



# Technical Operating Guidelines

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# Technical Operating Guidelines

This guide covers the guidelines that should be followed when deploying Iwatsu Enterprise TOL. Since deployment environments and technology related to TOL are always changing, this document will also be updated periodically to reflect the latest trends and guidelines set for the industry. Please ensure that you have the latest version of Technical Operating Guidelines before proceeding with your research and deployment.

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# 1

## New Features



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## New Features

### New UC Client Manager, Mac and Web Support

UC Client Manager has been updated to match the modern user interface that the users encounter in their daily lives. But while the user interface has been updated, the core behavior has remained the same so that previous users of UC Client Manager will have no trouble when moving onto the next generation. The new UC Client Manager is also designed to support the new functionality of the UC server (e.g. Enhanced Call Control).

The biggest upgrade in terms of functionality for UC Client Manager would be the support of plugins. These plugins are designed to integrate with pre-existing business solutions that are already out there (e.g. Salesforce, Microsoft OCS/MSN, Skype, etc.) so that users can experience a truly integrated experience while using the UC solution rather than being forced into a foreign environment where everything may seem difficult and confusing. Utilization of the UC Client Manager will allow the users to enhance their UC Client Manager experience or simply use it as an added background tool which enhanced their experience with software solutions that they are already using.

#### Mac Client Support

Iwatsu Enterprise TOL is now able to provide a full UC experience to users using a Mac system. Through the use of the Mac version of UC Client Manager, along with virtually any e-mail client software on a Mac environment, the Mac users will now be able to have the same user experience as Windows users when it comes to core UC Client Manager functionality such as LanTalk or Locations management.

#### Web Based Client Support

The users will now also have the ability to access the UC Client Manager software through a web browser. This means that virtually any type of operating system can be used to offer the UC experience to the users as long as the user has access to a modern web browser. The ubiquitous nature of the web based UC Client Manager will allow for a easier and smoother deployment of UC Client Manager without the previous limitations. When combined with Web Client, this new feature will go hand in hand with the current cloud computing trend.

#### Specific Behavior and Requirements

UC Client Manager may be deployed on all supported Operating Systems. Please refer to the below charts and notes for specific rules and limitations.

#### Supported Operating Systems for Desktop Clients

OS List	32Bit Support	64Bit Support	Limitations
Microsoft Windows XP	YES	NO	---
Microsoft Windows Vista	YES	YES	---
Microsoft Windows 7	YES	YES	---
Microsoft Windows Server 2003	YES	NO	---
Microsoft Windows Server 2008	YES	YES	---
Mac OSX 10.5 (Leopard)	YES	NO	---
Mac OSX 10.6 (Snow Leopard)	NO	YES	---

- NOTE:** Iwatsu does not test the application under virtual environments. Please use at your own risk when deploying the application to a virtual environment.
- NOTE:** Microsoft Operating Systems require Microsoft .Net Framework 2.0 or higher. If this is a pushed environment, the framework must be pushed before rolling out UC Client Manager.

- NOTE:** Mac Operating Systems require Mono framework 2.4.3 or higher.

## Supported Browser for Web UC Client Manager

Browser List	Version
Microsoft Internet Explorer	7.0 or higher
Mozilla Firefox	3.0, 3.5
Apple Safari	4.0 or higher
Google Chrome	3.0 or higher

- NOTE:** Other web browsers not listed above should work with Web UC Client Manager in theory, but Iwatsu does not verify functionality outside of the above listed browsers.

## Client Feature Comparison Between Platforms

Features	For MS Windows	For Mac OSX	Web Based Client
Call Manager	YES	YES	YES
LanTalk	YES	YES	YES
Company Directory	YES	YES	NO
Contact Search	YES	YES	NO
Directory Search	YES	YES	YES
UC Location Management	YES	YES	YES
Event & Call Logs	YES	YES	NO
Plug-ins	YES	NO	NO
Outlook Snap-In	YES	NO	NO

## Plugin Compatibility Chart

Plugin Name	Requirements & Comments	Windows Support	Mac Support	Web Support
ACT!	ACT! Version 2005 only	YES	NO	NO
Bluetooth	Requires Microsoft Bluetooth driver. You must uninstall any other drivers and allow Windows to manage the Bluetooth driver in order to utilize this plugin	YES	NO	NO
Google Talk	Any version of Google Talk (as of Jan 2010)	YES	NO	YES
Microsoft CRM	MS CRM Version 1, 2, 3, 4	YES	NO	NO
Microsoft OCS	MS OCS Version 2005, 2007 and 2007 R2 only	YES	NO	NO
Microsoft MSN Messenger	MSN Version 6.0 and up	YES	NO	NO
PC Recruiter	Custom*	YES	NO	NO
SalesForce	Internet Explorer 6.0 and up Firefox 3.0 or 3.5	YES	NO	NO
Skype	Skype Version 4.0 or higher	YES	NO	NO
Smart Tags	Office 2003/2007 for integration with software package (Office 2010 TBD) Clip board monitoring for All Windows OS	YES	NO	NO
TAPI	No terminal environment support	YES	NO	NO
Outlook Snap-In	Outlook 2002 and UP	YES	NO	NO

- \*Note:** Custom refers to customized solutions that Iwatsu has provided in the past. While these features are included in the UC Client Manager package for convenient deployment, they are not tested or supported by Iwatsu. While the users are free to use the plugin if desired, they must do so at their own risk.

## Licensing

UC Client Manager requires the users to have either CTI or UC license.

## Other Limitations

Only E-mail to Fax will be available to Mac Operating Systems.

# Google Apps/Desktop Support

Google applications are becoming an industry standard at an enormous pace. The availability and efficiency of Google solutions are now accepted for both business & personal usage. Google Desktop, along with Google Talk, is a popular choice for computer desktop management and efficient communication with those located outside the company's network.

UC Client Manager is now able to integrate with these popular application packages so that it can offer seamless user experience to those who may be already utilizing the Google solutions. Through the use of Google Desktop Gadgets, the users will be able to manage their locations & work group right from the Google Desktop interface, and even have the ability to control their incoming & outgoing phone calls without the direct use of the UC Client Manager.

For those who frequently use Google Talk, all your locations settings and availability will be synchronized between the UC Client Manager and Google Talk. This means that the locations calendar will now also affect Google Talk status, allowing users to automatically reflect their status to their contacts in Google Talk, without having to manually configure it all the time.

UC Client Manager integration with Google Desktop & Google Talk will transform the user's Google application experience to a whole new level by adding the entire UC functionality right into the interface that they're already familiar with.

## Specific Behavior and Requirements

The Google Apps solution will synchronize as a typical IMAP email server. All messages that populate on Google server will populate on the UC server and vice versa through the IMAP TSE. Google Apps supports Superuser functionality through OAuth system. By having the OAuth user configured as the Superuser on the UC server end, users will be able to freely change their Google Apps account passwords without having to worry about synchronization. Synchronization is performed through OAuth user's credentials and not individual user's. Only end user information required would be their full email address as the user name.

Google Apps integration will also synchronize the user's contacts and calendar with the UC system. Each calendar entry will be populated on the locations calendar.

The UC Google Desktop Gadget will also replace the traditional UC Client Manager for those sites that are heavily integrated into Google solutions. The gadget provides all the core features of UC Client Manager so that the users can access all the benefits from UC Client Manager right from the interface that they are already familiar with.

UC Client Manager integration with Google Talk also provides an added feature for avid Google Talk users since it will synchronize the availability between the two software. However, this integration requires that UC Client Manager is installed and logged into the system in order to synchronize the status of the users.

## The following are the configurations required to enable Google Apps Sync:

- ◆ Configure IMAP TSE server to connect with the Google Apps server
- ◆ Configure individual Mailbox accounts with their credentials (which requires each user's user name and password) or utilize OAuth as Superuser (which requires user names only)

## Licensing

In order to achieve synchronization between Google Apps and UC server, you will require an IMAP TSE license.

The users must have CTI or UC user license in order to utilize UC Google Desktop Gadget or Google Talk status sync from UC Client Manager.

## Speech Commands (Voice Navigation)

Navigating through the Voice Menu or the TUI can sometimes be difficult when you cannot freely enter the DTMF keys. When you're on a cellphone, for example, it is often difficult to navigate through DTMF input due to the ergonomics of cell phones. TOL now supports a Voice Navigation function where the users may speak the numerical choice rather than to enter it on their phone. This will allow the users to freely navigate through the entire system without having to enter a single key.

### Specific Behavior and Requirements

The following is the typical scenario that the user will encounter when utilizing speech commands.

User dials into system - says the login key word - says their mailbox number - says their password - the user says "two" for messages from the TUI - the system will accept the entry and user will be sent to the message TUI.

Above scenario assumes that speech command is enabled for the company and the voice menu that initially accepts the caller. If the speech command is only enabled for the mailbox itself, the user will only have access to speech command after entering their mailbox number as a DTMF key.

As long as the system recognizes the current user (e.g. logged into mailbox or is accepting a find me - follow me), the user will have speech command capability in both TUI and voice menus. This is assuming that the feature is enabled on the user's mailbox.

Since Speech Command uses ASR resources, any system that is able to support ASR will be able to support speech command.

### The following are the configurations required to enable Speech Commands:

- ◆ Enable Speech Recognition from Company level
- ◆ Enable Speech Command from Feature Group level
- ◆ Enable Speech Command for individual mailboxes that are associated with above FG

### Licensing

Speech Command uses ASR license and does not require a separate license. This means that the maximum number of users who can simultaneously use speech command is limited to the ASR ports on a system. As soon as the speech command enabled user is logged into their through a telephone, that user will occupy an ASR port/license. This will only be released when the user hangs up from the system.

It is recommended that the site purchases 1:1 ratio of ASR licenses to regular voice ports if the site plans on utilizing this feature for high number of users.

## Speech Command Accuracy

The system will be flexible when accepting a speech command from users. It will match the incoming sound with the DTMF key that is closest to it. There will be no confirmation upon accepting an entry, which means that there is a room for error. For example, if the user starts talking to someone while using speech command, the system will accept the sounds as an entry and enter it as a command. The same goes for any significant amount of noise that the system hears when the user is on the phone. The user should use this feature with such behavior in mind.

You may also add a TUI action for the users to disable the speech command for their current session if the user is in an environment where utilizing speech command can be problematic. This action will only disable the feature for the current call. Speech command will be enabled again when the user logs in the next time.

## Enhanced Call Control

Regardless of where you are, having the option to control your phone calls as if you were in the office can prove to be helpful. Being able to hold or transfer the caller from a cell phone or any external device would be an invaluable tool when you consider the versatility that it offers. The Enhanced Call Control feature allows you to access the typical call control commands right from virtually any telephone device, allowing you to be free from your desktop phone. As long as the telephone call is monitored by the server, you will be able to freely control the calls with the call control commands.

Enhanced Call Control also features Call Handoff, which is a seamless variation of traditional call forwarding which you can utilize for yourself. Since business is always on the move, it is not always ideal to stay idle. This is true even when you're on the phone. The important call you're answering at front of your desk may be preventing you from other tasks or being elsewhere. You could ask the caller to call you back on your cell phone or ask if it would be okay for you to call them back on the other line but this would usually break the flow of conversation and is not ideal for majority of situations.

The Call Hand Off feature was added to the TOL system to remedy such an issue. You can now seamlessly transfer your current ongoing phone call at your desk to another device (e.g. cell phone, another station, etc) without any interruption. The person you are talking to will most likely not even notice the transfer if the hand off was made from UC Client Manager since they will hear no prompts.

These feature tie in nicely with the UC Mobile applications' dial feature since it will bridge the call between you and the destination through the server. This means that your call is monitored by the server, which also means that every call you initiate from the UC Mobile application can support the Enhanced Call Control feature as long as the mailbox has the proper license and permission.

- ☑ **NOTE:** Enhanced Call Control is mutually exclusive with the Record Conversation feature. If the call was answered using the Answer & Record action, or if Always Record Calls is enabled for the mailbox, ECC will not be available for the user.

## Specific Behavior and Requirements

The following is the typical scenario that the user will encounter when utilizing Enhanced Call Control.

A caller tries to reach the user - the system calls the user via find me follow me on their external phone (e.g. cell phone, home phone) - upon accepting the call, the user hears a chime to indicate that ECC is enabled for the current call - during the call, the user pushes \*\* (by default, this may be modified) to access the ECC - the caller is put on hold - the ECC menu is read to the user - the user selects a command by pushing a DTMF key which corresponds to the action that the user wishes to perform (e.g. transfer, call handoff, etc.).

