IPedge® Application Server for the Strata CIX System General Description

Publication Information

Toshiba America Information Systems, Inc.
Telecommunication Systems Division

Publication Information

Toshiba America Information Systems, Inc., Telecommunication Systems Division, reserves the right, without prior notice, to revise this information publication for any reason, including, but not limited to, utilization of new advances in the state of technical arts or to simply change the design of this document.

Further, Toshiba America Information Systems, Inc., Telecommunication Systems Division, also reserves the right, without prior notice, to make such changes in equipment design or components as engineering or manufacturing methods may warrant.

IPeAppServ-GD-VB
Version B, August 2015
4010488

Our mission to publish accurate, complete and user accessible documentation. At the time of printing the information in this document was as accurate and current as was reasonably possible. However, in the time required to print and distribute this manual additions, corrections or other changes may have been made. To view the latest version of this or other documents please refer to the Toshiba FYI web site.

Toshiba America Information Systems shall not be liable for any commercial losses, loss of revenues or profits, loss of goodwill, inconvenience, or exemplary, special, incidental, indirect or consequential damages whatsoever, or claims of third parties, regardless of the form of any claim that may result from the use of this document.

THE SPECIFICATIONS AND INFORMATION PROVIDED HEREIN ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT A WARRANTY OF ACTUAL PERFORMANCE, WHETHER EXPRESSED OR IMPLIED. THE SPECIFICATIONS AND INFORMATION ARE SUBJECT TO CHANGE WITHOUT NOTICE. ACTUAL PERFORMANCE MAY VARY BASED ON INDIVIDUAL CONFIGURATIONS, USE OF COLLATERAL EQUIPMENT, OR OTHER FACTORS.

Trademarks

Toshiba, IPedge, CIX, SoftIPT and Strata are trademarks of Toshiba Corporation or Toshiba America Information Systems, Inc.
Appcritical is a registered trademark of Apparent Networks, Inc.
Linux is a registered trademark of Linus Torvald.
AudioCodes is Registered trademark of AudioCodes Ltd.
Cisco is a registered trademark of Cisco Technology, Inc.
Mac is a registered trademark of Apple Computer, Inc.
SonicWALL is a registered trademark of SonicWALL, Inc.
Mozilla and Firefox are registered trademarks of Mozilla Foundation Corp.
Windows, Outlook, and Microsoft are registered trademarks of Microsoft.
Zenoss is a registered trademark of Zenoss, Inc.
Trademarks, registered trademarks, and service marks are the property of their respective owners.

IPedge Application Server General End User Information

FCC Requirements

Means of Connection: The IPedge Application Server does not connect directly to the telephone network. All direct connections are made to a gateway. Please refer to the gateway manufacturer's documentation.

Radio Frequency Interference

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the manufacturer's instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case, the user, at his/her own expense, will be required to take whatever measures may be required to correct the interference.

Underwriters Laboratory

This system is listed with Underwriters Laboratory (UL). Secondary protection is required, on any wiring from any telephone that exits the building or is subject to lightning or other electrical surges, and on DID, OPS, and Tie lines. (Additional information is provided in the IPedge Install Manual.)

c UL us
LISTED
301756
I.T.E

CP01, Issue 8, Part I Section 14.1

Notice: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the Equipment will operate to the user's satisfaction.

Repairs to Certified Equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

CAUTION! **Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.**

Important Notice — Music-On-Hold

In accordance with U.S. Copyright Law, a license may be required from the American Society of Composers, Authors and Publishers, or other similar organization, if radio or TV broadcasts are transmitted through the music-on-hold feature of this telecommunication system. Toshiba America Information Systems, Inc., strongly recommends not using radio or television broadcasts and hereby disclaims any liability arising out of the failure to obtain such a license.

Hearing Aid Compatibility Notice: The FCC has established rules that require all installed business telephones be hearing aid compatible. This rule applies to all telephones regardless of the date of manufacture or installation. There are severe financial penalties which may be levied on the end-user for non-compliance.

Toshiba America Information Systems, Inc.
Telecommunication Systems Division, End User License Agreement
Refer to “End User License Agreement” on page 61

Toshiba America Information Systems, Inc.
Telecommunication Systems Division, End User Standard User Limited Warranty
Refer to “End User Standard Limited Warranty” on page 75

Toshiba America Information Systems, Inc.
Telecommunication Systems Division, Redistribution of OpenSource GPL Attribution
Refer to Toshiba Internet FYI > IPedge > Documentation.

WARRANTIES FOR NON-TOSHIBA BRANDED THIRD PARTY PRODUCTS

A valuable element of Toshiba’s product strategy is to offer our customers a complete product portfolio. To provide this value to our customers at the most optimal prices, we offer both Toshiba-branded and third-party manufactured products that support our Toshiba IPedge and Strata CIX product portfolio. Similar to other resellers of software, hardware and peripherals, these third-party manufactured products carry warranties independent of our Toshiba limited warranty provided with our Toshiba-branded products. Customers should note that third-party manufacturer warranties vary from product to product and are covered by the warranties provided through the original manufacturer and passed on intact to the purchaser by Toshiba. Customers should consult their product documentation for third-party warranty information specific to third-party products. More information may also be available in some cases from the manufacturer’s public website.

While Toshiba offers a wide selection of software, hardware and peripheral products, we do not specifically test or guarantee that the third-party products we offer work under every configuration with any or all of the various models of the Toshiba IPedge or Strata CIX system. Toshiba does not endorse, warrant nor assume any liability in connection with such third party products or services. If you have questions about compatibility, we recommend and encourage you to contact the third-party software, hardware and peripheral product manufacturer directly.

Contents

Chapter 4 – Networking

Chapter 5 – Features

Appendix – Specifications

This page is intentionally left blank.

Introduction

This General Description provides an overview of the IPedge Application Server for the Strata CIX system, associated hardware, features, capabilities, and capacities. The features described in this document assume that the IPedge Application Server has the current software release installed.

Organization

This document is divided into the following major topics:

- **Chapter 1 – Overview** is a brief introduction of the IPedge Application Server for Strata CIX, environmental and power considerations, related software, administration, configuration, and network requirements.
- **Chapter 3 – Unified Communications** describes the IPedge Messaging, Call Manager, Meeting, and Mobility Solutions which together form Toshiba's Unified Communications product suite.
- **Chapter 4 – Networking** describes the various network related configurations that need to be done when installing the IPedge Application Server for Strata CIX.
- **Chapter 5 – Features** describes the features which are available for the IPedge Application Server for Strata CIX.
- **Appendix – Specifications** includes detailed information on network requirements, Application Server dimensions, hardware compatibility, software license requirements, and capacities.

Conventions

Conventions	Description
Note	Elaborates specific items or references other information. Within some tables, general notes apply to the entire table and numbered notes apply to specific items.
Important!	*Calls attention to important instructions or information.*
`Courier`	Shows a computer keyboard entry or screen display.
"Type"	Indicates entry of a string of text.
"Press"	Indicates entry of a single key. For example: Type **`prog`** then press **`Enter`**.
Plus (+)	Shows a multiple PC keyboard or telephone button entry. Entries without spaces between them show a simultaneous entry. Example: **`Esc`**+**`Enter`**. Entries with spaces between them show a sequential entry. Example: **`# 5`**.
Tilde (~)	Means "through." Example: 350 ~ 640 Hz frequency range.
Start > Settings > Printers	Denotes a progression of buttons and/or menu options on the screen you should select.
See Figure 10	Grey/Blue words within the printed text denote cross-references. In the electronic version of this document (Library CD-ROM or FYI Internet download), cross-references appear in blue hypertext.

Related Documents/Media

Installation and Programming Manuals

- Strata CIX Installation and Maintenance Manual
- IPedge General Description
- IPedge Installation
- IPedge Feature Description and Implementation

User Guides

- Strata CIX IP5000-series Telephone User Guide

Quick Reference Guide

- IPedge IP5000-Series Telephone

Internet Site

For *authorized users*, Internet site FYI (http://fyi.tsd.toshiba.com) contains all current IPedge documentation and enables you to view, print and download current publications.

Overview 1

The IPedge Application Server for Strata CIX (shown below) integrates several important applications – Messaging, Call Manager, UCedge, and Meeting into a single server saving you money rather than buying the applications separately and provides a pathway to full IP Telephony deployment in the future. The IPedge Application Server uses Linux for the base operating system that provides a high level of scalability and security.

IPedge Messaging gives you voicemail, unified messaging, and an Android/iPhone client that lets you manage your messages and make and receive calls from your smartphone; enabling your effectiveness when you're not at your desk.

IPedge Call Manager/UCedge integrates your PC with call control on the Strata CIX so you can make calls from your contacts, text chat with your colleagues if you see they are on the phone, and take your calls at your home-office; enabling your effectiveness when you using your PC.

IPedge Meeting makes conference calls to be more like meetings by enabling you to share a presentation and even your video when you are talking remotely; making your conference calls more effective.

All three of these applications are integrated on the IPedge Application Server for Strata CIX which is available in three sizes so that you can choose the most cost effective model for your site. Whether you start with only one application or all three, the IPedge Application Server for Strata CIX enables you and your business telephone system to be more effective.

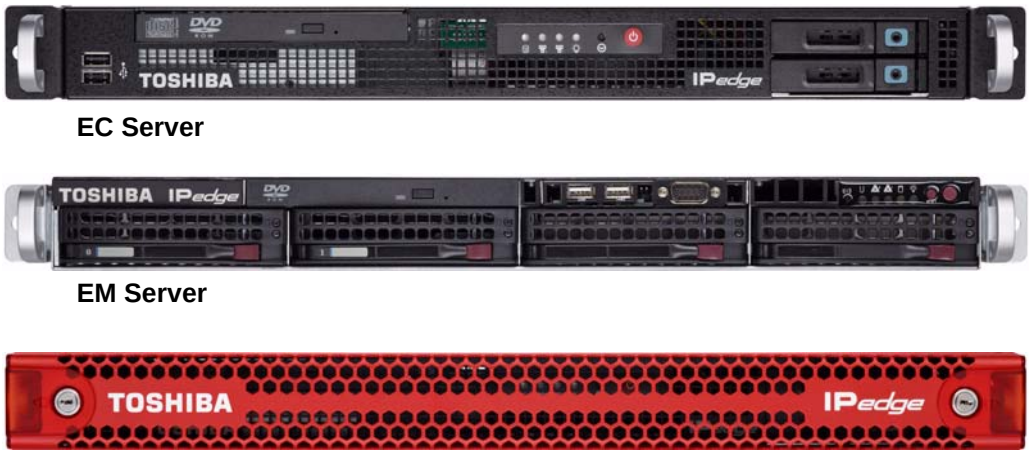
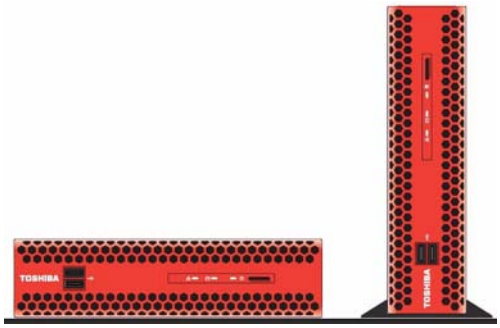


Figure 1 IP*edge* EC and EM Servers



IPedge EP System
(Horizontal and Vertical view)

IPedge EP System (Horizontal view
with Left and Right Rack-mount Brackets)

Figure 2 IPedge EP Server

Table 1 Basic Specifications

EC Server	EM Server	EP Server
Rackmount	Rackmount	Stand alone or 19” Rackmount
1U; 15” Deep; 19” Wide	1U; 25.6” Deep; 19” Wide	1.75U or 2.362” Height; 15” Deep; 8.12” Wide
1 x Core 2 Quad x 2.6GHz Processor, 4GB DRAM	2 x Quad Core x 2GHz Xeon Processors,12GB DRAM	1 x Atom Dual Core x 1.80 GHz Processor, 4GB DRAM
1 x 250GB HDD (available RAID1 kit includes a second 250GB HDD)	2 x 300GB HDDs (RAID 1 standard) 4 x 300GB HDDs (RAID5 optional)	250GB HDD
5,000 Mailboxes	10,000 Mailboxes	1,000 Mailboxes
200 Call Manager Users	800 Call Manager Users	40 Call Manager Users
24 Meeting Channels	24 Meeting Channels	4 Meeting Channels

IPedge Application Server Solutions

The IPedge Application Server integrates all the necessary customer centric applications as shown below. The IPedge Application Server reduces the need for multiple servers to support each application separately, therefore it dramatically decreases the cost and complexity of deploying multiple applications.

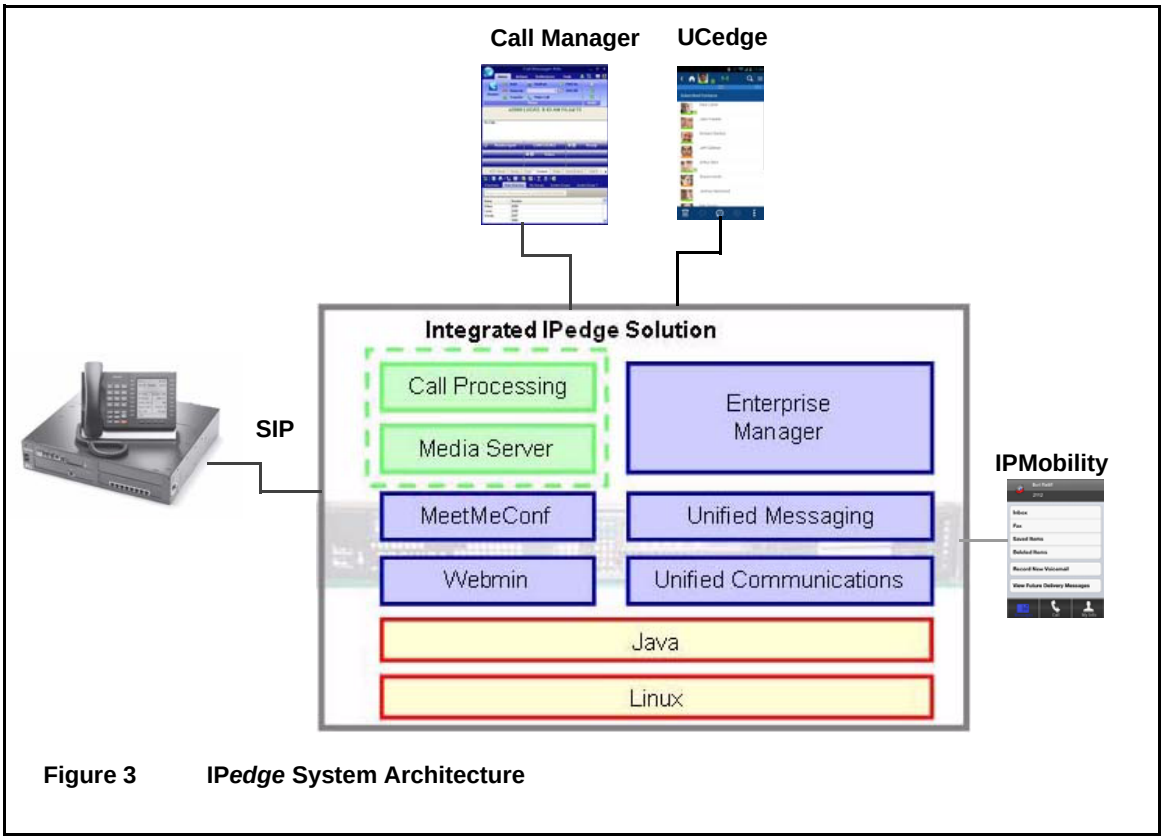


Figure 3 IP*edge* System Architecture

On a single server, IPedge Application Server provides the following:

- Voice Mail / Unified Messaging – Voicemail is built in and can be configured as either a single centralized voicemail system for the entire enterprise or as a distributed voicemail system for each site.
- Unified Communications – Unified Communications is built in and provides Call Control from PC, Chat and Presence on the desktop (Call Manager/UCedge)
- Meet-me Conference and Web Collaboration
  - Having a built in conferencing and web collaboration eliminates costly monthly subscription fees. The integrated conferencing and web collaboration tool boasts an extensive list of features including the following all on a simple and easy-to-use GUI.
  - On Demand Conferencing
  - Scheduling One-time calls
  - Scheduling Recurring calls
  - Web-based Reporting
  - Telephony User Interface (TUI) for Moderator and Participants

- IPMobility application allows an iOS or Android client to make calls using the app which routes them through the host IPedge Application Server, and without displaying the users mobile number to the called party.

In addition to the above, the Strata CIX server can connect to a separate MAS or MicroMAS server to include Strata ACD, Networked ACD (ACD + Unifier), and Call Center Reporting (TASKE or Insight).

Other Advantages

The IPedge Application Server also provides the following benefits:

- Runs multiple communication applications built into one server platform
  - Voice mail
  - Unified messaging
  - Meet-me conferencing and web collaboration
  - Call Manager unified communications with Presence, IM, call control from PC, CRM screen-pop integration, outbound dialing from any application, electronic document launch
  - Enterprise Manager web-based centralized system administration is integrated with browser access from your PC
  - Simplifies and integrates multiple forms of communications to optimize business processes
- Leverage server-based technologies
  - Low-profile chassis offers a sleek look and occupies minimum rack space
  - Standard Rack-Mount allows mounting on an existing standard 19 inch server rack
  - Survivability within or across the network providing business continuity when there is a hardware or network failure
  - Redundant Power Supplies and hard disk drives (RAID) on the EM model ensure business continuation after a single point of hardware failure
  - Expanded memory and Ethernet capacity to allow for multiple advanced applications
- LINUX Operating System
  - Provides a high level of scalability and security and is more resistant to virus attacks than common desktop operating systems. However, a secure network with proper monitoring capability is still recommended.
- The IPedge Application Server can be connected to the Strata CIX system with SIP. It can be upgraded to include the Call Processing and Media Server features of the IPedge platform.

Operating Environment

The environmental requirements for the IPedge EC, EM and EP systems are shown under "Operating Environment." on page 53.

Software

The following software is included and installed on the IPedge Application server:

- Linux Operating System
- Java, Apache TomCat, MySQL platform software
- IPedge Core (Call Processing, Media Server)
- Voicemail / Unified Messaging
- Net Server / Unified Communications (Call Manager/UCedge)
- Meeting / Meet Me Conferencing / Web Collaboration
- Enterprise Manager / Web-based administration

Unified System Administration

IPedge Enterprise Manager is a web-browser based administration tool that unifies the programming of the integrated applications. It provides a web interface for users to configure data, manage, control and maintain all components of these applications, and to coordinate the configuration of all IPedge Solutions in an Enterprise System. The system can be administered remotely over the Internet. No administration application is required on the user's PC.

Enterprise Manager can be accessed locally over the LAN or, with proper network security, remotely over the Internet, and because it is used from the user's Web browser, no special software is required to be loaded on the user's client PC. The Web browser must be Windows Internet Explorer 7.0 or Firefox 5.0 and above. The Mozilla add-on 'IE TAB' is required to properly view some Enterprise Manager pages in Firefox.

Configuration

A single IP Address is required for IPedge Application Server configuration. In a typical network configuration with the Strata CIX, the IPedge Application server is placed behind the NAT firewall and given a private IP address.

Strata CIX system users can minimize their investment by using their Strata CIX system for PSTN interfaces and telephones. The Strata CIX is networked to the IPedge Application Server using SIP.

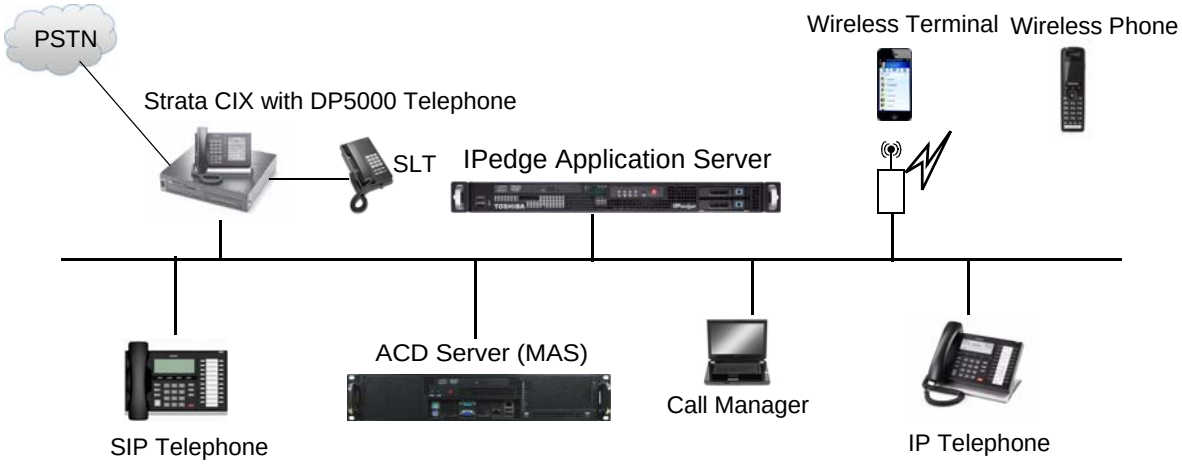


Figure 4 IPedge with Strata CIX as Gateway for Migration

Multi-node IPedge and Strata CIX systems can be networked together using IPedge Net.

Note To connect a Strata CIX system to an IPedge system via SIP the Strata CIX system must use MIPU or GIPU interface cards. The LIPU and BIPU interface cards do not support IPedge Net operation.

