

MITEL NETWORKS

# 3100 | Integrated Communications Platform

General Information Guide (GIG)  
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## Preface

### About this document

This guide provides detailed product and technical information on the 3100 Integrated Communications Platform (ICP), a Mitel Networks small business solution. This is a pre-sales document, aimed primarily at Mitel Networks channel partners, in particular sales engineers and sales representatives.

### About Mitel Networks Corporation

Mitel Networks is a leading-edge provider of next-generation IP telephony solutions. The company creates advanced communication solutions and applications in the areas of speech recognition, wireless mobility, unified messaging, and customer interaction solutions. Through direct channels and strategic technology partnerships, Mitel Networks currently serves the education, hospitality, healthcare, and government markets, providing voice communications solutions that are robust and reliable. The foundation for Mitel Networks' IP-based platforms will deliver the power of IP to the desktop.

Mitel Networks is an industry leader in broadband technologies. The company's successful integration of voice and data infrastructures, with patented dual-bus architecture in its Ipera™ IP platform, lets communication systems easily accommodate IP and digital phones. The Ipera platform allows enterprise customers of all sizes to seamlessly implement and/or upgrade to a Voice-over-IP (VoIP) infrastructure without sacrificing any of the features or functionality of the traditional PBX. In addition, clients also benefit from a broad range of IP-enabled applications.

Mitel Networks is headquartered in Ottawa, Canada, home to the company's product development, marketing, finance, and administration functions. Regional operations are located in Herndon, Virginia (US Sales), Caldicot, Wales (European headquarters); and Singapore (Asia-Pacific operations). Mitel Networks operates 71 regional facilities in the U.S., Canada, the UK, Europe, and the Far East. Manufacturing facilities are located in Canada and the UK.



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### Documentation Available

This document will be updated with each release. It is, together with a variety of other pre-sales and post-sales information and tools, available on the Mitel On Line (MOL) extranet site under Product Portals – 3100 ICP.

Access to MOL can be obtained by registering under www.mitel.com – on line services, or by contacting any Mitel Account Executive or Mitel Customer service at 1800 796 4835.

## 3100 | Integrated Communications Platform

Another useful information source for the latest version of this document and other 3100 ICP technical documentation is Manual Maker. This tool can be accessed through [www.mitel.com/edocs](http://www.mitel.com/edocs). In the context of the 3100 ICP solution, Manual Maker can be used to generate customized user guides for any of the Mitel Networks IP phones, other desktop devices and voice mail.

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## 3100 ICP Introduction

The Mitel Networks™ 3100 Integrated Communications Platform (ICP) is a Voice over IP (VoIP) solution for small businesses (5-50 employees). It is also a cost-effective solution for branch offices of larger enterprises.

This 3100 ICP business communications solution provides a complete voice and data network. It combines a telephone system with sophisticated call management, a computer network and a gateway to the Internet in 1 affordable package. It also integrates seamlessly with Mitel Network's wide range of IP telephones, analog phones, and other peripherals.

This solution builds on Mitel Networks 25-plus years of telecommunications experience by migrating system and desktop features forward into a packet switched delivery model that is also designed for ease of installation, user configuration, and maintenance. Unlike most IP telephony solutions that are designed to support large numbers of users, the 3100 ICP makes the latest advances in converged voice and data application solutions both available and affordable for small business, through existing standard network services such as:

- standard loop start (LS)/CLASS service lines,
- dial-up modem connectivity,
- DSL or cable modem broadband connections, and
- Digital access such as T1 and PRI (planned for early 2003).

## Solution Components

The 3100 ICP solution consists of a base unit, called the Controller, and a number of option modules and expansion units that allow the solution to be adjusted to the customer's needs. This section provides a detailed description of each component.

The 3100 ICP components have the following common physical features:

- External Casing - components may be stacked or rack-mounted (in a 19-inch rack)
- Power Supply - each unit has a Standard Male IEC AC input connector for power
- LEDs - located on the front of the units for visual indication of circuit status.

## Controller



IP0218

**Figure 1 - 3100 ICP Controller**

The Controller is the basis of the 3100 ICP solution (Figure 1). It provides the voice, data, signaling, central processing, and communications resources for the solution.

## 3100 | Integrated Communications Platform

The Controller has the following physical characteristics:

- It can be installed on a desk, mounted in a 19" rack, or hung on a wall.
- The front panel allows you to access the peripheral interfaces on the control card and the optional line and expansion modules.
- The rear panel includes the power input connector and has an opening for the Uplink connector.
- The top cover can be removed to allow for adding optional modules or an Uplink card that provides connection to the 3100 ICP Expansion.

In terms of functionality and components, the Controller provides the following (Figure 2):

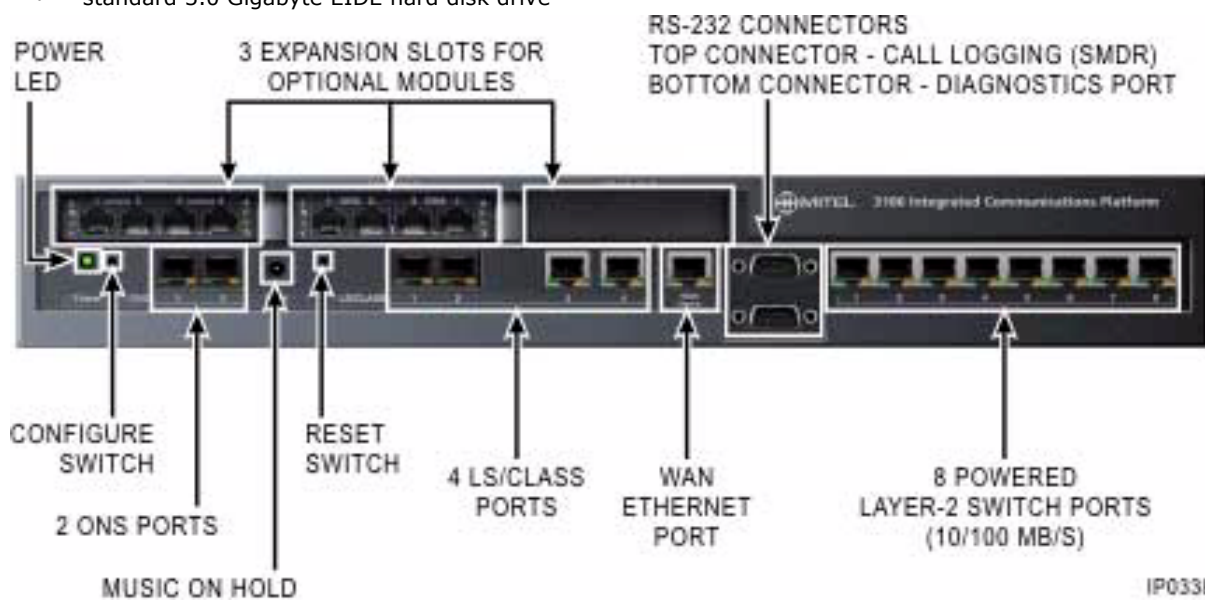
Voice functionality:

- two analog ONS POTS ports
- four analog LC/CLASS ports (North American variant)
- two BRI ports (UK variant)
- voice mail (four virtual ports, 60 mailboxes, 150 hours of recording time)
- call control and voice mail software

**Note:** All ports except for the R 232/DB9 ports are RJ45 jacks

Data functionality:

- eight 10/100 Mbs Ethernet port Layer 2 powered switch (IP set powering)
- Dynamic Host Configuration Protocol (DHCP) server that supports up to 100 IP addresses
- IP Edge router (IP routing/WAN router, Domain Naming System (DNS) and Network Address Translation (NAT))
- one WAN Ethernet port for connections to WAN services such as cable or Digital Subscriber Line (DSL). remote WAN locations are supported through Ethernet WAN interface or dial-up Point-to-point Protocol (PPP) connections.
- two V.34 modems
- two RS232/DB9 Serial ports for call logging record output (Station Message Detail Recording, SMDR) and diagnostic information
- router and Switch software
- compact flash module - 128MB
- standard 3.0 Gigabyte EIDE hard disk drive



**Figure 2 - 3100 ICP Controller Front View**

The Controller also includes three universal expansion slots for Optional Modules.

## Option Modules

In order to best suit customer's needs, the 3100 ICP provides a number of option modules. These modules increase the number of lines and analog devices that can be supported by the 3100 ICP. They insert into the Controller unit's option slots as indicated in Figure 2.

The following modules are available:

- 2-port ONS module
- 4-port ONS module
- 4-port Analog Services module
- 4-port LS/CLASS module
- BRI module (UK only)

## ONS Module

The ONS module allows analog devices to be connected to the 3100 ICP. Each Controller supports a maximum of two ONS modules (either the two port or the four port version).

## Analog Services Module

The Analog Services Card includes the following:

- one ONS port for a door opening relay circuit
- one ONS port for a loudspeaker paging unit
- one LS/CLASS port
- one off-site premise port
- The LS/CLASS and off-site premise port can also be used to create a power fail transfer circuit that connects the LS line circuit to the ONS extension circuit in the event of a system power failure

A maximum of one ASC module can be added to the Controller.

## LS/CLASS Module

The LS/CLASS module provides an interface between the 3100 ICP and LS/CLASS analog exchange lines. The lines support both North American and UK CLASS services such as CLID.

The loop start lines can be programmed to meet global transmission and protocol requirements through the System Management Tools.

A maximum of one 4-port LS/CLASS module can be added to the Controller (which already contains four LS/CLASS ports). A 4-port LS/CLASS module is available for both the North American and UK 3100 ICP variant.

## BRI Module (UK only)

The BRI module provides an interface between 3100 ICP and the ISDN. The module provides two 2B+D S/T interfaces, each of which can support two voice or data channels. The channels can be configured to operate in either trunk or subscriber mode. In the standard configuration for trunk mode the ports use point-to-point connection, a version of the module which uses point-to-multipoint connection is also available.

## Expansion Unit

The 3100 ICP solution also can be expanded through Expansion Units (Figure 3). Currently, an 8 and 16-port Expansion unit are available. Early in 2003, a 24-port Expansion unit will become available as well to accommodate further growth.

Each Expansion unit includes a 10/100 Ethernet port layer 2, powered switch with the respective number of ports.





IP0219

**Figure 3 - 3100 ICP 16 port Expansion Unit**

## System Maximums

Table 1 summarizes the 3100 ICP system maximums. Please note that early 2003, the 3100 ICP will be further expanded to support a full T1/E1 (24 channels). The 24-port Expansion Unit will be released at the same time.

Functionality	Capacities		
	Controller	Controller plus option cards	Controller plus option cards plus expansion unit
10/100 IP Ports	8	8	24
Analog device ports	2	10	10
Voice Trunks	4	8	8
WAN Data Connection	1 link	1 link	1 link
Maximum voice extensions (combination IP sets and analog sets)	10	18	34

**Table 1 - 3100 ICP System Maximums**

## 3100 ICP Technical Specifications

Table 2 summarizes the technical specifics for the 3100 ICP. Other technical details are outlined below.

The WAN Ethernet Port supports connections to DSL modems or Cable modem service.

The Layer 2 Ethernet switch includes:

- 8 10/100 ports
- auto-sensing
- auto-negotiation
- support for half or full duplex mode
- QoS/priority mechanisms including source port, MAC address and TOS field.
- supplying power to Mitel Networks IP Phones

The 3100 ICP supports tone plans for the following geographic areas:

- Argentina
- Canada
- Caribbean
- Chile
- Mexico
- United Kingdom
- United States

Controller and Expansion height	Controller - 2.6 in (66 mm) without feet 2.9 in (75 mm) with feet
	Expansion - 1.73 in (44 mm) without feet 2.1 in (53 mm) with feet
Controller and Expansion width	17.3 in (440 mm) without feet 17.7 in (449 mm) with feet
Controller and Expansion depth	14 in (355 mm) without feet 14.3 in (363 mm) with feet
Controller and Expansion weight	Controller - 12.4 lb (5.6 kg) Expansion - 8.8 lb (4.0 kg)
Supply voltage	90 Vac to 132 Vac and 180 Vac to 264 Vac
Maximum load	75W continuous, 85W peak
Working Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-4°F to +122°F (-20°C to +50°C)
Transport Temperature	-40°F to +158°F (-40°C to +70°C)
Working Humidity	10% to 85% RH
Storage Humidity	10% to 90% RH
Transport Humidity	5% to 95% RH
Air Pressure	70 - 106 kpa (700 - 1060 mb)

**Table 2 - 3100 ICP Technical Specifications**

## 3100 ICP Data Specifications

WAN Ethernet Port	Supports connections to xDSL modem or Cable modem service.
Layer 2 Ethernet Switch	10/100 ports, auto-sensing, auto-negotiation, supports half or full duplex mode, QoS/priority mechanisms supported include source port, MAC address, IEEE802.1p, VLAN and TOS field/Diff Serv. Supply power to Mitel Networks IP Phones.

**Table 3 - 3100 ICP Data Specifications**

## Solution Architecture

The 3100 ICP is built upon Mitel Networks Data Integrated Voice Applications™ (DIVA) architecture. This architecture delivers a highly robust call control that fully utilizes the power of IP while also supporting the traditional Time Division Multiplexing (TDM) based telephony for legacy devices and Public Standard Telephone Network (PSTN) connectivity.

Mitel Networks' architecture uses the Internet Protocol (IP) network to connect IP telephony devices and provides a supplementary TDM subsystem to switch calls between traditional telephone devices. The 3100 ICP has the advantage of being able to optimally switch all types of traffic: IP or TDM.

The 3100 ICP provides native call setup, tear down, and signaling between Ethernet IP connected telephones. For traditional telephony, such as POTS and PSTN trunks, call handling is performed by the 3100 ICP through a conventional TDM circuit-switched subsystem.

The ability to use two different switching techniques simultaneously means that all traffic is switched with minimum conversion between packet and traditional telephony to provide optimum voice quality in all call scenarios. Embedded gateway functionality is only required between the IP and non-IP networks, optimizing the use of system resources.

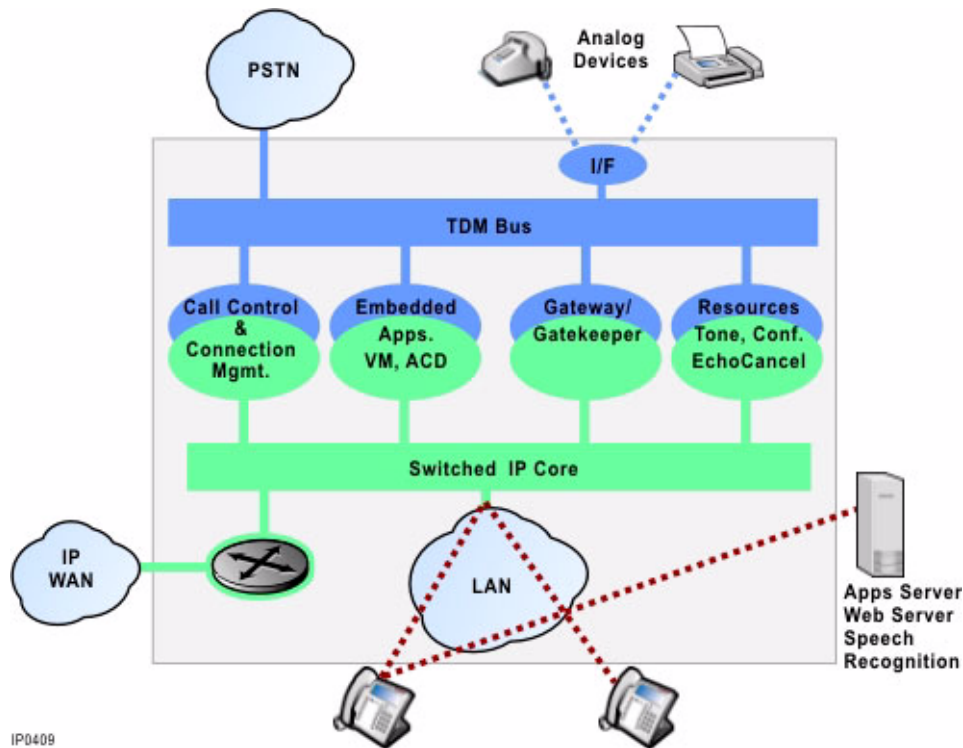


Figure 4 - 3100 ICP System Architecture

## Management Tools

The 3100 ICP has four easy-to-use, PC-based management tools, which can be used on-site or remotely:

- System Quick Installation Tool
- System Tool
- Group Administrator's Tool
- Desktop Tool

The System quick installation and System tool simplify installation and maintenance of the system. The Group administrator and Desktop tool are specifically designed to allow group administrators and end users respectively to manage their own phones. This way, users do not have to read through manuals or go through cumbersome programming on the phone itself to benefit from all phone features. All management tools are browser-based (Microsoft Internet Explorer version 5 or higher required).