Like in the above scenario, ECC is only available on calls which are monitored by the system (trombone transfers). Blind transfers or direct calls from the external device will not have the ECC capability. The same goes for the new Call Hand Off feature which is part of the ECC. The below is a typical scenario for Call Hand Off.

A caller tries to reach the user - the system calls the user via find me follow me on their cell phone - upon accepting the call, the user hears a chime to indicate that ECC is enabled for the current call - the user is currently working at home with UC Client Manager on. The user is able to see the call in progress from the call manager - user chooses the call hand off function from the UC Client then directs the call to home phone for better reception - user's home phone rings - user answers the home phone - the call is now seamlessly connected from the cell phone to the home phone without the caller noticing.

## The following are the configurations required to enable ECC:

- ◆ Enable Enhanced Call Control from FG level
- ◆ UC Licensed users within the above FG will have access to ECC

## Licensing

ECC requires the users to be a UC user. Also, since ECC is only available on monitored calls, all calls which involve ECC will occupy a minimum of 2 ports. This means that if a system has 16 ports total, maximum of 8 people can be on a call with ECC enabled on their call.

It is recommended that the site purchases additional ports if they plan on utilizing this feature for high number of users.

## Overlap of DTMF Keys in ECC & Other Limitations

When the ECC is activated by pressing the configured DTMF keys (\*\* by default), this DTMF is heard by both the user and the other line. This means that if the other line is also a system which interprets DTMF keys, there may be an overlap in functionality. Users should be aware of such limitation so that they do not lose control over an important call. However, the system is able to recognize who pushes the DTMF keys. So even when the person on the other line presses the DTMF keys required to activate ECC, it will not trigger for the user. Only the current user who has ECC capability can trigger ECC.

If both people on the line has access to ECC, the person who triggers it first will have the commands available to them. ECC is not available to users who are on hold by the other user who is using the ECC.

ECC is not compatible with the Speech Commands when you are triggering it. The user cannot say the DTMF key (e.g., say "star star" instead of pushing \*\*) to trigger ECC. However, the user may use speech commands to select an option from the ECC menu once it is triggered if speech commands is enabled for them (e.g., say "two" to transfer from ECC instead of pushing 2).

## Virtual Machine Support

Many organizations are now turning to virtual environments for their server needs due to its efficiency. Rather than having a room full of servers, a single rack on a hosted or in house environment can now perform the functions of multiple computers at once by leveraging virtual environments.

TOL can now also be installed on a virtual environment so that you can leverage existing hardware assets that you may already have. Or instead of having to purchase a entirely new server system, a simple upgrade of the existing server machine may be sufficient.

## Requirements

Software	Version
VM Software	VMware Vsphere 4 only
OS for TOL	Microsoft Windows XP, 7, 2003 and 2008. (32bit versions only)

## Virtual Environment Limitations

You cannot directly upgrade an existing TOL server to a virtual environment. However, you will be able to migrate an existing TOL server to a newly installed virtual machine system by migrating the database through the utilities provided on the installation DVD. This means that you can migrate both 7.x and 8.0 systems to a 8.0 virtual environment. This means that you will always have to install TOL on a new virtual machine with a fresh operating system. Importing an existing TOL environment to a virtual image is not supported.

TOL installed on a virtual environment requires the same amount of hardware resource as non-virtual machine environments. Please refer to **Server Specifications on page 53** for more information on resource requirements.

Faxing has not been tested (both inbound faxing and outbound faxing) in virtual environments. A comprehensive test data will be available in the near future.

## Soft License

With the release of TOL 8.0 the previous licensing model based on physical sentinel USB dongles will be phased out for most sites. License will now be managed through online activation only, which is based on the Site ID and Serial Number provided to the site during an order.

This means that the license is now more sensitive to any software or hardware changes that occur on the server computer. Please ensure that below conditions are met to allow license to function properly.

- ◆ Computer hardware does not change after activation (e.g. hard drive, network card, etc.).
- ◆ Ethernet card used to access the internet stays identical at all times (e.g. if there are 2 or more Ethernet cards on a computer, the same one should always be used for internet connection).
- ◆ Any re-installation or upgrade must be authorized on a site that is currently active.

## Upgrades from legacy systems

If you are upgrading from a legacy system which has utilized a physical USB sentinel key for license, the physical key will automatically become null after an upgrade to version 8.0. This process is part of a requirement during an upgrade. When you choose to upgrade the USB sentinel license, the process will finalize on its own after 48 hours. Once this process has been completed, there will be no rollback possible. If you wish to downgrade to legacy versions, you must order a replacement license again.

## Internet Requirement for Soft License

Soft license requires constant connection to the internet in order to function. If a system utilizing soft license loses connection to the internet, it will go on a 15 day countdown. If the internet connection is not restored after the countdown has ended, the license will become deactivated and the system will have reduced functionality.

## Term Based Licensing

Term based licensing is now also available for sites that wish to purchase a "per user" model of TOL. Clients will be able to freely add or remove number of users and scale the cost accordingly. Features may also be installed and removed from sites.

Term based licensing is designed to be sold as a "per year" package. Additional purchases and upgrades in between annual cycles will be pro-rated accordingly.



# 2

## Phased Out Features



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## Phased Out Features

With the introduction of Iwatsu Enterprise TOL software version 8.0, the following features and environments will be phased out.

### WAP

Wireless Access Protocol has been phased out due to emergence of smartphones in business spheres. UC Mobile is now compatible with most smartphone devices and operating systems such as Google Android, Apple iPhone and RIM Blackberry. JAVA based UC Mobile will still be available for typical and legacy cell phones.

### LAP

Local Area Paging feature has been phased out due to development of alternative solutions such as SMS protocol for cell phones.

### Dialogic Voice Boards

Dialogic voice boards are no longer supported directly by the TOL system. If a site utilizes Dialogic voice boards with TOL, a previous versions of TOL or a media gateway device (if available for the voice board in question) must be used.

### Microsoft Windows Server 2000

TOL server applications will no longer support Window Server 2000 due to the operating system being discontinued.

### Microsoft Office/Outlook 2000

TOL server applications no longer support Microsoft Office/Outlook 2000 due to changing industry standards.

### Real Speak 3.0/3.5, Nuance 8.0

TOL server applications no longer support these engines since they are no longer supported by the developer.

# 3

## Existing & Upgraded Features



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## Existing & Upgraded Features

### Speech Dialing Contacts

Users that have access to contacts (either through Contact synchronization with Exchange 2000/2003/2007 or by importing contacts through Web Client) are able to select which entries will be available for speech access. Both the Outlook and Web Client interface gives the user the choice of selecting one, several or all contacts. When accessing contacts through Outlook the selected contacts for speech accessibility belongs to a specific category "UC Speech".

The number of contacts that may be speech-enabled is stipulated by the license file for speech recognition. The license may be used with any of the voice ports or sessions that require this type of functionality. You will require more ASR ports for additional UC or CTI users that access this feature. The number of contacts that can be enabled for speech access is also stipulated by the type of license. The speech recognition engine handles three levels of licensing with respect to the number of names:

- ◆ AST 1 - up to 250 names active on 2 voice ports (no upgrades)
- ◆ AST-2: 251 ~ 500 Names
- ◆ AST-3: 500+ Names

Every user with the ability to speech-enable contacts has his/her own grammar file - a text file that the speech engine employs as a reference and against which it performs its recognition tasks. The content of this grammar file is determined by the application, though some settings are available to the system administrator for the purpose of defining priorities. Grammar files for speech capability will have the following content:

- ◆ Complete company directory
- ◆ Public contacts available for all users at the company level
- ◆ Speech-enable private contacts in Web Client (that is, personal contacts available in Web Client through contact synchronization with Exchange 2000/2003/2007/2010, or by importing them via Web Client)

### Some likely scenarios:

#### Case 1

Total number of users in the company (Directory structure): 250

Total number of public contacts: 20

Total number of Outlook (personal) contacts to be synchronized for a specific user: 420

Number of names in the license (AST-2): 251 ~ 500

In this scenario, the total number of contacts is higher than the license authorizes ( $250 + 20 + 420 = 690$ ); therefore, the user must specify which personal contacts to speech-enable.  $500 - (250 + 20) = 230$ . This means that 230 contacts out of 420 entries is the maximum number of personal contacts that the application will allow for speech accessibility.

- ☑ **Note:** It is important to keep in mind that as the company grows more mailboxes will be needed. New mailboxes will take priority over contacts in the grammar file, reducing the number of personal contacts by a like sum. For example, 20 new mailboxes will reduce the number of personal contacts by 20.

## Case 2

Total number of users in the company (Directory structure): 150

Total number of public contacts: 50

Total number of Outlook (personal) contacts to be synchronized for a specific user: 550

Number of names in the license (AST-1): 1 ~ 250

In this scenario,  $250$  (Maximum licensed) -  $(150 + 50) = 50$ . Therefore, only 50 from 550 entries can be speech-enabled.

- ☑ **Note:** The system administrator has the ability to define the Contact Priority company setting. Should an existing grammar file contain the maximum number of names permitted, and the number of mailboxes grow, either personal or public contacts will have to be removed. The system administrator has the power to decide which type of contacts (public or private) are going to carry the lower priority so that they can be removed in such events.
- ☑ **Note:** It is also possible to upgrade the ASR ports to handle 500+ names.

## Find Me / Follow Me

A central feature to TOL 7.0, for mobile users in particular, is the Find Me / Follow Me feature. The following are some of the important points to keep in mind when taking advantage of this feature:

Once the user selects the phone numbers at which he/she can be reached at a specific location the Find Me function will determine the number of voice ports to be employed when the system attempts to reach that user.

When the Find Me function is set to call the user at a single number (or call each number assigned to a particular location sequentially) only the voice port which answered the call will be in use.

If the user wants the system to call all the phone numbers assigned to a particular location at the same time (broadcast mode) the voice server will use the number of ports same as the number of phone numbers assigned to a location additional to the first voice port used to answer the call. For example, if there are three phone numbers assigned to "Office", four voice ports will be in use while the system locates the user.

Continuing from the above example, the caller will be placed on Hold while the system dials the three assigned numbers. When the user answers the call the system will ask for confirmation and expect a DTMF input from the user. Once the user has confirmed that he/she will take the call the call is connected and the remaining calls that were made to the other numbers to locate the user (in this case, two) will be dropped and those voice ports will be cleared. Depending on the type of phone system in place (e.g., Analog, IP, etc.), as many as three voice ports may be cleared (the voice port which answered the call in the first place, plus two). At a minimum two voice ports will be dropped.

- ☑ **Note:** Please note when taking advantage of the Find Me function in sequential mode that the caller is on Hold while the Find Me function tries to locate the user. It is suggested that user uses the broadcast mode when there are three or more phone numbers assigned to a location since it will lessen the on Hold time on the part of the caller.
- ☑ **Note:** Also bear in mind that each location (home, office, meeting, etc.) can have its own specific Find Me rules, allowing the user to specify broadcast for one location and sequential for another. For further information on this function the System Administrator should consult the Server Configuration Guide and the users should take a look the Client Applications Guide.

### How it works

The following describes the rules, logic and expected behavior when a user forwards his phone to the UC system with the CTI link to the PBX enabled/not enabled. It also covers the expected behavior when the phone must be forwarded as a result of a change in the database through the Web Client, UC Client Manager or the Admin. This behavior applies to both DID and Internal Calls.

### Rules and Conditions:

#### → Find me – Follow me with PBXs with no CTI

With PBX systems that do not integrate with TOL using a CTI stream the Find Me/Follow Me functionality only works with calls received by the TOL Auto-Attendant.

- ◆ Call first number at the location

The Auto-attendant will call the first number assigned to the location. Call supervision will be based on the feature group setting for that type of number (internal or external).

- ◆ Call each number assigned to the location sequentially

The Auto-attendant will call each number in the order assigned to the location. Call supervision will be supervised regardless of the feature group setting. There is usually only one voice channel taken for this process unless trombone transfers are used for call supervision. If the call is answered at one of the numbers the caller will be connected immediately unless the "Transfer Validation Prompt" is checked in the feature group for that type of number (internal or external).

- ◆ Call all the numbers at the same time

The Auto-attendant will call all the numbers at the same time using one channel for each number. If there is an answer at any of the numbers TOL will prompt to announce the caller's name and wait for confirmation that the recipient is at this number before connecting the call (for example a call answered by voice mail will note be connected since it cannot confirm). The feature group setting for "Transfer Validation Prompt" will not change this

behavior. Depending on the integration, once the call is completed, TOL will either internally bridge the call (SIP, Dialogic) where 2 channels will be used for the duration of the call or the PBX will be used to bridge the call.

