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Inter-Tel® 5000 and IP endpoints utilizing NAT

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I'd like to be able to use IP endpoints from the Internet. Can I place the Inter-Tel® 5000 inside my firewall?

Before we begin:

This answer varies depending on which version of software is currently loaded in your Inter-Tel® 5000 and whether you are using Inter-Tel IP endpoints or Mitel endpoints. In version 1.1 and 1.2 significant improvements were made in the systems ability to handle NAT. The 2.0 release is the same as 1.2 as far as NAT is concerned; however the UDP **port** range was increased to allow support for more IP endpoints. The 2.1 release functions exactly like 2.0 in relation to NAT.

NOTE: IP networking is not supported using NAT

NOTE: In each of these cases, you should program the public/NAT address of the IPRA as the IPRC address in the endpoint.

Inter-Tel endpoints:

- Inter-Tel® 5000 Version 1.0.x

If you are running software version 1.0.X.XXX the NAT functionality of most firewalls will cause problems. The recommended configuration is to put the Inter-Tel® 5000 in a DMZ using a public IP address. For the Inter-Tel CS-5400, you'll actually need two public IP addresses. There are security issues that need to be considered as well. Refer to technical documentation. In most cases it would be recommended to upgrade to 1.1 or later so your customer can take advantage of the new NAT Traversal functionality which would remove the need to place the Inter-Tel® 5000 in their DMZ using a public address.

- Inter-Tel® 5000 Version 1.1.x

With the release of software version 1.1.X.XXX, NAT functionality was implemented into the Inter-Tel® 5000 software. With this release you can configure the Inter-Tel® 5000 with an internal IP Address. You then rely on the IT Admin of the site you are working at to NAT a public external IP Address to the internal IP Address of the Inter-Tel® 5000 . We advise a one to one static NAT (all traffic to/from the public to the private address is **forwarded** unchanged). If you wish to open only specific **ports** to the private IP address then these are the necessary **ports**;

5566 TCP
5567 UDP
6004 - 6247 UDP

Once the NAT has been implemented by the IT Admin, you will need to program the system portion in the Inter-Tel® 5000 - As follows; In DB Programming navigate to System => IP Connections => Local => Open your P6XXX connection (s) and program the "NAT IP Address" to be the Public IP Address that was NATed by the IT Administrator. If this system is a CS-5400, you will see 2 local IP Connections. You would need 2 public IP Addresses that are NATed - respectively to the proper Internal IP Addresses on the Inter-Tel® 5000 .

Now - Navigate to System => Devices and feature codes => Endpoints => Open the endpoint that is going to be NATed => IP Settings => Set the NAT Address type to "NAT" for the IP Endpoints that are going to be using the NAT functionality. If the IP Endpoint is going to stay internal then NAT Address type should be set to "NATIVE"

Further info for 1.0 and 1.1 Inter-Tel® 5000 sites:

If you currently have a 1.0 or 1.1 Inter-Tel® 5000 , you can order the no cost upgrade part numbers as listed below to upgrade the license on your Inter-Tel® 5000 so you can upgrade any earlier 1.X sites to a later 1.X revision so your customer can take advantage of the new NAT Feature functionality.

-IT-5000 1.0 to 1.1 license upgrade part number - 840.0407

-IT-5000 1.1 to 1.2 license upgrade part number - 840.0458

If the system you are upgrading is 1.0, you would need to order 840.0407 and 840.0458 to get the license upgraded to 1.2.

-Inter-Tel® 5000 1.2.x

With the release of software version 1.2.X.XXX NAT functionality was improved in the Inter-Tel® 5000 software. With this release you can configure the Inter-Tel® 5000 with an internal IP Address. You then rely on the IT Admin of the site you are working at to NAT a public external IP Address to the internal IP Address of the Inter-Tel® 5000 . We advise a one to one static NAT (all traffic to/from the public to the private address is **forwarded** unchanged). If you wish to open only specific **ports** to the private IP address then these are the necessary **ports**;

5566 TCP
5567 UDP
6004 - 6247 UDP

Once the NAT has been implemented by the IT Admin, you will need to program the system portion in the Inter-Tel® 5000 - As follows; In DB Programming navigate to System => IP Connections => Local => Open your P6XXX connection (s) and program the "NAT IP Address" to be the Public IP Address that was NATed by the IT Administrator. If this system is a CS-5400, you will see 2 local IP Connections. You would need 2 public IP Addresses that are NATed - respectively to the Internal IP Addresses on the Inter-Tel® 5000 .