Software Support and Upgrade Service

Toshiba's Software Support and Upgrade Service (SUS) plan for IPedge provides a great way to protect the investment in an IPedge system. It provides three important benefits: software updates, technical support, and license transfers.

Software Updates – While covered under this plan, software updates for enhancements, new features, and corrections may be applied to the IPedge system. Some new features may require additional licenses. Software updates are obtained through the Authorized Toshiba Dealer. If the SUS plan lapses, software updates may not be applied unless you pay additional charges to regain current status for maintenance.

Technical Support – Systems covered under the SUS plan are eligible for full technical support by the Authorized Toshiba Dealer. If the plan lapses, technical support is billed "per incident" and software updates are not available until the SUS plan is reinstated.

License Transfers – Systems covered under the SUS plan are eligible for license transfer when upgrading to larger systems. A small transfer fee and equivalent license price differences may apply. Licences are not eligible for transfer without a current SUS plan.

The first year of SUS is included with the purchase of a new IPedge system. At the time of purchase, the SUS plan term may be extended for up to 5 years with a discount for purchasing multiple years. Before the plan expires, the plan term again may be extended for 1 to 5 years, with multi-year discounts available. An IPedge system with a lapsed Software Support and Upgrade Service plan may reinstate the SUS plan for a fee of 125% of the annual rate over the lapsed period. The term begins after purchase, when licenses are generated for the IPedge system.

This Software Support and Upgrade Service plan is available to the original owner of the system and is not transferable. Registration and proof of purchase of the original owner of the IPedge system may be required.

While Toshiba has made every effort at the time of publication to ensure the accuracy of the information provided herein, this information is subject to change without notice. Toshiba assumes no liability for any damages incurred directly or indirectly from any errors or omissions contained herein. In no event will Toshiba be liable for any incidental, consequential, special or exemplary damages, whether based on tort, contract or otherwise, arising out of or in connection with this information or any other information contained herein or the use thereof. The terms and conditions of Toshiba's Software Support and Upgrade Service plan apply to the SUS plan. Visit http://telecom.toshiba.com/Telephone_Systems_Support/warranty.cfm for details.

This page is intentionally left blank.

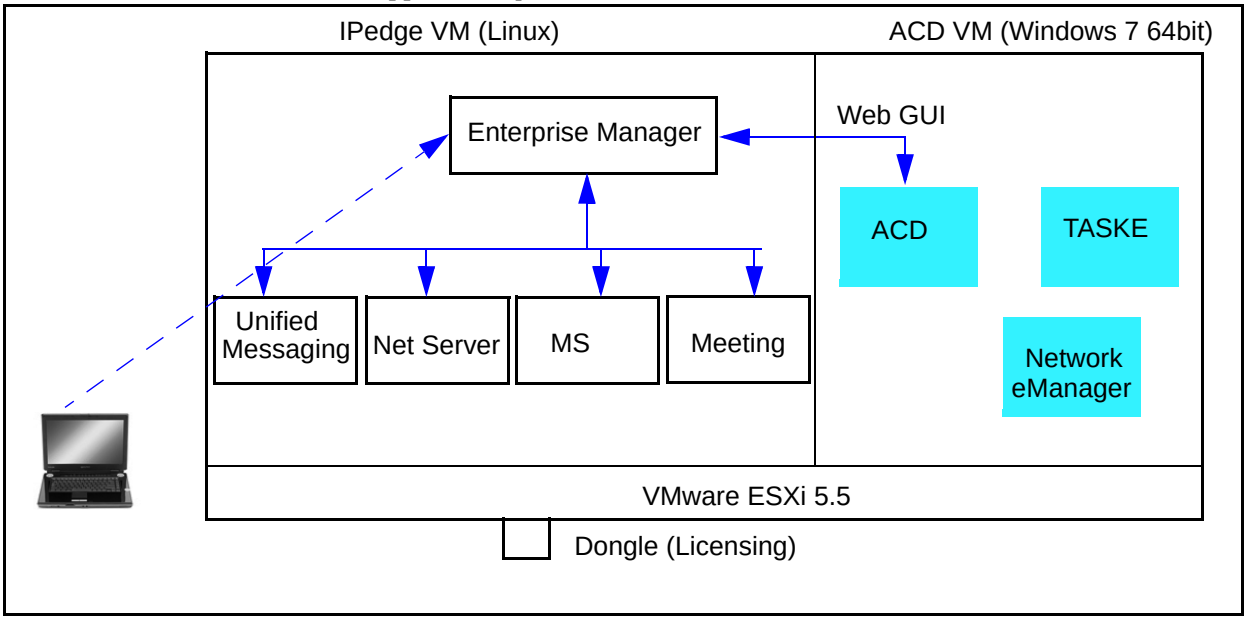
IPedge Virtual Application Server 2

As part of the IPedge Virtual Server solution, Toshiba is using servers which are supplied by Dell® – PowerEdge R220 EP and EC Class and PowerEdge R430 EC and EM Class. These servers do not carry the Toshiba name. The IPedge Virtual Application Server Turn-key Solution has been designed to run on a VMware® virtual server and comes pre-installed. These virtual application servers complement the Strata CIX product line for customers that do not require IPedge call processing.

By working with Dell, Toshiba is able to fully leverage its industry leading IPedge pure IP communications software with Dell's cost effective, up-to-date and powerful enterprise class servers.

The IPedge Virtual Application Server are available in three versions:

- **IPedge Virtual Application Server with ACD Licensed** – ACD software is integrated and licensed in the IPedge system.
- **IPedge Virtual Application Server with ACD Ready** – ACD software is pre-installed and can be activated in the future.
- **IPedge Virtual Application Server (IPedge Only)** – Cost-effective IPedge only version. This is a Turn-key solution. For a fee, the server can be upgraded by Toshiba Technical Support to install ACD. Any attempt by dealer or customer to install ACD or modify the VMware environment on their own in any way may void the warranty and will result in billable fees if Toshiba Technical Support is required.



On a single server, IPedge Virtual Application Server Turn-key Solution provides everything supported on the native IPedge server versions plus UCedge support and includes the following:

- Voice Mail / Unified Messaging – Voicemail is built in and can be configured as either a single centralized voicemail system for the entire enterprise or as a distributed voicemail system for each site.
- Unified Communications – Net Server UCedge XMPP standards based servers are built-in and provide call control, instant messaging and presence for UCedge Clients running on Android and iOS smartphones and tablet devices. Existing users of the powerful Call Manager are upgraded to XMPP support and will continue to enjoy the features of Call Manager in the new IPedge Virtual Server. Call Manager Advanced (8.2) will support the ACD application on the IPedge Virtual Server.
- Meet-me Conference and Web Collaboration
  - Having a built-in audio and video conferencing and web collaboration eliminates costly monthly subscription fees. The integrated conferencing and web collaboration tool boasts an extensive list of features including the following all on a simple and easy-to-use GUI.
  - On Demand Conferencing
  - Scheduling One-time Calls
  - Scheduling Recurring Calls
  - Web-based Reporting
  - Telephony User Interface (TUI) for Moderator and Participants
- Centralized Management for Multiple Sites – The Enterprise Manager resides on the IPedge Virtual Server and enables an administrator to manage all trunks and stations in all the servers of the enterprise, using one consolidated view. From one central location, the administrator can backup and restore configurations of all sites, and update the firmware on any or all phones in the enterprise. ACD, Network ACD (ACD + Unifier), and Contact Center Reporting (TASKE) are built in.

Table 2 Basic Specifications / Dimensions

R220 EP/EC	R430 EC	R430 EM
Rackmount (rail kits not included)	Rackmount (rail kits not included)	
Chassis with up to 2 Cabled Hard Drives (2.5" or 3.5")	3.5" Chassis with up to 4 Hard Drives	
Height 1.66 inches; Width: 17.09 inches; Depth 15.52 inches Weight: 17.46 lbs	Height 1.68 inches; Width: 17.08 inches (without rack latches) 18.99 inches (with rack latches); Depth 23.9 inches Weight: 36.88 lbs (empty) 43.87 lbs (max)	
No RAID	RAID-1	RAID-1 or RAID-5
1 CPU Intel Xeon E3-1240 v3 3.4GHz	1 CPU Intel Xeon E5-2609 v3 1.9GHz	2 CPUs Intel Xeon E5-2623 v3 3.0GHz
500GB 7.2K RPM SATA 3Gbps	500GB 7.2K RPM NLSAS 6Gbps 2.5in Hot-plug Hard Drive	600GB 10K RPM SAS 6Gbps 2.5in Hot-plug Hard Drive
Up to 40 or 200 users	Up to 200 users	Up to 1,000 users

IPedge Virtual Application Server applications run on CentOS Linux 5.4, while ACD and TASKE applications run on Windows® 7 64bit operating system.

IPedge Application Server Capacities

The capacity of the IPedge EP class server running on a Dell R220 server can be upgraded with the IPedge version 1.6.2 software.

The R220 EP class IPedge Application Server can be upgraded to support IPedge EC Application Server capacities. The EP license dongle will need to be exchanged for an IPedge EC virtual application server dongle and the license(s) will need to be transferred.

The Dell PowerEdge R220 EP server was initially configured for the IPedge EP class capacities. However, with the IPedge 1.6.2.208 software, the capacities can be increased to EC class capacities. The EC Class is available on two platforms. Users have a choice between a lower priced R220 EC class server or a more powerful RAID capable R430 EC class server.

Table 3 IPedge Application Server Software Classes

Dell Servers		IPedge EP Class Software	IPedge EC Class Software	IPedge EM Class Software
R220	No RAID	X	X	
	RAID 1	Future Release	Future Release	
R430-1CPU	RAID 1		X	
	RAID 5		Future Release	
R430-2CPU	RAID 1			X
	RAID 5			X

The IPedge Virtual Application Server allow maximum Voice Mail Ports and maximum Voice Announce Ports simultaneously. This is a major change from the MAS and MicroMas configuration rules. This allows for better pricing and greater configuration flexibility.

Table 4 Application Capacities

IPedge Application Server	EP	EC	EM
Voice Mail Ports	24	32	96
Call Manager / UCedge Clients	360	360	360
Call Manager / UCedge Clients (App Server with Unifier)	720	720	720
ACD Agents	360	360	360
ACD Agents (App Server with Unifier)	720	720	720

IPedge Virtual Application Server Benefits

The IPedge Virtual Server Turn Key Solution provides the following benefits:

- Unified Messaging, Meet-Me conferencing, Web Collaboration, UCedge, Call Manager, Enterprise Manager, all run on the same physical server.
- Allowing IPedge, Contact Center and TASKE to run on one server reduces cost and complexity.
- Toshiba Contact Center software, TASKE, and Network eManager all run on one virtual machine inside the same server.
- New low cost single user and survivable user license provides cost-effective scalability.
- A single user license across all hardware and software images provides for ease of migration as customer's grow and require larger platforms. In keeping with Toshiba's tradition of migration, this new license will backward and forward migrate to all IPedge platforms, both native and virtual, once upgraded to 1.6.2.
- IPedge and Contact Center software are administered from a single user interface providing for more error-free programming, easier administration and faster installations.
- Preloaded applications on selected servers provided for quick upgrade with minimal labor requirements.
- New UCedge Client has combined UCedge, Call Manager Advanced, and Lync Plug in with the VoIP Plug in into one low cost software license. One license is used to support up to three active devices running Windows, Apple, or Android desktop and mobile devices.
- New single survivable user and survivable UCedge licenses reduce the cost of system survivability.
- New bundles of 200 and 500 Advanced Mailboxes will provide for cost-effective scalability.
- VMware allows one server to run multiple virtual servers on one physical hardware server.
- Industry standard enterprise servers sourced from Dell provide a cost-effective platform while maintaining leading hardware and processor specifications as server technology evolves.
- Enterprise Class servers preloaded with VMware appeal to IT Managers and CIO's who are predominately involved in making the decisions regarding Communications solutions and Unified Communications platform decisions.
- Standard three year hardware warranty with onsite support included on all Dell servers.
- Integrated Dell Remote Access Controller (iDRAC) or Basic Management with Lifecycle Controller embedded in Dell servers provides remote management functionality which helps deploy, update, monitor, and maintain Dell PowerEdge servers without the addition of software. iDRAC out-of-band automation services, embedded pre-OS applications, and remote interfaces that enables streamlined local and remote server management, and reduces or eliminates the need for administrators to physically visit the server — even if the server is not operational.

Features

IPedge Virtual Server not only contains all features of IPedge, ACD and TASKE, but it also has several unique features.

Comparison

The table below shows some of the administration differences between the Native IPedge system and the IPedge Virtual Server.

	Native IPedge Application Server	IPedge Virtual Application Server
IPedge Administration	Enterprise Manager	Enterprise Manager
ACD Administration	Remote Win login (separate server)	Enterprise Manager
TASKE Administration	Remote Win login (separate server)	Remote Win login (same server)
Equivalent Systems	EP, EC and EM	Dell R220 and R430 servers
Purchasing	FYI	FYI
Shipping	Toshiba to Dealer	Dell to Dealer
Tier 1 Support	Toshiba Technical Support	Toshiba Technical Support
AWR	Yes	Yes (DOA within 30 days)
Repair	Yes (Return to Toshiba)	Yes (Dell Onsite Repair)

Unified Licensing

All IPedge, ACD and TASKE licenses are combined together into a single license file. Both licenses are associated with the single USB dongle. The same Enterprise Manager IPedge licensing procedure can be used to apply the IPedge, ACD and TASKE licenses simultaneously.

License Transfer

MAS ACD, TASKE and Call Manager licenses and IPedge licenses can be transferred to an IPedge Virtual Application Server for a fee. Configuration transfer fees and manual license transfer will be determined and performed by Toshiba Customer Service if the system has a valid maintenance date. The old MAS and IPedge system must be returned to Toshiba. A scraping fee will be charged.

TASKE parts used on the IPedge Virtual Application Server will use the same TASKE licenses as the MAS.

Single Admin for IPedge and ACD

ACD administration is fully integrated into the IPedge Enterprise Manager administration software. The initial setup includes the ACD server network setup in the Enterprise Manager. IPedge Virtual Application Server will automatically link ACD to IPedge servers together and enable it for use.

Web-based ACD Admin

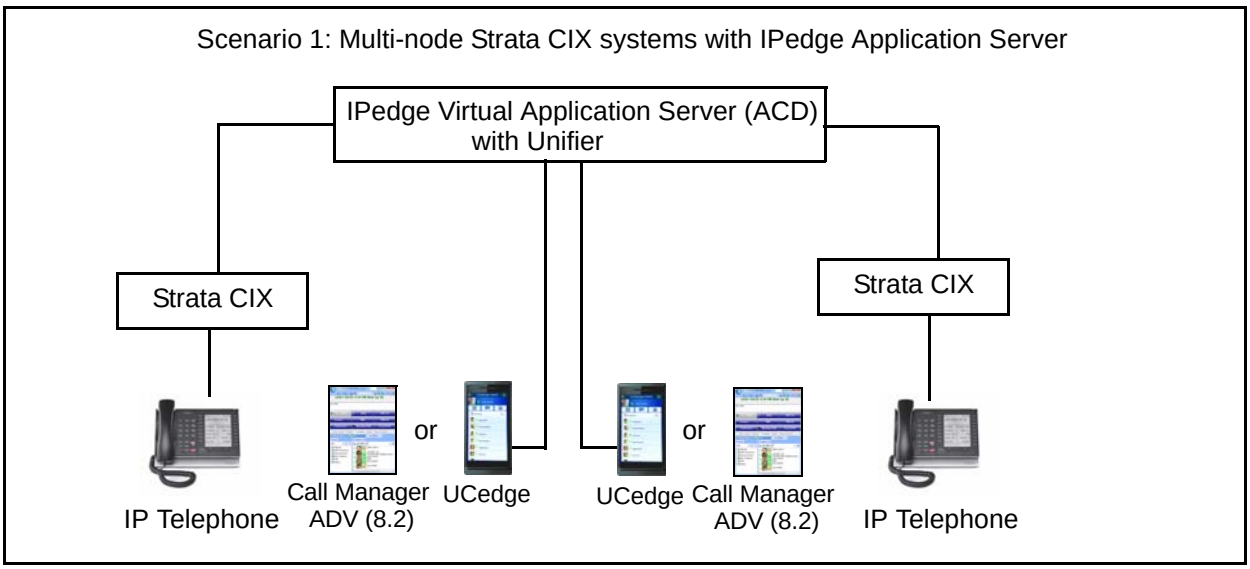
The ACD Admin in the IPedge Virtual Server is fully web-based and manages all features of ACD (Admin, Events, MIS, Real Time, TKI Keysets), Voice Assistant, Call Router, Database Assistant, Email Assistant, MMQ Admin, Text to Speech, and Unifer.

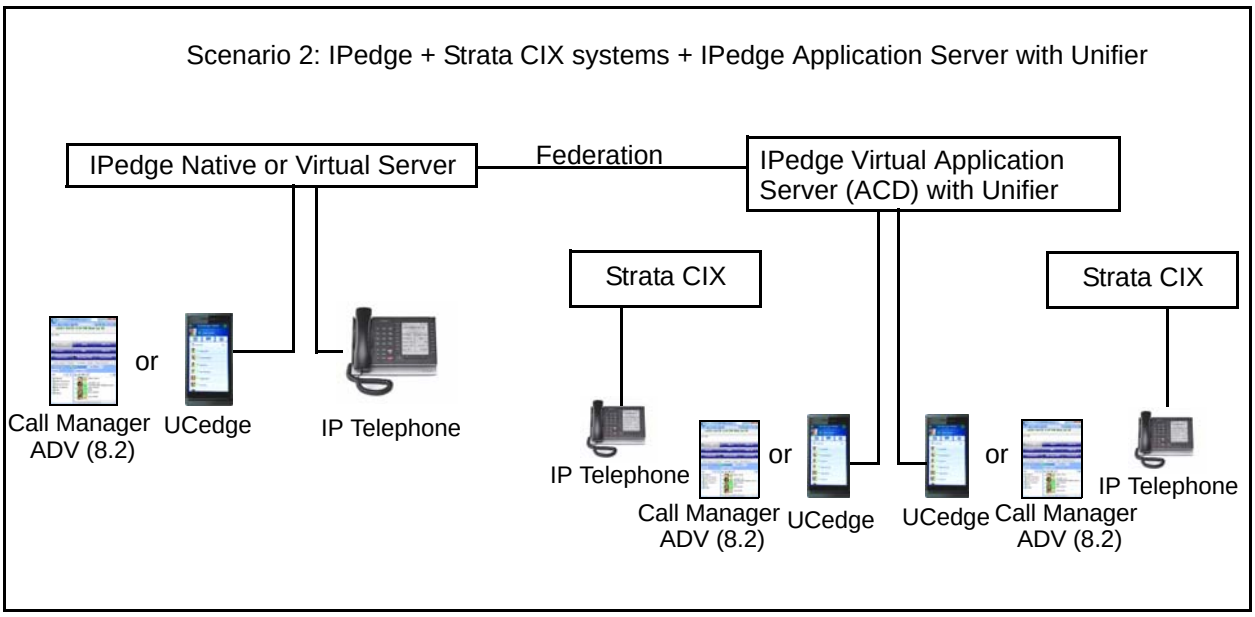
Interactions

The following interactions may occur with some applications when using the IPedge Virtual Server:

- Meeting – Java® version 7 and 8 have known issues. If you upgrade you can go into the Configure Java utility provided by Oracle® and run it in Java 6 mode to allow Meeting to function.
- Extended Warranty Choice – For IPedge Virtual Server Extended Warranty Choice is the only valid option to purchase five or seven warranties on Toshiba IP telephones. Value Plus warranty cannot be used with the IPedge Virtual Server.
- Presence and Instant Messaging – For a mixed environment with IPedge and Strata CIX with Unifier, the Strata CIX requires a separate IPedge Application Server (i.e., cannot share the same IPedge UC applications). One IPedge Application Server + Unifier can support multiple Strata CIX nodes.

Important! *Current IPedge + Strata CIX + Unifier customers must add IPedge Application Server if they want to upgrade to IPedge 1.6.2.*





Important! *Call Manager ACD (8.0) supports ACD on MAS and Call Manager ADV (8.2) supports ACD on the IPedge Virtual Server and the IPedge Virtual Application Server.*

Warranty and Support

Important! *The dealer must "Transfer the ownership" to Toshiba "Dealer Name" End Customer with Dell when it is installed. This must be done so that Toshiba, the dealer, or the customer can request support from Dell. The physical address of the customer server location must also be listed. This is where the Dell representative will go onsite to support the Server.*

Dell comes with the basic three year warranty. The hard disk drive has a one year warranty.

The basic warranty covers the following (included with order from Toshiba):

- Business Hours Warranty repair
- Customer Self replaceable (CSR) parts
- No Collaborative support
- Out-of-region phone Support
- Next business day limited onsite/return services

Notes

- For more Warranty and Support information, refer to the Dell website.
- SUS is valid only with end customer registration. ACD Maintenance costs are based on a per agent cost multiplied by the time (the number of years chosen).

This page is intentionally left blank.

Unified Communications 3

This chapter describes IPedge Messaging, Call Manager, UCedge, Meeting, and Mobility Solutions which together form Toshiba's Unified Communications product suite. The IPedge Application Server supports all Unified Communications (UC) applications on one platform, dramatically decreasing the cost and complexity of deploying multiple applications. This includes Presence, IM/Chat, PC call control, Auto Attendant, Voice Mail, Unified Messaging, Interactive Voice Response (IVR), and Enterprise Manager system administration.