### → Find me – Follow me with PBXs with CTI

With PBX systems that can integrate with TOL via a CTI link additional functionality is provided for cases where your internal office extension rings. This can occur if someone else within the company calls your direct extension or dials a DID that rings your extension directly, bypassing the TOL Auto-Attendant. This will depend on the “Re-Route Options for DID and internal calls using CTI” settings in the feature group. In order for the Find Me function to follow through your locations this setting must be set to “Forward calls to UC – Locations options”. In order to provide uniform Find Me in all cases TOL will employ one of two methods to make sure that the caller is able to reach you.

1. If DID Properties in the Feature Group has the Voice Mail Hunt Group defined.

In this case, TOL will use CTI to re-program your phone when your availability or location changes. In the case of change of availability TOL will activate the DND setting on the internal extensions that are assigned to that current location. In the case of a change of location TOL will forward the call to the Voice Mail hunt group and then engage its Find Me function to get the call to the mailbox owner as described above.

2. If DID Properties in the Feature Group does not have the Voice Mail Hunt Group defined.

If the feature group does not have the Voice Mail hunt group defined TOL will detect the internal phone receiving a ring. TOL will then determine the caller’s Caller ID to ensure there are no exceptions made for the caller in the user’s current location. The decision that TOL will make at this point depends on the following.

- a. Is this internal phone exclusively assigned to this mailbox? If there is another mailbox that has this phone assigned to it TOL will ignore the ringing of the extension and no further action will be taken.
  - b. Is this internal phone in the user’s current location? If this phone is in the current location TOL will let the phone ring. If it doesn’t answer the call TOL will check the Find Me function setup for the user’s current location.
- ♦ If it is set to “Call first number” and the ringing phone was the first number the caller will be prompted to leave a message. If this phone was not the first number TOL will not let the phone ring and pick up the call using the pick up code defined in the PBX template and transfer the call to the first number assigned in the user’s location.
  - ♦ If it is set to “Call each number sequentially” TOL will call the remaining numbers in the user’s location sequentially to find the user.
  - ♦ If it is set to “Call all the numbers at the same time” TOL will call the remaining numbers at the same time to find the user.
  - ♦ **Note:** If “Automatically find me” is chosen in the user’s Find Me function the caller will be prompted “Just a moment while I locate your party” prior to the other numbers being called. If “Ask the caller to find me” is chosen the caller will be prompted before the Find Me function calls the user’s other numbers.\
  - ♦ **Note:** If the phone that is ringing is not in the user’s current location TOL will use the pick up code defined in the PBX settings to pick up the ringing call and then process the Find Me function. Note that the caller will not be prompted until at least one of user’s numbers has been tried if the Find Me function was specified to “Ask the caller to find me”.

Once your call is picked up by TOL the same logic as above is used.

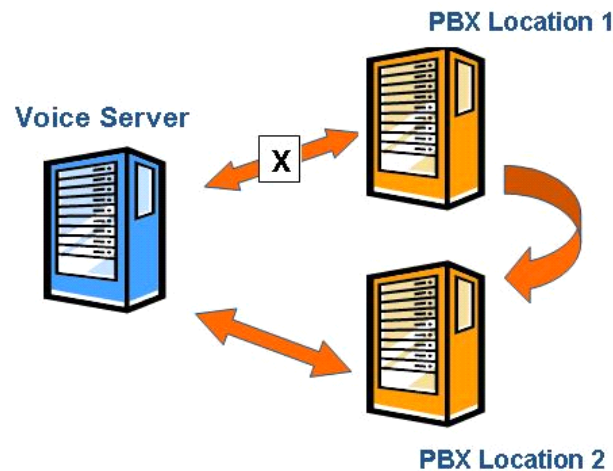
## Resiliency Ports

TOL Release 7.0 provided complementary resiliency services for PBXs. An envisioned scenario is as follows:

There are three actors in the scenario, the **Voice Server**, **Location 1** and **Location 2**. The centralized Voice Server provides UC Services and Messaging. Locations 1 & 2 are of the identical type of PBX (manufacturer & model). The Voice Server has an active connection with both switches (PBXs), allowing it to field calls from either location.

Under normal circumstances, all traffic is handled by the Location 1 PBX. This, according to our scenario, is assuming 12 voice channels shared between the Voice Server and the Location 1 PBX. The Voice Server also shares 8 voice channels with the Location 2 PBX in anticipation of a sudden Location 1 PBX failure.

Note that Voice Server licensing will display 12 voice ports and 8 resiliency ports; the Voice Server will then agree to configure a total of 20 voice ports. All 20 channels of the Voice Server are now ready to take calls regardless of their source, Location 1 PBX or Location 2 PBX.



Given that PBX 1 is the primary PBX it will in the normal course of things handle the majority of the calls. If it fails the traffic will be directed through PBX 2 using the system's resiliency services. The system's capacity to handle calls will be reduced since PBX 2 only supports 8 voice ports as opposed to PBX 1's 12 voice ports. Should PBX 2 fail in addition to PBX 1, the system will be unable to handle any calls. Lastly, should PBX 2 fail and PBX 1 remain in operation the system will continue to possess 12 voice ports but be without any resiliency capacity.

It is worth noting that the maximum number of active connections to the Voice Server is dictated by the value of the voice ports field in the license. According to our scenario above, wherein 12 voice ports are licensed and 8 additional voice ports are resiliency ports, a 13th call to the system will receive a busy signal. Though 20 voice ports are theoretically available only 12 can be employed at any one time.

### → The following conditions apply:

- ♦ The two PBXs that the Voice Server is integrated with must possess the same type of integration.
- ♦ The dial plan across locations must be unique.
- ♦ Resiliency ports are a back-up to primary voice ports.
- ♦ This functionality provides a solution for PBX-resiliency only, not messaging.

## Call History

TOL supports the recording of call history information for each individual user. To fully support the recording of call history for all of the calls (auto-attendant & extension to extension) CTI capabilities are required and the extension must be monitored.

The call history information is available from a number of end user interfaces. These include Outlook, UC Client Manager, Web Client and IMAP direct email client. Information provided with call history includes the phone number, Caller ID, name, date, time and duration.

There are certain scenarios for which call logs are not provided. These include, but are not limited to, the following scenarios:

- ◆ When a phone is set to **Call Forward Always** to another extension.
- ◆ Calls placed from the phone while another call is on hold.
- ◆ Calls placed on hold from UC Client Manager will log two entries in the Call History log.
- ◆ Outbound calls while placed in a conference are not logged.
- ◆ Outbound calls to internal extensions that are not answered are not logged.
- ◆ When your active extension is an external phone the duration of the call is inaccurate.

## Calendar & Contact Synchronization

Calendar and contact synchronization feature has been enhanced to support Google Apps in version 8.0. This allows a truly integrated solution when utilizing IMAP TSE sync between the supported mail servers and TOL.

### Calendar Entries

TOL supports limited calendar synchronization with Outlook 2000/XP/ 2003/2007. A dropdown list is provided in Outlook for the user's location and availability. These dropdown lists are also found in Outlook's meeting acceptance form.

By means of the UC Client Manager connection to the TOL Server the user's location calendar is updated with the appointment/meeting information. The subject is mapped to the schedule description field in the location calendar event in the TOL Server. Recurrence is also supported for meeting creation.

Mail Server	Calendar Sync	Calendar Push	Customized UC Location Support
Microsoft Exchange 2003	YES	---	YES (requires UCCM Outlook snap-in)
Microsoft Exchange 2007	YES	---	YES (requires UCCM Outlook snap-in)
Microsoft Exchange 2010	YES	---	YES (requires UCCM Outlook snap-in)
Google Apps (Gmail)	YES	---	YES (requires specific strings to be entered)
Lotus Domino	NO	NO	
Novell Groupwise	NO	NO	
(below list refers to using the client software <b>only</b> without utilizing a email server listed above (e.g. pop email accounts) and utilizing UC Client Manager Outlook snap-in)			
Microsoft Outlook XP	NO	YES	YES
Microsoft Outlook 2003	NO	YES	YES
Microsoft Outlook 2007	NO	YES	YES
Microsoft Outlook 2010	NO	YES	YES

- Note:** Calendar sync does not occur instantly. Estimated sync time for a typical calendar entry is 5 minutes.
- Note:** The synchronization is one-way from Outlook to the TOL server if you are not utilizing a full Exchange server sync. Changes on the TOL server are not reflected in Outlook without Exchange in between.
- Note:** Customized UC location and calendar sync/push are not compatible with reoccurring events.
- Note:** In order for TOL to synchronize with the mail server, the mail server must be within the same forest of network domain.
- Note:** LDAP import tool can only sync with **1** mail server, but it is able to pull information from multiple mail servers.

## Contact Entries

Contact entries can be synchronized between the mail servers and the TOL server through different client interfaces, such as Microsoft Outlook or web based clients such as Google Gmail. Whenever a user creates a private contact entry from either mail server or the TOL side, the entry will be synchronized to the other as well, allowing the users manage their contacts from a single location rather than having to replicate an entry every time.

Mail Server	Contact Sync	Manual/Mass Contact Import
Microsoft Exchange 2003	YES	YES (through LDAP, Outlook)
Microsoft Exchange 2007	YES	YES (through LDAP, Outlook)
Microsoft Exchange 2010	YES	YES (through LDAP, Outlook)
Google Apps (Gmail)	YES	YES (through LDAP, Gmail interface)
Lotus Domino	NO	NO
Novell Groupwise	NO	NO
(below are list of Microsoft Outlook versions compatible with contact sync feature)		
Microsoft Outlook XP	YES	YES
Microsoft Outlook 2003	YES	YES
Microsoft Outlook 2007	YES	YES
Microsoft Outlook 2010	YES	YES

- Note:** Public contacts cannot be synchronized.
- Note:** Contact sync does not occur instantly. Estimated sync time for a typical contact entry is 5 minutes.
- Note:** In order for TOL to synchronize with the mail server, the mail server must be within the same forest of network domain.
- Note:** LDAP import tool can only sync with **1** mail server, but it is able to pull information from multiple mail servers.

## Integrated Fax Services

☑ **Note:** For Inbound services (using soft fax) the ports are allocated dynamically. For Outbound services an **Admin > Company** setting will allow the system administrator to allocate ports for outbound fax services.

☑ **Note:** Faxing has not been tested (both inbound faxing and outbound faxing) in virtual environments.

TOL Release 7.0 also includes integrated Fax Server capabilities. Users may print a fax from any application, send a message in Outlook as a fax or send a fax using a fax wizard.

Because TOL takes advantage of the already localized Fax Console and Fax Services within the Windows OS (Windows 2000 and Windows XP Professional) there is no need for a new fax client. Once Microsoft Fax Services (**Start > Control Panel > Add/Remove Programs > Add/Remove Windows Components**) are installed on the user's PC the UC Client Manager allows for the installing of the Fax Service Provider. By selecting this option the users install a virtual device on their PC. The new Fax Service Provider will then have to be configured as their device for sending faxes.

### → System Limitation & Recommendation

Since this is a simulated fax experience, it is recommended that enterprises that require mass amount of outbound faxing use a **dedicated product for faxing purpose**. Due to the limitations of the default OS pool, the users will have to limit the **number of recipients of a single fax message to 10** when using Microsoft's fax client to send out faxes through the TOL server. Having more than 20 recipients will result in a non-displayed error where the fax jobs are not processed by the OS, so it is best to keep the number to 10 to ensure functionality.

⊘ **Warning:** A single workstation is also **limited to a single connection** from & to the server. This means that **only one** request can be processed at a single time. Multiple requests will be processed in a queue.

### → What steps occur when a User sends a fax?

1. The system is aware of the new device (EFSP) and (as the UC Client Manager is already connected to the Voice Server) all necessary information is delivered to the Voice Server by way of the UC Client Manager application. As the final rendering of the document will be received via FTP a virtual folder must have previously been configured on the Voice Server.
2. Having received all the required information (.tif file to be sent and any additional material delivered by the UC Client Manager) the Voice Server is ready to dial the fax number and send the fax. The Voice Server may execute this task either by using soft fax channels or by using any supported hardware resources.

☑ **Note:** Each fax will take approximately 10 seconds to be transferred to the server. The delivery speed of faxes will vary depending on the number of pages in the fax and the handshaking baud rate of the receiving fax machine. TOL will start handshaking at 14400 baud and decrease the rate until a successful connection is established. Please consider this variation of time when sending out high quantity of faxes and/or lengthy fax messages.

