutes depending on the timing when the public IP changes.

The complete flow of this is as follows:

1. Private Tenor is configured with a static private IP address (192.168.1.10) and its default gateway is pointed to the private IP of the NAT/router (192.168.1.1).
2. Public Tenor is configured on public network with public static IP address (208.225.120.127) and as a Gatekeeper.
3. ISP provides a dynamic public IP to NAT router (210.222.121.5).
4. Private Tenor sends a Registration packet to router with the private IP in the IP header.
5. NAT router translates the IP header address to represent the currently assigned public IP (210.222.121.5), and routes packet out to Internet.
6. Tenor GK receives packet and reads the IP header to get the public IP address.
7. Tenor GK sends a registration confirmation back to private Tenor, putting the public IP received in the confirmation message.

8. Private Tenor receives the confirmation packet and looks at the IP address within the message and automatically sets the external IP to this IP address.
9. The private Tenor sends keep alive messages to the Tenor GK. If during this period the ISP changes the public IP, the Tenor GK reads the new IP address from the incoming keep alive and sends this public IP back to the Tenor in the confirmation message.

## Feature Configuration

As mentioned earlier, this document will only provide the configuration and information that is directly related to this feature. Any other configuration parameters or information may be found in other documents. Additionally, in the case of 1G Tenors, both the Tenor that is installed on the private network and the Tenor that will act as the Gatekeeper must be loaded with software version P4-2-20-4 or higher.

All the IP addresses used below are based on the example from the previous section. Please make sure you configure your Tenors with the correct values for your network.

### Generation 1 Tenor (A400/A800/D800/D1600/D2400/D3000/GK)

#### *Private Tenor Configuration*

The following information is to be applied to the Tenor(s) that will be installed behind the NAT router with a private IP address. Don't forget to submit your changes when complete.

#### CLI Configuration Parameters

CLI Prompt Level	Command	Setting	Syntax	Comments
Config unit 1#	<code>ip</code>	192.168.1.10	<code>ip 192.168.1.10</code>	Set this to the private IP that will be assigned by the NAT router.
	<code>ext</code>	0.0.0.0	<code>ext 0.0.0.0</code>	The extip must be set to 0.0.0.0.
config h323#	<code>primarygk</code>	208.225.120.127	<code>primarygk 208.225.120.127</code>	Set this to public IP address of the Tenor GK so the Tenor registers to the GK.
	<code>autoextip</code>	1 (yes)	<code>autoextip 1</code>	This enables the Auto External IP feature on the private Tenor.
config gksys#	<code>borderelement</code>	Prim=0.0.0.0	<code>border 0 0.0.0.0</code>	Disables Border Element.

### Tenor GK Configuration

The following configuration is to be applied to the Tenor that will be installed on a static public IP and act as the Gatekeeper. Don't forget to submit your changes when complete.

#### CLI Configuration Parameters

CLI Prompt Level	Command	Setting	Syntax	Comments
Config unit 1#	ip	208.225.120.127	ip 208.225.120.127	Sets to static public IP assigned by your network.
config gksys#	borderelement	Prim= 208.225.120.127	border 0 208.225.120.127	Sets this Tenor as a Border Element and a Gatekeeper.
	useiphdr	1 (yes)	useiphdr 1	This enables the Auto External IP feature in the Tenor GK.

### Generation 2 Tenors (AS/AX/DX)

#### Private Tenor Configuration

The following information is to be applied to the Tenor(s) that will be installed behind the NAT router with a private IP address. Don't forget to submit your changes when complete.

CLI commands are shown, but you may also use the Configuration Manager.

It is assumed that you already have the IP address, subnet, and default Gateway set for this unit.

#### CLI Configuration Parameters

CLI Prompt Level	Command	Setting	Syntax	Comments
Quintum>	config h323sg		config h323sg	Brings you to the H323 signaling group.
config-H323SignalingGroup-1#	pgkipa	208.225.120.127	set pgkipa 208.225.120.127	Sets the primary gatekeeper to 208.225.120.127.
config-H323SignalingGroup-1#	aeip	1 (enabled)	set aeip 1	Enables the Auto External IP feature.
<Any>	gkp		gkp	Brings you to the Gatekeeper Parameters prompt.
config-GateKeeperParam-1#	pbeipa	0.0.0.0	set beipa 0.0.0.0	Disables the Border Element.

### **Tenor GK Configuration**

The following configuration is to be applied to the Tenor that will be installed on a static public IP and act as the Gatekeeper. Don't forget to submit your changes when complete.

#### **CLI Configuration Parameters**

<b>CLI Prompt Level</b>	<b>Command</b>	<b>Setting</b>	<b>Syntax</b>	<b>Comments</b>
Quintum>	<code>config gkp</code>		gkp	Brings you to the Gatekeeper Parameters prompt.
config-GateKeeperParam-1#	<code>pbeipa</code>	208.225.120.127	set beipa 208.225.120.127	Sets this Tenor as a Border Element and a Gatekeeper.
config-GateKeeperParam-1#	<code>useipheader</code>	1 (enabled)	set uiph 1	This enables the Auto External IP feature in the Tenor GK