On-site, the management tools can be accessed through a laptop or desktop PC that is connected to the LAN, through either a LAN drop, the Ethernet port on the back of the IP Phone, or directly to an Ethernet port on the Mitel Networks 3100 ICP Controller or Expansion Unit.

The Management tools can be accessed remotely in two ways:

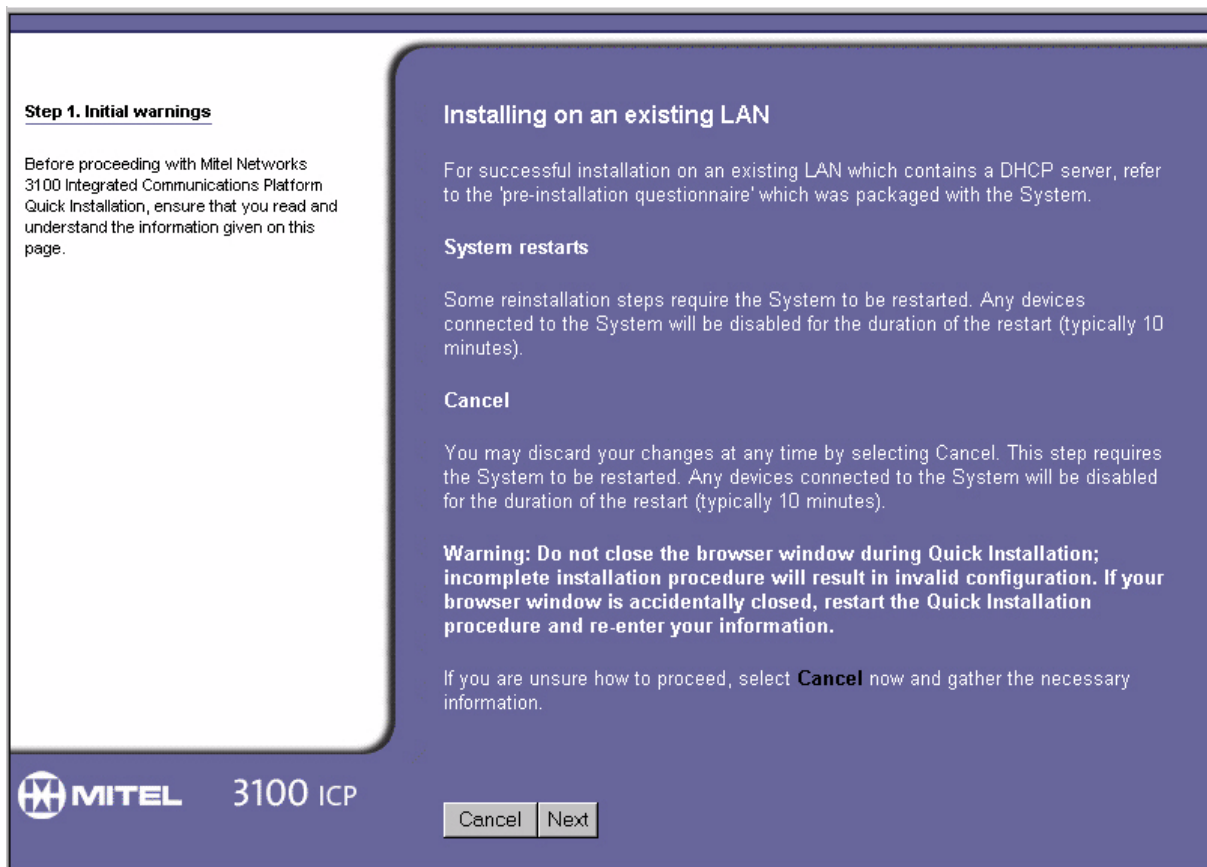
- by dialing into the 3100 ICP through the Internet. This is done via either a xDSL or cable modem in the remote location into the 3100 ICP WAN Ethernet port; or
- by dialing into the 3100 ICP through dial up modem. This is done using the modem on the remote user's PC or laptop into one of the V.34 modems included in the 3100 ICP.

## System Quick Installation Tool

Primarily a "use once" tool (Figure 5), the System Quick Installation Tool is designed to get the Mitel Networks 3100 ICP up and running at initial installation with very little programming. The tool is an installation wizard that guides the installer through a logical series of questions, which, when completed, configures the system to the

## 3100 | Integrated Communications Platform

selected settings. This tool also allows the installer to create a quick install template to use for future installations. This is especially useful to speed up deployment of the 3100 ICP throughout multiple branch offices.



**Figure 5 - 3100 ICP System Quick Installation Tool**

## System Tool

A trained installer or technician uses the System Tool (Figure 6) to edit and maintain the 3100 ICP's system configuration. The System tool allows the technician to:

- manage system-wide settings, for example date and time
- manage system provisioning and configuration. For instance, backup and restore, IP licensing options
- manage provisioning and configuration of extensions and lines
- manage provisioning and configuration of IP networking features such as the router and layer-2 switch
- capturing system logs to assist in troubleshooting (more elaborate diagnostics are planned for Release 4.0)
- define and change user access to the Desktop and System tools
- back up, restore and upgrade of system software and databases
- import and export data
- manage licenses for system options
- manage voice mail boxes and auto attendant features
- define voice management features applying to the system or network of systems.

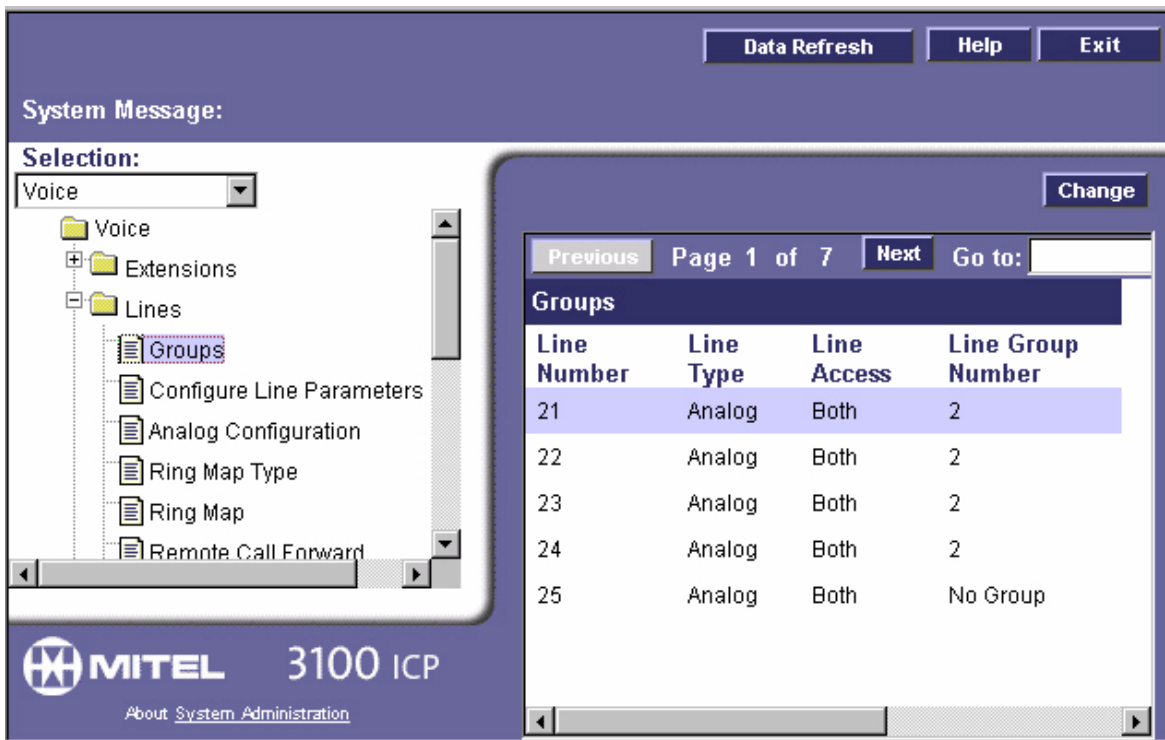


Figure 6 - 3100 ICP System Tool

### Group Administrator's Tool

The System or Group Administrator uses the Group Administrator's Tool (Figure 7) to manage user access to the 3100 ICP, add new users, modify user profiles and maintain certain system-wide features.

The Group Administrator's Tool allows an administrator to:

- change the date and time displayed on devices connected to the Mitel Networks 3100 ICP
- add users to the system
- change and deleting user information
- manage users' passwords and PIN codes
- assign line appearances and hunt maps
- create, modify and delete extension groups
- manage pick-up and night service groups
- manage the system's telephone directory
- add, modify, and delete system speed calls
- print the system speed call directory
- create and customize printed copies of user guides for the Mitel Networks IP Phones and the Mitel Networks 5140 IP Appliance
- manage dealer contact information.

Mitel Networks 3100 Integrated Communications Platform - Microsoft Internet Explorer

I want to... Manage Extensions

Use this page to add, remove or reconfigure extensions in the system.

Add Extension

Edit Extension

Delete Extension

To view a list of extensions in the system, click View Extension List.

View Extension List

Click Add to add a new extension, or select an existing extension, and then click Edit to modify it, or Delete to remove it.

Extension Number:

First Name:

Last Name:

Extension model:

Extension MAC:

page 1 of 4

**Extension Number**  
Enter a number between 3 and 6 digits in length.

**First Name.Last Name**  
You can enter up to 19 characters for the first and last names combined. The first name is optional. Valid characters for the name include A-Z, a-z, and spaces but may not include commas, hyphens or apostrophes.

Figure 7 - 3100 ICP Group Administrator Tool

## Desktop Tool

This tool is what many users have requested: a simple, browser-based program interface that allows phone users to easily benefit from all the features at their disposal. It is designed such that phone users can easily program their personal keys with features, line keys, and personal speed call numbers. They can also:

- manage a personal directory list
- setup call forwarding
- manage their Internet bookmarks (Mitel Networks 5140 IP Appliance users only)
- manage their Personal Directory (Mitel Networks 5140 IP Appliance users only)
- change their login password.

As shown in Figure 8, the picture of the phone represents the phone the user has on their desk. The user clicks on a feature and gets a description of what that feature does in the lower right corner. The user can then simply click on a key in the picture and assign the feature to that key.

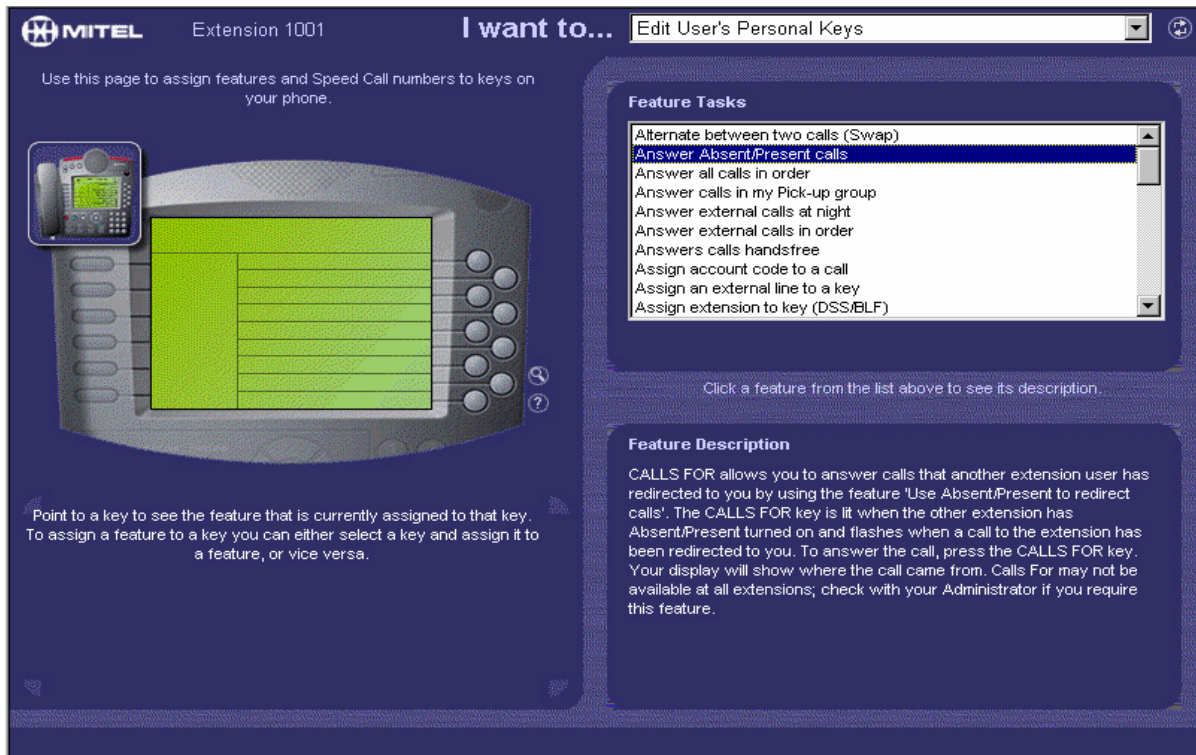


Figure 8 - 3100 ICP Desktop Tool

## Telephone Sets supported on the 3100 ICP

The 3100 ICP supports a comprehensive range of IP phones satisfying the customer's choice of cost and functionality (Figure 9). The IP phones will range from IP equivalent POTS sets to fully featured hands free sets. These Mitel IP phones provide quick and easy access to a wide range of voice functions based on Mitel Networks' acclaimed handset design.



Figure 9 - Mitel Networks IP Telephones

The advantages of using IP phones over analog or digital sets are:

- Plug and play functionality. Move phones from one desk to another without any re-programming. The system recognizes the user of a particular phone as soon as the phone is plugged into a location and it attaches the user's profile and programming automatically.
- Single wire. Since the system runs on CAT 3 or CAT 5 LAN cabling, no phone cabling is needed which reduces the cost and simplifies installation and maintenance. In addition, all Mitel IP phones (except 5001/5005) have dual ports so that a PC or laptop can be plugged in the back of the phone.
- Single point of powering. The Layer 2 switch included in the 3100 ICP provides power to the IP phones - no additional power is needed at the desk to power the phones. (Please note that the 5140 must be plugged into the Controller unit. If plugged into the Expansion unit, this particular phone requires additional powering).
- End user programming tools. By using the browser based tools, the group administrator and end user can set up their own phones and add and remove users without having to call in a technician - a savings in cost and time.
- Ability to expand on the system by adding useful applications, such as visual voice mail (on the 5140 web set), dialing from Outlook or ACT!™.
- Possibility to use a Softphone for users that are mobile, for example work shifts, work from home or on the road. When these users are in the office, they can sit down at any desk, plug in their laptop and their phone (Softphone is installed on the laptop or PC) works as if they were at their own desk.