3. While the Voice Server is in the process of sending the fax the user will be informed of the job's progress via the UC Client Manager.

Users of Unified Communication may immediately avail themselves of this functionality once MS Fax Services are installed. In addition, this functionality is also available to other types of users (regardless of their desktop capabilities) by adding more fax desktops to the license and assigning them to selected mailboxes.

## Softfax

- ☑ **Note:** TOL version 8.0 or higher no longer supports Softfax for Dialogic board systems.
- ☑ **Note:** Faxing has not been tested (both inbound faxing and outbound faxing) in virtual environments.

## Specifications

The TOL software implements Group 3 Fax specifications which supports analogue fax with send and receive rates up to 14.4 kbps. Group 3 Fax is a type of fax transmission compatible with the great majority of fax machines used today.

The software is targeted for faxmail applications. By using TOL a system can discriminate between incoming fax or voice calls allowing an application to route the call to either fax or speech resources. It will establish and manage communications between two fax modems. There are five phases of operation covered: call set up, pre message procedure (selecting the communication mode), message transmission (including phasing and synchronization), post message procedure and call release.

### → **TOL Release conforms to the following ITU-T specifications:**

- ◆ **V.17** -- 2-wire modem for fax applications with data rates of 14.4, 12.0, 9.6, 7.2 kbits/s
- ◆ **V.29** -- Fax modem with data rates of 9.6 and 7.2 kbits/s
- ◆ **V.27ter** -- Fax modem with data rates of 4.8 and 2.4 kbits/s
- ◆ **V.21 channel 2** -- Used to transfer T.30 control frames
- ◆ **T.30** -- procedures for document fax transmission in general switched telephone network

### → **PC usage**

- ◆ **40 MHz of CPU** is used for every fax channel for send/receive functions
  - ◆ **100 KB of RAM** is used to load the fax application on the start up of TOL
  - ◆ **80 KB of RAM** is used for every fax channel that is actively sending or receiving faxes.
- ☑ **Note:** The softfax is supported in SIP systems under **certified PBX only**. This includes the Iwatsu ECS. Refer to **PBX Specifications on page 72** for detailed information.

## Practical functionality

The soft fax application is loaded as part of the TOL middleware. This functionality is only activated when configured through the Admin console and licensed on the sentinel. The system will then be enabled at startup to discriminate between voice and fax calls on every channel of the system. The voice channel will detect the fax frequency and notify the application which will then start to receive the fax. It is important to note that when a fax is being received the voice channel can no longer accept a voice call until the fax call is completed.

Iwatsu has put forward a 95% or greater success rate for softfax acceptance. The number of successfully received faxes must meet these criteria in a deployed environment.

Fax Board Type	Maximum supported Channels	Maximum fax capacity
Softfax with SIP	16 per Voice Server	10 faxes/channel/hour

- ☑ **Note:** Softfax is not recommended for enterprises whose business is fax centric. If your customer relies solely on fax documents for their business model please consider using a hardware fax solution instead.
- ☑ **Note:** Softfax will not function with G.729 compression.

## Record Conversation

There are several approaches with regards to TOL and its ability to record conversations and act as a monitoring device. Regardless of which approach the user selects the result is the same: a voice message will be stored in that user's mailbox. Each voice message will of course have its own unique subject (i.e., voice message from Roger Limpet) to permit ready filtering and management.

The following sections explain the varying approaches in which TOL may be employed to record conversations while describing the specific PBX feature required to achieve the desired functionality:

### → Answer & Record - UC Call Manager

- ◆ **Scenario:** User receives a screen popup when a call is routed through the auto-attendant
- ◆ **PBX Feature required:** Conference capabilities for voice server ports or the ability to barge in using a feature code
- ◆ **Description:** When acting as an auto-attendant, TOL will receive a call and prompt the caller to say a name. Afterwards the caller may say a name or enter a mailbox number. Before the call is transferred the user is presented with Caller ID and options for call control. Actions will continue to be available while the call remains on the voice mail port. If the user elects to Answer & Record rather than a blind transfer the voice server will dial a conference call code. As a result the voice server remains on the call recording the conversation.

### → Press Telephone's Record Button (at any time)

- ◆ **Scenario:** User presses the Record button to begin recording at any time during the conversation.
- ◆ **PBX Feature required:** Non-hold conference call from set or pre-programmed PBX record key
- ◆ **Description:** While a conversation is in progress the user presses a Record option on his/her phone. This action initiates a conference call to the voice server providing it with the proper signalling so that the voice server begins recording the moment the voice port responds.

### → UC Client Manager (at any time)

- ◆ **Scenario:** User selects the Record option in UC Call Manager or Record Conversation (Record/Stop) in the UC Client Manager menu at any time during a conversation.
- ◆ **PBX Feature required:** Barge-In code from the voice port.
- ◆ **Description:** A barge-in capability provides a silent means of joining and recording a conversation. TOL allows the user to stop recording (at any time) and record later during the conversation at any time.

### → UC Client Manager – Record all incoming calls

- ◆ **Scenario:** User selects the Record option in UC Call Manager or Record Conversation (Record/Stop) in the UC Client Manager menu at any time during a conversation.
- ◆ **PBX Feature required:** Barge-In code from the voice port.
- ◆ **Description:** A barge-in capability provides a silent means of joining and recording a conversation. TOL allows the user to stop recording (at any time) and record later during the conversation at any time.

## Automatic Speech Recognition (ASR)

**Nuance® 8.5** is comprised of a robust collection of features and capabilities. Through the multi- language support TOL ASR Module provides each caller with a rapid and efficient telephone-based experience.

**Note:** Support for Nuance 8.0 has been phased out.

### → ASR Speech Engine supports the following languages:

- ◆ English (US/CAD)
- ◆ English (UK)
- ◆ European French
- ◆ Canadian French
- ◆ Italian
- ◆ German
- ◆ Dutch
- ◆ Latin American Spanish

The ASR-powered voice services for TOL allow end users to enjoy faster and more efficient phone-based interactions while enabling enterprises to improve customer satisfaction and lower costs. Note that the maximum number of Speech Directory entries that the application can handle is 10,000.

## Speech-enabled Automated Attendant

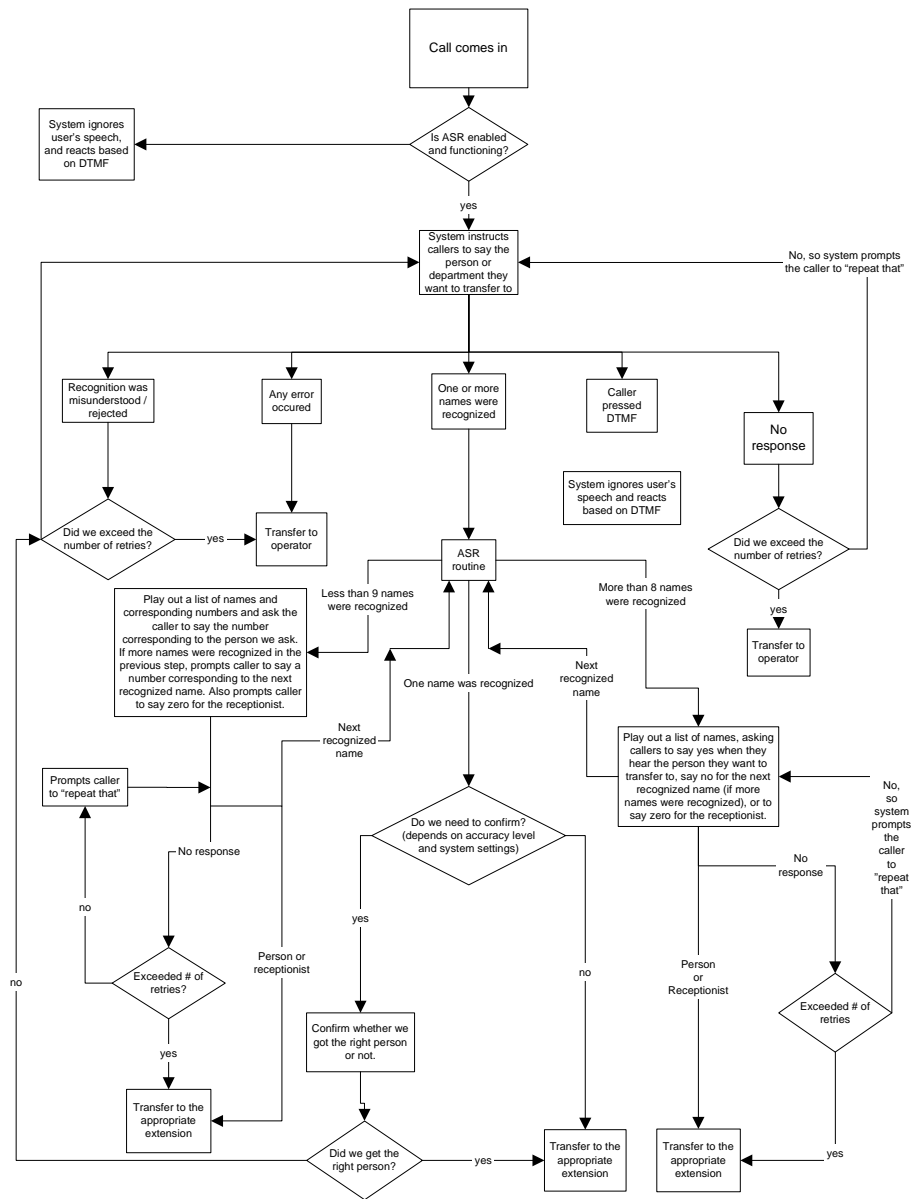
With the ASR TOL users can speak a user's name and be routed directly to that person. The auto-attendant provides all the functionality of an advanced call attendant with the power of speech recognition.

### → System requirements

- ◆ MS Windows 2003 (SP1/R2) / XP (SP2) / 7 Ultimate / 7 Professional / 7 Enterprise / 2008 (no R2 support)
- ◆ Minimum 2 GB RAM for 1 language, 512MB for each additional language

**Note:** SIP voice channels are able to support ASR

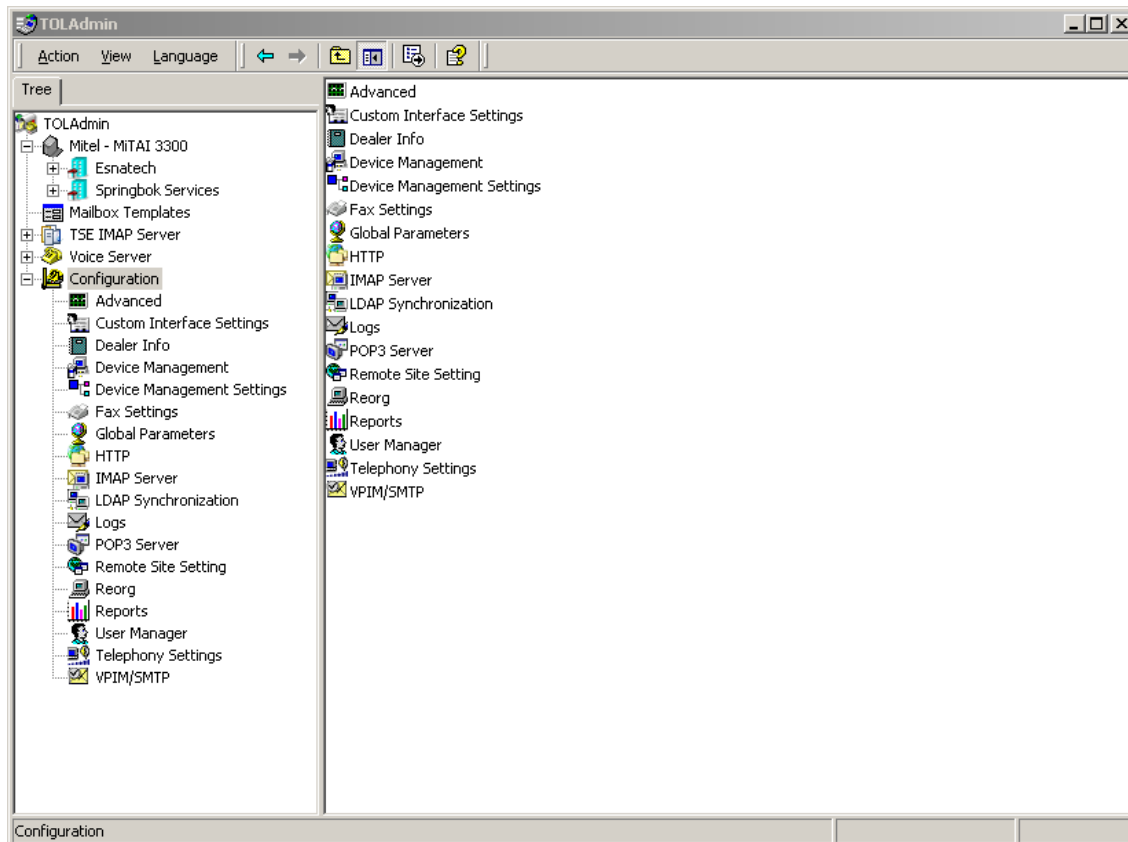
**Note:** Dialogic Media Gateways is able to support ASR functionality.