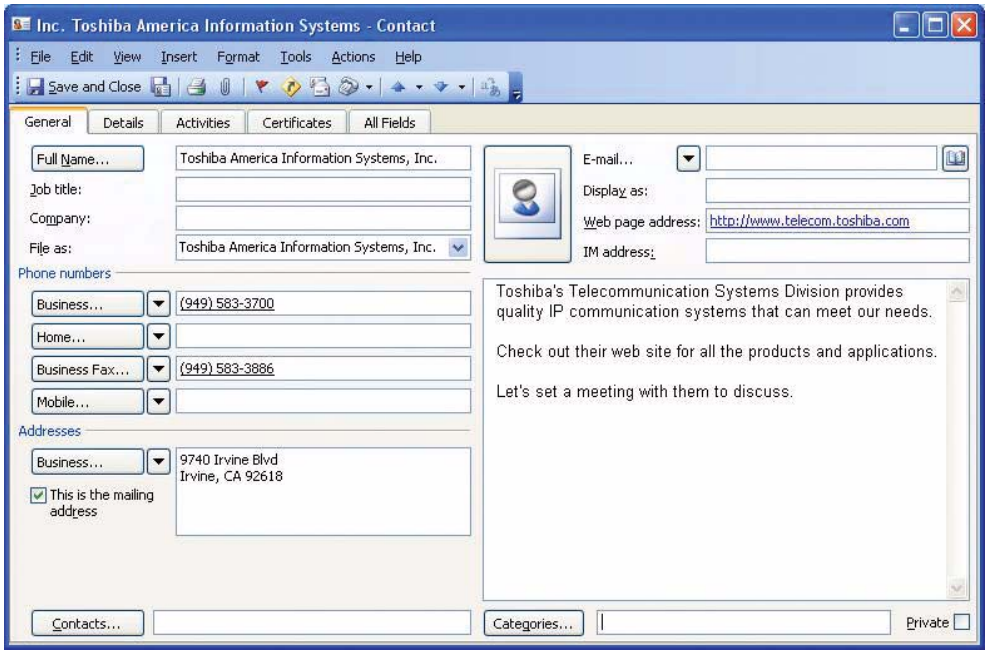
The Unified Communications product suite is easy to acquire, deploy, manage, and use. You can select the mix of modular capabilities that meet the specific needs of your business. Some of the key features and benefits of these tools are mentioned below:

- **Presence and Instant Messaging** – With a presence viewer you can see the status of other users, both their telephone busy/idle status and calendar status from Outlook integration, with the ability to click on the name to either call or instant message chat with them. You can decide the best way to contact someone to maximize efficiency.
- **Outbound Dialing from Any Application** – Making a call is as easy as highlighting a number and clicking the mouse. You can also launch electronic documents, applications and web pages directly from the SCM interface for quick access to the most frequently used communications tools. This saves you valuable time.
- **Desktop Call Control** – Using the Toshiba Call Manager (CM) desktop call manager application, you can combine the capabilities of your computer and telephone to dial, answer, or transfer calls, and more, using your mouse without ever picking up the telephone. Clicking on features make call transfer, speed dialing, and other functions faster and easier. SCM can be used at your desk with your desk telephone or as a

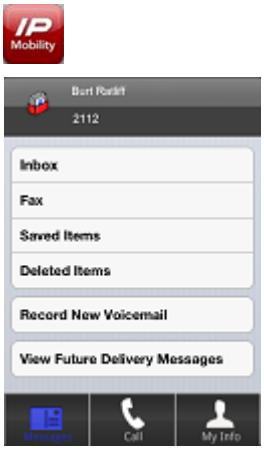
Call Manager Presence Screen

stand-alone IP soft phone providing mobility and remote access. You get the efficiency of combining your telephone and computer into one integrated communication tool.

- **CRM Integration and Screen-pops** – Your call answering personnel can provide better service by immediately knowing which customer is calling with screen-pop integration to your customer relationship management applications and databases. This saves you time and serves your customers better.



- **Off-premise Call Forwarding** – Enables your incoming calls to reach you when you're out of the office and enables you to change your forwarding destination from any remote location. You can stay in touch no matter where you are.
- **IPMobility for Android and iOS** – The IPMobility Application for Android™ and Apple iPhone™ allows a mobile device to act as an extension of the IPedge Application Server by providing incoming and outgoing call features.



  Users may also easily access key voice messaging functionality and manage administration of their voice mailbox without dialing into the voice mail system. IPMobility does not interfere with the ability to make a phone call or access the voice mail of the mobile device itself.

  The IPMobility Application is available for both Android and Apple mobile platforms. See "Mobile Device Support for IPMobility" on Page 60 for more details.

  For incoming calls, the IPMobility application uses the host IPedge Application Server "Follow Me" feature to route the call to the users mobile phone.

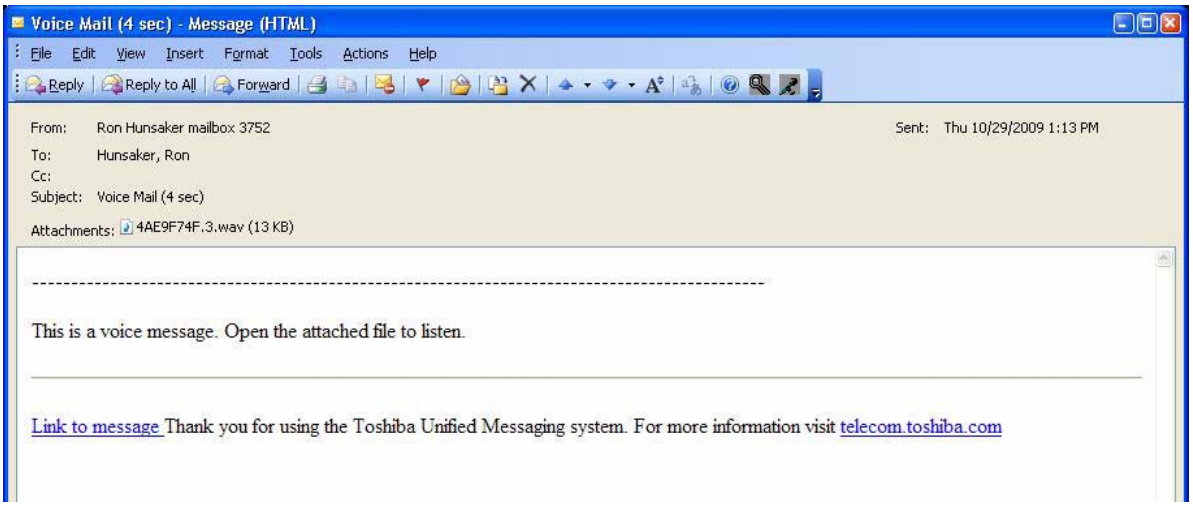
  For outgoing calls, the application uses the Strata CIX phone services to callback the mobile phone, then call the preset destination and then connect the two calls. This process:

  - Takes advantage of the host system's telephone service rates
  - Sends the Caller ID of the users office phone number - not the users mobile device number

  Users may also easily access voice messaging features and manage their voice mail without having to dial in to the system.

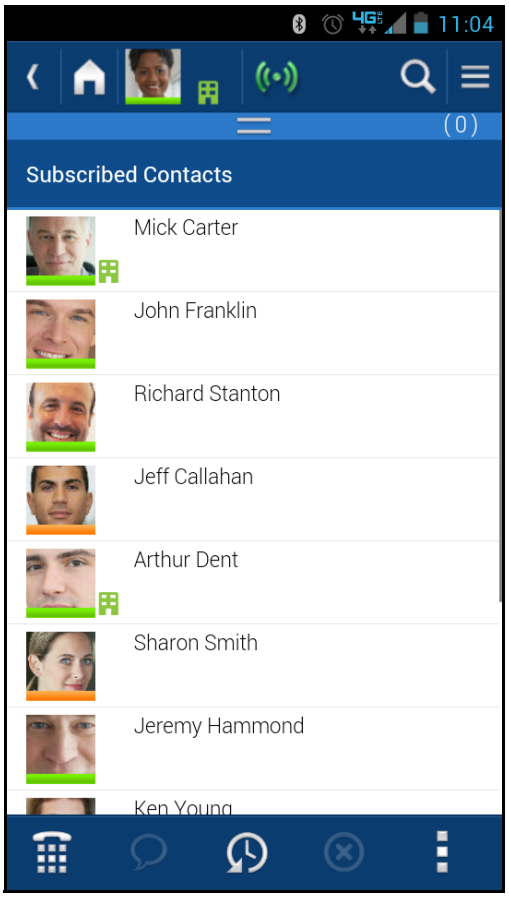
IPMobility users will incur per-minute usage on their cellular/wireless plan.

- **Unified Messaging** – You can access your voice messages from your email inbox, providing the convenience of checking all your messages from one place. Web-based unified messaging adds mobility allowing users access to their email, voice by using only an Internet browser, without even needing to first access their email providers. This is especially useful when away from the office; enabling mobile users to access and manage their voice from anywhere they have internet access.



- **Remote Connection and Mobility** – You may have a mix of on-site employees, telecommuters who work at home, mobile employees, and personnel in remote branch offices. It's important to improve employee productivity for all of them no matter where they are. Toshiba provides the tools for remote connectivity and mobility to make them all operate as if they were right there in the office.

UCedge Client



The UCedge Client is a UC solution for users of the IPedge system, IPedge Application Server, and VIPedge Application Services. The UCedge Client is a productivity tool that is integrated with the IPedge business telephone system. For the UCedge client to work on the IPedge Application Server, the voice interface will have to be the IP address of the Strata CIX system. It works on the iPhone, Android smartphones, PC's and Mac computers.

The following are the benefits of having the UCedge Client:

- **Pairing** – Initiate dialing on your desk phone from your tablet or smartphone.
- **Softphone** – Make and receive calls on your Android device.
- **Call Thru/Call Back** – Make calls from your cell phone using your Business Caller ID and make yourself and your business easier to reach by only giving out one number.
- **Follow Me** – Receive calls when you are away from your desk at the same extension and get things done sooner.
- **Call Thru or Call Back** – Make International Calls from your cell phone at land line rates and save money.
- **Call Back** – Be available on your business number with a local SIM or phone when traveling internationally and save money on cellular roaming rates.
- **Presence** – See the status of your VIPedge/IPedge colleagues before you call them and save time.
- **IM and Group IM** – Instant Message your VIPedge/IPedge/CIX colleagues who are on the phone or busy and get more done.
- **Contacts with Avatars** – Quickly find and call your VIPedge/IPedge/CIX colleagues without having to remember their internal extension.

IPedge Messaging

Messaging is an integrated voice processing application within the IPedge Application Server that provides standard voice mail and Automated Attendant features as well as Unified Messaging capabilities, Follow Me, Message Notifications, Soft Key navigation of mailbox menus, and Call Recording.

Since Messaging is incorporated into the IPedge Application Server, it delivers streamlined user administration and system management. With it, users can easily and conveniently manage their voice messages with intuitive on screen prompts. Users can program different types of greetings, call routing, and message notifications.

Some key features include:

Follow-Me

A mailbox can be set up to forward a call to an external phone number before the call is transferred to voicemail. When using supervised follow-me, the mailbox owner can perform functions such as record the call, conference in another subscriber, or send the caller back to the mailbox owner's voicemail box. This feature is a part of the UC features that allow users to flexibly control the call based on a user's requirement as follows:

- Caller ID based call handling
- Calendar based call handling
- Sequential ring and simultaneous ring
- Present the actual calling party's number on the cell phone or other destinations
- Routing to last answer device
- Follow-Me Connect Verification – The mailbox owner can positively accept the follow-me calls by pressing a key to prevent calls from ending up in cell phone voicemail or other telephone answering devices.
- Follow-Me Record to Mailbox – Allows the mailbox owner to record a conversation that has been answered at the follow-me number. The conversation is saved and sent to the mailbox owner's voicemail box as a new message.
- Follow-Me Transfer Back – After the mailbox owner receives the call to the external device he can redirect the caller to another internal extension.

Follow Me feature provides better phone operation integration through IPedge Net Server and provides the following capabilities.

- Follow Me feature control button on the phone – User can assign the button for the Follow Me feature and activate and deactivate the feature from the button on the IP Telephone to easily change the operation when users are in the office or on the road.
- Hand-off – When the user takes the call from the cell phone and return to the office, the call can be easily handed off to the desk phone by pressing the same button.
- Status Indication – The button has the LED to show the status of the Follow Me feature.

Unified Messaging

Unified messaging allows a mailbox owner to access voice messages directly through an email inbox. Emails may also be listened to from the voicemail box. Unified Messaging provides users with the following features; Fax-to-Email, Print Emails to Fax, Redirect Fax Messages, Integration with Email Clients, Messaging as an IMAP Server, and Messaging as a POP Server. Details on these features can be found in the Features chapter.

Other Messaging Features

Refer to "Messaging" on page 38.

Call Manager

Call Manager (CM) is a powerful unified communications tool, a PC soft phone designed to enhance productivity for mobile and office users.

The Call Manager application runs on a PC with Microsoft® Windows XP, Windows Vista, the Terminal server on Windows Server 2003 ~ Windows Server 2008 R2, Windows 7, or Windows 10 operating systems.

There are two levels of IPedge Call Manager:

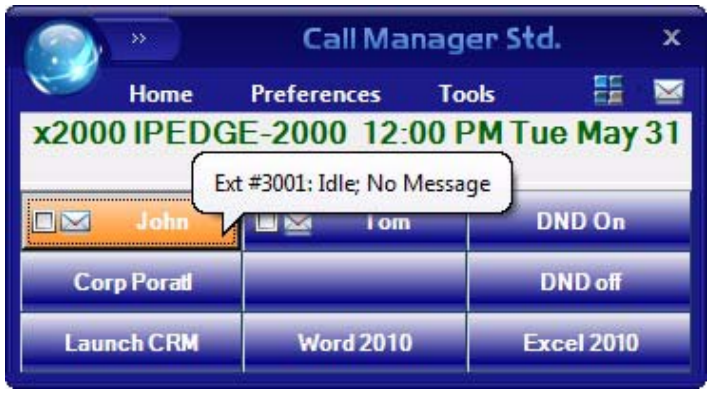
- Call Manager Standard version is free to all users of the IPedge Application Server. The license (I-CM-STD1) for Call Manager Standard is included in the user license bundle at no additional charge.
- Call Manager Advanced version provides enhanced functionality, including full Unified Communications (UC). Purchase Call Manager Advanced license (I-CM-1) when full UC capabilities are required.

  ACD customers and/or Network Call Manager customers must purchase the full featured Call Manager Advanced as the Call Manager Standard is not supported under this environment.

Call Manager clients connect to the Net Server running on the IPedge Application Server with the appropriate license (I-CM-1/I-CM-V1) on IPedge. When Call Manager is used with ACD or Unifier, it must connect to the external server with ACD or Unifier with the appropriate license (LICMAS-NETSEAT) for the server.

Call Manager Standard

Call Manager Standard provides the following major functions:



- Call control support (dial, answer, transfer, with drag and drop operation)
- 9 configurable buttons for any of the following features:
  - DSS/BLF (status display)
  - Feature access code
  - Run Program
  - Speed Dial
  - System/PBX Command
  - Web URL
- LCD View
- Dialing from Microsoft Outlook Contacts

Call Manager Advanced

Call Manager Advanced provides the following major functions:

- Desktop call control from your PC
- Customized call handling – CM allows you to place, answer, handle, view, and manage phone calls using your computer screen, keyboard, and mouse.
- Outbound dialing from any application
- CRM integration with screen pops – CM can easily interface with many popular programs (like Microsoft Outlook, Salesforce CRM, ACT, etc.). This allows you to dial from and "screen-pop" into these programs or the Internet / Intranet.
- Presence Viewer to display the status of other users
- Instant Messaging / Chat
- Using the VoIP Audio capabilities can provide a complete soft phone speech path when using a PC with the proper speech component support.
- Rules and actions can be set up to automatically activate when calls arrive even while you are away.

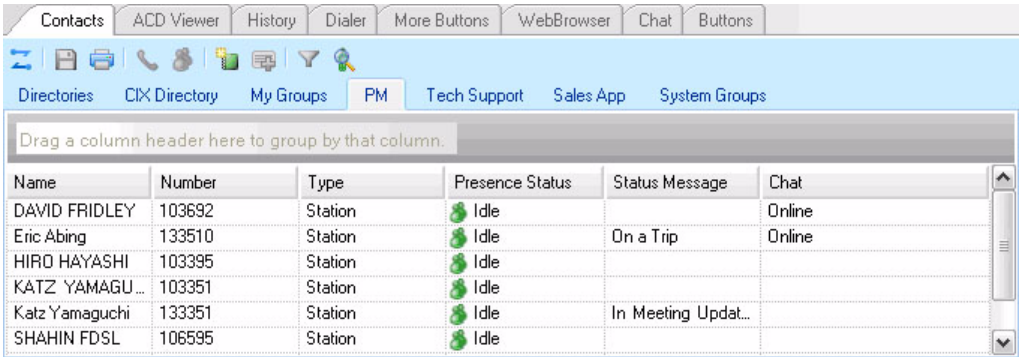
Figure 5 Call Manager Main Page

The Call Manager is based on the Microsoft Fluent User Interface which is easy to use and manage.

Microsoft's fluent user interface breaks the ribbon GUI down into multiple tabs. The tabs are broken down into groups. The ribbon groups all the common features and functionality together. Each tab has a specific function and all the buttons in that tab support that specific function. For example, the Home tab encompasses all the basic telephony functions including: Hold, Transfer, Hang up, and Make Call.

Companion Applications

The Call Manager application supports some powerful companion applications. The Companion application tabs are shown below.



Contacts (Directory, Presence Viewer and Speed Dial)

The Contacts companion application performs three features: Directory, Presence and Speed Dial. The Contacts application provides a powerful set of directory features that allow you to look up and dial Strata CIX system extensions with a click of the mouse.

The directory functionality in Contacts is generated by the system so it is always up to date with every extension. The directory can be easily searched and sorted by name and number. In addition to sorting by column name, the Contacts application now has a grouping feature where you can drag a column name into the grouping section and the resulting list will be grouped by the column name.

The Contacts application also has a Presence status column so you can quickly view the current status of the user's phone. Right-clicking on any user brings up a window that enables you to either call, chat, send broadcast, edit or delete.

History

The History companion application automatically creates a log of calls dialed, received and missed on the local telephone extension. The Call History can be searched for specific calls by date, telephone number, name or account code. Calls can be automatically dialed by double clicking the call in the Call History window.

The entire Call History or a search result can easily be printed or exported to a file. In addition to sorting by column name, the History application also has the new grouping feature where you can drag a column name into the grouping section and the resulting list will be grouped by the column name.

ACD Viewer

The Call Manager is tightly integrated with the ACD from Toshiba. The Call Manager ACD Viewer enables users connected to ACD to view the status of all ACD groups in which they belong. This additional functionality does not require MIS software to be installed. Call Manager shows the operating status of each group. Each group view can be expanded to see the number of calls and the status of each of the agents and supervisors in the group. Each group contains a "My Status" icon showing your own status in the group (logged in, logged out, busy, in wrap-up, etc), and the status can be changed by right-clicking on the icon.

Chat

The Call Manager Chat application enables Call Manager users connected to the IPedge system to interactively have chat conversations. Chat also supports whiteboard and canned messages. This program enables employees in an enterprise to communicate using real time text-based communications.

Using Call Manager Chat you can have individual conversations with anyone else on the server with the same feature installed. Chat can also be used to send a broadcast message to an individual or to an entire group. A broadcast message is a one-time message that will appear on the recipient's Chat window.

Dialer

Call Manager Dialer enables users to easily schedule phone calls to be placed later. For example, when a sales representative arrives in the morning he may know he needs to make calls to 15 of his customers, so from Microsoft® Outlook® he can drag and drop the contact information of all 15 of the customers into Dialer. When the designated time arrives for each call to be placed the user will be presented with a pop-up screen alerting him that it is time to place the call. Once the call is finished, the user will be presented with another pop-up screen requesting information about whether the call was successful and if not whether it should call again later (for example if the party was busy). The Personal Power Dialer displays all calls yet to be placed as well as calls that have recently been completed, plus as the status of the dialers and the phone.

Web Browser

The Call Manager provides an integrated web browser window for access to Internet or Intranet locations, or direct access to local HTML files. In addition to basic browsing, you can create custom web applications to extend the functionality of Call manager for your business. For example, your call center could have incoming calls automatically open the Call Manager browser window to a "Caller Survey" page. The Call Survey page could display information about the caller and display an answering script the agent could use to guide the conversation. The web page might also allow the agent to enter answers from the caller into HTML forms and submit the results to a company web server.

More Buttons

Call Manager has many different User Programmable buttons on the main screen and side window. These buttons can be easily configured by the user as DSS buttons, Feature buttons, Speed Dial buttons, User Action buttons, ACD buttons, etc. This provides the user with one-touch access to features, applications, files, phone numbers, employees and more.

Microsoft® Lync® Integration

Toshiba has a plugin that is installed on a customer's PC to integrate with the Microsoft Lync client. This eliminates the complex server configuration that is required for server integration. This integration enables customers who adopt Lync as the Instant Messaging/Presence application to integrate with the IPedge Application Server telephone features. Toshiba plugin requires the Call Manager Advanced license. In order to use the built-in softphone, Call Manager VoIP option license is also required.