Mitel Networks 3100 ICP supports the following desktop devices:

- Mitel Networks™ 5001 IP Phone;
- Mitel Networks™ 5005 IP Phone;
- Mitel Networks™ 5010 IP Phone;
- Mitel Networks™ 5020 IP Phone;
- Mitel Networks™ 5140 IP Appliance;



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- Mitel Networks™ 5303 Conference Unit (analog);
- Mitel Networks™ 5305 IP Office Conference Unit;
- Mitel Networks™ 5310 IP Board Room Conference Unit;
- Mitel Networks™ 5410 Programmable Key Module when connected to a Mitel Networks 5020 IP Phone;
- Mitel Networks™ 5415 Programmable Key Module when connected to a Mitel Networks 5020 IP Phone;
- Mitel Networks™ 5421 Interface Module (device that connects PKM to phone);
- Mitel Networks™ 5423 IrDA Module;
- Mitel Networks™ 5822 Softphone (for use with a PC).

### IP Phones Technical Specifications

Table 4 outlines the technical specifications for the Mitel Networks IP Phones. The following sections will provide more detail on each set.

	<b>5001</b>	<b>5005</b>	<b>5010</b>	<b>5020</b>	<b>5140</b>
Width	6.5 in (16.5 cm)	6.5 in (16.5 cm)	8.9 in (22.4 cm)	8.9 in (22.4 cm)	8.9 in (22.4 cm)
Height	8.25 in (21 cm)	8.75 in (22.2 cm)	7.0 in (17.8 cm)	7.0 in (17.8 cm)	8.5 in (21.6 cm)
Storage Temperature Range	-40°F to 151°F (-40°C to 66°C)		-13°F to 158°F (-25°C to 70°C)		-40°F to 151°F (-40°C to 66°C)
Operating Temperature Range	39.2°F to 120°F (4°C to 49°C)		32°F to 122°F (0°C to 50°C)		39.2°F to 120°F (4°C to 49°C)
Storage Humidity Range	15% to 95%		0% to 90%		15% to 95%
Operating Humidity Range	34% to 95%		0% to 90%		34% to 95%
Handset amplification	15 dB from nominal volume Note: Amplification up to 25 dB from nominal volume is possible using an optional amplified handset for persons with hearing difficulties.				
Compression	Supports G.711, G.728 and G.729a			Supports G.729	
Powering options	In-line powering, spare pair or adaptor				

**Table 4 - Technical Specifications - Mitel Networks IP Phones**

**Note:** While multiple compression standards are supported by different IP phones, the 3100 ICP solely operates in G.711 mode.

### Mitel Networks 5001 IP Phone



LL0071

**Figure 10 - Mitel Networks 5001 IP Phone**

## 3100 | Integrated Communications Platform

This entry-level phone (Figure 10) provides the following features:

- three fixed-function keys:
  - **Message** -- send and receive messages;
  - **Hold** -- easily places calls on hold;
  - **Redial** -- gives access to saved speed dials on the keypad keys. Pressing **Redial** twice redials the last externally-dialed number.
- handset and ringer volume controls;
- message waiting indicator.

The 5001 IP phone is only available in dark gray.

### Mitel Networks 5005 IP Phone



LL0070

**Figure 11 - Mitel Networks 5005 IP Phone**

The second entry-level IP phone (Figure 11) is the Mitel Networks™ 5005 IP Phone. Features include:

- single-line, 20-character, alpha-numeric Liquid Crystal Display (LCD);
- 20 personal keys, with built-in status indicators, 16 of these keys may be programmed with:
  - a feature;
  - an extension or extension group number (DSS/BLF);
  - a line or line group number;
  - a System or Personal Speed Call number.
- with the remaining four keys pre-assigned to:
  - **Redial** -- gives access to saved speed dials on the personal keys and keypad keys. Pressing **Redial** twice redials the last externally-dialed number;
  - **Message** -- send and receive messages;
  - **Program** -- used to assign features to personal keys;
  - **Trans/Conf** -- simplifies transferring calls or setting up a conference call.
- two fixed-function keys:
  - **Hold** -- easily places calls on hold;
  - **Cancel** -- simplifies the canceling of features in progress.
- handset, ringer and loudspeaker volume controls;
- LCD display contrast control;
- message waiting indicator;
- on-hook dialing.

The 5005 IP phone is only available in dark gray.

The phone can be customized to the individual user's needs through the Desktop Tool.

## Mitel Networks 5010 IP Phone



**Figure 12 - Mitel Networks 5010 IP Phone**

This IP phone (Figure 12) is in the middle range of price and functionality. Its features include:

- two-line, 20-character, alpha-numeric Liquid Crystal Display (LCD);
- six personal keys, with dual-colored LEDs, which may be programmed with:
  - a feature;
  - an extension or extension group number (DSS/BLF);
  - a line or line group number;
  - a System or Personal Speed Call number.
- seven fixed-function keys to simplify feature access:
  - **SuperKey** -- used to customize the phone or access features;
  - **Trans/Conf** -- simplifies transferring calls or setting up a conference call;
  - **Shift** -- gives access to saved speed dials on the personal keys and keypad keys;
  - **Message** -- send and receive messages;
  - **Hold** -- easily places calls on hold;
  - **Cancel** -- simplifies the canceling of features in progress;
  - **Intercom** -- for internal calling and pooled access to external lines.
- handset, ringer and loudspeaker volume controls (▲ and ▼ keys);
- LCD display contrast control (▲ and ▼ keys);
- message waiting indicator;
- on-hook dialing;
- two 10/100M switched Ethernet ports providing one wire connectivity to the LAN for both phone and computer;
- dedicated headset interface jack, which eliminates the need for a headset amplifier box when used with Mitel Networks headsets.

This 5010 IP phone is available in light gray and dark gray.

The phone can be customized to the individual user's needs by using SuperKey on the phone or the browser-based Desktop Tool.

## Mitel Networks 5020 IP Phone



**Figure 13 - Mitel Networks 5020 IP Phone**

The feature set of this 5020 IP phone (Figure 13) further builds on the 5010 functionality. Its features include:

- two-line, 20-character, alpha-numeric Liquid Crystal Display (LCD);
- three softkeys which are used to set up features and call diversions, and navigate the Phonebook;
- thirteen personal keys, with dual-colored LEDs, which may be programmed with:
  - a feature;
  - an extension or extension group number (DSS/BLF);
  - a line or line group number;
  - a System or Personal Speed Call number.
- nine fixed-function keys to simplify feature access:
  - **SuperKey** -- used to customize the phone or access features;
  - **Trans/Conf** -- simplifies transferring calls or setting up a conference call;
  - **Shift** -- gives access to saved speed dials on the personal keys and keypad keys;
  - **Message** -- send and receive messages;
  - **Hold** -- easily places calls on hold;
  - **Cancel** -- simplifies the canceling of features in progress;
  - **Speaker** -- one-touch access to handsfree operation;
  - **Microphone** -- provides mute function for privacy during a call;
  - **Intercom** -- for internal calling and pooled access to external lines.
- handsfree operation and automatic answering;
- handset, ringer and loudspeaker volume controls (▲ and ▼ keys);
- LCD display contrast control (▲ and ▼ keys);
- message waiting indicator;
- dedicated headset interface jack which eliminates the need for a headset amplifier box when used with Mitel Networks headsets;
- two 10/100M switched Ethernet ports providing one wire connectivity to the LAN for both phone and computer.

It is available in light gray and dark gray.

The phone can be customized to the individual user's needs by using SuperKey on the phone or the browser-based Desktop Tool.

## Mitel Networks 5140 IP Appliance



LL0020

**Figure 14 - Mitel Networks 5140 IP Appliance**

This (Figure 14) is one of Mitel Networks' high-end IP sets. It is a large display IP appliance with built-in web-browsing, easy management of personal directory numbers and integrated web-based applications. Features of this phone include:

- audio device keys which are used to control the audio path and sound level:
- **Headset** -- used to toggle the audio between the headset, speaker or handset
- **Microphone** -- acts as an on/off toggle for the microphone
- **Vol +, Vol -** -- controls the audio output level and adjusts the LCD contrast.
- 320x240 VGA display screen which is used for accessing and using functions, services and applications;
- eight application keys:
- **Call Logs** -- displays the call logging information details of the external calls received at the phone;
- **Bookmarks** -- displays a screen listing the nine most recently viewed URLs;
- **Voice Mail** -- displays a chronological list of voice messages;
- **Phone View** -- used to leave the current application and return to the default time/date display;
- **Personal Directory** -- displays a list of up to 50 entries in Personal Directory;
- **Online Services** -- displays the corporate URLs that employees can access;
- **Settings** -- used to customize the phone or access features;
- **Speed Dials** -- gives access to saved speed dials.
- ringing and message indicators;
- standard 12-key dialpad;
- integrated Infra-red Display Adapter (IrDA);
- six command keys -- used to invoke the command or function described by the adjacent text label;
- nine quick keys -- causes the system or application to perform the action represented by the adjacent text label;
- five navigation keys used to scroll up and down through the data displayed on the screen, move the cursor to the left and right, and pressing **OK** performs the default command on the selected item;
- three telephony feature keys:
- **Handsfree** -- used to enable handsfree working;
- **Hold** -- easily places or removes a call on or from hold;
- **Speech Recognition** -- this option will be available in later software versions.

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- two 10/100M switched Ethernet ports providing one wire connectivity to the LAN for both phone and computer.

### Mitel Networks 5822 Softphone



**Figure 15 - Mitel Networks 5822 Softphone**

In addition to the 5140 Web Appliance phone, Mitel Networks has designed another high-end IP phone - a software application (Figure 15) installed on the desktop of a PC or laptop. This application is ideal for users that are not in the office very often, for example working from home, on the road, or doing shift work.

The 5822 Softphone simulates the 5020 IP phone but has some additional features. These are outlined in the IP Telephone Features overview.

From a technical standpoint the 5822 Softphone requires a PC or laptop with the following:

- 100 based T Ethernet NIC card
- 450 MHz or faster Pentium compatible processor
- Microsoft Windows 95, 98, Millennium Edition (ME), NT, 2000 and XP
- 4 GB hard drive, CD-ROM drive (to load the software)
- 40 MB of available RAM.
- Full duplex sound card
- Loud speakers
- Microphone

In addition, the Plantronics DSP100 head set is recommended for this Softphone.

## Other Devices

A number of other IP and analog devices are supported on the 3100 ICP. This section outlines the details.

### Analog devices

Unlike other IP telephony solutions, standard analog telephone sets or other analog devices (such as fax machines) are also directly and natively supported by the 3100 ICP solution. This allows the customer to preserve their investment in their existing technology and this functionality moves fully to IP whenever they are ready to do so.

The analog set interface provides message waiting indication and supports Calling Line Identification (CLI) and other CLASS analog services. Power fail transfer to a single analog trunk is provided on one analog extension port.

Analog sets and fax machines are plugged into the analog ports that are available on the Controller (or the ONS option module). Other analog devices such as a door opening or loudspeaker paging system can be connected through the Analog Service Card, one of the option modules that can be inserted into the Controller.

### Printers, PCs, Laptops and Existing LAN

Printers, PCs, and laptops can be connected to the IP ports; however, in order to use the ports as efficiently as possible, it is recommended to plug the PC/laptop's LAN cable into the back of the IP phone which is connected to the 3100 ICP (Controller or Expansion Unit).

It is also possible to connect the 3100 ICP to an existing LAN through the WAN Ethernet port. This method is often used when a customer already has a LAN in place, but still wishes to benefit from the IP telephony advantages. In this case, the 3100 ICP LAN is an extension of the LAN, a back up for the existing LAN, or both. One of the scenarios at the end of this document outlines visually how this is done.

### Conference units

Mitel also provides three types of conference units that work with the 3100 ICP. These are the Mitel Networks 5303 Analog Conference unit, the Mitel Networks 5305 IP Office Conference unit and the 5310 Board Room Conference unit. The technical specifications for these units are summarized in Table 5 and the details for each conference unit are described in subsequent sections of this document.

Physical Dimensions			
Unit	Width	Length	Height
<b>Audio (saucer)</b>	7 in (17.7 cm)	7 in (17.7 cm)	2.8 in (7 cm)
<b>Remote Side</b>	2.9 in (7.4 cm)	5.8 in (14.8 cm)	1.6 in (4.2 cm)
<b>Mouse</b>	2.3 in (5.9 cm)	3.5 in (9 cm)	1 in (2.5 cm)
Technical Specifications			
Storage Temperature Range	-40°C at ambient humidity to 66°C at 15% relative humidity (-40°F at ambient humidity to 151°F at 15% relative humidity)		
Operating Temperature Range	4°C at ambient humidity to 49°C at 34% relative humidity (39.2°F at ambient humidity to 120°F at 34% relative humidity)		
Storage/Operating Humidity Range	15% to 95%		
Compression	Supports G.729		
Quality of Service	Supports 802.1p/q		
Powering options	In-line powering and adaptor		

**Table 5 - Technical Specifications For 5305 and 5310 Conference Units**

**Mitel Networks 5303 Conference Unit**

LL0046

**Figure 16 - Mitel Networks 5303 Conference Phone**

The Mitel Networks 5303 Conference Phone (Figure 16) uses Mitel Networks acoustic beam-forming technology to produce superior performance. Features of this unit include:

- Full Duplex operation
- Acoustic beam- forming that controls near end, far end and double-talk, and locates direction of speech
- Noise Reduction and automatic gain control to eliminate background noise
- Dynamic allocation of microphones to activate speakers
- 40 character 2 line LCD display with backlighting and contrast control
- 9 pre-programmed speed dials
- Time of day and date programming
- Echo cancellation
- 12 key alpha numeric keypad
- Softkeys for easy programming.

**Mitel Networks 5305 IP Office Conference Unit**

LL0087

**Figure 17 - Mitel Networks 5305 IP Office Conference Unit**

Mitel Networks 5305 IP Office Conference Unit (Figure 17) is a high-quality conference unit that uses acoustic beam forming technology to ensure superior performance. The unit is used in conjunction with the Mitel Networks 5020 IP Phone and connects by using the telephone's headset port. This unit is designed for a private office that measures 12 feet by 15 feet (3.6 meters by 4.5 meters).



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Features of the conference unit include:

- full-duplex operation;
- acoustic beam forming technology that controls near-end, far-end and double talk, and also locates direction of speech;
- noise reduction and automatic gain control to eliminate background noise;
- high-fidelity speaker;
- seven single-color LEDs;
- power supply from a 24V wall adaptor;
- simple installation;
- side Control Unit with mute, hold and volume controls.

The Mitel Networks 5305 IP Conference Unit package includes a speaker unit and a side control unit. An optional mouse controller is available. Both are available in a gray metallic colour

### Mitel Networks 5310 IP Board Room Conference Unit



**Figure 18 - Mitel Networks 5310 IP Board Room Conference Unit**

Mitel Networks 5310 IP Board Room Conference Unit (Figure 18) is designed for large rooms. Optimal performance is achieved in a room that measures 4.5 meters by 7.6 meters (15 feet by 25 feet). The 5310 is based on the same high-quality acoustic beam forming technology as the 5305 IP Office Conference Unit. The unit connects to a Mitel Networks 5020 IP Phone using the telephone's headset port.