→ **Speech Recognition behavior (see diagram)**

## Practical Functionality

Speech Recognition can be enabled on the TOL through the Admin console.

## → System Parameter configuration:



## Company configuration

When mailboxes are added or names modified, grammar compilation is necessary and will automatically be scheduled 5 minutes after the last change is made. Administrators can rightclick on their company then select **Properties** from the menu and click on the **ASR** tab. Pressing the **Compile Grammar** button will expedite the process.

Because of the design of the TOL speech engine it is not necessary to have a 1-to-1 ratio for speech ports and voice ports. In the example where a system has 2 speech-enabled ports only 2 simultaneous recognitions can occur. Once a name is recognized the speech engine is free to recognize another name on another port.

The design of the speech engine also allows for aliases for the same name to be created and still be considered as a single instance of recognition. The main search name will be based on the mailbox owner's entered name from the mailbox administration screen. However, aliases as well as phonetically spelled names can be configured under the "Directory Listing" within each mailbox.

The system administrator also has the ability to choose which mailboxes can be part of the name's recognition by grouping them in a feature to allow name searches and placing the ones that should not be in a separate group with the directory search option disabled.

## Multilingual Support

ASR offers full multilingual support such as multi-tenanting for up to **99** separate organizations and departments, greetings which can be changed by setting a schedule, and the ability to configure both IVR trees and Holiday configurations. With TOL's built-in intelligent call router combined with speech recognition callers can be routed quickly and efficiently to the appropriate destination improving their time efficiency and increasing overall customer satisfaction.

## Speech-enabled Company Directory

With ASR users simply press a button on their phone and speak a name to be routed directly to that extension. This feature is beneficial to larger organizations where trying to remember user extensions can be difficult. There is no more need for published directories and no need to change and update lists with new and deleted users. Staff can simply say the name and TOL will find that person using the ASR speech engine.

**Note:** PBX limitations may apply.

**Note:** Based on the license available on the TOL the system can search for the following:

AST 1 - up to **250** names active on 2 voice ports (no upgrades)

AST 2 - **251~500** names on as many ports as the system has enabled

AST 3 - **500+** names on as many ports as the system has enabled

## Text to Speech (TTS)

Text to speech allows the TOL server to read out text information to user via telephone. For example, TTS engine can read out a user or contact's name over the phone or even play back an entire email message over the phone for the user. TOL utilizes RealSpeak TTS engine to perform such tasks. Each site requires a dedicated TTS license in order to use related functions.

### TTS Versions

TOL is compatible with the latest version of RealSpeak 4.5 which officially supports Microsoft Windows 2008 server. TOL can also function with version 4.0 of RealSpeak for sites that are upgrading from previous versions of TOL which utilized an older version. Please refer to the chart below for TTS version compatibility with different types of OS.

OS	RealSpeak 4.0	RealSpeak 4.5
Microsoft XP SP2 32 bit	YES	YES
Windows 2003 Standard SP1 32 bit Windows 2003 R2 SP2 32 bit	YES	YES
Windows 7 Ultimate 32 bit Windows 7 Professional 32 bit Windows 7 Enterprise 32 bit	TBD	TBD
Windows 2008 32 bit (no R2 support)	NO	YES

## LDAP Importer Utility

The LDAP importer utility is installed on the TOL platform automatically. It is used to import an existing LDAP directory (active directory) to the TOL voice server. Using this tool the installers can quickly create voice mail user accounts in large enterprise installs.

The LDAP utility enables synchronization of new users created in the LDAP directory with the UC system. With this desired field information users can add user properties such as mailbox number and feature groups into their user profile within the LDAP directory. The consistency of look and feel is maintained for users creating an organization as well as dramatically reducing the management time associated with multiple directory stores and structures within an organization.

The advantage of LDAP synchronization is that there is going to be no affect on the voice server even when there are issues with the LDAP directory. The TOL UC automated attendant will still be able to answer and transfer calls 24 hours a day.

### → LDAP Directory Services:

- Microsoft® Exchange™ 2000 / 2003 / 2007 / 2010
- Novell GroupWise™
- Iplanet™



# 4

## Client Type Characteristics And Deployment Scenarios



### Chapter Summary

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# Client Type Characteristics And Deployment Scenarios

## Desktop Capabilities - Types

Iwatsu Enterprise TOL software version 8.0 supports a total of five types of desktop capabilities:

- ◆ Unified Communications Users
- ◆ CTI Users
- ◆ Advanced Unified Messaging Users
- ◆ Basic Unified Messaging Users
- ◆ Standard Users

For upgrading purposes the table below illustrates how these users will be managed.

User types - TOL6.X		User types - TOL7.0		User types - TOL8.0
Mailboxes	>>	Mailboxes (Standard)	>>	Mailboxes (Standard)
CTI Users	>>	CTI Users	>>	CTI Users
UM Users	>>	UC Users	>>	UC Users
	New	IM Users	>>	Basic UM
	New	UM Users	>>	Advanced UM

Should a user require outbound fax capability a fax desktop function can be associated with their profile. Fax Desktop capabilities are then available to any kind of user (Note that UC users already possess fax capability).

The following table demonstrates the different types of users and the features available to each:

Features   User Type	Standard	Basic UM	Adv. UM	CTI	UC
Web config. Access (Mailbox Administration)	Y	Y	Y	Y	Y
Mobility	N	N	N	Y*	Y*
<b>All clients - Phone, email, PC Mobile, Web</b>					
Access to Contacts	N	N	N	Y	Y
Web client specific					
Access to Availability filters	N	N	N	Y	Y
Access to Find Me	N	N	N	Y	Y
Access to Assign calls	N	N	N	Y	Y
Access to Locations Calendars	Y	Y	Y	Y	Y
<b>Phone specific</b>					
Enhanced Call Control	N	N	N		Y
Speech access to public contacts	Y	Y	Y	Y	Y
Speech access to private contacts	N	N	N	Y	Y
UC Mobile	N	N	N	Y	Y
SMS	N	N	N	Y	Y
UC Client manager options	N	N	N	Y	Y
Screen POPS	N	N	N	Y	Y
PIM integration	N	N	N	Y	Y
Instant messaging	N	N	N	Y	Y
Presence management	N	N	N	Y	Y
Access to visual directory & buddy list	N	N	N	Y	Y

Features   User Type	Standard	Basic UM	Adv. UM	CTI	UC
Desktop Dailing with IP dialer	N	N	N	Y	Y
Call Log window	N	N	N	Y	Y
Desktop SMS (ability to send to SMS)	N	N	N	Y	Y
Synchronized contacts	N	N	N	Y	Y
Synchronized calendar	N	N	N	Y	Y
<b>Inbox Access</b>					
<b>Web client</b>					
Administration	Y	Y	Y	Y	Y
Access to Inbox	N	Y	Y	Y	Y
Access to internal messages	N	Y	Y	Y	Y
Access to e-mail messages	N	N	Y	N	Y
Access to voice & Fax messages	N	Y	Y	Y	Y
<b>Phone Access</b>					
Access to VM from Phone	Y	Y	Y	Y	Y
Access to fax messages from phone	Y	Y	Y	Y	Y
Access to email messages from phone	N	N	Y	N	Y
<b>Synchronization mode</b>					
IMAP Pointers	Y	Y	Y	Y	Y
Forms	N	Y	Y	Y	Y
IMAP TSE	N	N	Y(Messages only)	N	Y
Contacts	N	N	N	N	Y
Outbound Desktop Faxing Capabilities (ODFC)	Optional	Optional	Optional	Optional	Y*
Print faxes from your desktop	N	N	N	N	Y*

- Note:** Fax Desktops enable all users (except UC users - capability included) to fax out from their desktop
- \*Note:** Mobility feature requires Mobility system service license. Faxing capabilities requires Outbound Fax Server system license.

## Minimum Hardware Specifications

A Client workstation should meet the following minimum hardware specifications:

- ◆ Multimedia PC (sound card + speakers for multimedia playback)
- ◆ Pentium 4 processor (2.0 GHz) or greater
- ◆ 512 MB of RAM

**Note:** These specifications should be adjusted accordingly depending on other applications that may be running alongside end user TOL applications.

In addition to these specifications, the client workstation must also be running the following software applications:

- ◆ Internet Explorer 6.0+ or Mozilla Firefox 3.0+ or Apple Safari 4.0+ or Google Chrome 3.0+
- ◆ A media player that can play GSM-compatible WAV files or MP3
- ◆ Windows 2000 / XP / Vista Business Edition / Windows 7
- ◆ Outlook 2002 or greater (for Outlook Plug-in only)

When utilizing the plug-ins for UC Client Manager (e.g., Outlook Plug-in) please keep in mind that the client machine will have to run the UC Client Manager and the software that the plug-in is integrating with simultaneously. When looking at the Outlook Plug-in as an example, Microsoft requires minimum of 256MB of RAM for the Microsoft Office Suite 2008 and the requirement increases depending on the features that the user uses from the suite. Microsoft's requirements must be added to the UC Client Manager's requirements in order for both to function properly. Please consider exactly how the user will utilize UC Client Manager when deploying the software to client machines.

Like most applications that are out there, the UC Client Manager only uses resources when needed. When the user has the UC Client Manager window minimized, it requires fewer resources. When the UC Client Manager is open, and the user has numerous other windows open (e.g., LanTalk, Call Control, Directory, etc.), the application will use more resources. When deploying the application to a client machine, please consider the user's habits and general usage estimates as well. When you consider the responsiveness and speed of UC Client Manager application, users that require heavy usage need additional hardware resources to experience the same user experience level as light users.

Since the UC Client Manager requires an internet and/or network connection to communicate with the TOL server, having no or very low network resources available on the client machine may prohibit proper function. While the UC Client Manager does not require a significant amount of network resources, if another application is using all or most of the resources, UC Client Manager may fail to communicate with the TOL server.

## Client Deployment Scenarios

- ☑ **Note:** All users who wish to utilize Web Client along with UC Client Manager must also have the compatible installed to enjoy all functionality. Please refer to the Web Client requirements section for detailed information.

### Deployment Scenario 1 - Basic UC Client Manager Usage

If the user only requires core functionality of the UC Client Manager (e.g., LanTalk, Call Control) and no additional plug-ins, the following specifications are sufficient:

- ◆ Multimedia PC (sound card + speakers for multimedia playback)
- ◆ Pentium 4 processor (2.0 GHz) or greater
- ◆ 512 MB of RAM

- ☑ **Note:** Deployment Scenarios assume that the user's computer does not run any other resource intensive software while running the UC Client Manager, unless mentioned specifically within the scenario.

The user should not experience any significant delays while using their computer. All notifications, messages, and UC Client Manager windows should appear almost instantly under these conditions. Basic applications such as web browsers can be used by the user without significant effect on the user experience, which means that the Web Client can be loaded without any difficulties.

### Deployment Scenario 2 - Integrated UC Client Manager Usage with Outlook

If the user requires core functionality of the UC Client Manager (e.g. LanTalk, Call Control) along with Microsoft Outlook plug-ins, the following specifications are sufficient:

- ◆ Multimedia PC (sound card + speakers for multimedia playback)
- ◆ Pentium 4 processor (2.0 GHz) or greater
- ◆ 512 MB of RAM + 256MB RAM for Outlook

- ☑ **Note:** The RAM requirement for the Microsoft Office Suite varies depending on what the user needs. If the user is only using Outlook from the entire suite, only 256MB of extra RAM is required on top of UC Client Manager's own requirements.

- ☑ **Note:** Deployment Scenarios assume that the user's computer does not run any other resource intensive software while running the UC Client Manager, unless mentioned specifically within the scenario:

The user should not experience any significant delays while using their computer. All notification, messages and the UC Client Manager windows should appear almost instantly under these conditions. Basic applications such as web browsers may be used by the user without significant effect on the user experience, which means that Web Client can be loaded without any difficulties.