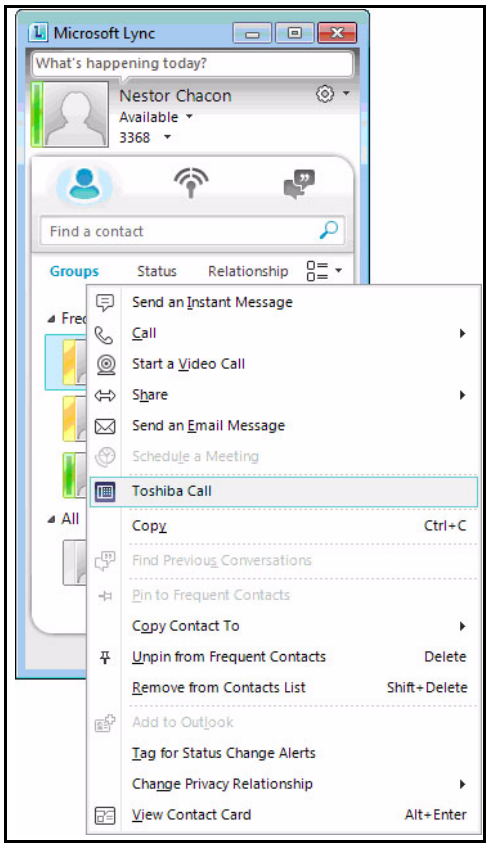
The following features are available through the integration:

- Lync Presence reflecting user's telephone status (In call).

  When a Lync user is on a call using a Toshiba digital telephone, IP telephone, or built-in softphone; other users will see the user's status as Busy (in call).

- Make Call from the Lync contact (shown right).

  The Toshiba Plugin provides a menu to use the Toshiba digital telephones, IP telephones, or the built-in softphone from the Lync Contact by right-clicking a contact and selecting Toshiba Call. If the user selects Call, it will use Lync softphone when it is available.

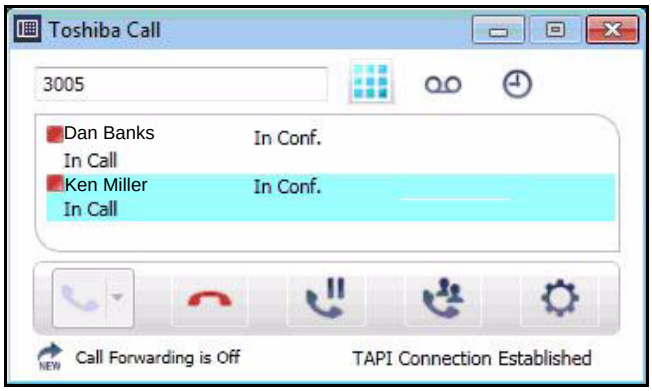


- Pop up notification for a ringing call with Lync contact information (shown right).

  When a call arrives, Toshiba Plugin pops up the notification and shows the contact name if available from the Lync Contact. The user can answer the call or route the call to the voice mail or other specified destination.

- Transfer and Conference Call

  User can transfer or conference call from the Toshiba Plugin main window (shown right).



- Optional built-in softphone

  Toshiba Plugin can be used together with Toshiba digital telephone, IP telephone, or SoftIPT for the user to control the telephone from Toshiba Plugin. In addition, as an option, the built-in softphone can be used with Toshiba Plugin.

Note Telephones to be used with Toshiba Plugin should be configured to have the Primary DN only, and Secondary DN/Shared DN and other GCO/Pool line keys should not be used. When used, the Toshiba Plugin or popup notification may not work properly.

Meeting

The Meeting application is integrated into the IPedge Application Server. Meeting allows participants to dial into a single conference or any combination of conferences. Meeting is web-based (shown below), so it's easy to set up conferences from anywhere, view conference participation during a call, and share a desktop screen. There can be up to four conferences with a total of 24 audio and web participants on the IPedge EC system; up to eight conferences with a total of 48 participants on IPedge EM system; and one conference with a total of four participants on IPedge EP system. Below is a list of features available with the Meeting application.

Audio Conference Features

- **Reservation-less and Scheduled Meet-me Conferencing** – enables conferences to start quickly and can be organized flexibly.
- **Web User Interface for Moderators** – enables moderators to schedule conferences.
- **Conference View** – shows moderators the participants that are in their conference and enables the management of individual participants. Participants can be muted, disconnected, or transferred to another conference for a side bar and conversation.
- **Telephone Portal for Moderator and Participants** – enables moderators and participants to exercise in-conference controls via DTMF.
- **Outlook Calendar Integration** – allows meetings to be easily scheduled and invitations distributed to all participants.

- **Web-based Reporting** – enables managers to have a view into the impact of audio conferences and web collaboration sessions in their business.
- **Moderator and Participants Codes** – adds security and control to who can manage and participate in conferences.
- **Exit and Entry Tone** – lets participants know when people are entering and leaving conferences in order to avoid surprises.
- **Audio Recording Capabilities** – enables audio conferences to be recorded for later playback or archived for record retention.
- **Flexible Configuration from 4 to 48 ports** – provides cost-effective small conferencing system for the SMB with room to grow and expand.
- **Dial Out** – Moderators can dial out (#31) to call participants into a conference.

Web Collaboration Features

- **Video –** Participants in web conferences can share video from the webcam on their PC.
- **Web based Desktop Sharing** – enables moderators to share documents, presentations and conversations in the meeting.
- **Web User Interface for Participants** – enables participants to join a web conference from any computer that is convenient at the time and does not – require a dedicated application to be installed.
- **Chat** – enables participants to exchange text messages to the group or individually while in a conference.
- **Computer Screen Sharing** – Sharing of a region from a primary or a second monitor.
- **Waiting Room** – Web conferences have a waiting room, where participants can wait until the moderator joins.

Networking 4

This chapter provides a description of the various network related configuration pieces that need to be done when using VoIP networks and installing the IPedge Application Server.

Preplanning for VoIP Deployment

Benefits

- More accuracy and predictability in estimating budget requirements (and TCO) for the VoIP deployment by identifying network infrastructure needs up-front.
- Reduce cost of deployment by reducing trouble shooting costs.
- Reduce cost of post deployment maintenance and support by having the necessary information before hand.
- Improve Project Management – All requirements and conditions for a successful VoIP deployment are articulated, considered and factored prior to deployment.

Requirements

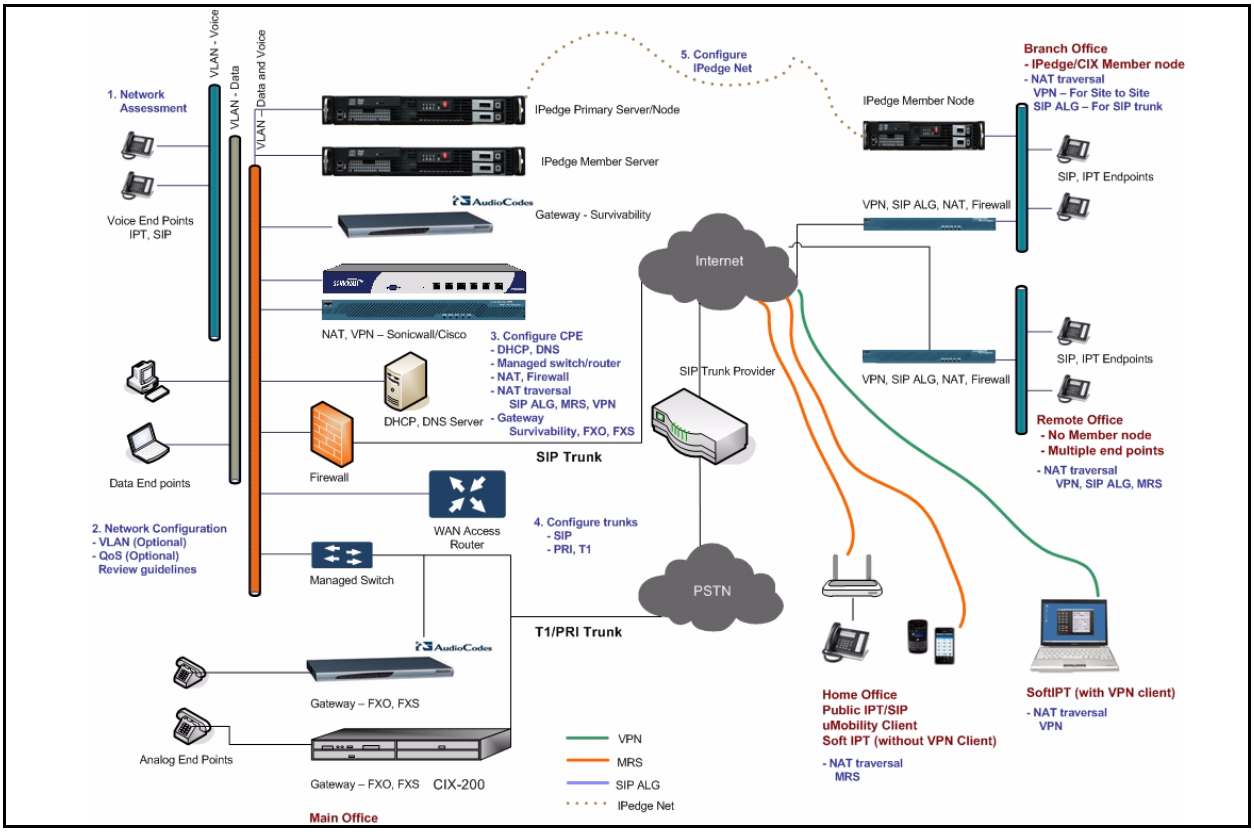
Network Assessment – A network assessment must be carried out to determine whether network or service upgrades are required to support a VoIP deployment. Toshiba recommends carrying out the network assessment with QoS enabled on the network.

Site Inventory Analysis – A site survey must be carried out to determine the list of network devices required for a given deployment. This survey must include considerations for the minimum required capability (feature set) and capacity for any networking device. A Gap analysis must then be performed to determine what upgrades or purchases would be required to support the deployment. The following table can be used for reference when doing Site Inventory Analysis.

Network Device	Capability	Capacity
Switches	QoS, VLANs, Autosensing, PoE	Port Capacity Port Bandwidth (GigE) Throughput, Latency, Jitter
Routers	QoS – DiffServ, DSCP 46	Uplink port Bandwidth Throughput, Latency, Jitter
Firewall and NAT	Ability to set firewall rules granularly. Flexibility to translate based on address and ports if required.	Throughput, Latency, Jitter

Network Device	Capability	Capacity
SIP ALG	Ability to successfully and accurately transform all SIP/SDP message headers.	Throughput, Latency, Jitter
VPN Gateway	Ability to create site to site tunnels. If required ability to create multi-site VPN tunnels.	Throughput, Latency, Jitter
Server Platform	DHCP, DNS, NTP Services	Capability to handle multiple concurrent requests at high performance.

Site Network Diagram & Configuration – For networked VoIP deployments with multiple IPedge or Strata CIX nodes, multiple trunk types or groups, one should document the network topology in the form of a diagram (example shown below) along with configuration settings for various network connectivity options (VLANs, IPs, IPedge Net, VPN, and Trunks etc). This topology diagram along with the system connectivity configuration will serve as reference for both, planning the initial deployment and for post-deployment maintenance, troubleshooting and debugging activities.



Interactions

While most end customer deployments fit the Toshiba recommended network deployment model, there may be instances where an end customer has unique network infrastructure or security policies which necessitate custom configuration and deployment. As this can potentially increase deployment time and effort it is critical to review end customer deployment environment and policies as part of the planning process.

LAN Deployment

Benefits

Cost savings from using and administering a single IP network infrastructure for both voice and data communications.

Requirements

Core Network Characteristics for VoIP – In order to maintain voice quality, the underlying IP network must satisfy the characteristics that are listed in the following table. The table lists requirements for delivery over both Local Area Networks (LANs and WLANs) and for delivery over Wide Area Networks (WANs).

Network Requirements (VoIP)	Local Area Network (LAN/WLAN)	Wide Area Network (WAN)
Reliability	99.99% uptime	99.99% uptime
Latency	< 20 msec	< 50 msec
Jitter	< 10 (+/- 5) msec or less	< 20 (+/-10) msec or less
Packet Loss	< 0.1%	< 1%

Network Bandwidth Capacity – The underlying IP network has to be provisioned so it can handle the anticipated "maximum call volume". To estimate this bandwidth, multiply the total number of voice streams by the bandwidth per stream. Note each voice call is composed of two voice streams, one in each direction. Bandwidth per stream = 88 kbps (G.711)

Network Assessments (MOS > 4.0) – A Network Assessment is required for every VoIP deployment to confirm that the underlying IP network satisfies the requirement mentioned above. The result of the Network Assessment must be a test report which qualifies the network for VoIP readiness in terms of MOS scores. The minimum acceptable MOS score for acceptable voice quality on an IP network is 4.0.

QoS Mechanisms – It is required that the network be designed to prioritize voice traffic over data traffic as voice quality is very sensitive to packet loss, delay and jitter in the network. Depending on the size of the implementation, one or both of these mechanisms is required.

- DiffServ (DSCP 46) – Enable DiffServ in the network switches and routers and in the phones to prioritize voice traffic over data traffic.
- 802.1q (VLAN) – For larger deployments (> 100 IP Phones) create a separate Voice VLAN and a data VLAN to limit the broadcast domain and minimize impact of data traffic on voice traffic.

Managed Switch or Router – It is necessary to ensure that the network is provisioned with managed switches and routers which provide the following capabilities:

- Autosensing Capability – All L2 port connections must be configured for maximum possible link (1000Mbps/100Mbps/10Mbps) speed and with full-duplex settings. The simplest way to ensure this is to deploy switches and phones with "Autosensing" capability.
- QoS Mechanisms like 802.1q, 802.1p, DiffServ (DSCP 46)
- Power over Ethernet (PoE) – It is recommended that IP telephones be powered using the PoE (IEEE 802.3af) technology. If PoE is not used, power bricks must be purchased separately for each phone.

Static IP Addressing for IPedge – In order to ensure availability and security of the system, the IPedge server and any gateways in the system must be provisioned with a static IP address on the LAN. This process must be carefully managed to ensure that there are no IP address conflicts in

the network. IPedge can be deployed with a private/static IP address, or it can be deployed with a public/static IP address as long as it is still behind a firewall.

DNS Server – In an IP system a lot of the underlying communication relies on addressing hosts by their fully qualified domain names (FQDN). In order for this communication to be successful host names have to be resolved to IP addresses. For example, SIP trunking configuration uses URIs and hostnames and these must be resolved to IP addresses using a DNS server. The IPedge server requires that one FQDN be configured, and if IPedge meeting is being deployed, a second FQDN is required.

NTP Server – It is critical that all networked devices (IPedge, gateways and IP phones) are synchronized to the same clock (system time). The best way to do this is configure all of the network devices to get and set their respective clocks from a public NTP server.

Firewall/NAT (Network Address Translation) Router – The IPedge server is designed to be deployed, primarily in a private address space behind a Firewall and NAT router.

- In order to successfully deploy and manage the IPedge system the firewall rules need to be configured to ensure that all valid incoming traffic is allowed by the firewall. For security reasons, the firewall should be configured to deny all other traffic.
- One must configure NAT policies (both inbound and outbound) to map traffic for all IPedge services between the WAN public IP address and the LAN IPedge private address. The details on how the NAT policies and Firewall rules need to be configured are described in the requirements that follow.
- Recommend network monitoring with a tool such as WhatsUp Gold, OpenNMS, and Zenoss®.

Interactions

Network Bandwidth Capacity – On a shared network infrastructure (both data and voice services), one needs to consider bandwidth requirements for both data and voice.

To provide additional prioritization for voice services, it is possible to enable 802.1p in conjunction with 802.1q (VLANs). This is currently a system wide setting in IPedge. However, this will enable 802.1p on remote phones requiring the switches are all locations where remote phones are deployed to support 802.1p.

For IP telephone configuration, broadcast mode is not recommended for large deployments (greater than 100 phones).

Remote Administration

Benefits

Gives an administrator the ability to manage the system from a remote location, thereby saving time and money.

Requirements

In order to manage an IPedge system from a remote location, any of the following mechanisms can be used.

HTTPS – This is a standard web based method to securely access and administer the IPedge system from a remote location. In order to use this mechanism:

- Configure the Firewall to allow bi-directional HTTPS traffic.
- Configure NAT router to forward HTTPS traffic on a given port to the IPedge HTTPS service (TCP port 9443)

- Configure the Firewall to allow and NAT to forward TCP ports (10000, 9101-9103)
- Configure certificate on the IPedge system for HTTPS authentication
- Setup a FQDN for the IPedge server in the DNS server.

IPSec VPN – An IPSec VPN session is setup so an administrator can log on to the network and administer the system directly. The VPN session must be configured with sufficient privileges to enable access to the IPedge system.

Firewall and NAT Configuration – This method relies on manual configuration of the Firewall (allow inbound management traffic) and the NAT router (forward inbound management traffic to IPedge) to allow remote access to the IPedge system from a specific IP address or group of IP addresses. The following ports need to be opened and forwarded for remote administration purposes, from specified IP addresses:

- HTTP – TCP port 8080
- Webmin – TCP port 10000
- BACULA – TCP ports (9101 - 9103)

Interactions

Port Forwarding – In some instances and deployments the standard ports used by IPedge may also be used by other systems and/or services within a deployment. One can also encounter this situation if there are multiple IPedge nodes within a single LAN. When one encounters such situations it would be necessary to use NAPT (Network Address and Port Translation) instead of standard NAT (Network Address Translation only) translation, to enable remote administration.

Web Conferencing

Benefits

Gives users across geographic boundaries the ability to do audio and web conferencing on demand. This is helpful for purposes of collaboration in distributed team environments; attendees from different locations can view and work on the same information in real time by using features such as desktop and document sharing.

Requirements

- Within the Firewall and the NAT router at the main office, the following ports need to be opened and forwarded, in order for a participant to access the IPedge Meeting conferences:
  - Admin – TCP 80
  - Secure Admin – TCP 8444
  - Web conferencing – TCP 443
  - Data port for desktop screen sharing service – TCP (1935, 1945)
- DNS Server Configuration – In order for the IPedge Meeting service to be easily and publicly (from the WAN) accessible, a couple of fully qualified domain names (FQDNs) need to be created. These FQDNs need to be mapped via the DNS service to the IP address of the IPedge Server. FQDN mappings within the DNS service (server) need to be created for:
  - Meeting administration service
  - Meeting web conferencing service

Note If the IPedge server is deployed behind a NAT firewall, the DNS service would need to be configured to map the FQDNs to the NAT public IP address instead.

Interactions

In some IT environments, public facing services and servers are configured in the DMZ. If that is the case in a customer deployment, firewall and NAT rules will need to be configured for IPedge meeting services to be accessible from both the WAN and the LAN.

Features 5

This chapter contains the IPedge features. They are presented in alphabetical order to make it easy to locate each feature.

Call Manager

The Call Manager features are covered in Chapter 3 – Unified Communications.

IPMobility

IPMobility is an IPedge Messaging application for the Android and iOS that allows a mobile device to perform as an extension of the office desk telephone. For devices that support IPMobility, refer to "Mobile Device Support for IPMobility" on page 60. IPMobility provides the following features:

- Support for the IPedge Follow Me (twinning) feature.
- Outbound calling through the host IPedge system.
- Visual Voice Mail.

Follow Me (Twinning)

The IPedge Messaging Follow Me (twinning) feature enables a single phone number to reach a user's chosen devices, e.g., desk phone, mobile phone, or both (simultaneous ring). Once answered, IPMobility offers call management providing users with a popup screen within the application to transfer the call to another extension or transfer the call to voice mail. IPMobility also gives users the ability to designate how to handle incoming calls if busy or out of the office for an extended absence.

Important! *The incoming call management described above requires the mobile phone service to support simultaneous voice and data (characterized by the ability to access the internet while talking on the phone). Administrators need to check with their specific service provider to confirm simultaneous voice and data.*

Making Calls

For outgoing calls, Toshiba's IPMobility application uses the host IPedge system's phone services to reach intended destinations. This feature not only takes advantage of the host system's telephone service rates, but also masks the user's cell phone number with the IPedge system office phone number.

IPMobility uses either a Call-thru or Callback process to set up the call.

- Call-thru – IPMobility sends a data command to the host IPedge system to notify the system that a user wishes to make a call. IPMobility then dials a specific DID number into the IPedge system. The calling party identification of the mobile phone is compared with the previously received data command, and then calls the destination number and bridges the two calls together.
- Callback – With Callback, after the same data command is sent, the IPedge system calls the mobile phone back, then calls the defined destination and then connects the two calls.

IPMobility does not conflict with the mobile device's ability to make a phone call or access the service provider's voice mail. Users can dial within the IPMobility application by typing in the phone number or extension directly or use the mobile phone's built-in contacts.

Visual Voice Mail

Users can also easily access key voice messaging functionality and manage administration of their voice mailbox without dialing into the voice mail system and navigating key presses or voice commands. Now, users can view, play, forward, and reply to their voice and fax messages mail from within the IPMobility application. Users can also;

- Manage mailbox personal greeting and name recordings
- Manage mailbox password.
- Setup IPMobility's Make Call functionality, e.g. Call-thru, Callback.

Meeting

Refer to the "Meeting" on page 27 covered in Chapter 3 – Unified Communications.

Mobility

The Mobility features are covered in Chapter 3 – Unified Communications.

Messaging Survivability

The IPedge Messaging application can be licensed and configured with a feature called Direct Cluster Networking (DCN). DCN allows the joining of two or more IPedge Application Servers (individually referred to as a Node) into a cluster. These clusters act in unison to maintain the integrity of the messaging database of the entire network. Each node that is configured into the cluster has a copy of the database of the other participating nodes. If one node fails, then when Strata CIX telephones register into another Strata CIX system, that is a node participant, all of that user's greetings and messages are available.