Features of the conference unit include:

- full-duplex operation;
- acoustic beam forming technology that controls near-end, far-end and double talk, and also locates direction of speech;
- noise reduction and automatic gain control to eliminate background noise;
- high-fidelity speaker;
- directional and presentation modes;
- seven dual-color LEDs;
- power supply from a 24V wall adaptor;
- simple installation;
- side Control Unit with mute, hold and volume controls.

The Mitel Networks 5310 IP Conference Unit package includes a Mitel Networks 5020 IP Phone, a speaker unit, and a side control unit. An optional mouse controller is available. All components are colored silver metallic.

## Programmable Key Modules (PKM)

Mitel Networks offers two types of PKM, the 5410 PKM and the 5415 PKM whose technical specifications are summarized in Table 6.

	<b>5410</b>	<b>5415</b>
Width	5.5 cm (2.2 in)	22.4 cm (8.9 in)
Height	18.5 cm (7.4 in)	18.5 cm (7.4 in)
Storage Temperature Range	-25°C to 70°C (-13°F to 158°F)	
Operating Temperature Range	0°C to 50°C (32°F to 122°F)	
Storage/Operating Humidity Range	0% to 90%	
Compression	Supports G.711, G.728 and G.729a	
Powering options	In-line powering, spare pair or adaptor	

**Table 6 - Technical Specifications - 5410 and 5415 PKMs**

### Mitel Networks 5410 Programmable Key Module

Mitel Networks™ 5410 Programmable Key Module (Figure 19) provides 12 additional personal keys and can be attached to a Mitel Networks 5020 IP Phone. Each personal key has a single-colored LED which behaves the same way as personal keys programmed on the IP phones. The personal keys can be programmed through the telephone or through the Desktop Tool.



ES0124

**Figure 19 - Mitel Networks 5410 PKM**

The personal keys can be programmed with:

- a feature;
- an extension or extension group number (DSS/BLF);
- a line or line group number;
- a System Speed Call number.

The Mitel Networks 5410 PKM connects to a 5020 IP Phone using a Mitel Networks 5421 Interface Module. A Mitel 24V power adapter is required to power the Mitel Networks 5410 PKM.

### Mitel Networks 5415 Programmable Key Module

Mitel Networks™ 5415 Programmable Key Module (Figure 20) provides 48 additional personal keys and can be attached to a Mitel Networks 5020 IP Phone. Each personal key has a single-colored LED which behaves the same way as personal keys programmed on the IP phones. The personal keys can be programmed through the telephone or through the Desktop Tool.



LL0035

**Figure 20 - Mitel Networks 5415 PKM**

The personal keys can be programmed with:

- a feature;
- an extension or extension group number (DSS/BLF);
- a line or line group number;
- a System Speed Call number.

The Mitel Networks 5415 PKM connects to a 5020 IP Phone using a Mitel Networks 5421 Interface Module. A Mitel 24V power adapter is required to power the 5415 PKM.

### **Mitel Networks 5421 Interface Module**

Mitel Networks™ 5421 Interface Module is the device that provides connectivity between a 5020 IP Phone and a 5410 PKM or 5415 PKM. Mitel Networks 5421 IM is installed separately in the telephone and is only compatible with 5020 IP Phones.

### **Mitel Networks 5423 IrDA Module**

This module (Figure 21) allows users to integrate their PDA (Personal Digital Assistant) with their IP phone. A Palm Pilot owner can use his/her Palm Pilot to dial a telephone number by simply clicking on the address item on the Palm Pilot (Dial by Address Book). A user can also create a button on their Palm Pilot to (de)activate features, for example to switch on/off the forwarding calls to a cell phone.

PDA applications will work with any phone that has an IrDA (Infra-red Display Adaptor) module. The 5140 IP Appliance has a built in IrDA module. However, the 5423 IrDA Module attaches to a 5020 IP Phone through an option module connector on the telephone.

In addition, the 5810 PDA Application software must be installed on the Palm operating system. A wireless connection between the telephone and the Palm PDA is established through the infra-red ports.



Figure 21 - Mitel Networks 5423 IrDA Module

## Remote Access, Security and Encryption

Mitel offers three methods for working remotely with the 3100 ICP solution:

- through a Dial up connection
- through a Virtual Private Network (VPN) connection using the SonicWALL option
- through the Mitel Networks 6000 Managed Application Server (MAS) solution

### Dial Up Connection

The dial up connection can be established by a simple RAS connection (basic data connection) from the remote user's PC or laptop to the 3100 ICP installed in the office, using the user's PC/laptop modem.

- **Note:** The 3100 ICP also has two built-in modems which can be used if the customer does not have high speed Internet access and wants to dial out to get to the Internet.

### VPN Connection

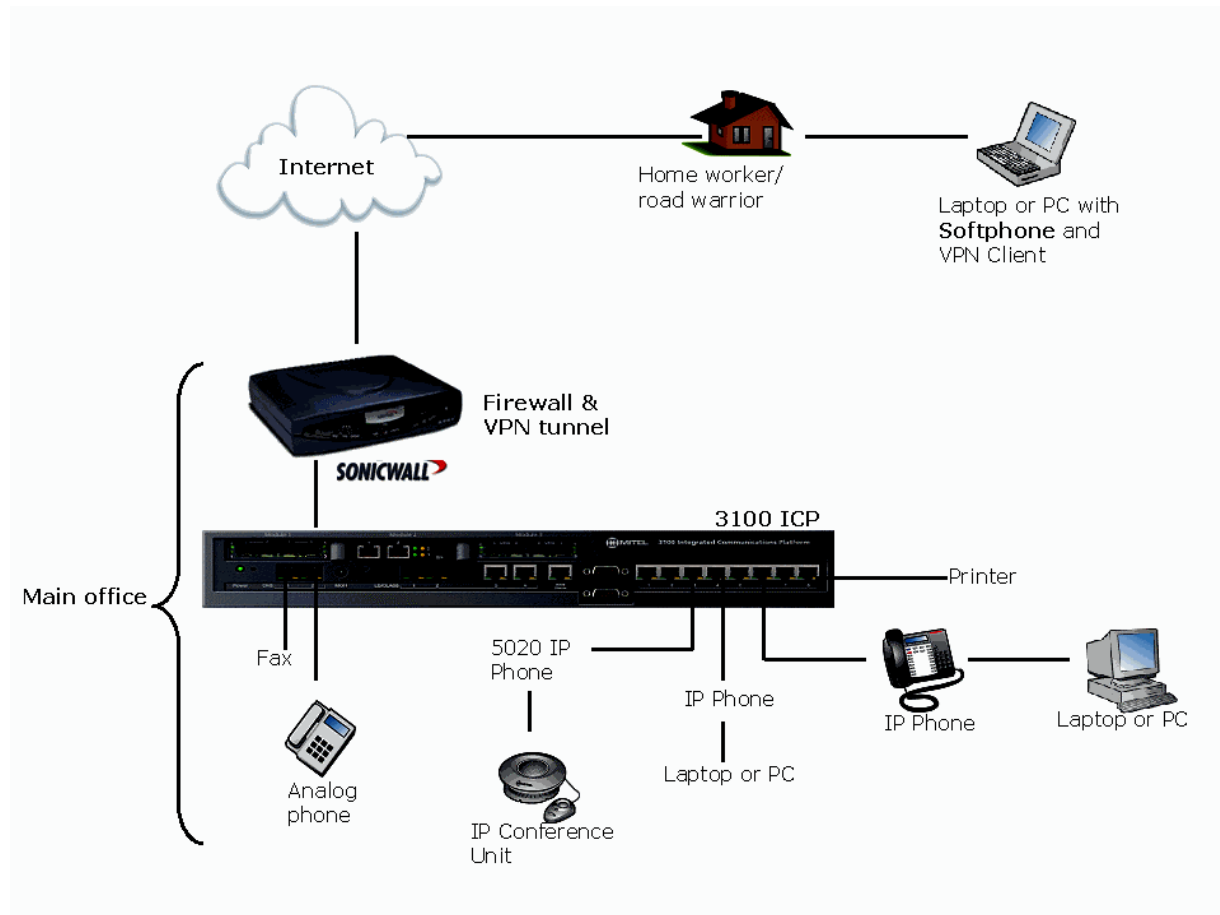
A VPN connection is more secure than a RAS connection. This is because a customer would establish a firewall on their network, which does not allow any hackers to enter the system. However, if remote workers need access, a hole needs to be made into the firewall to let authorized individuals access the company's information. This is done through a VPN connection.

Technically, the 3100 ICP supports IP Packet Filtering and Network Address and Translation (NAT). The extensive IP packet filtering subsystem is also customizable. Multiple filters on each interface can be applied to individual or ranges of source addresses, destination addresses, source or destination ports, or protocols. Filters can be applied to inbound or outbound packets.

### SonicWall VPN Connection

The SonicWALL option provides both a firewall and VPN connection. The SonicWALL SOHO is the firewall. It is an ICSA certified stateful packet inspection firewall, along with optional VPN support to enable secure and encrypted remote access to your network via the Internet.

There are different VPN scenario's depending on whether the remote user has a Softphone or another Mitel Networks IP phone. Both VPN setups provide a data and voice connection into the main office. However, please note that the voice connection is not Quality of Service guaranteed, since the Internet does not prioritize voice packets over data packets. This will result in a cell phone quality on the voice connection.



**Figure 22 – SonicWALL VPN Setup Using Softphone**

Figure 22 illustrates the required scenario for a remote Softphone. This set up would include the following VPN elements:

- SonicWALL SOHO, to set up the fire wall at the main office
- SonicWALL VPN at the main office, to set up the VPN connection to the Internet
- SonicWALL VPN client license, which is the software the remote user installs on their PC or laptop.

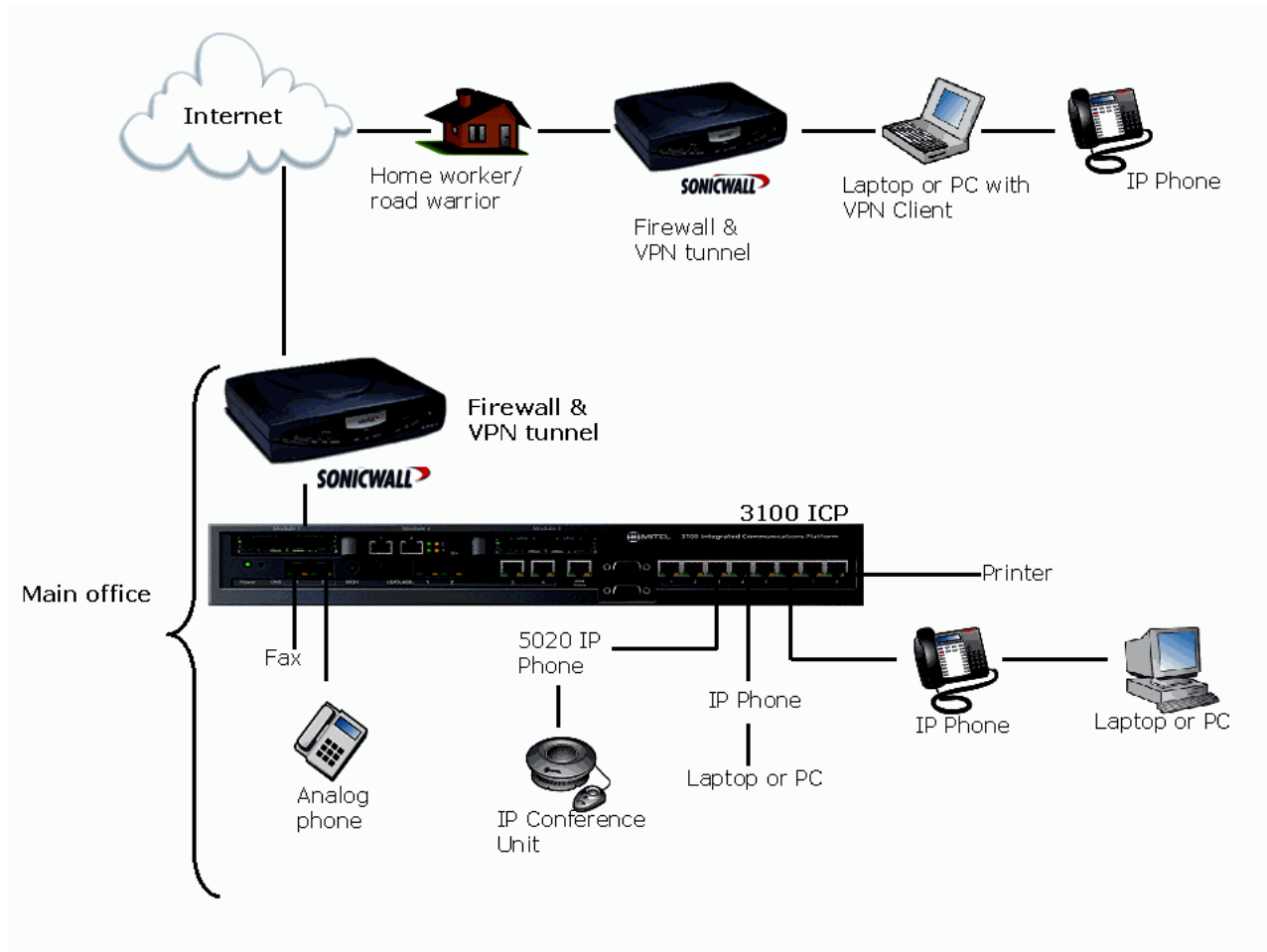
It is recommended to use one Softphone per remote location until compression is available. This is planned for early 2003. An ADSL network connection is required at each remote site.

The number of remote locations (each with a Softphone) is limited by the ADSL bandwidth.

Figure 23 illustrates the SonicWALL VPN setup for other Mitel IP phones.

This set up would include the following VPN elements:

- SonicWALL SOHO at the main office
- SonicWALL VPN at the main office
- SonicWALL VPN client license on the remote user's PC or laptop.
- SonicWALL VPN at the remote user's site, connected to the PC or laptop



**Figure 22 – VPN set up using other Mitel IP Phones**

Again it is recommended to use a maximum of 1 phone per site until compression is available. An ADSL network connection is required at each remote site. The number of remote locations is limited by the ADSL bandwidth.

## 6000 MAS

The 6000 MAS offers the same functionality as the SonicWALL option, however it offers many other small business options such as a file, print and email servers (POP, DNS, FTP), and web site hosting at the customer's premise. For more details on the 6000 MAS please refer to specific information on this product. This can be obtained through [www.mitel.com](http://www.mitel.com), or through the Mitel On Line (MOL) extranet under product portals. Please note that in all cases the remote user will need a high speed Internet access (for example DSL or cable modem).

## Feature Overview

This section summarizes all the features available within the 3100 ICP solution. The features are categorized as follows:

- **System Features** – All features and their description included with the 3100 ICP system.
- **Voice Mail Feature Descriptions** – Overview of all voice mail features provided with the 3100 ICP.
- **Auto Attendant Feature Descriptions** – Overview of all auto attendant features included with the 3100 ICP.
- **Telephony Features Overview** – At a glance overview of which features work on which Mitel Networks IP phones.
- **Telephony Feature Descriptions** – Descriptions per telephony feature as per the telephony features overview.