Since the Outlook tool bar contains all of the major features of UC Client Manager, the user may have the UC Client Manager window minimized for better desktop management. However, minimizing the UC Manager window will not reduce the resources that the UC Client Manager uses since the Outlook plug-in is always active. This ensures proper response time of the software at all times by eliminating the need for the application to reallocate the required resources every time it becomes active.

## Deployment Scenario 3 - Integrated UC Client Manager Usage through Google Gadgets

If the user already uses Google Desktop, the user may opt to install the Google Gadget version of the UC Client Manager which has all the basic functionality of the UC Client Manager. This allows the user to reduce the amount of software installed on their system, allowing for a more efficient approach to application distribution. By adding onto an existing application platform, the user is able to better adapt to the application since the GUI will not be too unfamiliar. For Google Gadget deployment, the following specification is sufficient:

- ◆ Multimedia PC (sound card + speakers for multimedia playback)
  - ◆ Pentium 4 processor (2.0 GHz) or greater
  - ◆ 256MB of RAM + 256MB of RAM for Google Desktop
- Note:** If Google Desktop has numerous number of gadgets installed, it may require additional resources.
- Note:** Deployment Scenarios assume that the user's computer does not run any other resource intensive software while running the UC Client Manager, unless mentioned specifically within the scenario.

The user should not experience any significant delays while using their computer. Basic applications such as web browsers may be used by the user without significant effect on the user experience, which means that Web Client can be loaded without any difficulties.

## Other Requirements & Limitations

### Outlook 2003 & Word 2003 – Conflict

Please be advised that employing Word 2003 as Outlook 2003's email text editor comes with a downside. Should the user select this option, the Outlook toolbar "Record at", which gives the user the ability to reply to an email with a voice message, will not be available. Employing Word 2003 as your email text editor in conjunction with Outlook 2003 and TOL blocks the "Record at" toolbar in Outlook. Employing Outlook as your email text editor is a trouble-free option.



# 5

## Server Messaging Type Characteristics And Deployment Scenarios



### Chapter Summary

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# Server Messaging Type Characteristics And Deployment Scenarios

## E-mail Server Synchronization (IMAP TSE)

### Unified Messaging Deployment Email Requirements

Deployment of Unified Messaging into an email environment is limited to tested and verified email server environments. Please refer to the chart below to determine if a site is compatible for UM deployment.

Email Server	Requirements	Contact Sync	Calendar Sync	Comments
Exchange 2003	Configure to be compatible with TOL, enable IMAP4	Y	Y	
Exchange 2007	Configure to be compatible with TOL, enable IMAP4 Note: SP2 installation recommended for full functionality	Y	Y	Base version without service packs will lack functionality
Exchange 2010	Configure to be compatible with TOL, enable IMAP4	Y	Y	
Google Apps Gmail	Configure to be compatible with TOL, enable IMAP4	Y	Y	OAuth performs Super User function
Lotus Notes	Lotus R6.0, 6.5, 7.0 Configure to be compatible with TOL, enable IMAP4	N	N	
Groupwise	Groupwise 6.5 SP2, 7.0, 8.0 Configure to be compatible with TOL, enable IMAP4 and GWIA Enable TCP/IP Service on the network For configuration over 500 users, used direct connection between TOL IMAPTSE and the Groupwise server is required for adequate performance.	N	N	

- Note:** IMAP TSE is based on IMAP4 standards. Other email servers with this same capability may function correctly but take note that they have not been validated by Iwatsu.

TOL's IMAP TSE gateway can now utilize high performance pace (HPP) mode when connecting to an Exchange server. The HPP mode uses an event-driven model to communicate information changes between the TOL Server and the Exchange server. This is in contrast to the polling model used in previous releases which continues to be used in the current release with non-Exchange servers (i.e., Lotus Domino or Novell Groupwise). The default setting for HPP mode is "enabled". To turn it off it is necessary to go to the IMAP Tester utility. The benefit of using the HPP mode significantly reduces the CPU usage on the TOL Server.

When a voice mail message is received by the TOL Server, the Message Waiting Indicator (MWI) on the user's telephone is extinguished. When the message from the phone or Web Client is read the MWI is no longer lit.

Unified users with access to all their phone and email messages may notice a slight delay before their MWI is extinguished when accessing their messages via the email client (Outlook, Lotus Notes, etc). This delay is very short and can be modified based on individual user priorities and the number of users in the feature group.

The following tables detail the MWI behavior in a **controlled** environment. The following data reflects traffic with inbox-only synchronization with a maximum message count of 250 messages in the inbox. Please keep in mind that using the HPP mode ignores the priority assigned to mailboxes, which means that the following information does not apply to HPP systems. All data provided were tested in version 7.1 of TOL.

→ **100 UC User Scenario**

Total Number of Users in Each Feature Group	Priority Assigned	<i>Time to Extinguish MWI after VM message read in Email Client</i>
		<i>Average Time</i>
100	Maximum	16 sec

Max No. of Mailboxes synchronized per cycle = 5

Number of Messages Sent Per Sync Cycle = 10

→ **250 UC User Scenario**

Total Number of Users in Each Feature Group	Priority Assigned	<i>Time to Extinguish MWI after VM message read in Email Client</i>
		<i>Average Time</i>
100	Maximum	24 sec
100	Medium	44 sec
50	Minimum	24 sec

Max No. of Mailboxes synchronized per cycle = 10

Number of Messages Sent Per Sync Cycle = 50

→ **500 UC User Scenario**

Total Number of Users in Each Feature Group	Priority Assigned	<i>Time to Extinguish MWI after VM message read in Email Client</i>
		<i>Average Time</i>
100	Maximum	24 sec
200	Medium	85 sec
200	Minimum	252 sec

Max No. of Mailboxes synchronized per cycle = 10

Number of Messages Sent Per Sync Cycle = 50

→ **1,000 UC User Scenario**

Total Number of Users in Each Feature Group	Priority Assigned	<i>Time to Extinguish MWI after VM message read in Email Client</i>
		<i>Average Time</i>
100	Maximum	24 sec
200	Medium	85 sec
700	Minimum	339 sec

Max No. of Mailboxes synchronized per cycle = 10

Number of Messages Sent Per Sync Cycle = 50

→ **5,000 UC User Scenario**

Total Number of Users in Each Feature Group	Priority Assigned	<i>Time to Extinguish MWI after VM message read in Email Client</i>
		<i>Average Time</i>
150	Maximum	TBD
250	Medium	TBD
4600	Minimum	TBD

Max No. of Mailboxes synchronized per cycle = 10

Number of Messages Sent Per Sync Cycle = 50

→ **10,000 UC User Scenario**

Total Number of Users in Each Feature Group	Priority Assigned	<i>Time to Extinguish MWI after VM message read in Email Client</i>
		<i>Average Time</i>
200	Maximum	TBD
400	Medium	TBD
9400	Minimum	TBD

Max No. of Mailboxes synchronized per cycle = 10

Number of Messages Sent Per Sync Cycle = 50

**Note:** When synchronizing (mailbox) inboxes containing more than 10,000 items, system performance is adversely affected until all such items are synchronized.

**Note:** User Scenario for 5,000 and 10,000 users will be provided in the near future.

## Unified Messaging Capacity

The following chart illustrates the capacity of TSE server on a UM environment.

	<b>Capacity</b>
Maximum number of total users on system	20,000
Maximum number of UC users on system	10,000
Maximum Number of users for 1 TSE Server	5,000
Maximum Number of users for 2 TSE Servers	10,000
Maximum Number of users for 3 TSE Servers	15,000
Maximum Number of users for 4 TSE Servers	20,000

## Deployment: Basic Unified Messaging

Integrated Messaging is a unified view of all messages in a user's email client.

There are two methods of deploying Basic Unified Messaging:

### Deployment 1 - Basic Unified Messaging via SMTP Forwarding

In the Deployment 1 scenario, the TOL system forwards the received voice and fax messages to an SMTP\* compliant email server. All message types are stored on the email server and the user is given a single view in their email client.

- ☑ **Note:** Simple Mail Transfer Protocol (SMTP) is a TCP/IP protocol used to send and receive email. SMTP is limited in its ability to queue messages at the receiving end, however, it is usually used with POP3 or IMAP.

You can record voice mail responses from your PC desktop and either have these responses sent via email or forwarded to others. You also have the option of responding to a voice mail with a simple email.

- ☑ **Note:** As the reply destination would be the user's mailbox and not that of the original sender the 'Reply' feature is not available.

You respond to a voice message from Outlook via the 'Forward' feature, by keying in your response and selecting a recipient from the Global Address List. By this method both the original voice message and the email response is sent back to the original sender.

- ☑ **Note:** The TOL toolbar plug-in (Outlook only) is required to enable the recording of voice replies to voice messages from email.

A plug-in is available (Outlook and Lotus Notes users only) that synchronizes read marks back to the TOL Server (for accurate MWI). The plug-in also allows you to record voice messages from your PC using the PC microphone and gives you access to the Delete Message button which deletes the message from the TOL Server and the Lotus Notes client. Please also refer to Outlook 2003 & Word 2003 Conflict.

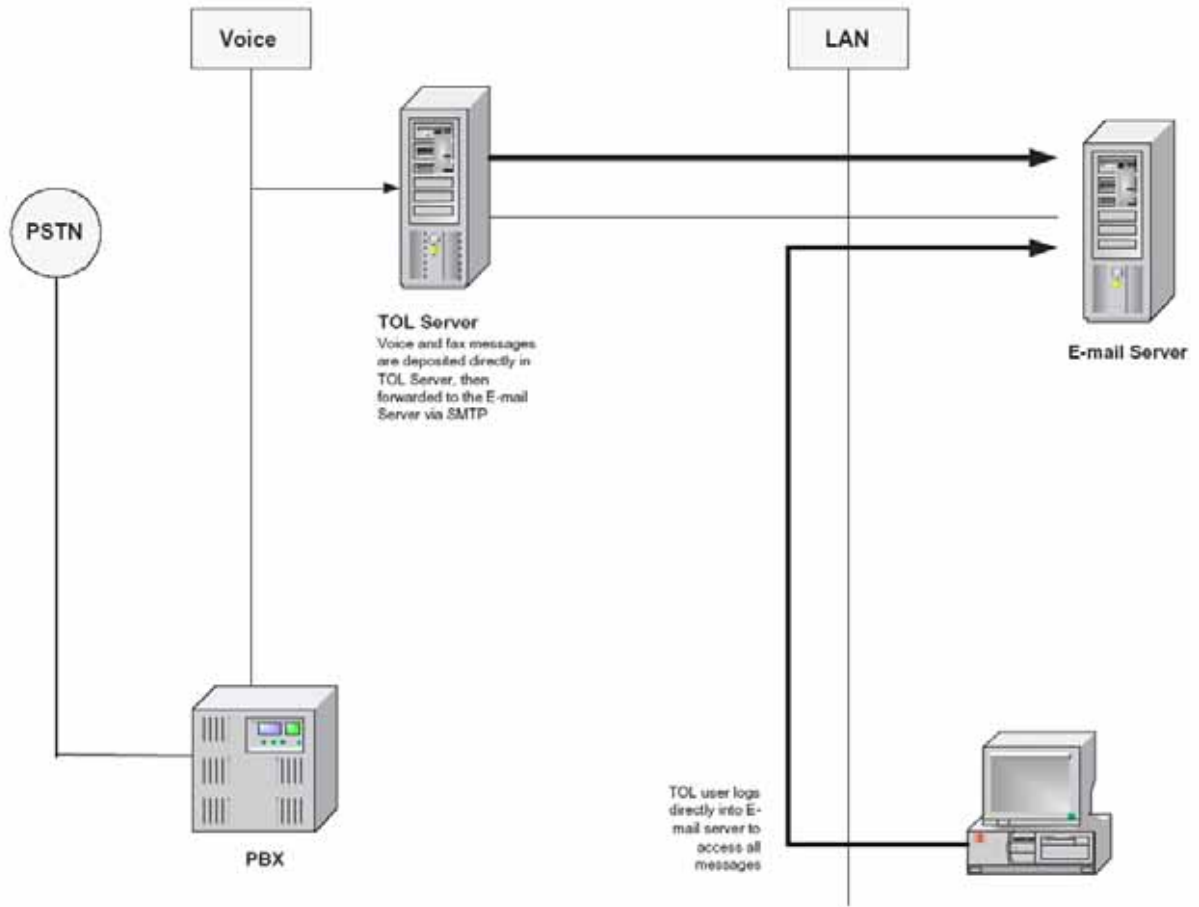
Deployment 1 is ideal for PC-centric deskbound users who want to retrieve their messages via their email client. Such users do not typically need to check their voice messages by telephone. They may access this option if the voice messages are copied and sent to the email server rather than deleted from the TOL Server.