Nodes can be geographically distributed in various configurations. Each node contains the complete database for the entire cluster, and the Messaging application residing on each node only uses the local copy of the database. Each node is identified by a NODE ID. In addition all files, including system greetings, user greetings and messages can be replicated to all nodes (standard cluster) or replicated to a designated subset of nodes (hybrid cluster), depending on cluster size and network capability.

System Fault Finding and Diagnostics

IP*edge* Application Server can detect problems in the system. These conditions can be detected, alerted, logged, and traced. IP*edge* includes many useful diagnostic tools.

Alarm Indication of System Faults

Visual Alarms are presented to Enterprise Manager.

Fault Detection and Error Logs

The IP*edge* Application Server detects and logs abnormalities that it encounters during operation. All error and trace logs are stored on the hard drive and are monitored by Enterprise Manager.

Event and System Administration Logs

Events are stored in an Event Log. All actions made by the System Administration user are logged. Both logs may be called up at a later time.

Automatic Fault Recovery

The system can automatically correct certain conditions detected during operation. This enables the system to continue operating normally without requiring correction.

Backup and Restore

The customer database can be backed up and restored automatically or manually scheduled. The customer database can be moved to a network drive or can be moved to another location using FTP. The backup and restore functions can be performed locally or remotely.

Maintenance and Administration

The Enterprise Manager terminal can be connected directly to the IP*edge* system or via the customer's LAN as well as remotely over the Internet over the public network.

Software Upgrade

A regular IPedge system software upgrade can be performed. You can upgrade the Operating System without affecting your customer database.

Messaging

The following is a list of Messaging features. Messaging is categorized into the following feature sets: Automated Attendant, Voice Messaging, Unified Messaging, Networking, Administration, Reporting, and Security.

Automated Attendant

Automated attendant routes incoming calls to the appropriate system extension without operator assistance. One of the benefits of an automated attendant is that it eliminates the bottleneck of calls at the operator's console, particularly during peak hours, and allows callers to reach their desired destination quickly. If a caller is not familiar with the telephone system's extension number, the automated attendant offers the caller the option of accessing a directory assistance function. The function prompts the caller to dial a number up to nine digits that corresponds to the letters in the party's name. The system then performs a lookup and announces the available options.

Departments

In IPedge Messaging, Automated Attendant features are configured in Departments. Each department's automated attendant functions can be configured separately. Up to 999 separate departments can be created, each with its own automated attendant greetings, day of week and time of day timers, operator, incomplete call destination and directory assistance. Each IPedge Application Server ships with one department. Additional departments can be enabled with licensing.

Department Partitioning

Department partitioning allows for complete separation between departments or companies using one Messaging system, allowing for complete "tenant" functionality.

Departmental Time Zone

Departmental time zone is a configurable setting that defines the appropriate time zone for programmable departmental parameters, such as time of day-based greetings and call routing rules.

Directory Assistance

Messaging allows for incoming calls to the auto attendant to dial the first letters of the called party's first or last name.

Do Not Disturb

A mailbox owner can set "Do not disturb" to have calls sent directly to voicemail.

Follow-Me

A mailbox can be set up to forward a call to an external phone number before the call is transferred to voicemail. When using supervised follow-me, the mailbox owner can perform functions such as record the call, conference in another subscriber, or send the caller back to the mailbox owner's voicemail box.

Follow-Me Connect Verification

The mailbox owner can positively accept the follow-me calls by pressing a key to prevent calls from ending up in cell phone voicemail or other telephone answering devices.

Follow-Me Record to Mailbox

Allows the mailbox owner to record a conversation that has been answered at the follow-me number. The conversation is saved and sent to the mailbox owner's voicemail box as a new message.

Follow-Me Transfer Back

After the mailbox owner receives the call to the external device he can redirect the caller to another internal extension.

Holiday/Date-Based Greeting

Holiday messages and their dates can be pre-programmed into the system. When the internal calendar matches one of these dates, the appropriate holiday greeting will replace the main greeting.

No Response Destination

A destination that incoming callers will be transferred to if they do not respond when prompted by the auto attendant. The system will validate if a caller is still connected to the system before a call is transferred to the no response mailbox. This enables the filtering of calls that were dropped by the caller, but were not disconnected by the central office or the telephone system.

Operation Mode

Operation modes allow a department to operate under different modes such as day, night, emergency, lunch, or holiday. Each mode can have different conditions to handle calls (e.g., different greetings, operators, scripting routings). Operation modes can be set to change automatically or manually.

Simple Single-Digit Dialing

The Messaging departmental conversion tables allow the incoming caller to easily navigate by using single-digit DTMF keystrokes to reach specific company departments, services or extensions.

Time of Day Greeting

Time of day greeting is a time-dependent greeting (e.g., good morning, good afternoon, good evening).

Fax

All IPedge Application Server models support T.38 communication when the end-to-end communications are entirely SIP. Fax features are licensed on a user level, not a system level basis. An Advanced User license is required for a user to take advantage of the fax mail and personal fax features.

Fax from Desktop

Provides the ability to send faxes from the mailbox owner's desktop.

Fax Format

Fax documents sent from the mailbox owner's desktop may be formatted as PDF, TIF or DCX.

Fax Log

A web-based report displays the mailbox owner's outbound faxes. The fax log includes date, time, status of an outbound fax, fax destination, account and billing codes.

Fax-on-Demand

This component allows incoming callers to access a library of documents and select a specific fax document to be faxed to them. Fax on demand applications are created using the Messaging Script mailbox. A Script license is required for this feature.

Fax Mail

Fax mail allows a mailbox owner to receive faxes in his voice mailbox and view them via unified messaging (an email attachment) or use the telephone interface to re-route the incoming fax to a physical fax machine.

Fax Queue

A web-based report displays the mailbox owner's outbound faxes currently queued for transmission.

Fax Settings

The mailbox owner may set personal outbound fax settings, such as number of times to retry fax delivery based on busy or no answer and how long to wait between each try. Each fax user can transmit its own name and number (CSID) on outbound fax.

Incoming Fax DID

For inbound fax messages, a DID number may be associated with the mailbox. An incoming fax to this number will automatically trigger a fax tone and the fax will be stored in the mailbox.

Incoming Fax Target

Faxes may be re-routed from an incoming mailbox to a secondary mailbox.

Personal Fax

With the use of a custom printer driver, Messaging allows users to send documents as faxes to remote locations, using the IPedge Application Server. Just select the print option, as you would print a document, and choose the Messaging Fax printer. A web applet will be presented to accept addressing options and to add a fax cover page.

Voice Messaging

Ad-Hoc Groups

A mailbox owner can send or forward a message to a group of mailboxes created on the fly, as opposed to predefined groups. See "Distribution Groups" on page 42).

Archive Mailbox

Messages can be archived by automatically copying from an originating mailbox to an archive mailbox. For example, hotel reception can access the archive mailbox to allow guests to recover messages after they have already checked out. Archived messages are stored by mailbox number and date for easy access.

Automatic Message Copy

Messages can be copied automatically from an originating mailbox to a destination mailbox. Specific types of messages, such as priority or group can be selected for automatic message copy, and the automatic message copy can happen immediately or be assigned to copy only after a pre-selected amount of time.

Call Queuing

When the automated attendant detects a busy event from an extension it can be set to put all callers on hold in a queue and let each caller know his position in the queue. IPedge Messaging will attempt to transfer the caller to the extension after a certain period of time and if the extension is still busy the system will announce to the caller their position in the queue. While holding, Messaging can play promotional announcements to the caller.

Call Record to Voice Mail

The mailbox owner can record an incoming call by using a key press on the telephone key pad.

While on an active call, a telephone user can record the conversation and store it in their voice mailbox. Users can replay recorded messages by calling the voice mailbox that has the stored recording and play it back as any other message. Recording to Voice Mail (VM) is available on two-party and multi-party conference calls.

Call Screening

Call screening allows a mailbox owner to require that a caller state her name before a call is transferred to the requested extension. The name is played back to the mailbox owner and the owner can either accept or reject (i.e., send directly to voicemail) the call.

Caller ID (CID) Routing

Calls can be routed, based on caller ID information, to a mailbox or application. A complete or partial number (which includes only the area code, or area code + exchange) can be used. Caller ID routing tables are available at the system level, departmental level and for every voicemail box.

Cancel Operation

Allows a mailbox owner to cancel out of the current action and be brought back to the previous menu.

Change Message Time

The date and time of a message can be automatically updated when re-saved by a mailbox owner in order to extend message end-of-life.

Check Message Count

The mailbox owner can check how many new and saved messages are in his mailbox.

Codec Support

Codec support is built-in support for G.711 (ulaw and alaw) and G.729.

Confidential Message

A message may be marked as confidential and the recipient will be informed that it is confidential before the message plays.

Delete from Subscriber's Mailbox

A message may be deleted from another subscriber's mailbox by the subscriber who sent it, if it has not yet been listened to.

Direct Transfer to Voice Mailbox

The transferring party can transfer a call directly to a person's voice mailbox without waiting for the call to forward from the called party's telephone. The voice mailbox does not need to be associated with an active telephone in the Strata CIX system. Direct transfer to voice mail (VM) can be performed to a centralized VM system connected to a network node other than the user's node.

The transferring party presses **Direct Transfer to VM** and dials the mailbox number, and the call transfers immediately on receipt of the last digit. The transferred party hears the greeting associated with the specified mailbox and can then leave a message.

Direct Transfer to Voice Mailbox simplifies getting a call for a busy or absent employee to his/her mailbox. It eliminates the need for the caller to enter the desired mailbox number after being connected to the voice mail system. This feature is available using standard DTMF or SMDI VM integration and does not require Toshiba proprietary VM integration.

Distribution Groups

A new message can be sent, or a message can be redirected to multiple individuals, without having to input individual mailbox numbers. Distribution groups are either global (available to all mailboxes) or private (each mailbox owner can establish their own groups). The system can manage up to 99,999 distribution groups (private and global) with unlimited members and groups within groups.

End Recording Key

The administrator can define a specific key that callers must press to stop their recording (for example, #). This is useful to prevent accidental termination of a recording.

Envelope Information

Envelope Information includes time and date information, caller ID, sensitivity and urgency of the message. Envelope information can be programmed to automatically play with a new message or

only play when requested by the mailbox owner. If set to play automatically, it can be programmed to play either before or after the voicemail message.

External Message Notification

The mailbox owner can schedule notification to external devices when a message is received, such as text message to cell, notification to pager, and call-out to another phone number.

First-time User Tutorial (Mailbox Set-up)

Assists the mailbox owner with the set-up of her voicemail box (change password, set up personal greeting).

Forward/Rewind

A configurable timer that defines how far backward or forward a message will skip when the mailbox owner uses the skip backward/ forward key press during message playback.

Future Delivery

A mailbox owner can input a time and date to schedule a message for future delivery.

Hospitality Mailbox

A hospitality mailbox is a streamlined mailbox that allows guests (users) to retrieve room messages from any phone on or off the property and access voicemail through a web browser. The front desk can also retrieve messages for a guest as well as retrieve messages from the archive for a guest that has already checked out.

Key Ahead

Bypass a voice prompt by selecting a key press.

Mailbox Owner Language Selection

A default language can be set for each mailbox owner. This is the language of the prompts that a mailbox owner will hear when calling into his mailbox. If this feature is not set, the mailbox owner will hear the language identified in department settings.

Mailbox Time Zone

This configurable setting defines a time zone for the mailbox owner which is used during envelope information message playback. The owner will hear the message delivery time relative to their time zone.

Message Call Back

While listening to a message, a mailbox owner can initiate a call back to the caller (based on caller ID). In a supervised call back the IPedge Messaging remains on the call, allowing the use of functions such as call record, transfer to voicemail, or transfer to another mailbox owner.

Message Cascading

An administrator can create a set of independent rules to determine what happens to a message after it is received in a mailbox. For example, when a message comes in to a sales group mailbox it is automatically copied to all members of that group. The administrator can also define cascade

rules that will delete or save the messages from all the members as soon as one member has listened to the message.

Message Delete Confirmation

Message delete confirmation requires the mailbox owner to confirm message deletion by pressing an additional key. This option can be enabled or disabled by the system administrator.

Message Waiting Indication

The system will trigger a light on a phone when a new message is received. In addition, an indication on the phone display shows the mailbox owner how many phone messages are in the mailbox.

Notification of Non-Receipt

A mailbox owner may request notification when another mailbox owner does not listen to a specific message.

Octel® Prompt Emulation

In addition to the Messaging telephone user interface, the system includes a prompt set that mimics the Octel's system. The Octel prompt emulation can be used on a mailbox-by-mailbox basis or system-wide.

Park and Page

A caller is notified that the called party does not answer and asks if the caller wishes to page the called party. This feature can be set to be used at all times or only during night and/or day mode.

Pause Message

A configurable timer that defines how long a message will pause when a mailbox owner uses the pause key press during message playback.

Personal Assistant

Personal assistant allows the caller to press a single digit during the mailbox owner's mailbox greeting to be transferred to another extension.

Personal Automated Attendant

IPedge Messaging mailbox conversion table allows the mailbox owner to provide a caller with directives to perform certain functions, such as transfer to assistant, replay greeting, contact pager, transfer to follow-me number, record a message, page mailbox owner, send caller's telephone number to email.

Play New Messages Automatically

Play new messages automatically is a programmable parameter that allows new messages to be played automatically when a mailbox owner logs in (without pressing any digit to begin message playback).

Priority Message

A message may be marked as priority to be sent to the front of the mailbox owner's message inbox.

Programmable Menu Timeout

A configurable timer that defines the number of seconds the system waits for an entry from the mailbox owner before it times out.

Redirecting Messages

A mailbox owner can forward a message to another subscriber's mailbox or to a group of mailboxes.

Retrieve a Deleted Message

A mailbox owner can retrieve a deleted message and move it back to his saved messages folder up to one day after being deleted (or a longer period of time, as defined by administrator).

Return Receipt

A message may be marked as return receipt to request confirmation that the recipient received and listened to the message.

Review Saved Messages

A mailbox owner may listen to messages already moved to the saved folder.

Speed Control

Allows the mailbox owner to increase and decrease the speed of message play back.

Soft Key Control of Voice Mail

The Liquid Crystal Display (LCD) of IP telephones connected to the Strata CIX system, provides a visual presentation of the options within Messaging mailbox menus. Depending on the size of the LCD screen, some or all of the menu options are available by pressing corresponding soft keys located next to the desired option or function. When the phone is idle and a message arrives for an extension on the phone, the Msg LED is activated and the LCD shows the number of new messages that are currently in the mailbox. If any of the messages are marked as priority, the LCD shows the number of new and priority messages.

After a successful login to a mailbox, the LCD presents the mailbox Subscribers Menu options—listen to messages, record messages, and personal options. Selecting any one of these options presents a new LCD with the next available menu options.

Note For general information on using Soft Keys on your phone, refer to the appropriate Telephone User Guide. See the Strata CIX IP5000-series Telephone User Guide for a sample list of available Soft Keys.

Subscriber's Menu

The subscriber's menu provides the mailbox owner access to all available features of the voicemail system.

System and Department Language Selection

IPedge Messaging supports multiple languages and can be used independently or simultaneously per system department group.

Additional languages available by request. Contact Toshiba Sales Applications Desk for details.

Variable Extension Length

Variable extension length is a configurable option that sets the number of digits that make up a valid extension number.

Variable Mailbox Length

Variable mailbox length is a configurable option that sets the number of digits that make up a valid mailbox.

Voice Mail Call Monitor

This optional feature enables a mailbox user to monitor a message while it is being recorded in his mailbox. This feature is active when the User's telephone is idle or for calls that are forwarded to voicemail and when a message recording begins. If the mailbox owner is present when the call comes in, he can press the "Call Monitor Button" to hear the caller leaving the message.

When the caller stops the recording process (by hanging up) the monitoring ends and the mailbox user hears the prompt, "The caller has finished. Good bye." If more than one caller is leaving a message at the same time, then the mailbox user is able to monitor the last caller.

Volume Control

Allows a mailbox owner to decrease or increase volume during message playback.

Wake-Up Call

A mailbox can be programmed to make two types of wake-up calls:

- System makes daily wake-up call until deactivated by mailbox owner.
- System makes a one-time wake-up call and is then deactivated. Can be set to enable or disable by the system administrator.

Unified Messaging

Unified messaging allows a mailbox owner to access voice messages directly through an email inbox. Emails may also be listened to and can be managed from the voicemail box.

Fax-to-Email

Fax-to-email allows the mailbox owner to review fax information directly from the email inbox (including fax sender and number of pages), view fax messages onscreen with any TIFF or PDF image viewer and forward fax messages to any email address directly from the email inbox.

Print Emails to Fax

Forward emails to a fax machine so that they may be printed.

Redirect Fax Messages

Redirect fax messages from the voicemail box to any fax machine when the email inbox is not available for fax viewing.

Integration with Email Clients

IPedge Messaging unified messaging provides seamless and fully synchronized integration with existing email clients without the requirement of a desktop client. This allows Messaging unified messaging to be desktop operating system-independent and greatly minimizes administration and deployment workload.

Messaging as an IMAP Server

This is an independent mail server configuration where voice and deleted messages appear in a separate folder from the mailbox owner's primary inbox. Messages are synchronized with IPedge Messaging.

Messaging as a POP Server

This is an independent mail server configuration where voice messages are displayed in the mailbox owner's primary inbox. Messages are not synchronized.

Msync

Msync is actually a Microsoft® Exchange Web Services connector, which allows the IPedge Application Server to access a Microsoft Exchange Server, in order to manage IPedge Messaging users' voice and fax messages within the email message store without requiring them to have to enter and maintain their email log on credentials within Messaging.

Msync requires the minimum software requirement for the host Exchange server to be one of the following configurations:

- Microsoft Exchange 2007 SP1 (Running on Windows 2008 SP2 64-bit)
- Microsoft Exchange 2010 SP1 (Running on Windows 2008 R2 standard 64-bit)

Multi-site Networking

VPIM

Using the industry standard VPIM protocol, mailbox owners using Messaging can transparently send and reply to messages from mailbox users located on dissimilar, but VPIM-enabled voicemail systems.

Administration

System administration is done using a web-based application named Enterprise Manager. An administrator's password is required for access to all system administrator functions.

Callout Length

A definable maximum length for a number the system is allowed to callout.

Class of Service (COS)

Class of service controls each specific mailbox's activities including personal options, incoming calls, transfer supervision, ringer and housekeeping. Messaging can accommodate up to 999 COS of service definitions for maximum system flexibility.

Housekeeping

A configurable length of time that defines how long a new, saved or deleted message will be stored. Each COS definition has its own housekeeping timers.

Import Data

New mailboxes or caller ID routing numbers can be batch imported via a CSV file.

Mailbox Mapping

An incoming DNIS/DID can be mapped to a mailbox number.

Mailbox Password

A mailbox owner's mailbox is protected by a numeric security code. Maximum password length is nine digits.

Mailbox Role

The mailbox owner/administrator's interface is controlled by roles that manage mailbox owners' and administrators' viewing and administration permissions.

Mailbox Search

An administrator can search for specific mailboxes based on mailbox owner's name, department, class of service, etc.

Mailbox Status

A real-time report showing all mailboxes in the system that currently contain messages. This report can be displayed on an overhead projector to show mailbox owners their message status when they have no access to a physical phone with a message waiting light.

Mailbox Swap

Mailbox swap is a database swap between mailboxes that includes all feature programming, messages and greetings.

Mailbox Transfer

A single box or range of boxes may be moved to a new numbering plan. The transfer includes all feature programming, messages and greetings.

Maximum Greeting Length

A configurable option to set a maximum mailbox greeting length. Options are also available for those mailboxes requiring an unlimited greeting length.

Maximum Message Length

Mailboxes may be assigned a maximum message length that determines the length of a message the incoming caller can leave for that mailbox. Options are also available for those mailboxes requiring an unlimited message length.

Maximum Messages

Mailboxes can be set with the maximum number of messages they may receive. If the maximum is reached the caller will be notified there is no room in the mailbox.

Maximum Silence Timer

Maximum silence timer is a configurable option that sets the maximum silence duration within a message. If reached, the message recording will terminate and the caller will be offered additional options (send message, continue recording, rerecord, etc.).

Message Playback Order

Messaging playback order allows each mailbox type (new messages, saved messages, email and deleted messages) to be independently assigned as first-in-first-out or first-in-last-out.

Minimum Message Length

Minimum message length can be set to prevent “hang-up” messages.

Push Mailbox

A range of mailboxes can be updated with a field change.

Quick Glance

Allows the administrator to see a list of all mailboxes with the following information: mailbox, extension, first name, last name, class of service, department, mailbox type, message waiting indicator, transfer mode, email client and call control client.

System Backup

The system can perform a daily or weekly backup of all system data including messages, greetings and configuration. The system can also automatically upload a backup to a remote FTP site and create multiple stored backup files.

System Monitor

Monitors the activity of the channels to display which channel is in use or on stand-by, which mailbox is in use and which mode the Messaging is using.

Transfer Supervision

Automated Attendant calls can be set to transfer supervision type (none, partial or full). If fully supervised, the number of rings for no-answer result can be defined.

Variable Password Length

Variable password length is a configurable number of digits that make up a valid password number. Each department may have a different variable password length.

WebController

All administration can be managed through a web-based interface. Administrators can create different roles for sub-administrators and mailbox owners to manage subsets of the system. The WebController can be used on a secure or non-secure http port.

Reporting

Messaging records all activity from calls coming in or out of IPedge Messaging. By collecting this information, administrators can generate different reports. These reports help the system administrator manage and maintain the system to ensure optimum performance. Reports are available for viewing, printing or emailing and can be accessed from the reports menu using Enterprise Manager.