## System Features Overview

Feature Name	Feature Description
Analog CO line type	The system lines are based on Loop Calling, Disconnect Clearing and CLASS capability.
Analog LS/CLASS CO lines	The system provides four lines on the Controller and four additional lines on the LS/CLASS Option Module.
Asynchronous Serial interface	This consists of 2 V.24 ports configured for: <ul style="list-style-type: none"> <li>• 1200 - 9600 Baud.</li> <li>• 8 data bits.</li> <li>• No parity.</li> <li>• 1 stop bit.</li> </ul>
Auto Attendant	<ul style="list-style-type: none"> <li>• Comes included in the system.</li> <li>• Provides an automatic company directory that uses extension numbers or names as the dialing method.</li> <li>• Allows single-digit option selection.</li> <li>• Plays different greetings during open and closed business hours.</li> </ul>
Call logging	See SMDR
Call Logging (SMDR) Interface	Call records are stored in a file on the internal hard drive; the log file can be transferred to a PC using FTP and either: <ul style="list-style-type: none"> <li>• Upper Serial Port 1: (V.24 port; 1200 - 9600 Baud; 8 data bits; No parity; 1 stop bit), or</li> <li>• Telnet Port 2001.</li> </ul> The system will store up to seven days of records.
Call logging/logger/SMDR	See SMDR
Display caller's number/name	The system will automatically display a caller's number/name.
Door phone Operation	This feature allows one extension on the system to be setup to answer the Door phone Intercom. The Analog Services Card is required for this feature.
Extension Cabling	The system supports CAT 3 through CAT 6 cabling, however CAT 5 is recommended.
Extension Groups	This feature allows a number of extensions to be associated within a group. The group of extensions is allocated a Directory Number/Group Number, which enables the group to be called by dialing an extension group number or transferring a call to the extension group number.
Extension Loop Resistance	600 ohm
Extension-to-Extension Dialing	This feature allows an extension user to dial another extension directly.
Flexible Numbering Plan	The system's flexible numbering plan allows access to extensions, lines and system features according to the leading digit dialed.
Hunt Maps	This feature allows the system installer to define the lines, and the order in which they are selected, to which extension users have access for making external calls.
Infra-red Display Adaptor Module (Mitel Networks 5423)	<p>This module is used to allow for PDA (Personal Digital Assistant) integration with the Palm Pilot. For instance it allows a user to dial a number directly from their Palm Pilot.</p> <p>This module is included in the Mitel Networks web appliance and can also be attached to a Mitel Networks 5020 IP phone.</p> <p>NOTE: the Mitel Networks 5810 PDA Application needs to be installed separately.</p>
Least Call Cost Routing (LCCR)	Least Call Cost Routing (LCCR) enables the system to select a particular network (i.e. the most cost effective route for a call). <ul style="list-style-type: none"> <li>• Note: This feature is exclusive to the UK version of the 3100 ICP.</li> </ul>
Line Groups	Lines can be grouped according to the requirements of different

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Feature Name	Feature Description
	system users. For example, a departmental Manager may have sole access to a particular line as a private line, or a department's extensions may have sole access to a group of lines, leaving other lines available for other departments.
Loudspeaker Paging	Allows for connecting external paging equipment to the loudspeaker paging port on the Analog Services Module using a third-party paging telephone access module.
Maximum Analog Extension Line Length	1500 feet (approximately 500 meters)
Maximum IP Extension Line Length	300 feet (approximately 100 meters)
Memory Backup	Available through on-board FLASH memory and integral hard disk drive. Off-board to the hard drive in a PC.
MF (Multi-Frequency) Tone Dialing	This feature allows an extension user to access services that require the use of multi-frequency tones, such as banking or remote checking of voice mail (any touch tone service).
External Music on Hold (MOH)	External Music on Hold provides callers with music when a call is on hold or when a call is transferred to a busy extension. Use the 3.5mm stereo jack socket on the Controller to any external music source, like a radio.
Internal Music on Hold (MOH)	Internal MOH provides callers with music when a call is on hold or when a call is transferred to a busy extension. It is available as part of the system from a pre-recorded file in FLASH memory. This default file can be replaced by a file of the user's choice (.wav file). <ul style="list-style-type: none"> <li>Note: This .wav file needs to be converted to the 3100 ICP specified format (see 3100 ICP Technical Manual).</li> </ul>
Night Bell	This allows for external night bell equipment to be connected to an ONS port.
ONS Analog Extension ports	Two ONS ports are included in the Controller with CLASS capability. Up to four more are available using the 2-port or 4-port Option Modules.
Paging (extension paging)	This feature allows an extension user to broadcast a message to another extension, or group of extensions, activating the loud speaker on the receiver's phone. <ul style="list-style-type: none"> <li>Note: This works only with IP phones and only those IP phones that have a speaker built-in.</li> </ul>
Personal Digital Assistant Application	Mitel Networks 5810 PDA Application used with the Mitel Networks 5423 IrDA Module to allow users to use their Palm Pilot in conjunction with the system (see also IrDA module).
Programming	The system can be programmed in different ways: <ul style="list-style-type: none"> <li>Locally – via the browser-based tools running on a PC connected to an Ethernet port on Mitel Networks 3100 ICP.</li> <li>Remotely – via the browser-based tools running on a PC and an IP connection to Mitel Networks 3100 ICP or dialing in via the on-board modem.</li> </ul>
Real Time Clock	Powered by a capacitor in the Controller. This provides sufficient power to maintain the clock for approximately six days in the event of a power failure.
Recall Signal	Hook Flash or Timed Break
Selectable Clock Display	This feature enables the system clock to be displayed in 12 or 24-hour notation.
SMDR	This feature enables all system calls to be logged. If a printer is connected, calls on the system are registered, identifying the: <ul style="list-style-type: none"> <li>Date</li> <li>Duration of the call</li> <li>Externally dialed number</li> <li>Internally dialed extension</li> <li>Type of call (external incoming, internal incoming, external</li> </ul>



Feature Name	Feature Description
	<p>outgoing call etc.)</p> <ul style="list-style-type: none"> <li>• Start time of call</li> <li>• Note: The number from incoming external calls is not logged.</li> </ul> <p>A PC or SMDR buffer box can also be connected, allowing the use of third party accounting software. The 3100 ICP creates tab-delimited records that can be imported into a 3rd party call log application.</p> <p>With the 5822 Softphone, call logging is extended in the sense that the user can indicate which call information will show up on the report.</p> <p>It also allows the Softphone owner to see additional information such as:</p> <ul style="list-style-type: none"> <li>• the reason why the call ended;</li> <li>• whether the call was recorded;</li> <li>• whether Auto Answer was used to answer the call and/or whether a message was used in the answer.</li> </ul>
System type	<p>The 3100 ICP can be programmed as a</p> <ul style="list-style-type: none"> <li>• Key system</li> <li>• PBX</li> <li>• Hybrid Key/PBX</li> </ul>
Toll Restriction	<p>This feature allows the system installer to set restrictions on long distance and local calling for certain extension users.</p>
Voice mail	<p>Fully integrated into the system and configurable by the System Administrator.</p> <p>If required, external voice mail equipment can be connected to an ONS analog extension port.</p> <p>Virtual extensions that provide a voice mailbox to users who do not have physical telephone can be programmed.</p>

Table 7 – 3100 ICP System Feature Overview

## Voice Mail Feature Descriptions

Mitel Networks 3100 ICP includes a full-featured, integrated voice mail service at no extra cost. The integrated voice mail service ensures that customer calls never go unanswered.

The voice mail system supports four concurrent access ports, 250 user mailboxes and stores up to 150 hours of messages. The 3100 ICP voice mail is easy to setup and use. Both the user and Group Administrator can use the browser based management tools to set up voice mail (voice guided instructions also available).

A mailbox is automatically created when a new user is added and once a mailbox is set up.

Table 8 describes the voice mail features in further detail.

Feature Name	Description
Certified Messages	<p>This feature allows the sender of a message to be notified when the recipient has read the message (on internal calls only).</p> <ul style="list-style-type: none"> <li>• <b>Note:</b> The group administrator would have to set up this feature for the individual users.</li> </ul>
Distribution Lists/Broadcast Message	<p>The voice mail allows for a number of different group voice mail functions:</p> <ul style="list-style-type: none"> <li>• The system installer or group administrator can set up a maximum of four system-wide distribution lists and a broadcast message facility to deliver messages to all mail boxes</li> <li>• The individual user can set up a maximum of five personal distribution lists.</li> <li>• The 3100 ICP system in total will support 100 distribution lists.</li> </ul>
Dual Mailboxes	<p>A transfer-only mailbox can be linked to the same extension as an existing extension-type mailbox. This enables, for example, a single mailbox for a</p>

Feature Name	Description
	sales department and the sales manager.
Mailbox Types	<p>The four following mailbox types are available:</p> <p>Extension - the Auto Attendant will transfer a caller to the mailbox's associated extension. If the called party is busy or does not answer, the caller is prompted to leave a message in the mailbox.</p> <p>Message-Only - the Auto Attendant will not attempt a transfer but will immediately prompt the caller to leave a message in the mailbox.</p> <p>Transfer-Only - the Auto Attendant will transfer a caller to the mailbox's associated extension but will not take a message if the called party is busy or does not answer.</p> <p>Information-Only - the Auto Attendant will only play the mailbox greeting; no transfer or prompt to leave a message will occur.</p>
Memo	Subscribers have single-digit access to send a message to their own mailbox, for future reminders and memo-type messaging.
Message Envelope	Played prior to the beginning of each message, containing priority type, date and time (including caller identification for internal and external calls).
Message Erase	Allows immediate deletion of a message from the system. The message cannot be subsequently restored; deletion is immediate and permanent.
Message Forward	Allows messages to be forwarded to other subscribers and distribution lists with or without a pre-pended comment.
Message Notification	<p>The subscriber is notified that they have received a message by the message waiting indicator on their phone flashing, and optionally by setting the notification type to one of the following options, which causes the voice mail system to call:</p> <ul style="list-style-type: none"> <li>the mailbox's associated extension number (for analog phone extensions or phones without a message waiting indicator prompts the called party to log into their mailbox).</li> <li>an outside number (prompts called party to log into their mailbox).</li> <li>a message pager (plays an audio message indicating messages are waiting).</li> <li>a tone-only pager (simply hangs up after a far connection is made).</li> <li>a digital pager (plays multi frequency digits corresponding to a system-wide callback number, along with the specific mailbox number).</li> </ul>
Message Reply	Allows immediate reply to a message received from another internal mailbox subscriber.
Message Review	Allows immediate replay of a message including message envelope information.
Message Rewind/Hold/Fast Forward	Allows subscribers to rewind, fast forward or pause messages for several seconds.
Message Send Actions	This allows callers to review, re-record, and append to a message before sending it. A message can also be cancelled prior to sending.
Multiple Message Capability	Allows an outside caller to leave more than one voice mail message per call, therefore saving on toll charges.
New Mailbox Tutorial	The system guides the subscriber through the steps required for initial configuration of a mailbox, including specification of a (non-default) pass code and recording of a personal greeting and name.
Outside Message Notification Calls	The Administrator can configure a line access code for use in all outside notification calls. This access code will control the lines to be used for notification.
Password Protected Mailboxes	Each mailbox is protected by a personal pass word that the user can program themselves.
Personal Greetings/Name	This allows each mailbox user to record their name and a personal greeting.
Private Messages	The message cannot be forwarded to another subscriber's mailbox.
Saved Messages	The user can save messages. However, they will be automatically purged from the system after 15 days, unless programmed otherwise by the system

Feature Name	Description
	administrator (for example to never delete messages). <ul style="list-style-type: none"> <li><b>Note:</b> There is a maximum of 150 hours of recording and new messages are never purged automatically.</li> </ul> Saved messages are played in last-in first played order.
Temporary Greeting	This feature allows the user to register a personal greeting set for a specific number of days (with automatic expiration). This is useful to cover holidays or business travel.
Unlimited Message Length	Unlimited message length with a five-minute continuation prompt.
Urgent Messages	A message can be marked as urgent by the caller, which registers the message before non-marked calls in the receiver's mail box.

**Table 8 – 3100 ICP Voice Mail Feature Descriptions**

## Auto Attendant Feature Descriptions

The 3100 ICP also includes an auto attendant that eliminates the need for an operator, provides professional handling of calls, and gives customers quick access to employees. In addition, the auto attendant automatically detects and routes fax calls, eliminating the cost of a separate dedicated fax line.

Table 9 outlines the specific auto attendant features.

Feature Name	Description
Alternate Greetings	It is possible to create up to four greetings with the Auto Attendant (for example one for within and one for outside business hours). Only one greeting can be active.
Caller Type-Ahead	Callers who are familiar with the system may enter their keypad selections without waiting for the system prompts.
Control Call Answer Time By Port	The number of rings to wait before the Auto Attendant will answer can be controlled on a port-by-port basis, including "immediate" and "never answer".
Directory	Also known as Dialing by Name. Callers may access a mailbox directory where they will be able to reach a mailbox owner by dialing the person's first or last name rather than their mailbox number. The system can be configured for either first or last name dialing (but not both at the same time).
Expire at a Pre-set Time Greeting	A Company Greeting can be programmed for use over holidays or shutdowns that will automatically expire after a specified number of days.
Fax Finder	Detects an incoming fax tone and automatically directs it to the fax mailbox/extension.
Flexible Mailbox Numbering (Dial plan)	In addition to supporting single-digit mailboxes (1-8), a mailbox dial plan of two, three or five digits can be selected as well.
Open and Closed Greetings	The company greeting can be programmed to automatically change from open business hours to closed or after hours so that these messages come on automatically when the call is directed to the auto attendant.
Operator Revert	Callers may reach a live attendant at any time by dialing "0".
Operator Transfer to a Mailbox	Allows a receptionist/operator to transfer an outside caller to a specified mailbox where the caller will immediately hear the subscriber's personal greeting and will be prompted to leave a message.
Quick Message Feature	Allows a caller reaching the Auto Attendant to leave a message in a specific mailbox without transferring to the mailbox extension and possibly speaking live with the subscriber.
Unlimited Transfer	Allows the user to dial any internal extension defined in the system.
User Programmable Dial 0 Extension	Allows the user to program the dial 0 extension to any internal extension, for example, a personal or departmental secretary, or an external (long distance) number. <ul style="list-style-type: none"> <li><b>Note:</b> The Group Administrator programs this feature.</li> </ul>

**Table 9 – 3100 ICP Auto Attendant Feature Descriptions**

## Telephony Features Available on IP Phones

This table provides an at-a-glance overview of all the 3100 IC telephony features, available on the various Mitel Networks IP phones.