#### → SMTP forwarding may be deployed in the following email environments:

- ◆ Exchange 2000/2003/2007/2010
- ◆ Lotus Notes 6.0, 6.5, 7.0
- ◆ First Class
- ◆ IMail
- ◆ Infolink
- ◆ SLMail
- ◆ GroupWise 6.5, 7.0, 8.0
- ◆ SendMail
- ◆ Mercury Mail
- ◆ Gmail (Google Apps)

The email server must be configured to accept attachments (WAV attachments specifically) and the client PC must have a media player installed that can play GSM compressed WAV files (i.e. Windows Media Player).

- ⊘ **Warning:** Users of SMTP forwarding should make careful use of the Delete after Forward option. If this option is selected messages are permanently deleted immediately after being forwarded to the designated email address. In the event of a failure to deliver the message (receiving server is down, mailbox is full, invalid address, etc.), an "undeliverable mail" message will be received in the inbox on the TOL Server. Although the forwarded message will still be accessible from the Sent folder the WebClient application must be used to access this folder (by the user or the System Administrator) and retrieve the message.



IM using SMTP Forwarding (Scenario 1)

## Deployment 2 - Basic Unified Messaging with IMAP Pointers

In the Deployment 2 scenario, separate message stores are used (one for email, one for voice/fax mail) using IMAP "pointers" configured from the email client to each store. From this scenario a single desktop view of all message types is provided.

IMAP allows you to access messages (from two separate data stores) from a single email client. By viewing the messages from where they are stored the load is dramatically lowered on the existing email server. Instead of being stored the voice messages are managed on the voice mail server.

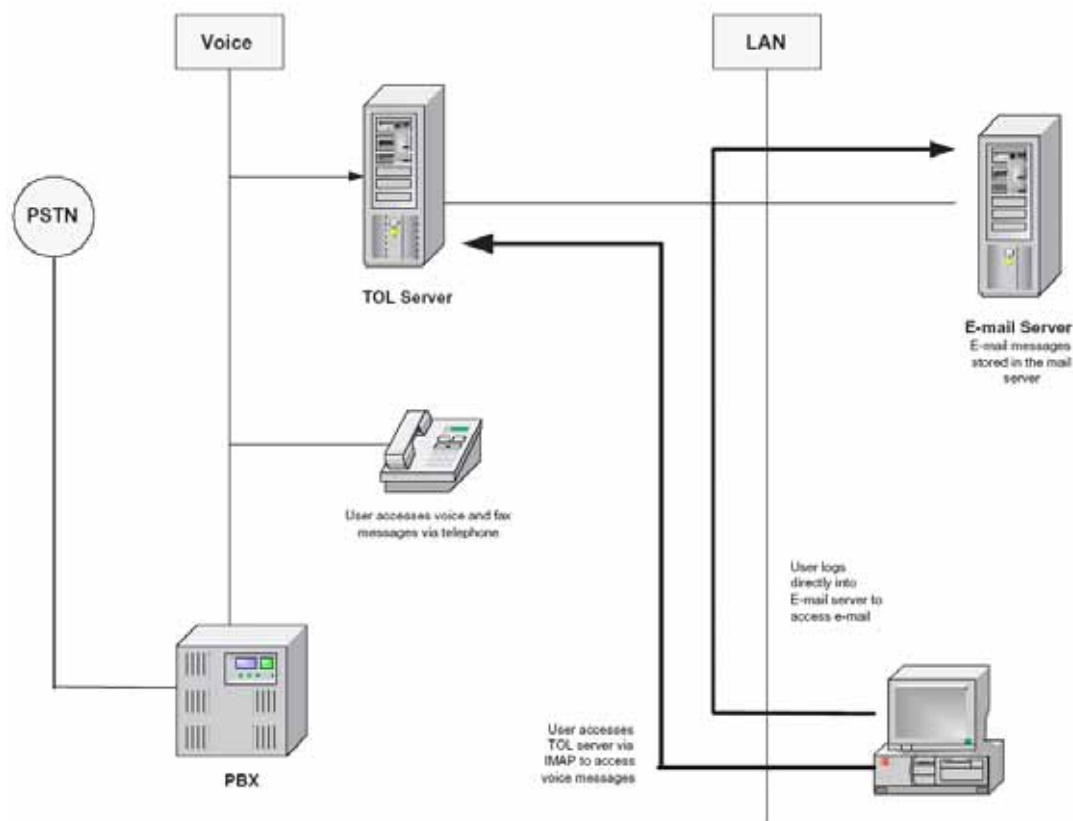
You typically have a separate folder in your email client for each message type

(email/voice/fax). You can view the header with sender information and then decide whether or not to download the voice message by clicking on the message. The mail client requires constant access to the TOL Server when the user is accessing voice messages.

As the TOL Server is the only server receiving voice messages and controlling the MWI this deployment scenario gives accurate message waiting lights for voice messages.

→ **IMAP Pointers are deployable in the following email client environments:**

- ◆ Outlook 2002 / XP / 2003 / 2007 / 2010
- ◆ GroupWise 6.5, 7.0, 8.0
- ◆ Thunderbird 2.0
- ◆ Eudora 7.0
- ◆ Gmail (Google Apps)



IM with IMAP Pointers (Scenario 2)

## Integrated Messaging: Email Client Experience & Features

There will be different types of features available depending on the type of client software that the end users use along with TOL. You may also utilize TOL as the mail server without having to use a separate mail server. The features available will also vary depending on which mail server you utilize.

<b>Integrated Messaging</b>			
<b>Email Client</b>	<b>SMTP/POP Email via TOL</b>	<b>IMAP Email via TOL</b>	<b>Third Party IMAP Email Server + IMAP TSE sync</b>
Outlook XP/2003/2007/2010	Message status can be synchronized with TOL server when using Outlookg plug-in along with UC Client Manager. MWI will be accurate in this situation.	Since you are accessing messages directly from TOL server, message status and MWI will be in sync between client software and the server.	Both message status and MWI will be fully synchronized.
GroupWise 6.5, 7.0, 8.0	The messages can be pulled from TOL server but no status will be synchronized between client and server.	Since you are accessing messages directly from TOL server, message status and MWI will be in sync between client software and the server.	Both message status and MWI will be fully synchronized.
<b>Features</b>			
Available Folders	Inbox only.	2 folders for Email and Voice Mail.	Multiple folder sync possible depending on mail server.
Message store	Voice mail stored in email server. If auto-delete is configured. If messages are not deleted automatically upon forward, a copy remains on the TOL server.	Messages are stored on the TOL server. If replication is used, a local copy on user's email client may also be created.	Messages are stored on the mail server and can also reside on TOL side depending on the settings.
Plug-in for UC Client Manager	Available for Outlook and Lotus Notes only. Provides Read mark synchronization and Voice Delete button to ensure sync of voice messages & MWI when using SMTP forwarding.	Not required (optional for added functionality).	Not required (optional for added functionality).
Configure required at client desktop	Installation of UCCM, activation of plug-in. Configure mail server with required settings.	Configure mail server with required settings.	Configure mail server with required settings.
Contact Sync	There is no contact sync between TOL and client software.	There is no contact sync between TOL and client software.	Contact synchronization can be achieved for Exchange and Google Apps mail server sync.
Calendar Sync	Calendar entries can be pushes to TOL server through UCCM plug-in.	Calendar entries can be pushes to TOL server through UCCM plug-in.	Calendar synchronization can be achieved for Exchange and Google Apps mail server sync.

## Deployment: Advanced Unified Messaging

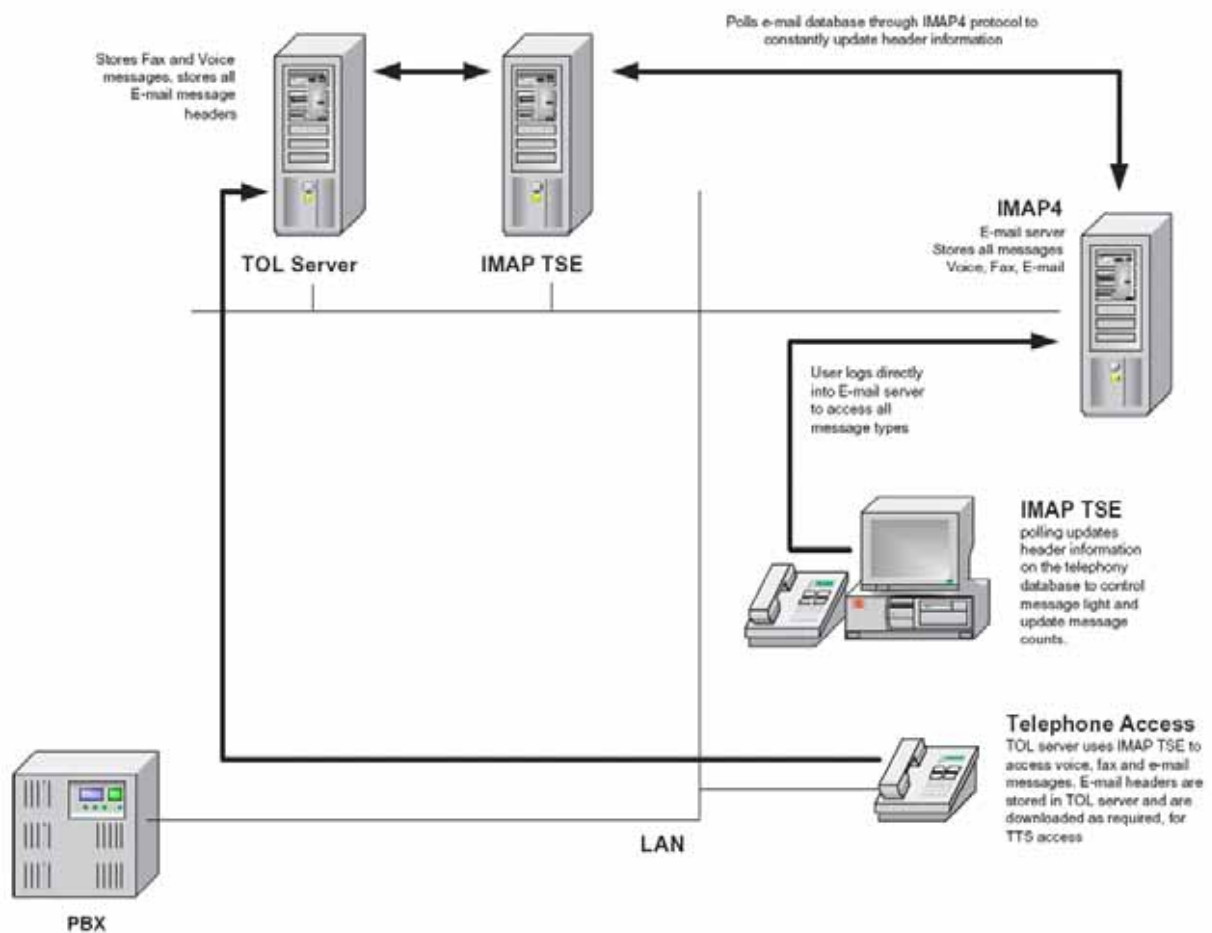
Unified messaging is a unified view and single point of management for phone, web, and email messages.

### → IMAP TSE (Transparent Storage Engine) Gateway

The IMAP TSE gateway connects directly to the current email server for synchronized message access. Email servers currently supported include Exchange 2000 / 2003 /2007 / 2010, Lotus Notes 6.0 / 6.5 / 7.0 and GroupWise 6.5 / 7.0 / 8.0 and Gmail (Google Apps).

☑ **Note:** When used with Novell GroupWise 6.5 / 7.0 / 8.0, the computing environment must support TCP/IP services. TOL Server does not support IPX-based networking.

IMAP TSE polls the messaging servers on a schedule determined by the System Administrator. At the time of the poll, actions and changes are synchronized. Although polling activity on the TOL Server does use a lot of CPU resources the service is low priority and uses CPU resources only as they become available. Any time another service or process requires CPU resources the polling service releases the needed resources. The preceding applies to Lotus Notes and Groupwise. As for Exchange 2000/2003/2007/2010 please refer to IMAP TSE/Email Server Contact Synchronization.



