TECHNICAL NOTE T009

Connecting SCOTTY IP videophones to broadband lines (Advanced).

Introduction

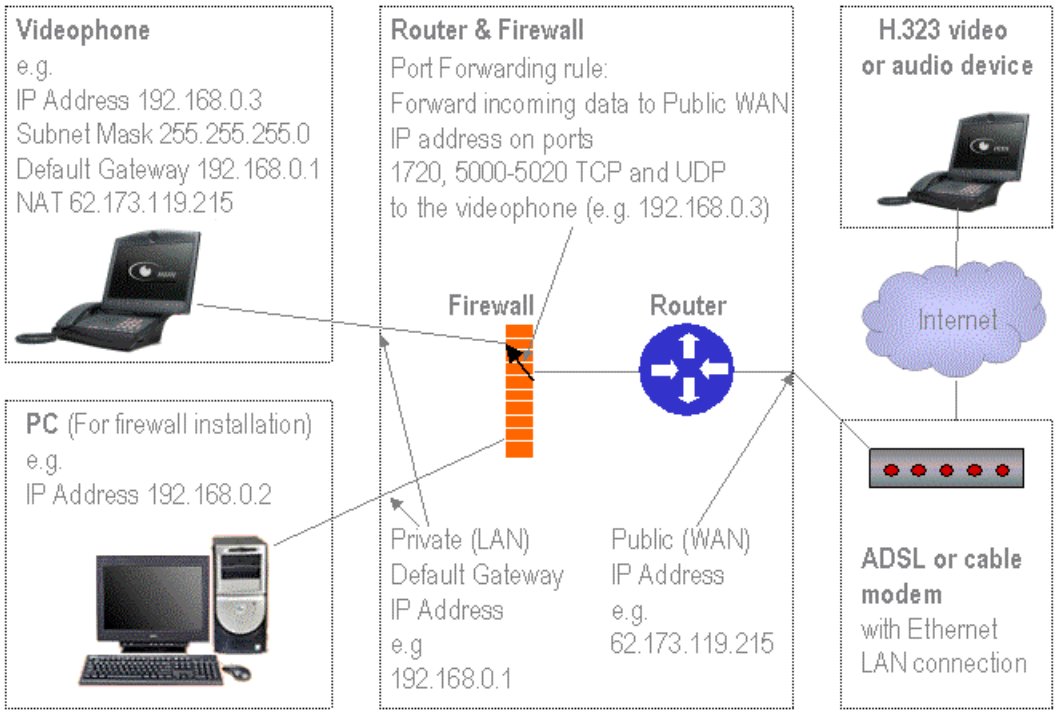
Whilst ISDN offers a popular, consistent, hassle-free solution to connecting a videophone at home, connecting an IP videophone to a home broadband service requires a little effort but can deliver excellent results.

The reward of using the Internet for your video calls is obviously free calls (beyond the fixed monthly charge for the service) and greater available bandwidth (often over 192 kbps compared with 128 kbps over ISDN).

In many regions it also extends the community of potential endpoints from the small number with home ISDN services to the ever increasing number with broadband services.

A wide range of endpoints- from PCs running NetMeeting to full group videoconferencing systems will be a free call away!

This advanced example is useful for people who would like tighter security, but does not offer the wide interoperability that the DMZ approach in T008 offers.



Example 1.0 Using the Port Forwarding feature in the firewall to forward video traffic to the videophone (This example is for H.323 protocol and no gatekeeper).

Basic Configuration

Before you start you will need a broadband ADSL or Cable service, an ADSL or cable modem and a router with an Ethernet interface to allow you to connect the videophone.
An interesting shortcut can be to connect an IP videophone direct to the Ethernet interface on a cable modem and make calls through some providers from the default videophone configuration! (Assuming that the service is not already locked to your PCs details) However, most people with a home broadband setup also wish to use one or more PCs to surf the web, hence the approach of using a router, or preferably a combined router & modem.

Initial setup.

It is beyond the scope of this article to describe the method used to configure a home router to allow attached PCs etc. to connect to the Internet, and it is also well documented in the literature supplied with the home router. We will assume you already have a PC attached that is capable of browsing the web through the router, and also capable of accessing the configuration menus of the router as a starting point.

DHCP

Most home routers include an integral DHCP server (Dynamic Host Configuration Protocol), and this allows the videophone to automatically receive a valid IP address, subnet mask, default gateway, and DNS in the case of the mm745.
We recommend that you use DHCP to provide valid IP settings to the videophone, but once these are received, we recommend that you then disable DHCP in the videophone creating 'static' entries. This is because you will be adding forwarding/filtering rules that will become invalid in the event of a change of IP address in the videophone.
Following this process the IP settings are likely to be as follows:

IP Address	192.168.1.*xx*
Subnet mask	255.255.255.0
Default Gateway	192.168.1.1

The DHCP menu is available from:
menu>communications setup>network setup on the mm146, and from settings>advanced settings>IP settings on the mm745.