Feature Name	5001	5005	5010	5020	5140	5822
Dual Port			✓	✓	✓	✓
LCD		1-line	2-line	2-line	320x240 VGA display	2-line
Number of personal programmable/quick keys	0	16	7	14	9	14
Number of fixed function/application/telephony keys	3	4	6	8	15	8
Number of soft/command keys	0	0	0	3	6	3
Number of System Speed Call numbers available	1000	1000	1000	1000	1000	1000
Number of pre-assigned personal/quick keys		3	1	1	1	1
Dual or single-colored personal keys		single	Dual	dual		dual
Headset Operation			✓	✓	✓	✓
Message Waiting Indicator	✓	✓	✓	✓	✓	✓
Account codes - allocate to incoming/outgoing calls	✓	✓	✓	✓	✓	✓
Adjust display contrast		✓	✓	✓	✓	✓
Adjust handset receiver volume	✓	✓	✓	✓	✓	✓
Adjust ringer pitch	✓	✓	✓	✓	✓	✓
Adjust volume of the speaker	✓	✓	✓	✓	✓	✓
Administrator Extension				✓	✓	✓
Alarm calls - setup for other extension users (Administrator only)				✓	✓	✓
Alarm calls - setup on own extension	✓	✓	✓	✓	✓	✓
Answer external call via personal/quick key		✓	✓	✓	✓	✓
Answer next call via personal/quick key		✓	✓	✓	✓	✓
Auto Attendant (refer to Voice Mail section of this manual)	✓	✓	✓	✓	✓	✓
Automatically answer incoming external calls				✓	✓	✓
Automatically answer a call and define the type of response to give						✓
Automatic hold	✓	✓	✓	✓	✓	✓
Bookmarks - enables the extension user to access a list of user-defined URLs.					✓	
Call status information - LCD provides information about status of extension and current call		✓	✓	✓	✓	✓
Callback when free	✓	✓	✓	✓	✓	✓
Calls For - identifies diverting extension number		✓	✓	✓	✓	✓
Cancel a Message Waiting request	✓	✓	✓	✓	✓	✓
Cancel Call Forwarding	✓	✓	✓	✓	✓	✓
Conference Call - enable an extension user to set-up a call between three parties		✓	✓	✓	✓	✓
Direct Station Select/Busy Lamp Field (DSS/BLF) keys -		✓	✓	✓	✓	✓

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Feature Name	5001	5005	5010	5020	5140	5822
setup at extension						
Directed Message Waiting - leave a message for another extension user without calling the extension first	✓	✓	✓	✓	✓	✓
Display caller's number/name		✓	✓	✓	✓	✓
Do Not Disturb	✓	✓	✓	✓	✓	✓
Door phone Operation		✓	✓	✓	✓	✓
Dual Tone Multi-Frequency Tone Dialing	✓	✓	✓	✓	✓	✓
Exclusive Hold - place a call on hold which can only be retrieved by the extension that placed the call on hold		✓	✓	✓	✓	✓
Extension Groups - extension can be associated with a group	✓	✓	✓	✓	✓	✓
Extension Paging - broadcast a message to a single, group or all extensions on the system		✓	✓	✓	✓	✓
Extension Status Announcement	✓	✓	✓	✓		✓
Extension-to-extension Dialing - user can dial another extension directly	✓	✓	✓	✓	✓	✓
External Call Waiting - indicates that an external call has arrived when an extension user is busy on another call	✓	✓	✓	✓	✓	✓
Follow Me - enables calls to follow an extension user to another extension within the office	✓	✓	✓	✓	✓	✓
Follow Me (I'm Here) - enables an extension user to "pull" calls from their usual extension to their current extension	✓	✓	✓	✓	✓	✓
Forward all incoming calls to another extension/extension group	✓	✓	✓	✓	✓	✓
Forward calls to an external destination	✓	✓	✓	✓	✓	✓
Forward incoming calls to another extension/extension group when extension is busy is unable to answer	✓	✓	✓	✓	✓	✓
Group Listen - enables others nearby to listen to a call whilst only the extension user can speak to the other party		✓	✓	✓	✓	✓
Hands free operation (full) - enables extension users to make and answer calls, and listen and respond to broadcast messages without lifting the handset				✓	✓	✓
Hands free operation (partial) - enables extension users to make calls and listen to broadcast messages without lifting handset		✓	✓	✓	✓	✓
Hotline	✓	✓	✓	✓	✓	✓
Identify Next Call Announcement	✓	✓	✓	✓	✓	✓
Intrude into an established call		✓	✓	✓	✓	✓
Last Call Duration Announcement	✓	✓	✓	✓		✓
Last Call Duration Display		✓	✓	✓	✓	✓
Last Number Redial	✓	✓	✓	✓	✓	✓
List of Calls - display the 10 most recent, different external calls to an extension			✓	✓	✓	✓
Message Waiting - leave indicator for another extension user	✓	✓	✓	✓	✓	✓
Messaging - enables an extension user to display a message at the calling extension, eg, GONE TO LUNCH		✓	✓	✓	✓	✓
Monitor a call between two external parties (Administrator only)				✓	✓	✓

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Feature Name	5001	5005	5010	5020	5140	5822
Night Service - place a call in night service mode 1 or 2 (Administrator only)				✓	✓	✓
Online Services - enables the extension user to access a list of URLs programmed by the Administrator.					✓	
Page via the loudspeaker system	✓	✓	✓	✓	✓	✓
Park an external call for another extension user to retrieve		✓	✓	✓	✓	✓
PDA (Personal Digital Assistant) - enable to use with phone (Note: IrdA module required for 5020)				✓	✓	
Personal Directory - create entries specific to extension				✓	✓	✓
Personal speed calls - store under personal/quick keys and keypad keys		✓	✓	✓	✓	✓
Phonebook				✓	✓	✓
Pick up a call ringing at a colleague's extension	✓	✓	✓	✓	✓	✓
Pick up a call ringing at another extension in the user's extension group	✓	✓	✓	✓	✓	✓
Pick up an incoming call when the system is in Night Service mode 1 or 2	✓	✓	✓	✓	✓	✓
Pick up a parked call	✓	✓	✓	✓	✓	✓
PIN Codes - prevent unauthorized users from making external calls from an extension	✓	✓	✓	✓	✓	✓
Prime Line		✓	✓	✓	✓	✓
Recall on lines		✓	✓	✓	✓	✓
Redial List - enables an extension user to save and prioritize ten externally-dialed numbers		✓	✓	✓	✓	✓
Re-establish a reverted call - attempts to re-connect the reverted call		✓	✓	✓	✓	✓
Ringer On/Off - enables an extension user to turn off the ringer for all incoming calls that arrive under a personal/quick key		✓	✓	✓	✓	✓
Selective Ringer - enables an extension user to selectively turn off the ringer for calls that arrive under specific personal/quick key(s)		✓	✓	✓	✓	✓
Speech Synthesis	✓	✓	✓	✓		✓
Store a call under a personal/quick key		✓	✓	✓	✓	✓
Swap		✓	✓	✓	✓	✓
System Directory - enables extension users to dial from directory setup by the Administrator				✓	✓	✓
System Hold - place a call on hold which can be retrieved by any extension on the system		✓	✓	✓	✓	✓
Time and date announcement	✓	✓	✓	✓		✓
Time and date change (Administrator only)				✓	✓	✓
Transfer a call		✓	✓	✓	✓	✓
Visual Voice Mail (VVM) - allows the extension user to visually interact with their voice mailbox.					✓	
Visually Impaired Operator (VIO) - enable an extension to be used by a visually-impaired operator				✓		✓
Who Am I? - indicates the extension number	✓	✓	✓	✓	✓	

**Table 10—Features Available on IP phones**

## IP Telephony Features Descriptions

Feature Name	Description
Absent/Present	<p>This feature allows a user have all his/her calls ring at a colleague's or assistant's extension in his/her absence. This feature was previously called Boss/Secretary. It is used in conjunction with Calls For, i.e. the colleague or assistant will need to have the Calls For feature activated in order for Absent/Present to work.</p> <p>This feature is useful if you always want your customer's to be able to reach you. For instance, it can be used in shift work, at a customer service centre while other workers are having a break.</p>
Account Codes	<p>An account code can be assigned to an incoming or outgoing call for tracking purposes. Account codes are especially useful in the professional services industry where all costs need to be attributed to certain customers. For instance, accountants, consultants, lawyers, architects, engineers or graphic designers.</p> <p>These account codes will help administrators recover the cost of long distance phone calls as well as ensure that the time spent on specific accounts is appropriately tracked and charged back to a client.</p> <p>Call logs can be downloaded to a PC, which is connected to an IP port on the switch (i.e. Controller or Expansion unit) or behind an IP extension. The call logs are save in a txt format, which can be imported into Microsoft Excel or a call logging application. The file format is tab delimited.</p> <p>Alternatively, a printer can be connected to the SMDR port, which will allow the records to be printed directly.</p> <p>The information listed on the call log is:</p> <ul style="list-style-type: none"> <li>• Date</li> <li>• Duration of the call</li> <li>• Externally dialed number</li> <li>• Internally dialed extension number</li> <li>• Type of call (external incoming, internal incoming, external outgoing call etc.)</li> <li>• Start time of call</li> <li>• Meter pulse (which can have a long distance rate attached to it – for example each pulse is 10 cents in long distance charges).</li> <li>• Note: Meter pulse data is only applicable to the UK.</li> </ul> <p>There are two types of account codes, verified and non-verified. Release 3.1 of the 3100 ICP supports non-verified codes only. This means that it is up to the individual caller to enter the correct code. The system will not check codes against a pre-entered list to ensure accuracy.</p>
Administrator Call Metering	This feature allows an Administrator the ability to setup metering of calls on their set.
Administrator External Listen	See Call Monitoring.
Administrator Remote Alarm Calls	<ul style="list-style-type: none"> <li>• Note: This feature is only available from an Administrator Extension.</li> </ul> <p>This feature allows an Administrator to setup an alarm (wake-up or reminder) call to ring an extension at a specified time.</p>
Advisory Messaging	This feature allows an extension user to display a message (from a list of 12 pre-defined messages) at the calling extension.
Alarm Calls/ Reminder/ Wakeup (set up own extension)	Never be late again. This feature allows an extension user to set up an alarm (wake-up or reminder) call to ring at their extension at a specified time.
Answer External Cal via personal/ quick key	This allows an extension user to answer external calls in the order that they are presented at the extension. A button programmed with this feature will continue to flash until the last external call has been answered.
Answer Next Call via personal/ quick key	This feature is similar to Answer External Call, however, it applies to both incoming internal and external calls. Answer Next Call allows the user to answer all calls in the order that they are presented at the extension.

Feature Name	Description
Auto Answer - Automatically answer incoming internal call	This feature enables internal incoming calls presented at an extension to be answered automatically without lifting the handset so that the extension user is connected to the caller without the extension ringing. The difference between this feature and Handsfree Operation is that the Handsfree Operation feature is used for outgoing calls only.
Auto Attendant	Plays different greetings during open and closed business hours, provides a company directory that uses extension numbers or names as the dialing method, and allows single-digit option selection.
Automatic Hold	While in conversation with another party, this feature allows an extension user to make or receive another call by pressing either the DSS/BLF, line or extension group key or by simply dialing the internal or external number. The current party is automatically placed on hold without the extension user having to press the Hold key.
Book marks (5140 IP appliance only)	This unique feature allows an extension user to use the phone as they use their Internet browser and set up bookmarks for favourite web sites.
Call Back When Free	If an extension user hears busy tone when attempting to call an extension or access a line, Callback when Free enables the user to reserve access to the extension or line as soon as it becomes available.
Call Cost	This feature allows the user to meter local calls. <ul style="list-style-type: none"> <li>Note: This feature is available in the UK only.</li> </ul>
Call Forward All to an extension or extension group	This feature allows an extension user to forward all their calls to another extension or an extension group without first ringing at their extension.
Call Forward on No Answer or Busy to an extension or extension group	This feature allows an extension user to forward their calls to a nominated extension or extension group when the called party is busy on another call or unable to answer the call.
Call Forward to an external destination	See Remote Call Forward.
Call Hold	Refer to Automatic, Exclusive and System Hold respectively.
Call Monitoring	This feature allows an Administrator to monitor a call between two external parties, and if necessary, end the call. This is similar to the Intrude feature with the primary difference being that in Call Monitoring, the person monitoring cannot become a speaker party on the call, they can only listen to the conversation. This monitoring feature is useful for monitoring new employees to ensure they are handling customers correctly. This feature also helps prevent abuse of other features such as Remote Call Forward. <ul style="list-style-type: none"> <li>Note: This feature is only available from an Administrator Extension.</li> <li>Note: The use of this feature may violate provincial, local, state and/or federal rules, regulations and/or statutes including, without limitation, criminal or privacy legislation. Retailer and customer are hereby warned to check local laws to ensure that the use of this feature does not contravene any such rules, regulations and/or statutes.</li> </ul>
Call Park	This feature allows an extension user to answer an external call and place it in a type of hold which enables anyone on the system to retrieve it by dialing a code (see Call Park Pick-up).
Call Park Pick-up	This feature allows an extension user to pick-up an external call held on a specific line by another extension user by dialing the Call Park Pick-up feature access code followed by the line number.
Call Pick-up (at another extension outside the user's extension group)	This feature allows a user to pick up a phone call that is coming in on another extension. For example, instead of walking to a colleague's desk to pick up their calls when they're at lunch, the extension user can pick up that call from their own desk.
Call Status Information	The Display window on the phones provides information about the status of the extension and the current call. Note: Some IP phones (such as the 5001 IP phone) do not have a display.
Call Store	This feature allows an extension user to place a call on hold under a pre-programmed STORE key and leave it on hold for a pre-defined time.



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Feature Name	Description
	Up to 30 STORE keys can be programmed at an extension. This maximum can only be achieved when using a Mitel Networks 5020 IP Phone with a Mitel Networks 5415 PKM attached. This feature is frequently used by receptionists during peak calling hours.
Call Transfer	This feature allows an extension user to move a call from their current extension to another extension. The transfer can be announced or unannounced in that "announced" means the person who transfers the call introduces the caller to the person to whom the call is being transferred. "Unannounced" means that the call is transferred without introduction.
Calling Line Identification blocking	This feature allows a user to block their identity to the parties they are calling. See Calling Line Identification Display.
Calling Line Identity Display (CLID)	This feature provides the facility to display the caller's telephone number on the LCD; if the caller's telephone number and name are in the System or Personal Directory, their name is displayed instead of their phone number.
Calls For	See Absent/Present.
Cancel Call Forwarding	This is the feature used to turn off call forwarding and have calls be routed directly to the user's extension again.
Cancel Message Waiting	This feature is used to turn off the Message Waiting feature.
Conference Call	This feature enables an extension user to setup a conference call between three parties. The 3100 ICP system allows for two simultaneous 3-way conference calls.
Direct Station Selection/Busy Lamp Field (DSS/BLF)	Direct Station Selection (DSS) allows an extension user to directly dial, transfer a call to, or pick up a call ringing at the extension programmed under the DSS key. Busy Lamp Field (BLF) (Busy Lamp Field) gives the status of the extension programmed under the DSS key.
Directed Call Pick-up	This feature allows an extension user to pick up a call which is ringing at another extension that is not in their pick-up group.
Directed Message Waiting	This feature allows an extension user to leave a message waiting indication at another extension directly, that is, the extension user does not need to call the extension number.
Display (LCD)	Liquid Crystal Display – this is the display field on the phone.
Display Contrast Control	Allows an extension user to adjust the contrast on the extension's LCD.
Do Not Disturb	This feature disables an extension's Ringer. Extension users calling an extension with Do Not Disturb hear busy tone, and a message similar to the following is displayed on their LCD: EXT xxxx DND. External calls that are usually presented at an extension under a personal key continue to be presented; the associated key flashes with ringing cadence, however, the extension does not ring.
Doorphone Operation	This feature allows one extension on the system to be setup to answer the Doorphone Intercom.
Dual/Single Port	This is a telephone characteristic as some Mitel Networks IP phones have dual ports that allow connecting a PC or laptop directly into the phone. This reduces cabling as all communications go over the single wire that connects the phones and PCs/laptops to the 3100 ICP system.
Exclusive Hold	This feature allows an extension user to temporarily place a call, or a number of calls, on hold. Calls placed on Exclusive Hold can only be retrieved by the extension user who placed the call on hold.
Extension Groups	This feature allows a number of extensions to be associated within a group; the group of extensions is allocated a Directory Number/Group Number which enables the group to be called by dialing an extension group number or transferring a call to the extension group number.
Extension Paging – Directed Page/ Group Page/ All Page	This feature allows an extension user to turn on the loudspeaker at another extension or at a number of extensions and broadcast a message. The types of broadcast messages that can be made are: <ul style="list-style-type: none"> <li>to another extension user;</li> <li>to all extension users in an extension group;</li> </ul>