-Inter-Tel® 5000 2.0.x +

In the 2.0.x.xxx software release the number of total IP endpoints was increased, the UDP **port** range used by the system also has increased as below. The functionality and programming of the system as far as NAT is concerned has not changed and is the same all the way thru to the latest 2.4 software.

5566 TCP
5567 UDP

6004 - 6604 UDP for 5200 systems
6004 - 7039 UDP for 5400 and 5600 systems

-Processor Module (PM-1) base **port** - 6004,

-Processor Expansion Card (PEC-1) base **port** - 6604

-5600 systems should be treated as 5400 systems as far as NAT is concerned, you will need IP addresses for both the PM-1 and PEC-1. See KB 3352 for further details on connecting IP devices to 5600 systems.

Example of NAT configuration for a CS-5400 (only forwarding the necessary ports for a 1.2 system):

P6000 local (Processor Module) = Internal IP Address 192.168.200.201 Will have public IP Address 64.128.29.35 directly associated using static NAT.

P6001 local (Processor Expansion Card) = Internal IP Address 192.168.200.202 Will have public IP Address 64.128.29.36 directly associated using static NAT.

Public IP 64.128.29.35 should have **ports** TCP 5566, and UDP 5567, 6004 - 6247 mapped directly to internal IP 192.168.200.201
Public IP 64.128.29.36 should have **ports** TCP 5566, and UDP 5567, 6004 - 6247 mapped directly to internal IP 192.168.200.202

Note: The suggested configuration is a static one to one NAT, for specific firewall configuration advice please contact your firewall vendor.

Further Info related to Inter-Tel endpoints:

The NAT setting "AUTO" will not work properly if the local internal IP Addressing for the Inter-Tel® 5000 is (example) 192.168.200.201, and the far end endpoint (Not local to the network the Inter-Tel® 5000 resides on) also has local IP Addressing of 192.168.200.xxx. If you have this situation you will need to use the NAT setting

Mitel endpoints:

With the 2.4 release of 5000 software the ability to connect Mitel IP endpoints Model 5212/5224 and 5330/5340 to the 5000 has been added. Below is a list of **ports** that the Mitel endpoints use to connect to the 5000. The auto NAT functionality that works with the classic Inter-Tel endpoints is not support with the Mitel endpoints. Also please note that the 5212 and 5224 endpoints download their firmware every time they connect to the system via TFTP, due to this they are not the best choice for use over the public internet.

Connection Name	Ports	Description
Dynamic Host Configuration Protocol (DHCP)	67 and 68/User Datagram Protocol (UDP)	The endpoint uses DHCP to obtain its IP address, subnet mask, default gateway, TFTP server, and ICP address. This protocol is for use on the Local Area Network (LAN) only. It is not required to traverse NATs and firewalls. It is optional if all network information is statically programmed.
TFTP	68 and 69, 20001/ UDP	The endpoint uses TFTP to download firmware during the boot process. The endpoint/source number port number may be random, but the Inter-Tel 5000 destination uses the specified ports. The endpoint ships with the port setting at 0 (recommended). When left at this setting, the TFTP tries port 20001 followed by port 69.
MiNet	6800–6802/ Transfer Connection Protocol (TCP)	The MiNet protocol is for basic call control. The endpoint/source number may be random, but the Inter-Tel 5000 destination uses the specified ports.
Switch Application Communication (SAC)	3998 and 3999/ TCP	The SAC protocol is for endpoint applications and programmable buttons. The endpoint/source number may be random, but the Inter-Tel 5000 destination uses the specified ports.
RTP (Inter-Tel IP Endpoint)	5004–5007/UDP	Real-Time Transfer Protocol (RTP) is for streaming audio. The Inter-Tel 5000 and IP endpoints use the specified ports to send to and receive from the peer endpoint. Each channel requires two port numbers: The even port number is for the RTP protocol, and the odd port number is for the Real-time Transport Control Protocol (RTCP) protocol. The port number value in DB Programming specifies the endpoint base RTP port range. The first audio channel uses the base port+2.
RTP (Mitel IP Endpoint)	50098–50508/UDP	
RTP (Processor Module)	6004–6261/UDP	
RTP (Expansion Module)	6604–7039/UDP	