Full Report

This comprehensive report includes the following information: date, channel, time, department, mailbox number, duration of call, type of call (external caller or internal user), incoming or outgoing call, call result (answered or unanswered) and caller ID.

Mailbox List

This report displays a detailed list of all mailboxes and includes mailbox, extension, subscriber name, department, COS, usage, new messages, saved messages, email messages, deleted messages and total messages.

Mailbox Usage by Date

This report displays the mailbox usage by date. The usage report records any activity made from the mailbox extension, which includes any calls received or made, whether they are external or internal.

Mailbox Usage Daily

This report displays mailbox usage information by date.

Message by Mailbox

This report provides a history of all messages by mailbox.

Message Activity

This report displays message activity by mailbox.

Outbound calls

This report provides information on all outbound calls placed by IPedge Messaging. The report includes mailbox number, date, time, result (answered/ unanswered), call duration and number dialed.

Port Statistics

This report indicates summary activity per port on specified dates. Information includes the port or channel number, number of internal versus external calls, total number of calls, total duration, number of transfers and completions.

Scripts

Messaging creates customized routines or scripts for directing callers around the system. Scripts programming is a centralized application that can create various choices to a caller as well as being the standard tool for setting up “Audio Text” mailboxes and building custom applications. Scripts offers many different applications, including;

- Intelligent call routing, whereby callers are routed based on time of day, day of week, and other criteria such as caller ID.
- Interactive questionnaires
- Recorded information

Scripts requires a license for each application desired.

Script Logging Reports

This report displays a list of all the calls to a script mailbox including time, date, caller information and key presses.

System Group List

This report displays all broadcast groups in the system and shows if they are system groups or personal groups and whether they have recorded the group name.

System Hourly Statistics

This report displays the total activity of Messaging on an hourly basis for the dates specified.

System Statistics

This summary report displays the total activity of the voicemail for the dates specified.

Unattended Mailboxes

This report lists all the mailboxes that have been created but not yet activated through the subscriber's menu.

Messaging Survivability

The IPedge Messaging application can be licensed and configured with a feature called Direct Cluster Networking (DCN). DCN allows joining the Messaging application of two or more IPedge Application Servers (individually referred to as Nodes) into a cluster. These clusters act in unison to maintain the integrity of the messaging database of the entire network. Each node that is configured into the cluster has a copy of the database of the other participating nodes. If one node fails, then when Strata CIX telephones register into another Strata CIX system, that is a node participant, all of that user's greetings and messages are available.

Nodes can be geographically distributed in various configurations. Each node contains the complete database for the entire cluster, and the Messaging application residing on each node only uses the local copy of the database. Each node is identified by a Node ID. In addition all files, including system greetings, user greetings and messages can be replicated to all nodes (standard cluster) or replicated to a designated subset of nodes (hybrid cluster), depending on cluster size and network capability.

Functional Considerations

Although DCN provides a robust voice mail survivability solution, there are some functional considerations that need to be understood and communicated to customer users.

- If a telephone has a Message Waiting Indicator (MWI) illuminated and the system that supports that telephone fails, the MWI will not be reinstated until another new message is received. The telephone survives over to another system that is in the cluster and has its mailbox intact, but the Message Waiting light will not light until a new message is received.
- The voice mail hunt group pilot number should be the same on the different nodes. If the voice mail hunt group pilot number is different on the different nodes incorrect voice mail forwarding after a node failure will occur. For example, station 201 on Strata CIX Node 11 (DCN Node 1) is set to system call forward to voicemail hunt group pilot 300. The DNs on Strata CIX Node 12 (DCN Node 2) are set to system call forward to voicemail hunt group pilot 400. If Strata CIX Node 11 fails and station 201 re-registers with Strata CIX Node 12, station 201 will not properly forward to voicemail when a call is presented to it.

Note The Messaging application must be running on every Strata CIX system that will run DCN.

Security

Limited Dial-Out Digits

A limited number of digits are allowed in a dial-out according to class of service to prevent international toll fraud.

Limited Password Entry Attempts

When a certain number of password entry attempts per call is detected, the Messaging will immediately hang up the call to prevent automated dialers which try to expose passwords by “brute force” attacks.

Mailbox Lock and Administrator Notification

When a certain number of password entry attempts per mailbox is detected Messaging locks the mailbox to prevent further use and notifies the system administrator via email.

Secure Authentication for Outgoing Email

Outgoing emails sent from Messaging are SSL encrypted and can be configured to use secure authentication.

Appendix – Specifications

This appendix includes detailed information on the items listed below. The sections in this appendix apply to the IPedge systems, unless otherwise stated.

- Operating Environment.
- Power Considerations
- Capacities
- Strata CIX System Requirements
- IPedge Software License Requirements
- Mobile Device Support for IPMobility

For further details, refer to the *IPedge I&M Manual*.

Operating Environment.

Table 5 Operating Environment

	EC Application Server	EM Application Server	EP Application Server
Operating Temperature	50^0F ~ 95^0F; 10^0C ~ 35^0C	50^0F ~ 95^0F; 10^0C ~ 35^0C	50^0F ~ 95^0F; 10^0C ~ 35^0C
Operating Humidity	20% ~ 80% (non condensing)	20% ~ 80% (non condensing)	20% ~ 80% (non condensing)
Storage Temperature	-20 ~ +60^0C	-20 ~ +60^0C	-20 ~ +60^0C
Power	100 ~ 240 VAC; 50 ~ 60 Hz; 1.2 Amp at 120 VAC; 130 Watts Inrush Current: 11.5 Amp	100 ~ 240 VAC; 50 ~ 60 Hz, 2.1 Amp at 120 VAC; 250 Watts Inrush Current: 10.4 Amp The IPedge EM server has two redundant, hot-swap power supplies. The server can run indefinitely on one supply.	100 ~ 240 VAC; 50 ~ 60 Hz; In-rush: Maximum 10 Amp (cold start) Peak Load: 0.4 Amp
Heat	785 BTUs	778 BTU/hour; 867 BTUs max.	106 BTUs

Power Considerations

The IPedge Application Server should have a dedicated AC power circuit. The specific input voltage and current requirements for each server is listed the specifications for each model.

UPS Recommendation

Toshiba recommends an Uninterruptible Power Supply (UPS) with power conditioning for the IPedge Application Server. The recommended UPS from ONEAC are shown in the Table 6 below. The UPS shown in the table include power conditioning.

Table 6 IPedge System Power Conditioner and UPS

		IPedge Application Server for Strata CIX		
		EC	**EM**	**EP**
Power Conditioner		PC180A-S2S	PC360A-S4S	PC075A-S2S
Battery Backup Time	30 Minutes	ON700XAU-SN	ON700XAU-SN	ONE254AG-SE
	1 Hour	ON700XAU-SN1	ON700XAU-SN1	ONE254AG-SE
	2 Hours	ON700XAU-SN1	ON700XAU-SN1	ONE604AG-SE
	4 Hours	ON700XAU-SN1	ON700XAU-SN2	ONE300XAU-W-SV1
	8 Hours	ON700XAU-SN2	ON700XAU-SN4	ONE300XAU-W-SV1

Capacities

The following tables contain IPedge Application Server Application Capacities.

Table 1 Enterprise Manager

	EC App Server	EM App Server	EP App Server
Enterprise Manager Simultaneous Sessions	16	32	4
Web Based Station Admin Simultaneous Sessions	64	128	4

Table 2 Media Server

	EC App Server	EM App Server	EP App Server
Resources	174	480	22

Table 3 Meeting

	EC App Server	EM App Server[1]	EP App Server
Audio Channels	24	24	4
Web Sessions	24	24	4
Video Sessions	24	24	4
Conference Record	4	8	1

1. Limit of 24 on IPedge App Server for Strata CIX configuration due to requirement for single MIPU on Strata CIX.

Table 4 Call Manager

	EC App Server	EM App Server	EP App Server
Users with Call Manager	200	800	40

Table 5 Messaging

	EC App Server	EM App Server	EP App Server
Departments	999	999	999
Mailboxes (basic or UM)	5,000	10,000	1,000
Script Mailboxes	1,000	1,000	1,000
Voice Mail Channels	32	80	8 or 24[1]
Hours of Storage	4,000 hours	7,000 hours	4,000 hours

1. If 24 channels are enabled, the system cannot be upgraded to include call processing using the I-APP-UP-EP-DSC.

Mean Time Between Failures (MTBF)

Table 7 MTBF

	EC Application Server	EM Application Server		EP Application Server
		I-EM-1A	I-EM-1B	
MTBF[1]	4.02 years	2.71 years	2.60 years	9.95 years
MTBF[2]	4.29 years	19.45 years	17.97 years	NA

1. I-EM-1A and I-EM-1B refer to the IPedge EM server with RAID1 and RAID5 respectively. The calculated value is based on any failure even though there are redundant components.
2. The IPedge EC server refers to I-EC-1A with RAID1 option installed. The calculated value is based on at least one component of each redundant system continuing to operate.

Strata CIX System Requirements

- R5.20MT065 or higher
- MIPU 02-11 firmware

Note One port on an MIPU card is required for each channel of IPedge Messaging or IPedge Meeting that is being attached to the Strata CIX system. All MIPU ports to be used for IPedge Messaging must be on the same MIPU card. All MIPU ports to be used for IPedge Meeting must be on the same MIPU card. IPedge Messaging and IPedge Meeting do not have to use the same MIPU card.

License Information

License Part Number	Description
LIC-CIX-IP-PORT	IP endpoint license required for each IPedge Messaging or Meeting channel.
LIC-ACD	Net Server license required for Call Manager connection to the IPedge system.

Note SMDI integration does not require a Strata CIX license.

Device Monitor Capacities for Strata CIX Systems

Applications including Strata ACD, Call Manager, Tracer, Taske, and System TAPI send requests to the IPedge system to monitor the status of the telephones using the respective applications. These requests are sent over the CSTA ethernet link connecting the application and the IPedge system. These requests can produce a heavy load on the IPedge and LAN so there is a limit to the number of telephones and devices that can be setup for monitoring and how many can be active on a monitored call simultaneously. The capacity limits and a table listing how the telephone and device capacities are counted is provided below:

CSTA Device Monitor Capacity Limits

The limits below apply to the IPedge EC and EM Application servers.

- Total number of devices that can be monitored: 1152
- Total number of simultaneous device monitor calls: 560

Table 8 Applications using CSTA Device Monitors

Device Category		Number of CSTA device monitors required
1	ACD Agent or Supervisor only.	1 CSTA device monitor per agent or supervisor.
2	ACD Agent or Supervisor with Call Manager and/or Tracer or both.	1 CSTA device monitor per agent or supervisor.
3	Normal User with Call Manager and/or Tracer or both.	1 CSTA device monitor per user.
4	ACD Groups.	1 CSTA device monitor per group.
5	ACD Voice Assistant ports.	1 CSTA device monitor per port.
6	Extensions to be monitored by Call Manager or Taske.	1 CSTA device monitor each.
7	Attendant Consoles	1 CSTA device monitor per console.
8	System TAPI Service Provider application.	1 CSTA device monitor per TSP application user.
Note The total CSTA Device Monitors used is equal to the sum of the devices in each Device Category.		

IPedge Software License Requirements

The IPedge Application Server only requires one license per platform.

Table 1 IPedge Application Server for Strata CIX Part Numbers

Platform	Part Numbers Required	Description
EP Application Server	I-EP-1A	IPedge EP Application Server with AC adaptor. Factory equipped with single 250GB hard drive, 4GB RAM, and all the necessary software to support IPedge features.
	I-APP-EP-DISC	IPedge EP Application Server Discount Bundle. Includes system license, recovery DVD, and 6 free call manager standard licenses. One system license required per Server. Includes 1 x I-APP-EP, 6 x I-CM-STD1 and 1 x I-RCVY-DVD-VF. Limit 1 per system. I-APP-EP includes 1 X SYS-PLTFM-EP, 1 X I-MSG-BASE, 6 X I-MSG-ADV.
	I-APP-UP-EP-DSC	The IPedge Application Server Upgrade License for the EP at a special discount. Includes I-APP-UP-EP [Includes 6 x I-CP-USR-EP, 3 x I-CP-TRUNK, 1 x I-MS-BASE, and 8 x I-MSG-CH. Requires I-APP-EP]. Requires I-APP-EP
	I-APP-EP-VM24	Upgrade to 24 Messaging channels for the IPedge EP. **Important!** An IPedge EP Application Server with 24 Messaging channels can not be upgraded to include call processing with the I-APP-UP-EP license. To upgrade, migrate to an IPedge EC server. Limit 1 per system.
EC Application Server	1-EC-1A	IPedge EC model rack mount Server. Factory equipped with single 250GB SATA hard drive, 4GB RAM, and all the necessary software to support IPedge features. Mounting rails are required, see the 4-post (I-EC-RL4-1A) or 2-post (I-EC-RL2-1A) rail kits sold separately.
	I-APP-EC-DISC	IPedge EC Application Server Discount Bundle. Includes system license, recovery DVD, and 24 free call manager standard licenses. One system license required per Server. Includes 1 x I-APP-EC, 24 x I-CM-STD1 and 1 x I-RCVY-DVD-VF. Limit 1 per system. I-APP-EC includes 1 X SYS-PLTFM-EC, 1 X I-MSG-BASE, 24 X I-MSG-ADV.
	I-APP-UP-EC-DSC	The IPedge Application Server Upgrade License for the EC at a special discount. Includes I-APP-UP-EC [which includes 24 x I-CP-USR-EC, 12 x I-CP-TRUNK, 1 x I-MS-BASE, and 32 x I-MSG-CH] Requires I-APP-EC.

Table 1 IPedge Application Server for Strata CIX Part Numbers *(continued)*

Platform	Part Numbers Required	Description
EM Application Server	I-EM-1A	IPedge EM model rack mount server. Factory equipped with two 300GB SAS hard drives in RAID1 configuration, 12GB RAM, dual redundant power supplies, and all the necessary software to support IPedge features. System ships with one 4-post rail kit.
	I-APP-EM-DISC	IPedge EM Application Server Discount Bundle. Includes system license, recovery DVD, and 32 free call manager standard licenses. One system license required per Server. Includes 1 x I-SYS-EM, 32 x I-CM-STD1 and 1 x I-RCVY-DVD-VF. Limit 1 per system. I-APP-EM includes 1 X SYS-PLTFM-EM, 1 X I-MSG-BASE, 32 X I-MSG-ADV.
	I-APP-UP-EM-DSC	The IPedge Application Server Upgrade License for the EM at a special discount. Includes I-APP-UP-EM [Includes 32 x I-CP-USR-EM, 16 x I-CP-TRUNK, 1 x I-MS-BASE, and 60 x I-MSG-CH] Requires I-APP-EM

Table 2 Additional Application Licenses

License Part Number	Description
I-MSG-ADV	IPedge IP Messaging Advanced User - per user. This license includes basic voicemail features plus unified messaging.
I-CM-1	IPedge Call Manager Advanced, 1 user license. Provides desktop call control. PC phone functionality, and chat text messaging capabilities. One license is required for each user. VoIP voice plug-in is sold separately per user.
I-CM-STD1	Single client license for IPedge Call Manager Standard version provides the screen based telephony and Outlook Contact dialing. Bundled with IPedge user license and not required to purchase.
I-CM-V1	IPedge Call Manager voice plug-in license to add VoIP for Strata Call Manager. Requires one IPedge Call Manager License (I-CM-1) as well as one IPedge user license (I-CP-USR-XXX).
I-MT-A	IPedge Meeting meet-me conferencing audio channel License. One required for each simultaneous meet-me audio conferencing participant. Minimum 4.
I-MT-RCD	IPedge Meeting Audio Conference Record License. One required for each simultaneous channel of audio conference recording.
I-MT-V	IPedge Meeting Video Channel license. This is used to upgrade a system to video. The number of video channels must equal the number of web channels.
I-MT-W	IPedge Meeting Web Conference Application - per concurrent user IPedge Meeting meet-me conference web collaboration channel license. One required for each simultaneous web collaboration session participant.

Mobile Device Support for IPMobility

The IPMobility client application is supported on Android OS versions; 2.x, 3.x, & 4.x, and has been tested on the following devices:

Table 9 IPMobility Mobile Device Support

Device Category	Requirements
HTC	with Android 2.2.2
	EVO 4G LTE with Android 4.0.3
LG-P350	with Android 2.2.2
Motorola	Droid 2, 3, & X with Android 2.3.4
	MB 520 with Android 2.2.1
Samsung	Galaxy II with Android 2.3.5
	SGH I997 with Android 2.2.1
Sony Xperia™ E15i	with Android 2.1

There are no material differences in the functionality of these devices requiring changes to the application. There are two known variances:

1. Automatic answer of Callback calls from IPedge system is not available after Android 2.3.5
2. Not all devices allow override of the default answering screen with a custom answering screen (app call screening function). One example of this is the Samsung SGH I997 with Android 2.2.1.

With the above information in mind, and considering the array of differences among mobile devices in the marketplace including best practices for mobile application development - Toshiba elected to test the IPMobility application with a sampling of popular devices.

End User License Agreement

Preface:

For users in the following countries, please refer to “TOSHIBA AMERICA INFORMATION SYSTEMS, INC. End User License Agreement” or “TOSHIBA AMERICA INFORMATION SYSTEMS, INC. Contrat de licence de la Division des systèmes de télécommunication.”

- United States of America
- Canada
- Bahamas
- Barbados
- Dominican Republic
- Puerto Rico
- Trinidad

For users in the following countries, please refer to “TOSHIBA CORPORATION End User License Agreement”.

- Australia
- Greece
- Hong Kong
- Indonesia
- Ireland
- Malaysia
- New Zealand
- Saudi Arabia
- Singapore
- South Africa
- Thailand
- United Kingdom

TOSHIBA AMERICA INFORMATION SYSTEMS, INC.

End User License Agreement

Toshiba America Information Systems, Inc.
Telecommunication Systems Division
9740 Irvine Boulevard
Irvine, California 92618-1697
United States of America

IMPORTANT: THIS END USER LICENSE AGREEMENT ("EULA") IS A LEGAL AGREEMENT BETWEEN YOU ("YOU") AND TOSHIBA AMERICA INFORMATION SYSTEMS, INC. ("TAIS"). CAREFULLY READ THIS EULA. USE OF ANY PROPRIETARY TOSHIBA AND THIRD PARTY SOFTWARE OR ANY RELATED DOCUMENTATION PRE-INSTALLED ON, OR SHIPPED WITH, A TAIS TELECOMMUNICATION SYSTEMS PRODUCT OR OTHERWISE MADE AVAILABLE TO YOU BY TAIS IN WHATEVER FORM OR MEDIA (COLLECTIVELY, "SOFTWARE"), WILL CONSTITUTE YOUR ACCEPTANCE OF THESE TERMS. IF SEPARATE TERMS ARE PROVIDED BY THE SOFTWARE SUPPLIER, THE TERMS OF THIS EULA THAT ARE NOT INCONSISTENT WITH THOSE SEPARATE TERMS WILL CONTINUE TO BE APPLICABLE. IF YOU DO NOT AGREE WITH THE TERMS OF THIS EULA, DO NOT INSTALL, COPY, OR USE THE SOFTWARE AND PROMPTLY RETURN IT TO THE TAIS AUTHORIZED CHANNEL FROM WHICH YOU OBTAINED IT IN ACCORDANCE WITH APPLICABLE RETURN POLICIES. EXCEPT AS OTHERWISE AUTHORIZED IN WRITING BY TAIS, THIS SOFTWARE IS LICENSED FOR DISTRIBUTION THROUGH AN AUTHORIZED CHANNEL ONLY TO AN END-USER PURSUANT TO THIS EULA. "AUTHORIZED CHANNEL" MEANS TAIS OR A DEALER AUTHORIZED BY TAIS TO PROVIDE TAIS HARDWARE AND/OR SOFTWARE TO END USERS. TAIS IS WILLING TO LICENSE THIS SOFTWARE TO YOU ONLY UPON THE CONDITION THAT YOU OBTAINED THE SOFTWARE FROM AN AUTHORIZED CHANNEL AND ACCEPT ALL TERMS OF THIS EULA.

1. License Grant. The Software is not sold; it is licensed upon payment of applicable charges. TAIS grants to you a non-transferable and non-exclusive right to use with a TAIS telecommunication systems product the copy of the Software provided under this EULA that you have obtained from an Authorized Channel. With respect to third party Software, TAIS is only passing along license rights which may be granted by the owner or licensor of the Software and TAIS does not separately license these rights to you. Each copy of the Software is owned by TAIS and/or its suppliers. You agree you will not copy the Software except as necessary to use it on one TAIS system at a time at one location. Modifying, translating, renting, copying, distributing, printing, sublicensing, transferring, or assigning all or part of the Software, or any rights granted hereunder, to any other persons and removing any proprietary notices, labels or marks from the Software is strictly prohibited except as permitted by applicable law; you agree violation of such restrictions will cause irreparable harm to TAIS and provide grounds for injunctive relief, without notice, against you or any other person in possession of the Software. You and any other person whose possession of the Software violates this EULA shall promptly surrender possession of the Software to TAIS, upon demand. Furthermore, you hereby agree not to create derivative works based

on the Software. TAIS reserves the right to terminate this license and to immediately repossess the Software in the event that you or any other person violates this EULA.