Feature Name	Description
	<ul style="list-style-type: none"> <li>to all extension users on the system.</li> </ul>
Extension Status Announcement	This feature announces the current status of the extension, if Speech Synthesis is available.
Extension-to-Extension Dialing	Allows an extension user to dial another extension directly.
External Call Waiting Tone	<p>This feature enables or disables Call Waiting tone at an extension. When enabled, a short burst of tone is generated when an external call arrives at an extension when the extension is busy.</p> <p>When Call Waiting tone is heard, the extension user can leave the incoming call unanswered until the current call is finished, or place the current call on hold and answer the new call.</p>
Fixed function keys	These keys have already been pre-programmed with user features, e.g. hold, speaker, transfer/conference.
Follow Me	<p>This feature allows an extension user to temporarily forward their calls to another extension (internally) before leaving their original extension. For example, if a person works at one desk in the morning and at another desk in the afternoon, he/she can use the Follow Me feature to ensure that when he/she goes to work at his/her afternoon desk, all calls will now arrive at that extension instead of at the extension he/she sits at in the morning.</p> <p>The difference with the Call Forward feature is that with Call Forward, calls can be routed to an external phone number as well as to another extension.</p>
Follow Me (I'm Here)	This feature enables an extension user to "pull" calls from their usual extension to the extension that they are currently working at. This feature ensures that calls continue to follow an extension user when working at various desks within the office.
Group Call Pick-up	This feature allows an extension user to pick up an incoming call which is ringing at another extension in their pick-up group.
Group Listen	During a handset call, this feature turns on an extension's loudspeaker to allow others nearby to listen to the current call while the handset microphone remains on allowing the extension user to speak to the other person.
Handsfree Operation (5020 IP Phones and 5140 IP Appliances)	Allows an extension user to answer and make calls without lifting the handset and to listen and respond to broadcast or internal calls without lifting the handset. See Auto-Answer.
Handsfree Operation (5005 and 5010 IP Phones)	Allows an extension user to dial external or internal numbers and listen to broadcast messages without lifting the handset.
Handsfree Paging (5020 IP Phones and 5140 IP Appliances)	Enables an extension user to answer a broadcast message while operating their extension handsfree; when another extension user makes a broadcast message, a two-way connection is automatically established.
Handset Receiver Volume Control	Allows an extension user to adjust the volume of the handset receiver.
Headset Operation	Allows an extension user to use a headset to answer and make calls.
Hotline	This feature allows a pre-determined internal or external destination to be called when the extension goes off-hook.
Intercom key	See Prime Line.
Identify Next Call Announcement	If Speech Synthesis is available, this feature announces the source of the incoming internal or external call; the source is also displayed on the LCD.
Intrude on an established call	This feature allows an extension user to enter into an established call and speak to the parties involved; the entry is announced by a warning tone that is heard by all parties. Access to this feature is dependent upon the intrude priority assigned to the extension.
Key Click Control (key pad tone on/off)	This feature enables or disables the tone that sounds when the user presses the dial buttons on the phone.
Last Call Duration Display	This feature displays the duration of the call while on the phone.
Last Number Redial	See Redial.

Feature Name	Description
LCD Contrast Control	See Display Contrast Control.
List of Calls	This feature lists the last ten most recent, different incoming calls to an extension, irrespective of whether the call was dealt with. The date and time of the call is shown as well as how many times that number has called.
Loudspeaker Paging	Allows users to place a page to a loudspeaker paging system that is connected via an ONS/analog extension port.
Message Waiting Indicator	See Directed Message Waiting.
Message Waiting	This feature allows an extension user to leave a message waiting indication at another extension. The called extension user is informed of the message waiting indication by their Message Indicator flashing and by their LCD displaying MESSAGE WAITING.
Messaging	<p>An extension user can program their extension to display a message at a caller's extension, for example "Back Soon". This only works with internal calls. The message remains on the caller's extension's LCD for the duration of ringing and is cleared when the caller hangs up or the call is answered (or when the call goes to voice mail).</p> <p>In addition, the Mitel Networks 5822 Softphone allows an extension user to send a message to callers when the extension user does not want to accept calls from a particular caller or when operating in Auto Answer mode.</p> <p>The Softphone also allows extension users to simply refuse to accept calls from individual telephone numbers or even from all incoming calls.</p> <p>The extension can be set up to</p> <ul style="list-style-type: none"> <li>Automatically send an appropriate message to these callers (pre-recorded by the extension user, or using one of the pre-recorded messages that comes with the Softphone.</li> <li>End the call immediately without sending a message.</li> </ul>
MF (Multi-Frequency) Tone Dialing	Allows an extension user to access services that require the use of multi-frequency tones, such as banking and voicemail systems.
Music on Hold	Internal or external music may be supplied as an option; Music on Hold provides callers with music on hold when a call is on hold or when a call is transferred to a busy extension.
Night Service	This feature enables an Administrator to direct incoming external calls to an extension or a number of extensions to be answered outside of regular working hours.
Night Service Pick-up	When Night Service is active, this feature allows an extension user to pick up an incoming external call which is ringing at another extension in the user's Night Service Pick-up group.
Online Services	This refers to the built-in Internet browser on the Mitel Networks 5140 IP Appliance. It allows users to browse the Internet and bookmark frequently accessed sites.
Paging	See Extension Paging and Loudspeaker Paging.
PDA (Personal Digital Assistant) Integration	<p>This integration allows Palm Pilot users to dial phone numbers from the address book on their PDA. The user points their Palm Pilot to a 5140 IP Appliance or 5020 IP phone, clicks on the Palm Pilot contact they wish to dial and the phone will ring that number.</p> <p>The Palm Pilot integration also allows users to create a button on their Palm Pilot that activates a phone feature, for example Call Forward On/Off.</p> <ul style="list-style-type: none"> <li>Note: If used in conjunction with a 5020 IP phone, an additional 5423 IrDA module is required. This module can be mounted on the phone (see Figure 21).</li> <li>Note: A separate CD-ROM must be ordered to activate this functionality.</li> </ul>
Personal Directory	The Personal Directory allows end users to set up their own list of contact numbers on the phone.
Personal Programmable Keys	Enables an extension user to program desired features onto phone keys made available for that purpose.
Personal Speed Calls	This feature allows extension users to save frequently dialed external numbers. A Personal Speed Call can be saved under a personal key as a primary or secondary feature. This means that a programmable key can be programmed with an extension number but behind that extension is the actual external number that will be dialed.
Phonebook (5140 IP)	Up to 2,000 entries can be recorded in the Phonebook, allocated either to the System

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Feature Name	Description
Appliances, 5020 IP Phones and 5822 Softphones only)	<p>Directory or to individual users as a Personal Directory. The Phonebook provides users with the ability to search for, and dial numbers by name.</p> <p>The system directory is typically handled by the Group Administrator. The remaining entries can be used by end users who set up their personal directory.</p> <p>Alternatively, 3100 ICP also integrates with Microsoft Outlook 2000 and ACT 2000. Users can dial directly from their Outlook/ACT contact list as well.</p> <ul style="list-style-type: none"> <li>Note: The 5822 Softphone supports Outlook 2000 (not ACT) but also has it's own built-in phonebook. Each entry in this phone book can include: <ul style="list-style-type: none"> <li>First and last name</li> <li>Home telephone number</li> <li>Office telephone number</li> <li>Mobile telephone number</li> </ul> </li> </ul>
PIN Codes	An Administrator can assign a PIN (Personal Identification Number) code to an extension user which, when invoked, prevents unauthorized users from making external calls from the user's extension, that is, it locks the extension. The PIN code can also be used at another extension to access features or make external calls which would not normally be available at the extension.
Prime Line	One line on an extension can be designated as a Prime Line (Intercom key); incoming calls on this line have priority over all other calls arriving at the extension.
Recall on Lines	Allows an extension user who is in conversation with a called party at a remote site to make an enquiry call to another party on the remote site through the same line.
Record A Call	This feature allows users to record conversations they have on the phone. This information gets stored on the hard drive of their computer.
Redial	This feature enables an extension user to redial the last external number dialed from the extension.
Redial List	This feature allows an extension user to save and prioritize up to ten externally-dialed numbers; the extension user can define the position, in a stack of ten, which the last number dialed should occupy.
Re-establish a reverted call	If a transferred call to an extension user goes unanswered, the call returns to the original extension user; Re-establish allows the original extension user to re-attempt the transfer.
Reminder	See Alarm Calls.
Remote Call Forward	This feature allows an extension user to forward incoming calls to an external destination, for example, a mobile phone or home number.
Reverted Call	If a transferred call to an extension user goes unanswered, the call returns to the original extension user to deal with.
Ringer On/Off	This feature enables an extension user to turn off their extension's ringer for all external calls that arrive at their extension under a programmed personal key.
Ringer Pitch Control	Allows an extension user to adjust the ringing characteristics of their IP Phone to distinguish it from other phones in the area.
Ringer Volume Control	This feature allows the user to adjust the volume of the ringer on their phone.
Selective Ringer	This feature enables an extension user to select which keys, programmed for incoming external calls, do not ring at the extension.
Soft/Command Keys	These keys work in conjunction with the Superkey button found on some IP phones. These keys are fixed (non-programmable) and allow an extension user to easily program features (for example, Call Forward) without using dial up or key codes.
Speaker Volume Control	Allows an extension user to alter the volume of the speaker.
Store A Call Under A Personal/Quick Key	See Call Store. This feature is similar to Exclusive Hold as opposed to System Hold.
Swap	Enables an extension user to place a call on hold, dial another number, talk to the called party and then toggle between the two parties by pressing the pre-programmed SWAP key.
System Directory	This is the part of the Phonebook set up by the Group Administrator. All extension users have access to this phone list and can set up their own personal directory.
System Hold	This feature allows an extension user to temporarily place calls on hold which can then be

Feature Name	Description
	retrieved by any extension user on the system.
System Speed Call Numbers	Allows an extension user to dial System Speed Call Numbers which have been setup by the Administrator; up to 1000 external numbers can be stored. The extension user dials the stored number either by dialing the four-digit System Speed Call Number or by pressing a pre-programmed SPEED CALL key.
Three-Party Conference	This feature enables an extension user to setup a conference call between three parties.
Time and Date Change	<ul style="list-style-type: none"> <li>Note: This feature is only available from an Administrator Extension.</li> </ul> Enables an Administrator to modify the date and time displayed on the system's extensions.
Visual Voice Mail	This feature allows the user to see their voice mails displayed on the LCD. The display will indicate the: <ul style="list-style-type: none"> <li>time of the call</li> <li>duration of the call</li> <li>name or number of the caller</li> <li>date</li> </ul>
Wake-up	See Alarm Calls.
Who Am I?	This feature indicates the extension number of the phone on the extension's LCD.

**Table 11—IP Telephony Features**

## IP Networking

The following networking protocols and technologies are used in the Mitel Networks 3100 ICP system (see glossary for descriptions):

- Point-to-Point Protocol (PPP);
- File Transfer Protocol (FTP) and Trivial File Transfer Protocol (TFTP);
- Route Information Protocol (RIP);
- Telnet;
- Domain Name Server (DNS);
- Hypertext Transfer Protocol (HTTP);
- Dynamic Host Configuration Protocol (DHCP).

The 3100 ICP DHCP server functionality can be used to assign IP addresses to other IP devices (for example printers) on the locally attached networks and may be turned off if the Mitel Networks 3100 ICP is integrated into an existing LAN with a DHCP server. The DHCP client may be used to obtain an IP address to use as its host IP on a connected network.

NAT (Network Address Translation) may be used on remotely attached networks. Remote WAN locations are supported via xDSL, frame relay or dial-up PPP connections. The Mitel Networks 3100 ICP router is capable of supporting up to five interfaces simultaneously.

IP routing determines the best route for getting an IP packet to its destination. To determine this route, the router contains tables of information about destinations, including networks, sub-networks (or sub-nets) and hosts, and how best to reach these destinations.

The purpose of IP routing is to:

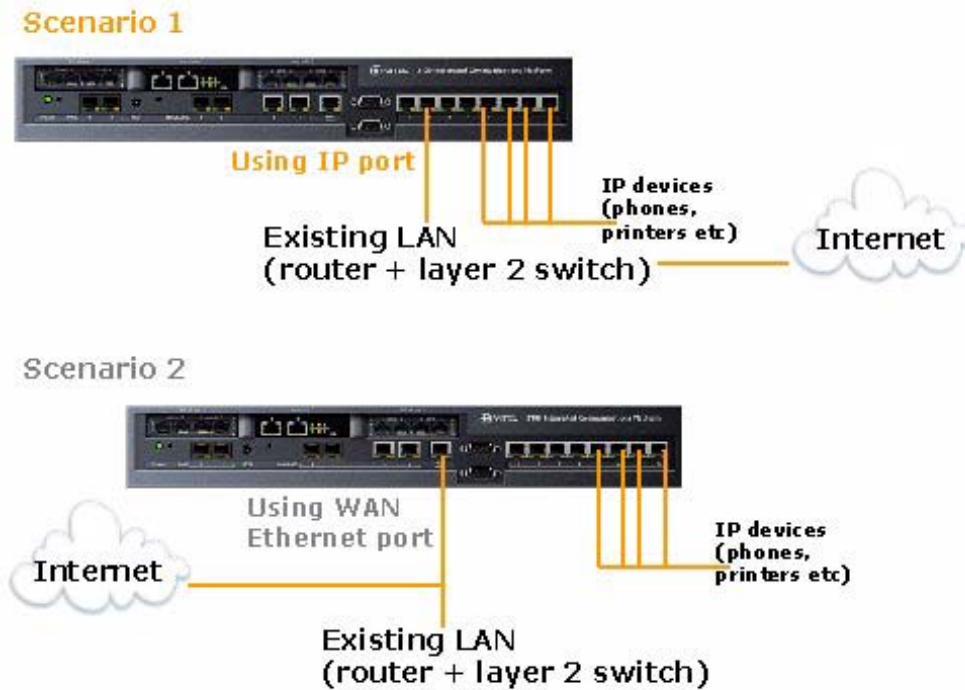
- establish connections between Mitel Networks 3100 ICP and devices on multiple LAN and WAN networks;
- transfer IP packets between Mitel Networks 3100 ICP and these network devices;
- ensure that Voice over IP (VoIP) packets are given priority over data packets and receive an adequate QoS (Quality of Service).

For data networking, Mitel Networks 3100 ICP incorporates the necessary IP edge router features to provide basic Internet connectivity over dial-up or broadband access connections such as DSL and cable. For corporate branch office connections, the 3100 ICP has been designed to easily allow an organization to use their existing WAN router by attaching it to one of the Layer 2 switch ports or by attaching it directly to the 3100 ICP Controller WAN port (see figure 22). Scenario 1 would appear if the company decides to use the Internet connection from their existing

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LAN and scenario 2 would make sense if the company wants to use the Internet gateway from the 3100 ICP Controller.

However, it is recommended that the 3100 ICP is connected to an existing LAN via the WAN Ethernet port on the Controller. This will allow the Mitel Networks IP Phones to exist on a private sub-net where the embedded DHCP server can serve them. At installation, the DHCP server parameters will require changing from the factory default settings to settings that ensure the 3100 ICP is integrated properly with the existing LAN.