NAT

The IP address your videophone received is an internal IP address. Many millions of other devices in the world will have exactly the same address, so it is clearly unsuitable for you to give to others outside your local area network to use. NAT (Network Address Translation) allows the internal IP address to be translated into the external public IP address assigned to your router.
The first step to creating a Network Address Translation is to discover your public IP address. Do this by entering the configuration screen of your router. Look for a 'Status' page in the configuration menus and look for 'WAN status'. Take a note of the IP address you find, and enter it in the NAT field of your videophone.
The NAT settings are available from:

menu>communications setup>network setup on the mm146, and from settings>advanced settings>firewall support on the mm745.

NOTE: If your router is H.323 aware entering the public IP address of your videophone in the NAT field on your videophone will cause calls to fail. Home routers and firewalls are generally not H.323 aware. Business devices may have this capability but it needs to be configured.

Port Forwarding Rules

Now you need to create the port forwarding rule in the router. The port forwarding rule not only creates a Network Address Translation (NAT), but also unblocks the designated ports in the router to the videophone, allowing the video, audio, and call setup streams through to the videophone without restriction.
First, find the advanced settings menu, then the firewall setup menu, then the port forwarding menu. Enter the information as follows, substituting the internal address of your videophone. (in this example it is 192.168.0.3)

The illustration below shows a configuration for an mm745 using the H.323 protocol.
The values to enter are listed on the following page.

Opening a narrow range of ports can cause call failures with third party equipment as different vendors use a variety of different port ranges.

Port Forwarding Menu					
Port Range					
Application	Start	End	Protocol	IP Addr.	Enable
H.323 Setup	1720	1720	TCP & UDP	192.168.0. 3	✓
H.323 A/V	5000	5020	TCP & UDP	192.168.0. 3	✓
				192.168.0.	
				192.168.0.	
				192.168.0.	

SCOTTY product default port ranges are as follows:

mm745

H.323

Port	Type	Description
1718	UDP	Gatekeeper autodiscovery
1719	UDP	Gatekeeper manual registration
1720	TCP	H.323 calling port.
5000	TCP	H.245 Capability Exchange
5001– 5010	UDP	Media (video, audio, data) This port range can be adjusted using the setup menus.

mm146, mm150, mm156

H.323

Port	Type	Description
1718	UDP	Gatekeeper autodiscovery
1719	UDP	Gatekeeper manual registration
1720	TCP	H.323 calling port.
2099 to 2100	TCP and UDP	H.245 Capability Exchange
2101-2109	UDP	Media (video, audio, data) This port range can be adjusted by changing the UDP port number in the Network Setup menus.

SIP

Port	Type	Description
5060	UDP	Default SIP Proxy port

Packet Buddy

Port	Type	Description
2099	UDP	Default port for all media and communication. This port can be adjusted using the setup menus.

StatIX

Port	Type	Description
7800	UDP	SCOTTY StatIX location server port number.

Reboot

Following a static IP configuration change please reboot videophones and routers.

Test

If you would like to make a test call, try
62.173.119.215, (H.323) or
62.173.119.216, (Packet Buddy) or
62.173.119.217 (H.323 video clip)

IP Address Changes
Most domestic broadband services offer dynamic (DHCP) IP addressing. In the event of a router reboot, or maintenance at the service provider your IP address can change, although if your router is left switched on all the time this should be quite infrequent. If your IP address changes you will need to change the NAT entry in your videophone, and advise people who will be calling you of the change.
Three solutions exist to the problem of changing IP addresses.

1) Use a gatekeeper (mm146, 156 and mm745 models support gatekeepers)
2) Upgrade to a business service with static IP addressing.
3) Use a 3rd party service with a gatekeeper.
4) Use SCOTTY's StatIX service.

StatIX
IP made easy

StatIX is a service that enhances the operation of your SCOTTY videophone or group system by providing static IP address functionality without the high cost or hassle.
StatIX allows your videophone to be "called" over the Internet using a simple unique identifier (like a telephone number) from anywhere in the world! The StatIX server works seamlessly with your videophone to continually keep track of its ever changing dynamically assigned IP address.
StatIX is available for use with mm146 and mm156 videophones, and the mm150 group system
Please note: StatIX is exclusive to the mm146, mm156, and mm150.
Detailed information is available at www.scottygroup.com/statix