2. Software Support and Upgrade Service. NOT WITHSTANDING ANY OTHER PROVISION OF THIS EULA, YOU HAVE NO LICENSE OR RIGHT TO ANY SOFTWARE SUPPORT AND UPGRADE SERVICE, UNLESS YOU HOLD A VALID LICENSE TO THE ORIGINAL SOFTWARE AND HAVE PAID THE APPLICABLE FEE TO AN AUTHORIZED CHANNEL FOR THE SOFTWARE SUPPORT AND UPGRADE SERVICE. USE OF SOFTWARE SUPPORT AND UPGRADE SERVICE IS LIMITED TO TAIS TELECOMMUNICATION SYSTEMS PRODUCT SUPPLIED BY AN AUTHORIZED CHANNEL FOR WHICH YOU ARE THE ORIGINAL END USER PURCHASER OR OTHERWISE HOLD A VALID LICENSE TO USE THE SOFTWARE THAT IS BEING UPGRADED.

3. Copyright. You acknowledge that no title to the copyright or any other intellectual property rights in the Software is transferred to you. You further acknowledge that title and full ownership rights to the Software and all copies thereof will remain the exclusive property of TAIS and/or its suppliers, and you will not by this EULA acquire any rights to the Software or any copies thereof, except the license expressly set forth above. You will not remove or change any proprietary notices contained in or on the Software. The Software is protected under US patent, copyright, trade secret, and/or other proprietary laws, as well as international treaties. Any transfer, use, or copying of the Software in violation of the EULA constitutes copyright infringement. You are hereby on notice that any transfer, use, or copying of the Software in violation of this EULA constitutes a willful infringement of copyright.

4. Critical Applications. The Software is not designed or recommended for any "critical applications". "Critical applications" means life support systems, medical applications, connections to implanted medical devices, commercial transportation, nuclear facilities or systems or any other applications where product failure could lead to injury to persons or loss of life or catastrophic property damage. ACCORDINGLY, SHOULD YOU DECIDE TO USE THIS SOFTWARE FOR ANY CRITICAL APPLICATION TAIS DISCLAIMS, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL LIABILITY ARISING OUT OF THE USE OF THE SOFTWARE IN ANY CRITICAL APPLICATION. IF YOU USE THE SOFTWARE IN A CRITICAL APPLICATION, YOU, AND NOT TAIS, ASSUME FULL RESPONSIBILITY FOR SUCH USE. Further you shall indemnify and hold TAIS harmless from any and all damages, liabilities, costs, and expenses, including reasonable attorneys' fees and amounts paid in settlement of third party or government claims, incurred by TAIS as a result of or in any way arising from such use.

5. No Reverse Engineering. You agree that you will not attempt, and if you employ employees or engage contractors, you will use your best efforts to prevent your employees and contractors from attempting to reverse compile, reverse engineer, modify, translate or disassemble the Software in whole or in part. Any failure to comply with the above or any other terms and conditions contained herein will result in the automatic termination of this license and the reversion of the rights granted hereunder back to TAIS.

Notwithstanding the foregoing, in regard to any conflict between the terms of this Section 5 and any applicable open source license agreements (as referred to herein) for any open source software included in the Software, the terms of the applicable open source license agreement controls.

6. Limited Warranty. THE HARDWARE PRODUCT LIMITED WARRANTY IS SET FORTH IN THE TAIS STANDARD LIMITED WARRANTY ASSOCIATED WITH THE HARDWARE PRODUCT, WHICH MAY BE POSTED ON THE TAIS TELECOMMUNICATION SYSTEMS DIVISION INTERNET WEBSITE. TAIS' SOLE OBLIGATIONS WITH RESPECT TO TOSHIBA SOFTWARE IS SET FORTH IN THIS EULA. UNLESS OTHERWISE STATED IN WRITING, ALL TOSHIBA AND THIRD PARTY SOFTWARE ARE PROVIDED ON AN "AS IS" BASIS WITHOUT WARRANTY OF ANY KIND BY TOSHIBA. UNLESS THIRD PARTY SOFTWARE MANUFACTURERS, SUPPLIERS OR PUBLISHERS EXPRESSLY OFFER THEIR OWN WARRANTIES IN WRITING IN CONNECTION WITH YOUR USE OF THEIR THIRD PARTY SOFTWARE, SUCH THIRD PARTY SOFTWARE IS PROVIDED ON AN "AS IS" BASIS WITHOUT WARRANTY OF ANY KIND BY THE MANUFACTURER, SUPPLIER, OR PUBLISHER OF SUCH THIRD PARTY SOFTWARE. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, TAIS AND ITS SUPPLIERS DISCLAIM ALL WARRANTIES WITH REGARD TO THE SOFTWARE, EITHER EXPRESS OR IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE WARRANTY OF NON-INFRINGEMENT OF THIRD PARTY RIGHTS, AND THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE SOFTWARE IS WITH YOU. NEITHER TAIS NOR ITS SUPPLIERS WARRANT THAT THE FUNCTIONS CONTAINED IN THE SOFTWARE WILL MEET YOUR REQUIREMENTS OR THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE. HOWEVER, TAIS WARRANTS THAT ANY MEDIA ON WHICH THE SOFTWARE IS FURNISHED IS FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE FOR A PERIOD OF NINETY (90) DAYS FROM THE DATE OF DELIVERY TO YOU. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY TAIS OR A TAIS AUTHORIZED REPRESENTATIVE SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE/JURISDICTION TO STATE/JURISDICTION.

7. Limitation of Liability. TAIS' AND/OR ITS SUPPLIERS' ENTIRE LIABILITY AND YOUR SOLE AND EXCLUSIVE REMEDY UNDER THIS EULA SHALL BE, AT TAIS' OPTION, REPLACEMENT OF THE SOFTWARE OR REFUND OF THE PRICE PAID. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL TAIS OR ITS SUPPLIERS BE LIABLE TO YOU FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES FOR PERSONAL INJURY, LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION/DATA, OR ANY OTHER PECUNIARY LOSS OF ANY KIND ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE, OR OTHERWISE IN CONNECTION WITH ANY PROVISION OF THIS EULA EVEN IF TAIS OR ANY SUPPLIER HAS BEEN ADVISED OF THE

POSSIBILITY OF SUCH DAMAGES AND EVEN IF THE REMEDY FAILS OF ITS ESSENTIAL PURPOSE. IN NO EVENT SHALL TAIS OR ITS SUPPLIERS BE LIABLE FOR ANY CLAIM BY A THIRD PARTY. DATA USAGE RATES MAY APPLY WHEN DATA IS SENT OR RECEIVED WHILE USING THE SOFTWARE. YOU ARE SOLELY RESPONSIBLE FOR ANY SUCH DATA USAGE AND APPLICABLE CHARGES. ASK YOUR WIRELESS PROVIDER FOR FURTHER DETAILS ON RATES THAT MAY APPLY TO YOU.

8. State/Jurisdiction Laws. SOME STATES/JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY MAY LAST, THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR THE EXCLUSION OF LIABILITY FOR DEATH OR PERSONAL INJURY CAUSED BY NEGLIGENCE, SO SUCH LIMITATIONS OR EXCLUSIONS IN THIS EULA MAY NOT APPLY TO YOU.

9. Export Laws. This EULA involves products and/or technical data that may be controlled under the United States and other countries, including but not limited to United States Export Administration Regulations or any other applicable law, regulation or order ("Export Laws"). The products and/or technical data involved with this EULA may not be exported without US Department of commerce, Bureau of Export Administration authorization. Any export or re-export by you, directly or indirectly, in contravention of U.S. Export Administration Regulation is prohibited. You shall comply with all Export Laws to assure that the Software is not exported, directly or indirectly, in contravention of the Export Laws.

10. Governing Law. This EULA will be governed by the laws of the State of California, United States of America, excluding its conflict of law provisions.

11. United States Government Restricted Rights. The Software is provided with RESTRICTED RIGHTS. The Software and other materials provided hereunder constitute Commercial Computer Software and Software Documentation and Technical Data related to Commercial Items. Use, duplication, or disclosure by the United States Government, its agencies and/or instrumentalities is subject to restrictions of this Agreement pursuant to FAR 12.211, FAR 12.212(a), DFARS 227.7202-1, DFARS 227.7202-3(a), and DFARS 252.227.7014(a)(1) as applicable. Without limiting the foregoing, use, duplication, or disclosure by the United States Government, its agencies and/or instrumentalities is subject to restrictions as set forth in subparagraph (c)(1)(ii) of The Rights in Technical Data and Computer Software Clause at DFARS 252.227-7013 (October 1988) or subparagraphs (c)(1) and (2) of the Commercial Computer Software - Restricted Rights at 48 CFR 52.227-19, FAR 52.227-19(b)(1) and (2) (DEC 2007), FAR 52.227-14 (DEC 2007) including Alt. III, FAR 52.227-20, and DFARS 252.227-7015 as applicable.

12. Severability. If any provision of this EULA shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions hereof shall not in any way be affected or impaired.

13. No Waiver. No waiver of any breach of any provision of this EULA shall constitute a waiver of any prior, concurrent or subsequent breach of the same or any other provisions hereof, and no waiver shall be effective unless made in writing and signed by an authorized representative of the

waiving party. To the extent the terms of any TAIS policies or programs for support services conflict with the terms of this EULA, the terms of this EULA shall prevail.

14. Supplier Software. The Software may include certain software provided by TAIS suppliers. In such event, you agree that such supplier may be designated by TAIS as a third party beneficiary of TAIS with rights to enforce the EULA with respect to supplier's software.

15. MIB Download Confidentiality and Non Disclosure. Upon downloading any management-information-base technical information and data (collectively, "MIB"), you agree that the MIB is for limited use, only for implementation and use in connection with IPedge or CIX Strata. It may not be sold, shared, or distributed by you, but may be shared with your own employees, consultants or third party developer(s) who have a reasonable need to know said information, and are bound by the terms and conditions of this Agreement. The MIB is considered proprietary and confidential information of TAIS and no rights, title or interest are being transferred hereunder. When the purpose in which the MIB was intended is no longer valid, the information shall be destroyed or returned to TAIS. Any unauthorized distribution, posting, sharing, or publishing of the MIB is strictly prohibited. The obligation to maintain confidentiality of information received hereunder, including code or MIB, will survive the expiration or termination of this agreement by seven (7) years, or three (3) years from the date of the end of production of the product (including succession products), whichever is longer.

16. Open Source Software. The Software may contain software files that are subject to certain open source license agreements. The open source software files and additional terms and conditions may be included in the TAIS Telecommunication Systems Division product general description, Internet website or electronically within the product. The open source software files are provided "AS IS" to the maximum extent permitted by applicable law. Please read the open source and third party software terms and conditions carefully for relevant copyright and licensing terms.

YOU ACKNOWLEDGE THAT YOU HAVE READ THIS EULA AND THAT YOU UNDERSTAND ITS PROVISIONS. YOU AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. YOU FURTHER AGREE THAT THIS EULA CONTAINS THE COMPLETE AND EXCLUSIVE AGREEMENT BETWEEN YOU AND TAIS AND SUPERSEDES ANY PROPOSAL OR PRIOR AGREEMENT, ORAL OR WRITTEN, OR ANY OTHER COMMUNICATION RELATING TO THE SUBJECT MATTER OF THIS EULA.

TOSHIBA AMERICA INFORMATION SYSTEMS, INC. Contrat de licence de la Division des systèmes de télécommunication

IMPORTANT : LE PRÉSENT CONTRAT DE LICENCE (« CONTRAT ») CONSTITUE UN ACCORD JURIDIQUE ENTRE VOUS (« VOUS ») ET TAIS. VEUILLEZ LE LIRE ATTENTIVEMENT. L'UTILISATION DE TOUT LOGICIEL ET DE TOUT RENSEIGNEMENT S'Y RAPPORTANT (ENSEMBLE, « LOGICIELS ») INSTALLÉ DANS UN PRODUIT NUMÉRIQUE OU EXPÉDIÉ À MÊME CE PRODUIT, OU QUE TAIS MET À VOTRE DISPOSITION DE QUELQUE MANIÈRE OU SOUS QUELQUE FORME QUE CE SOIT, FAIT FOI DE VOTRE ACCEPTATION DES PRÉSENTES MODALITÉS, À MOINS QUE LE FOURNISSEUR DU LOGICIEL NE PRÉSENTE DES MODALITÉS DISTINCTES. À DÉFAUT D'ACCEPTER LES MODALITÉS DU PRÉSENT CONTRAT, VOUS NE DEVEZ PAS INSTALLER, COPIER NI UTILISER LE PRÉSENT LOGICIEL ET DEVEZ LE RETOURNER SANS DÉLAI À L'ENDROIT D'OÙ VOUS L'AVEZ OBTENU, CONFORMÉMENT AUX POLITIQUES DE RETOUR EN VIGUEUR. À MOINS D'UNE AUTORISATION CONTRAIRE PAR ÉCRIT DE TAIS, LE PRÉSENT LOGICIEL VOUS EST OCTROYÉ À DES FINS EXCLUSIVES DE DISTRIBUTION PAR VOIES AUTORISÉES AUX UTILISATEURS.

1. Octroi de la licence : Ce logiciel ne vous est pas vendu; vous êtes autorisé à l'utiliser moyennant le paiement des frais applicables. TAIS vous accorde le droit individuel, non transférable et non exclusif d'utiliser une copie du logiciel fourni en vertu du présent contrat. Vous consentez à ne pas copier le logiciel, sauf si nécessaire aux fins d'utilisation sur un seul système TAIS à la fois et dans un même endroit. Il vous est strictement interdit de modifier, de traduire, de louer, de reproduire, de distribuer, d'imprimer, de sous-louer, de transférer ou de céder ce logiciel, en tout ou en partie, ni de céder les droits accordés en vertu du présent contrat à des tiers ou d'enlever les avis, les étiquettes et les marques privatifs du logiciel, sauf dans la mesure permise par les lois en vigueur. Vous reconnaissez que la violation de l'une ou l'autre de ces interdictions fera un tort irréparable à TAIS et lui fournira les motifs nécessaires à l'adoption de mesures injonctives, sans préavis, contre vous et toute autre personne ayant le logiciel en sa possession. Toute personne dont la possession du logiciel viole le présent contrat doit, sur demande, le rendre à TAIS dans les plus brefs délais. Vous consentez à ne créer aucune œuvre dérivée du présent logiciel. En cas de violation du présent contrat par vous ou par des tiers, TAIS se réserve le droit de le résilier et de reprendre immédiatement possession du logiciel. L'exécution du présent logiciel à d'autres fonctions exige un permis d'exécution valide.

2. Propriété intellectuelle : Vous reconnaissez que le titre du logiciel ne vous est nullement cédé, que le titre et les droits de pleine propriété du logiciel demeurent la propriété exclusive de TAIS et/ou de ses fournisseurs, et vous n'acquerrez aucun droit au logiciel, sauf les droits accordés en vertu de la présente licence. Vous ne devez supprimer ni modifier les avis privatifs inscrits sur ou dans ce logiciel. Ce logiciel est protégé par les lois américaines sur les brevets, les droits d'auteur et le secret industriel et/ou par d'autres lois sur la propriété et des traités internationaux. Tout transfert, utilisation ou reproduction du logiciel en violation du présent contrat constitue une violation du droit d'auteur. Sachez que tout transfert, usage ou reproduction du logiciel en violation du présent contrat constitue une atteinte volontaire au droit d'auteur.

3. Interdiction de désosser : Vous acceptez de ne pas essayer de décompiler, de désosser, de modifier, de traduire ou de démonter le logiciel, en tout ou en partie. Si vous embauchez des employés ou des entrepreneurs, vous devez mettre tout en œuvre pour empêcher que ces employés et entrepreneurs ne décompilent, ne désossent, ne modifient, ne traduisent ou ne démontent le logiciel, en tout ou en partie. L'inobservation de cette disposition ou d'autres modalités du présent contrat entraînera la résiliation automatique de ce dernier et la restitution à TAIS des droits accordés en vertu du présent contrat.

4. Garantie limitée : LE PRÉSENT LOGICIEL EST FOURNI « TEL QUEL », SANS GARANTIE DE QUELQUE NATURE QUE CE SOIT. DANS LA PLEINE MESURE PERMISE PAR LES LOIS EN VIGUEUR, TAIS ET SES FOURNISSEURS DÉSAVOUENT TOUTES LES GARANTIES EXPRESSES OU TACITES À L'ÉGARD DU LOGICIEL, NOTAMMENT LES GARANTIES DE NON-VIOLATION DES DROITS DE TIERS ET DE CONFORMITÉ À L'AN 2000, ET LA GARANTIE IMPLICITE DE QUALITÉ MARCHANDE ET D'ADAPTATION À UN USAGE PARTICULIER. VOUS ACCEPTEZ TOUS LES

RISQUES EN CE QUI A TRAIT À LA QUALITÉ ET AU RENDEMENT DU LOGICIEL. NI TAIS NI SES FOURNISSEURS NE GARANTISSENT QUE LES FONCTIONS DU LOGICIEL RÉPONDENT À VOS EXIGENCES, OU QUE LE LOGICIEL FONCTIONNERA SANS INTERRUPTION NI ERREUR. CEPENDANT, TAIS GARANTIT QUE, DANS DES CONDITIONS D'USAGE NORMAL, LES MÉDIAS SUR LESQUELS LE LOGICIEL EST FOURNI SERONT EXEMPTS DE DÉFECTUOSITÉS MATÉRIELLES ET DE FABRICATION PENDANT 90 JOURS À COMPTER DE LA DATE DE LIVRAISON DU LOGICIEL.

5. Limitation de la responsabilité : LE REMPLACEMENT DES MÉDIAS OU LE REMBOURSEMENT DU PRIX DU LOGICIEL, SELON LE CHOIX DE TAIS, CONSTITUE L'UNIQUE RESPONSABILITÉ DE TAIS ET VOTRE SEUL RECOURS EN VERTU DU PRÉSENT CONTRAT. DANS LA PLEINE MESURE PERMISE PAR LES LOIS EN VIGUEUR, TAIS ET SES FOURNISSEURS NE SERONT NULLEMENT TENUS RESPONSABLES DE QUELQUE DOMMAGE CONSÉCUTIF, PARTICULIER, ACCESSOIRE OU INDIRECT QUE CE SOIT EN CAS DE BLESSURES CORPORELLES, DE PERTES DE PROFITS COMMERCIAUX, D'INTERRUPTION DES ACTIVITÉS COMMERCIALES, DE PERTES D'INFORMATIONS OU DE DONNÉES COMMERCIALES OU DE TOUTE AUTRE PERTE FINANCIÈRE QUE CE SOIT DÉCOULANT DE L'UTILISATION OU DE L'IMPOSSIBILITÉ D'UTILISER LE LOGICIEL, MÊME SI TAIS ET SES FOURNISSEURS ONT ÉTÉ AVISÉS DE LA POSSIBILITÉ DE TELS DOMMAGES. NI TAIS NI SES FOURNISSEURS NE PEUVENT EN AUCUN CAS ÊTRE TENUS RESPONSABLES DE RÉCLAMATIONS DÉPOSÉES PAR DES TIERS.

6. Lois provinciales et territoriales : CERTAINES PROVINCES ET CERTAINS TERRITOIRES NE PERMETTENT PAS D'EXCLURE LES GARANTIES IMPLICITES, DE LIMITER LA DURÉE D'UNE GARANTIE IMPLICITE NI D'EXCLURE OU DE LIMITER LES DOMMAGES CONSÉCUTIFS OU ACCESSOIRES. IL SE POURRAIT DONC QUE VOUS NE SOYEZ PAS TOUCHÉ PAR DE TELLES EXCLUSIONS OU LIMITES. LA PRÉSENTE GARANTIE RESTREINTE VOUS DONNE DES DROITS SPÉCIFIQUES; IL SE PEUT QUE VOUS EN AYEZ D'AUTRES ET QUE DE TELS DROITS VARIENT D'UNE PROVINCE OU D'UN TERRITOIRE À L'AUTRE.

7. Lois sur l'exportation : Le présent contrat se réfère à des produits et/ou à des données techniques pouvant être contrôlés en vertu des règlements des United States Export Administration Regulations (administration des exportations des États-Unis) et, le cas échéant, une autorisation du United States Department of Commerce (département du commerce américain) pourrait être nécessaire avant de pouvoir les exporter. Les exportations directes ou indirectes en violation des règlements des United States Export Administration Regulations (administration des exportations des États-Unis), ou de tout autre règlement, loi ou ordonnance applicables, sont interdites.

8. Lois applicables : Le présent contrat est assujetti aux lois de la Californie (États-Unis d'Amérique), à l'exclusion de ses dispositions sur les conflits de lois.

9. Droits limités du gouvernement des États-Unis : Ce logiciel est fourni avec des droits limités. Ce logiciel et les autres éléments matériels fournis avec les présentes constituent le logiciel commercial, la documentation sur le logiciel et les données techniques reliés à ces éléments commerciaux. Conformément aux F.A.R. 12.211 et 12.212, le gouvernement américain les utilise sous licence et les droits du gouvernement américain à cet égard sont restreints, conformément à la licence commerciale du revendeur.

10. Divisibilité : Si une disposition du présent contrat est jugée invalide, illégale ou inexécutable, la validité, la légalité et le caractère exécutoire des dispositions restantes ne seront d'aucune manière touchés, ni compromis.

11. Aucune renonciation : Aucune renonciation au droit de résiliation pour violation d'une disposition du présent contrat ne peut constituer une renonciation au droit de résiliation pour une violation précédente, coïncidente ou subséquente de la même disposition ou d'autres dispositions. Une renonciation n'est exécutoire que lorsqu'elle est faite par écrit par un représentant autorisé de la partie l'ayant initiée.