**Figure 23--Using Internet Connection Of Existing LAN Versus 3100 ICP LAN**

The IP phones and any other DHCP clients (computers, printer etc) on the switched side of the 3100 ICP will receive default DHCP configuration parameters. IP addresses will be handed out from the 192.168.1.0 subnet starting with IP address 192.168.1.10 and ending with 192.168.1.250. Either static or dynamic IP addresses can be assigned depending on the customer's preference and what they purchased from their Internet Service Provider (ISP).

Please note an outgoing modem link or a DSL link cannot be used if the existing LAN already has a default route, either static or DHCP.

When installing the 3100 ICP on a customer's existing LAN, it is recommended that the 3100 ICP be configured on a separate or test sub-net before connecting it to the live LAN. This will minimize the risk of causing network problems for other users.

Before starting the Mitel Networks 3100 ICP system configuration, it is recommended to have a detailed network diagram available that shows all sub-nets and assigned IP addresses in the existing LAN. This will enable installation and configuration of the Mitel Networks 3100 ICP in a controlled manner while still using the current IP addresses and sub-nets.

## IP Networking Features Overview

Function	Description
Auto Negotiation	802.3u
Dial on Demand (DoD)	Brings up a dial up link for the modem when a PC on the network requires WAN access.

Function	Description
Domain Name Server (DNS)	Stores name information, responds to queries about name conflicts and provides addresses for the local subnet. The DNS in Mitel Networks 3100 ICP handles queries from those PC hosts that are located on the Layer 2 switch subnet and the WAN Ethernet subnet.
Dynamic Host Configuration Protocol (DHCP)	Server Assigns dynamic IP addresses to the devices on the network. Mitel Networks 3100 ICP DHCP server can act as the DHCP server for the network or it can be disabled to allow another DHCP server provided by the network.
Dynamic Host Configuration Protocol (DHCP) Relay Agent	Acts as the interface between the DHCP client and the DHCP server and passes messages between the two.
Ethernet Ports	10/100 switched ports that can be configured to Auto Negotiate (802.3u) or configured to a fixed 10BaseT or 100BaseT full or half duplex mode.
IP Address Assignment	Selects an IP address for a networked Mitel Networks 3100 ICP system that has booted with a default database.
IP Multicast	Used to transmit the same message to a number or destinations simultaneously. Supports Internet Group Management Protocol (IGMP).
IP Routing Table	Lists the routes that are available to users of the Mitel Networks 3100 ICP system. The table can hold up to 256 static entries.
Network Address Translation (NAT)	Enables an entire network to appear to systems outside the network as a single IP address. Mitel Networks 3100 ICP NAT can handle a network that includes 500 IP devices.
Packet Filtering	Examines every incoming and outgoing data packet for records that conform to the standards for records in a packet of one of three types - TCP, UDP, Other. Mitel Networks 3100 ICP can filter packets for up to 100 ports.
Packet Forwarder	Receives data packets from the network forwards them to their destinations.
Packet Validity Checking	Ensures only valid IP packets are sent.
Point to Point Protocol (PPP)	PPP on Mitel Networks 3100 ICP supports the following protocols: Internet Protocol Control Protocol (IPCP), which enables Mitel Networks 3100 ICP to act as an end router; Compression Control Protocol (CCP), which selects the compression type for data packages; Link Control Protocol (LCP), which checks that a receiving device supports PPP; Password Authentication Protocol (PAP), which PPP uses after a link between two devices has been established to authenticate the identities of the devices by the use of a identifier/password combination; Challenge Handshake Authentication Protocol (CHAP), which verifies the identities of the devices in a link in a similar manner to PAP, but also repeats the verification process at intervals while the link remains connected. The link will be broken if the device performing the verification does not receive the expected response from the other device. MS-CHAP, which is Microsoft Corporation's version of CHAP, is also supported by Mitel Networks 3100 ICP. Link Quality Monitoring Protocol, which monitors a link and reports on the number of data packets which are corrupted or lost during a transfer.
QoS	QoS/priority mechanisms supported are source port, MAC address, IEEE 802.1p, TOS-field/Diff Serv.
Real Time Protocol (RTP)	Part of Point-to-Point protocol and is used to carry voice over the network.
Spanning Tree Protocol (STP)	Algorithm specified in the IEEE 802.3 standard to manage multiple links within a LAN. The Spanning Tree Algorithm allows the use of redundant links within the same network without creating active loops.
Subnets	Allows a network administrator to divide a large network into smaller sections without needing additional IP addresses. The database in Mitel Networks 3100 ICP includes a list of available subnets. This list can be added to, modified, deleted from.

Table 12—IP Networking features overview

## Typical 3100 ICP Configuration

This section illustrates how the 3100 ICP solution would be deployed in different small business environments.

### Scenario One

A Pharmacy is moving and in the new location, they will require:

- eight telephones of which one is an analog phone
- six PCs and one laptop
- a printer
- a fax machine

They will require a DSL Internet connection and will be using all eight CO lines that the solution provides. Figure 25 illustrates how the 3100 ICP would be installed.

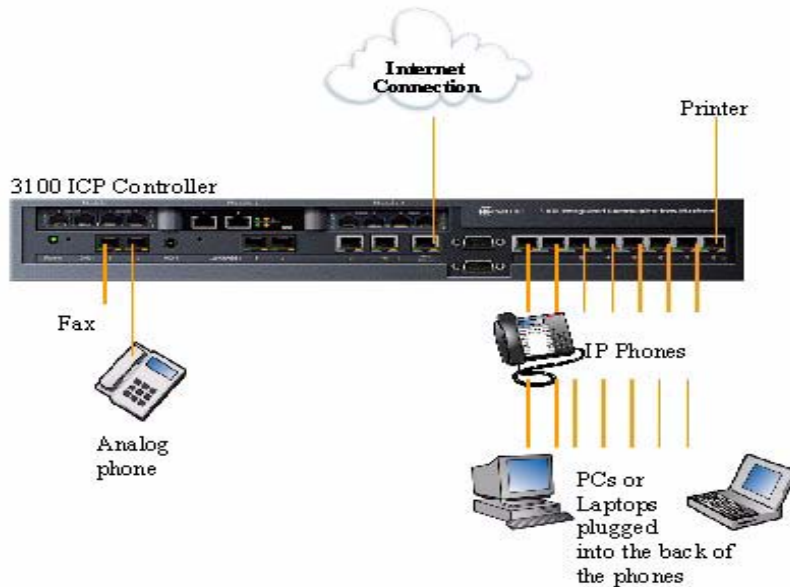


Figure 24 - Customer Scenario 1

### Scenario Two

A manufacturing company is expanding their business. They have also built a new garage next to the office building. They will need:

- 10 telephones
- 10 PCs at the main office
- a fax machine
- a printer.

In the garage, they'll just need to put an analog telephone. They will also have two teleworkers. Figure 26 illustrates how this can be set up.



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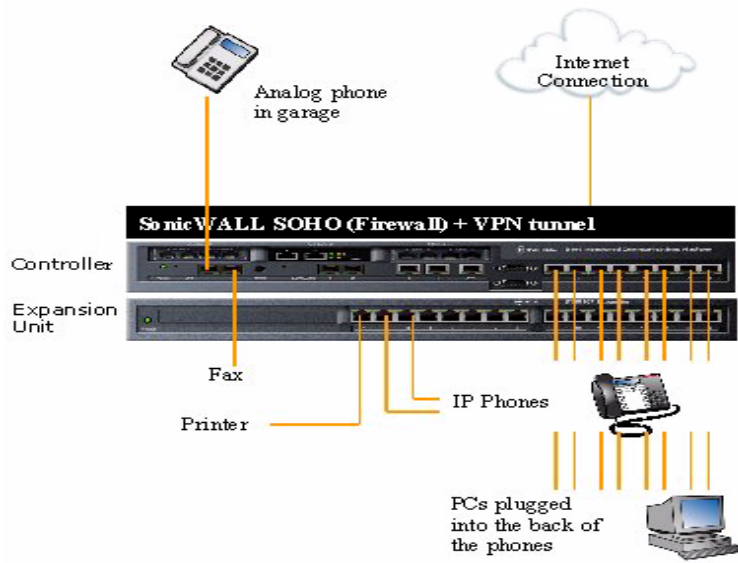


Figure 25 - Customer Scenario 2

## Glossary

For a more complete list of terms, please refer to the Glossary section of the Mitel Networks 3100 ICP Technical Manual.

2B+D	An ISDN channel consisting of "bearer" (B) channels are used for voice or user data and a "delta" (D) channel used for control signalling and/or X.25 packet networking. Throughput on the two B channels is normally 64 kbps while the D channel is 16 kbps giving a total data rate of 144 kbps.
AC	Alternating Current
ADSL	Asymmetric Digital Subscriber Line
ASC	<b>Analog Service Card.</b> An Option module that goes with the 3100 ICP. It provides loudspeaker paging, doorphone operation, closed circuit phone or a Power Fail Transfer port.
BLF	<b>Busy Lamp Field.</b> A personal key which is programmed with an extension user's number; the key's light gives the status of the extension.
BRI	Basic Rate ISDN
CAT 3	<b>Category 3</b> is a high-speed cable that consists of 4 twisted pairs of solid copper wire in a configuration that facilitates installation of multiple phone and fax lines
CAT 5	<b>Category 5</b> is a high-speed cable that consists of 4 twisted pairs of solid copper wire in a configuration that facilitates installation of multiple phone and fax lines. Cat 5 has the capacity and speed several times greater than needed for today's high-speed Internet services, such as DSL and cable modems
CD-ROM	Compact Disk-Read Only Memory.
CLID	<b>Calling Line Identity Display.</b> Displays the number of an incoming external caller. If the external number is included in the System or Personal Directory, the number is replaced by the associated name in the directory.
CO	Central Office
CSU	Channel Service Unit
CTI	Computer Telephony Integration
DBAB	<b>Dial By Address Book.</b> This application takes the Address Book feature on the PDA, and enhances it to provide the user with the ability to select a phone number dial directly from the PDA.
DHCP	Dynamic Host Configuration Protocol
DID	Direct Inward Dial
DIVA	<b>Data Integrated Voice Applications.</b> Architecture that the 3100 ICP is based on.
DNS	Domain Name Server
DSL	Digital Subscriber Line
DSP	Digital Signal Processors
DSS	<b>Direct Station Selection.</b> A personal key which is programmed with an extension user's number; pressing this key enables an extension user to directly dial, transfer a call to or pickup a call ringing at the extension.
DSS/BLF key	<b>Direct Station Selection/Busy Lamp Field key.</b> Personal key assigned with the number of another extension.
DHCP	Dynamic Host Configuration Protocol
DHCP client	Dynamically obtains an IP address for a client from a DHCP Server.
DHCP server	Assigns dynamic IP addresses to devices on a network.
DSL	<b>Digital Subscriber Line.</b> Provides high-bandwidth information over conventional copper wiring.
EIDE	Enhanced Integrated Device Electronics
Ethernet	The most widely-installed Local Area Network (LAN).
FTP	<b>File Transfer Protocol.</b> A protocol which enables a user to log into the Local Area Network, list directories and copy files between systems. It can also be used to backup and restore system databases and to upgrade the system software.
GB	<b>Giga Byte.</b> A unit of memory or storage space.
GUI	Graphical User Interface

HTTP	Hyper Text Transfer Protocol.
ICP	Integrated Communications Platform
ICSA	Internet Communications Security Association
ID	Identification
IEEE	Institute of Electrical and Electronic Engineers
IP	Internet Protocol
IP Phone	A telephone which uses Internet Protocol to send or deliver voice.
IrDA	Infa-red Display Adaptor.
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
LAN	<b>Local Area Network.</b> A network which connects PCs and other devices within a single location.
LCCR	Least Call Cost Routing.
LCD	<b>Liquid Crystal Display.</b> Two-line, 20 character, alpha-numeric display which gives a visual indication of the current status of the extension.
LED	Light Emitting Diode
LS/CLASS	<b>Loop Start/Customer Local Access Signaling Services.</b> This enables call information, that is, the caller's number and name, to be transmitted down an analog line, which supports CLASS, for display on extensions with LCDs.
MAC	Medium Access Controller
MB	Mega Byte. A unit of memory or storage space, that equals 1,048,576 bytes.
MF Tone Dialing	Multi Frequency Tone Dialing
MOL	Mitel OnLine
NAT	<b>Network Address Translation.</b> A service which translates the addresses of hosts on the local LAN to one or more external, globally unique addresses.
NIC (card)	<b>Network Interface Card.</b> A hardware device that allows computers to connect to networks.
ONS	<b>On-Premise Station.</b> Extensions which are installed in the same building as a system, or extensions which can satisfactorily operate with a system when installed in an adjacent building without special circuit arrangements.
PBX	Public Branch Exchange
PC	Personal Computer
PKM	Programmable Key Module
POTS	Plain Old Telephone Service
PPP	<b>Point-to-Point Protocol.</b> A data communications standard which allows two ends of a point-to-point serial interface to negotiate the parameters that will be used on the connection. Configuration of the global PPP parameters on Mitel Networks 3100 ICP consists of entering data for four options: <ul style="list-style-type: none"> <li>• IP address pools;</li> <li>• DNS parameters;</li> <li>• WINS parameters;</li> <li>• miscellaneous parameters.</li> </ul>
PDA	<b>Personal Digital Assistant.</b> A portable, electronic organiser.
PRI	Primary Rate ISDN
PSTN	<b>Public Switched Telephone Network.</b>
QoS	Quality of Service
RAM	Random Access Memory
RAS	<b>Remote Access Services.</b> Allows users to connect to another computer or network remotely (usually through dialup/modem).
RH	Relative Humidity
RIP	Routing Information Protocol
SA	Security Association
SMDR	<b>Station Message Detail Recording.</b> A telephone call tracking and reporting system.
SME 6000	Small Medium Enterprise 6000

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SOHO	Small Office Home Office
STAC	<b>Storage Allocation and Coding</b> compression method. The PPP specific compression system, which provides up to 4, times the speed of your normal connection.
T1/E1	Digital carrier facility consisting of 24 digital channels (T1 - North American standard) or 30 digital channels (E1 - European equivalent) used to transmit DS-1 formatted digital signals at 1.5 megabits per second.
TDM	<b>Time Division Multiplexing</b> . A method of multiplexing which allows information streams to be allocated a percentage of the communications channel.
TFTP	<b>Trivial File Transfer Protocol</b> . A simplified version of FTP, however, TFTP does not provide password protection when downloading software and transferring files. This type of protocol relies on UDP which cannot guarantee delivery.
TFI	<b>Telephony Features Integration</b> . This application gives the extension user access to the telephony features available on the Mitel Networks 5140 IP Appliance or Mitel Networks 5020 IP Phone with Mitel Networks 5423 IrDA Module attached. Through this application, you can create "soft" buttons on your PDA that, when activated, emulate the buttons on the phone.
TOS	Type Of Service
TUI	Telephone User Interface
UDP	<b>User Datagram Protocol</b> . A connectionless protocol which delivers data packets without guaranteed delivery or acknowledgement.
VoIP	<b>Voice over IP</b> . Used in IP telephony for controlling the delivery of voice information using the Internet protocol.
VPN	Virtual Private Network
WAN	<b>Wide Area Network</b> . A network which connects PCs serving users who are not located within a single location.
.wav	Wave file. A Microsoft format for sound files.
xDSL	A generic reference to related DSL technologies.

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