12. Logiciels fournisseurs : Ce logiciel pourrait être accompagné de logiciels offerts par des fournisseurs de TAIS. Le cas échéant, vous reconnaissez que de tels fournisseurs peuvent être désignés par TAIS à

titre de tiers bénéficiaires de TAIS, et qu'ils sont autorisés à faire respecter les modalités du présent contrat en ce qui a trait à de tels logiciels fournisseurs.

VOUS RECONNAISSEZ AVOIR LU LE PRÉSENT CONTRAT ET EN COMPRENDRE LES DISPOSITIONS. VOUS CONSENTEZ À ÊTRE LIÉ PAR LES MODALITÉS QU'IL CONTIENT. VOUS RECONNAISSEZ ÉGALEMENT QUE LE PRÉSENT DOCUMENT RENFERME L'ENTENTE INTÉGRALE ET EXCLUSIVE ENTRE VOUS ET TAIS, ET QU'IL REMPLACE TOUTE PROPOSITION OU ENTENTE VERBALE OU ÉCRITE PRÉCÉDENTE, AINSI QUE TOUTE AUTRE COMMUNICATION CONCERNANT L'OBJET DU PRÉSENT CONTRAT.

Toshiba America Information Systems, Inc. Telecommunication Systems Division 9740 Irvine Boulevard Irvine California 92618-1697 United States of America

DSD 020905

TOSHIBA CORPORATION

End User License Agreement

Toshiba Corporation Cloud & Solutions Company,
Global Sales & Marketing Department 2
Smart Community Center
72-34 Horikawa-cho, Saiwai-ku, Kawasaki 212-8585
Japan

IMPORTANT: THIS END USER LICENSE AGREEMENT (“EULA”) IS A LEGAL AGREEMENT BETWEEN YOU (“YOU”) AND TOSHIBA CORPORATION (“TOSHIBA”). CAREFULLY READ THIS EULA. USE OF ANY PROPRIETARY TOSHIBA AND THIRD PARTY SOFTWARE OR ANY RELATED DOCUMENTATION PRE-INSTALLED ON, OR SHIPPED WITH, A TOSHIBA TELECOMMUNICATION SYSTEMS PRODUCT OR OTHERWISE MADE AVAILABLE TO YOU BY TOSHIBA IN WHATEVER FORM OR MEDIA (COLLECTIVELY, “SOFTWARE”), WILL CONSTITUTE YOUR ACCEPTANCE OF THESE TERMS. IF SEPARATE TERMS ARE PROVIDED BY THE SOFTWARE SUPPLIER, THE TERMS OF THIS EULA THAT ARE NOT INCONSISTENT WITH THOSE SEPARATE TERMS WILL CONTINUE TO BE APPLICABLE. IF YOU DO NOT AGREE WITH THE TERMS OF THIS EULA, DO NOT INSTALL, COPY, OR USE THE SOFTWARE AND PROMPTLY RETURN IT TO THE TOSHIBA AUTHORIZED CHANNEL FROM WHICH YOU OBTAINED IT IN ACCORDANCE WITH APPLICABLE RETURN POLICIES. EXCEPT AS OTHERWISE AUTHORIZED IN WRITING BY TOSHIBA, THIS SOFTWARE IS LICENSED FOR DISTRIBUTION THROUGH AN AUTHORIZED CHANNEL ONLY TO AN END-USER PURSUANT TO THIS EULA. “AUTHORIZED CHANNEL” MEANS TOSHIBA OR A DEALER AUTHORIZED BY TOSHIBA TO PROVIDE TOSHIBA HARDWARE AND/OR SOFTWARE TO END USERS. TOSHIBA IS WILLING TO LICENSE THIS SOFTWARE TO YOU ONLY UPON THE CONDITION THAT YOU OBTAINED THE SOFTWARE FROM AN AUTHORIZED CHANNEL AND ACCEPT ALL TERMS OF THIS EULA. WE MAY CHANGE THESE TERMS AT ANY TIME BY NOTIFYING YOU OF A CHANGE WHEN YOU NEXT START THE SOFTWARE. YOUR CONTINUED USE OF THE SOFTWARE WILL CONSTITUTE YOUR ACCEPTANCE OF SUCH VARIED TERMS.

1. License Grant. The Software is not sold; it is licensed upon payment of applicable charges. TOSHIBA grants to you a non-transferable and non-exclusive right to use with a TOSHIBA telecommunication systems product the copy of the Software provided under this EULA that you have obtained from an Authorized Channel. With respect to third party Software, TOSHIBA is only passing along license rights which may be granted by the owner or licensor of the Software and TOSHIBA does not separately license these rights to you. Each copy of the Software is owned by TOSHIBA and/or its suppliers. You agree you will not copy the Software except as necessary to use it on one TOSHIBA system at a time at one location. Modifying, translating, renting, copying, distributing, printing, sublicensing, transferring, or assigning all or part of the Software, or any rights granted hereunder, to any other persons and removing any proprietary notices, labels or marks from the Software is strictly prohibited except as permitted by applicable law; you agree violation of such restrictions will cause irreparable harm to TOSHIBA and provide grounds for

injunctive relief, without notice, against you or any other person in possession of the Software. You and any other person whose possession of the Software violates this EULA shall promptly surrender possession of the Software to TOSHIBA, upon demand. Furthermore, you hereby agree not to create derivative works based on the Software. TOSHIBA reserves the right to terminate this license and to immediately repossess the Software in the event that you or any other person violates this EULA.

2. Software Support and Upgrade Service. NOTWITHSTANDING ANY OTHER PROVISION OF THIS EULA, YOU HAVE NO LICENSE OR RIGHT TO ANY SOFTWARE SUPPORT AND UPGRADE SERVICE, UNLESS YOU HOLD A VALID LICENSE TO THE ORIGINAL SOFTWARE AND HAVE PAID THE APPLICABLE FEE TO AN AUTHORIZED CHANNEL FOR THE SOFTWARE SUPPORT AND UPGRADE SERVICE. USE OF SOFTWARE SUPPORT AND UPGRADE SERVICE IS LIMITED TO TOSHIBA TELECOMMUNICATIONS SYSTEMS PRODUCT SUPPLIED BY AN AUTHORIZED CHANNEL FOR WHICH YOU ARE THE ORIGINAL END USER PURCHASER OR OTHERWISE HOLD A VALID LICENSE TO USE THE SOFTWARE THAT IS BEING UPGRADED.

3. Copyright. You acknowledge that no title to the copyright or any other intellectual property rights in the Software is transferred to you. You further acknowledge that title and full ownership rights to the Software and all copies thereof will remain the exclusive property of TOSHIBA and/or its suppliers, and you will not by this EULA acquire any rights to the Software or any copies thereof, except the license expressly set forth above. You will not remove or change any proprietary notices contained in or on the Software. The Software is protected under applicable patent, copyright, trade secret, and/or other proprietary laws, as well as international treaties. Any transfer, use, or copying of the Software in violation of the EULA constitutes copyright infringement. You are hereby on notice that any transfer, use, or copying of the Software in violation of this EULA constitutes a willful infringement of copyright.

4. Critical Applications. The Software is not designed or recommended for any "critical applications". "Critical applications" means life support systems, medical applications, connections to implanted medical devices, commercial transportation, nuclear facilities or systems or any other applications where product failure could lead to injury to persons or loss of life or catastrophic property damage. ACCORDINGLY, SHOULD YOU DECIDE TO USE THIS SOFTWARE FOR ANY CRITICAL APPLICATION TOSHIBA DISCLAIMS, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL LIABILITY ARISING OUT OF THE USE OF THE SOFTWARE IN ANY CRITICAL APPLICATION. IF YOU USE THE SOFTWARE IN A CRITICAL APPLICATION, YOU, AND NOT TOSHIBA, ASSUME FULL RESPONSIBILITY FOR SUCH USE. Further you shall indemnify and hold TOSHIBA and its affiliates harmless from any and all damages, liabilities, costs, and expenses, including reasonable attorneys' fees and amounts paid in settlement of third party or government claims, incurred by TOSHIBA and its affiliates as a result of or in any way arising from such use.

5. No Reverse Engineering. You agree that you will not attempt, and if you employ employees or engage contractors, you will use your best efforts to prevent your employees and contractors from attempting to reverse compile, reverse engineer, modify, translate or disassemble the Software in whole or in part. Any failure to comply with the above or any other terms and conditions con-

tained herein will result in the automatic termination of this license and the reversion of the rights granted hereunder back to TOSHIBA.

Notwithstanding the foregoing, in regard to any conflict between the terms of this Section 5 and any applicable open source license agreements (as referred to herein) for any open source software included in the Software, the terms of the applicable open source license agreement controls.

6. Limited Warranty. TOSHIBA'S SOLE OBLIGATIONS WITH RESPECT TO TOSHIBA SOFTWARE IS SET FORTH IN THIS EULA. UNLESS OTHERWISE STATED IN WRITING, ALL TOSHIBA AND THIRD PARTY SOFTWARE ARE PROVIDED ON AN "AS IS" BASIS WITHOUT WARRANTY OF ANY KIND BY TOSHIBA. UNLESS THIRD PARTY SOFTWARE MANUFACTURERS, SUPPLIERS OR PUBLISHERS EXPRESSLY OFFER THEIR OWN WARRANTIES IN WRITING IN CONNECTION WITH YOUR USE OF THEIR THIRD PARTY SOFTWARE, SUCH THIRD PARTY SOFTWARE IS PROVIDED ON AN "AS IS" BASIS WITHOUT WARRANTY OF ANY KIND BY THE MANUFACTURER, SUPPLIER, OR PUBLISHER OF SUCH THIRD PARTY SOFTWARE. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, TOSHIBA AND ITS SUPPLIERS DISCLAIM ALL WARRANTIES WITH REGARD TO THE SOFTWARE, EITHER EXPRESS OR IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE WARRANTY OF NON-INFRINGEMENT OF THIRD PARTY RIGHTS, AND THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE SOFTWARE IS WITH YOU. NEITHER TOSHIBA NOR ITS SUPPLIERS WARRANT THAT THE FUNCTIONS CONTAINED IN THE SOFTWARE WILL MEET YOUR REQUIREMENTS OR THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY TOSHIBA OR A TOSHIBA AUTHORIZED REPRESENTATIVE SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.THIS LIMITED WARRANTY GIVES YOU SPECIFIC RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE/JURISDICTION TO STATE/JURISDICTION.

7. Limitation of Liability. TOSHIBA'S AND/OR ITS SUPPLIERS' ENTIRE LIABILITY AND YOUR SOLE AND EXCLUSIVE REMEDY UNDER THIS EULA SHALL BE, AT TOSHIBA'S OPTION, REPLACEMENT OF THE SOFTWARE OR REFUND OF THE PRICE PAID. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL TOSHIBA OR ITS SUPPLIERS BE LIABLE TO YOU FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES FOR PERSONAL INJURY, LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION/ DATA, OR ANY OTHER PECUNIARY LOSS OF ANY KIND ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE, OR OTHERWISE IN CONNECTION WITH ANY PROVISION OF THIS EULA EVEN IF TOSHIBA OR ANY SUPPLIER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES AND EVEN IF THE REMEDY FAILS OF ITS ESSENTIAL PURPOSE. IN NO EVENT SHALL TOSHIBA OR ITS SUPPLIERS BE LIABLE FOR ANY CLAIM BY A THIRD PARTY. DATA USAGE RATES MAY

APPLY WHEN DATA IS SENT OR RECEIVED WHILE USING THE SOFTWARE. YOU ARE SOLELY RESPONSIBLE FOR ANY SUCH DATA USAGE AND APPLICABLE CHARGES. ASK YOUR WIRELESS PROVIDER FOR FURTHER DETAILS ON RATES THAT MAY APPLY TO YOU.

8. State/Jurisdiction Laws. SOME STATES/JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY MAY LAST, THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR THE EXCLUSION OF LIABILITY FOR DEATH OR PERSONAL INJURY CAUSED BY NEGLIGENCE, SO SUCH LIMITATIONS OR EXCLUSIONS IN THIS EULA MAY NOT APPLY TO YOU.

9. Export Laws. This EULA involves products and/or technical data that may be controlled under all applicable export control laws, regulations and orders, including but not limited to United States Export Administration Regulations or any other applicable law ("Export Laws"). The products and/or technical data involved with this EULA may not be exported without appropriate government authorization. Any export or re-export by you, directly or indirectly, in contravention of the Export Laws is prohibited. You shall comply with the Export Laws to assure that the Software is not exported, directly or indirectly, in contravention of the Export Laws.

10. Governing Law. This EULA will be governed by the laws of the Japan, excluding its conflict of law provisions.

11. Severability. If any provision of this EULA shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions hereof shall not in any way be affected or impaired.

12. No Waiver. No waiver of any breach of any provision of this EULA shall constitute a waiver of any prior, concurrent or subsequent breach of the same or any other provisions hereof, and no waiver shall be effective unless made in writing and signed by an authorized representative of the waiving party. To the extent the terms of any TOSHIBA policies or programs for support services conflict with the terms of this EULA, the terms of this EULA shall prevail.

13. Supplier Software. The Software may include certain software provided by TOSHIBA suppliers. In such event, you agree that such supplier may be designated by TOSHIBA as a third party beneficiary of TOSHIBA with rights to enforce the EULA with respect to supplier's software.

14. Open Source Software. The Software may contain software files that are subject to certain open source license agreements. The open source software files and additional terms and conditions may be included in the TOSHIBA Telecommunication System product general description or electronically within the product. The open source software files are provided "AS IS" to the maximum extent permitted by applicable law. Please read the open source and third party software terms and conditions carefully for relevant copyright and licensing terms.

15. Entire Agreement. YOU ACKNOWLEDGE THAT YOU HAVE READ THIS EULA AND THAT YOU UNDERSTAND ITS PROVISIONS. YOU AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. YOU FURTHER AGREE THAT THIS EULA CONTAINS THE COMPLETE AND EXCLUSIVE AGREEMENT BETWEEN YOU AND TOSHIBA AND SUPERSEDES ANY PROPOSAL OR PRIOR AGREEMENT, ORAL OR WRITTEN, OR ANY OTHER COMMUNICATION RELATING TO THE SUBJECT MATTER OF THIS EULA.

TOSHIBA AMERICA INFORMATION SYSTEMS, INC.

Telecommunication Systems Division
End User Standard Limited Warranty

For Telecommunication Equipment
Purchased Within the Fifty (50) United States and District of Columbia,
United States Territories, Puerto Rico, Latin America, and the Caribbean

DISCLAIMER AND LIMITATION OF REMEDY

ALL OTHER EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS, ARE HEREBY DISCLAIMED. TOSHIBA EXPRESSLY DISCLAIMS ALL WARRANTIES NOT STATED IN THIS LIMITED WARRANTY. ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW ARE LIMITED IN DURATION TO THE TERM OF THIS EXPRESS LIMITED WARRANTY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO END USER.

TOSHIBA, ITS AFFILIATES AND SUPPLIERS DO NOT WARRANT THAT OPERATION OF THE PRODUCT WILL BE UNINTERRUPTED OR ERROR FREE.

IF THE PRODUCT FAILS TO WORK AS WARRANTED, END USER'S SOLE AND EXCLUSIVE REMEDY WILL BE REPAIR OR REPLACEMENT. IN NO EVENT WILL TOSHIBA, ITS AFFILIATES OR SUPPLIERS BE LIABLE TO END USER OR ANY THIRD PARTY FOR ANY DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE MALFUNCTIONING PRODUCT. THIS LIMITATION APPLIES TO DAMAGES OF ANY KIND, INCLUDING ANY DIRECT OR INDIRECT DAMAGES, LOST PROFITS, LOST SAVINGS OR OTHER SPECIAL, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, WHETHER FOR BREACH OF WARRANTY, CONTRACT, TORT OR OTHERWISE, OR WHETHER ARISING OUT OF THE USE OF OR INABILITY TO USE THE PRODUCT, EVEN IF TOSHIBA OR AN AUTHORIZED TOSHIBA REPRESENTATIVE, SERVICE PROVIDER OR RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR OF ANY CLAIM BY ANY OTHER PARTY.

SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR SOME PRODUCTS, SO THE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO END USER. THIS LIMITED WARRANTY GIVES END USER SPECIFIC LEGAL RIGHTS, AND END USER ALSO MAY HAVE OTHER RIGHTS THAT VARY FROM JURISDICTION TO JURISDICTION.

GENERAL TERMS

This limited warranty applies to the telecommunication equipment (except for fuses, lamps, and other consumables) sold by Toshiba America Information System, Inc. ("***Toshiba***") or a Toshiba authorized dealer to an end user within the Fifty (50) United States and District of Columbia, United States Territories, Puerto Rico, Latin America, and the Caribbean for such end user's own use and not for resale ("***End User***") and described in the below table (the "***Product***"). The limited warranty period for each Product is for the period described in the below table and begins on the date Toshiba or its authorized dealer delivers the Product to End User (the "***Limited Warranty Period***").

Product	**Limited Warranty Period**
IPedge™ New Telecommunication Equipment	One (1) year
Toshiba-branded New Telecommunication Equipment (excluding IPedge™)	Two (2) years
Toshiba-branded Refurbished Telecommunication Equipment	Ninety (90) days

End User may be required to provide proof of purchase as a condition of receiving warranty service.

Toshiba warrants that the Product is free from defects in materials and workmanship under normal use.

UNLESS OTHERWISE STATED IN WRITING, ALL TOSHIBA AND THIRD PARTY SOFTWARE AND ANY RELATED DOCUMENTATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND. TOSHIBA'S SOLE OBLIGATION WITH RESPECT TO SOFTWARE AND ANY RELATED DOCUMENTATION IS SET FORTH IN THE END USER LICENSE AGREEMENT FOR THE SOFTWARE, WHICH IS ACCEPTED BY USING THE PRODUCT.

The sole obligation of Toshiba under this limited warranty is to repair or replace defective parts or Product with new or refurbished parts or Product (at its option).

The terms and conditions of this limited warranty constitute the complete and exclusive warranty agreement between End User and Toshiba for the Product and supersede any prior agreements or representations made in any Toshiba sales document or advice that may be provided to End User by a Toshiba representative in connection with End User's purchase of the Product. No change to the conditions of this limited warranty is valid unless it is made in writing and signed by an authorized Toshiba Vice President.

WHAT IS NOT COVERED BY THIS LIMITED WARRANTY?

- Service on Product made necessary by any external cause, including fire, theft, acts of God, accident, misuse, abuse, neglect, lightning, power failures, surges or shortages, liquids, alteration, improper installation, improper maintenance or improper connection with any device or software.Service on Product purchased outside the Fifty (50) United States and District of Columbia, United States Territories, Puerto Rico, Latin America, and the Caribbean.
- Service made necessary by installing or using Product in combination or in assembly with third party products that are incompatible or of inferior quality, design or performance.
- Service on Product on which the Toshiba label or logo or serial number is defaced or missing.
- On-site service and repair of the Product.
- Modifications to the Product not approved in writing by Toshiba.
- Replacement of missing parts, providing retrofits or preventive maintenance.
- Third party products. The Product may be subject to warranty provisions provided by a third party provider.
- Toshiba and third party software and any related documentation pre-installed on or shipped with the Product or otherwise made available by Toshiba in whatever form or media.

PROTECTION OF STORED DATA

For an End User's important data, please make periodic back-up copies of all data stored on the Product as a precaution against possible failures, alteration, or loss of the data. IF AN END USER'S DATA IS ALTERED OR LOST DUE TO ANY TROUBLE, FAILURE OR MALFUNCTION OF THE PRODUCT AND THE DATA CANNOT BE RECOVERED, TOSHIBA WILL NOT BE LIABLE FOR ANY DAMAGE OR LOSS OF DATA OR ANY OTHER DAMAGE RESULTING THEREFROM. WHEN COPYING OR TRANSFERRING AN END USER'S DATA, PLEASE CONFIRM WHETHER THE DATA HAS BEEN SUCCESSFULLY COPIED OR TRANSFERRED. TOSHIBA DISCLAIMS ANY LIABILITY FOR THE FAILURE TO COPY OR TRANSFER THE DATA CORRECTLY.

BEFORE RETURNING ANY PRODUCT FOR SERVICE, BACK UP DATA AND REMOVE ANY CONFIDENTIAL, PROPRIETARY OR PERSONAL INFORMATION. TOSHIBA IS NOT RESPONSIBLE FOR (1) DAMAGE TO OR LOSS OF ANY PROGRAMS, DATA, OR REMOVABLE STORAGE MEDIA OR (2) RESTORATION OR REINSTALLATION OF ANY DATA OTHER THAN SOFTWARE INSTALLED BY TOSHIBA WHEN THE PRODUCT WAS MANUFACTURED.

CRITICAL APPLICATIONS

The Product is not designed for any "critical applications." "Critical applications" means life support systems, medical applications, connections to implanted medical devices, commercial

transportation, nuclear facilities or systems or any other applications where product failure could lead to injury to persons or loss of life or catastrophic property damage. ACCORDINGLY, TOSHIBA DISCLAIMS ANY AND ALL LIABILITY ARISING FROM USE OF THE PRODUCT IN ANY CRITICAL APPLICATIONS. IF END USER USES THE PRODUCT IN A CRITICAL APPLICATION, END USER, AND NOT TOSHIBA, ASSUMES FULL RESPONSIBILITY FOR SUCH USE. FURTHER, TOSHIBA RESERVES THE RIGHT TO REFUSE TO SERVICE ANY PRODUCT USED IN A CRITICAL APPLICATION AND DISCLAIMS ANY AND ALL LIABILITY ARISING OUT OF TOSHIBA'S SERVICE OR REFUSAL TO SERVICE SUCH PRODUCT.

Index

M

N

P

R

S

T

U

V

W