### → IMAP TSE Deployment

## Messaging Configuration (IMAP)

This section helps you construct a configuration of an Iwatsu Enterprise TOL Messaging solution when using IMAP as the protocol to retrieve messages from the mail server. The material presented here is applicable to the following email servers:

- ◆ Exchange 2000/2003/2007/2010
- ◆ Groupwise 6.5, 7.0, 8.0
- ◆ Lotus Notes 6.0, 6.5, 7.0
- ◆ Gmail (Google Apps)

→ **This section uses the following criteria:**

- ◆ number of users
- ◆ email traffic
- ◆ voice mail traffic

**Note:** The ratio of voice mail users to UC users is NOT considered relevant to this configuration.

Software	Minimum Specifications
IMAP TSE Server OS	Windows XP Windows 2003 SP1/R2

- ◆ IMAP4 compatible mail server
- ◆ IMAP services enabled on the email server
- ◆ The IMAPTSE Gateway only uses IMAP RFCs listed as supported by Microsoft for the Exchange mail server. These listings can be found online at:  
<http://support.microsoft.com/kb/262986>
- ◆ The IMAP TSE Gateway acts as a group of IMAP4 clients to connect to the messaging storage server to perform synchronization activities for TOL.
- ◆ User name and password (with permission) so that UC can access user accounts on existing mail server
- ◆ The Email Server must be IP-addressable from TOL
- ◆ Clustered Exchange servers are supported
- ◆ It is recommended that the email environment is fully operational before TOL Server is implemented
- ◆ It is recommended that IMAP services are installed and fully operational before deploying TOL with the IMAP TSE Gateway
- ◆ In cases of +500 UC users the IMAP TSE should be installed on a server separate from the TOL Server (Distributed model)
- ◆ There must be a free IMAP port available between the TOL and Email servers. In addition, a TCP/IP connection must be available between the LDAP, TOL, and Email servers
- ◆ IMAP TSE supports a maximum of **5,000** users per server

## Directory Server

- ◆ User imports can be configured with any LDAP-compliant directory services
- ◆ LDAP upload utility can also be used to import delimited text files

## Microsoft Exchange Configurations

- ◆ Although Exchange can be in Mixed mode (Exchange 2000/2003) an additional IMAP TSE Gateway must be purchased for each separate Exchange Server (i.e., non-clustered).
- ◆ Active Directory in Mixed mode (Windows 2000) is supported
- ◆ The IMAP TSE Gateway does not work directly with the Exchange store, but uses standard IMAP4 protocol to access mailboxes, folders and messages contained within the message store.
- ◆ UC deployments cause a considerable increase in transaction log activity on the Exchange Server. Make sure you have enough available hard disk storage space for additional logging. The general rule (how much space required for logging after UC implementation) is twice your current logging storage requirements
- ◆ In order to perform synchronization with the mail store the IMAP TSE Gateway will connect to the Exchange server which will increase overall system traffic. This in turn can cause an increase in the amount of transaction logs generated by Exchange. In addition the IMAP TSE Gateway will increase the size of the message store within Exchange because accessing any message over IMAP triggers the creation of a copy of the message converted from the native Exchange representation to what is deemed suitable for IMAP4. This cached copy is created automatically by Exchange in order to improve the performance of IMAP operations. This, in combination of with the above, results in a higher growth rate of transaction logs. These increases are discussed at the following online links:

<http://technet.microsoft.com/en-us/library/aa996118.aspx#TheStmFile>

[http://forums.msexchange.org/m\\_1800422107/mpage\\_1/tm.htm#180042251](http://forums.msexchange.org/m_1800422107/mpage_1/tm.htm#180042251)

- ◆ The structure of the .STM (storage database, part of the message store used for IMAP) and set of operations recorded into the transaction logs while working with the .STM might be different from operations with the .EDB (standard part of the message store).

Make sure your Exchange Server meets Microsoft's recommended minimum specifications prior to deploying UC.

## MacIntosh Entourage

To allow the MacIntosh Entourage (version: Entourage 2004 as provided through Microsoft Office 2004 for MacIntosh running on OS X Panther) to function alongside the TOL, the following modifications must be made:

- **With regards to using IMAP pointers and securing the best configuration for them:**
1. Create an IMAP account and point it back to the TOL system.
  2. Edit the properties of the account as required and click the **Options** tab.
  3. Deselect the checkbox "**Always download complete message body**".
  4. Deselect the checkbox "**partially receive messages over**" and enter 200 KB in the appropriate field.
- **To play WAV file attachments using QuickTime (rather than iTunes as preferred by OS X):**
1. Save a WAV file to disk.
  2. Highlight the WAV file on the local computer.
  3. Click on the **File Menu**.
  4. Click **Open With**.
  5. Click **Other**.
  6. In the left-hand window, highlight **Applications**.
  7. In the right-hand window, scroll down to **QuickTime Player** and highlight.
  8. Select the checkbox, "**Always Open with**".

The preceding steps will integrate Entourage very nicely with TOL. A playback bar will appear in the mail client providing stop, play, rewind, fastforward and volume functionality.

Undertaking a straight integration with Exchange the Entourage will behave as described above by default. All that is required is the creation of an Exchange account.

Entourage 2004 will also allow for a simultaneous Exchange account and an IMAP pointer account (as in Outlook 2003 / XP) and is set up through the regular email account creation process.

# 6

## Server Specifications



### Chapter Summary

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## Server Specifications

### General Requirements

#### Maximum System Capacity

Feature	Capacity
Company Directory	20, 000
Voice Mailboxes	20, 000
Unified Messaging Users	10, 000 - on Distributed Server 1,000 - on Standalone Server
Voice Channels	48 ports - SIP with Iwatsu ECS 100 ports - SIP integration, per voice server 800 ports - High Availability Environment* * High Availability is not currently supported for TOL 8.0. Release date is TBD.
Text to Speech Ports	64 ports
Automatic Speech Recognition	64 ports
Extension Dialing	Unlimited
Number of Tenants	99

- Note:** Depending of the level of functionality desired, the appropriate license must be purchased. The purchase of a TOL 8.0 license in itself is insufficient.
- Note:** TOL is a dedicated application which should only be installed as a primary application on any server. Sharing system resources with other application may prohibit proper functionality of the TOL.
- Note:** **TOL does not support virtual machine environments for voice servers.** Only Consolidated servers within an HA environment have been tested and verified for virtual machine deployment.

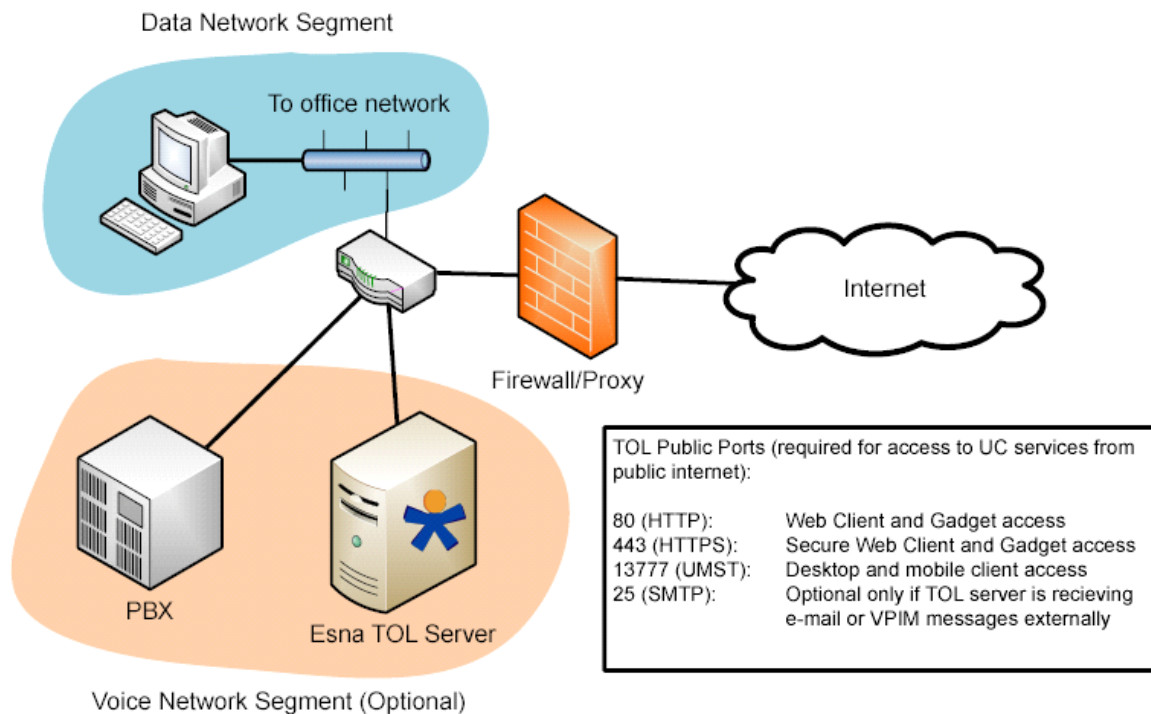
## Network Requirements and Specifications

The TOL system can exist as a standalone server on a local area network which allows for network-based user and system administration.

For proper deployment, connect the TOL server to your network via the 100 baseT NIC interface on the back of the server and then boot up the server.

- ⚠ **Warning:** You can have a **maximum of 2 network cards** installed in a single server computer.
- ✔ **Note:** The TOL server must have sufficient administrative rights to the network so that it can co-exist as another workstation on your local area network (LAN). For more information contact your LAN Administrator.
- ✔ **Note:** The TOL server does not support IPv6 and is only compatible with IPv4. If the server is to access the internet, a secondary source (e.g., router, hub, etc.) which utilizes IPv6 may be used. All internal traffic must be configured using IPv4.

The following is an example of how TOL can be configured within an organization's network. By having a network infrastructure as shown here, you can ensure the functionality of TOL server within the organization while protecting all assets through the necessary security measures (e.g., firewall) from internet or other external connections.



→ **Before installing the TOL system you must have one of the following operating systems installed:**

- ◆ Supported OS:
  - Windows XP (SP2)
  - Windows 2003 R2 Enterprise Edition, SP1 Standard Edition
  - Windows 7 Ultimate, Professional, Enterprise (32 bit)
  - Windows 2008 (32 bit)

## TCP/IP ports used by the application

Port Required	Application/Component	Comments
21	Integrated Fax FTP File Uploading	port used for file transfers
25	VPIM SMTP	port used for simple mail transfer
80	Web Client SRM	
110	POP3	
143	IMAPTSE Email/Contact/Calendar Synchronization	
389	LDAP Connector	
443	Web Client (SSL connection) SRM (SSL connection)	
943	IMAPTSE Email/Contact/Calendar Synchronization (SSL connection)	
8201	UC Nuance Loader UC Nuance Loader Manager	
11000	UM Monitor	
13777	UC Client Manager UMST UC Mobile	
13780	ASR Distributed Environment	
20202	PEX Server	

## Software Requirements

→ Refer to the following table for the minimum software requirements to run the TOL server:

Software	Version
OS	Microsoft XP SP2 32 bit Windows 2003 Standard SP1 32 bit Windows 2003 R2 SP2 32 bit Windows 7 Ultimate 32 bit Windows 7 Professional 32 bit Windows 7 Enterprise 32 bit Windows 2008 32 bit (no R2 support)
ASR	Nuance 8.0 / 8.5
TTS	ScanSoft RealSpeak 4.0 or 4.5

- Note:** The **RAM** requirement for TOL with speech-enabled Auto-Attendant is **2GB** of RAM for one language and **512MB** of RAM for each additional language.
- Note:** Each version of Microsoft Windows require different features and/or services to be activated before installing TOL. Please refer to the **Server Install Guide** for details on each operating system's requirements.

## Media Support Requirements

If you wish to utilize additional media support within the TOL server (e.g., MP3 support for voice mail, PDF support for fax), you must install the necessary applications within the server so that the file formats can be recognized by the server. Refer to the chart below for requirement examples:

File Format	Application Required	Comments
MP3	Windows Media Player	Windows Media Player version 10 or higher for Windows 2003 or XP. Windows Media Player version 11 or higher for Windows 2008 or 7.
PDF	Adobe Acrobat Reader	Requirement is the free version of Acrobat Reader, not the paid version of publishing application.
DOC	Microsoft Office	

## ANTI-VIRUS Software Installation

The TOL system has only been validated with Norton Anti-virus Corporate Edition. Other anti-virus software applications that have been installed with TOL are:

- ◆ McAfee VirusScan
  - ◆ BitDefender
- Note:** Please ensure that the UC folder and all of its sub-folders are excluded from the scan after installing your antivirus software. **Scanning the UC folder can cause negative performance affect to the TOL.**

## IMAP TSE Gateway Requirements

- ◆ In order to use IMAP TSE, the IMAP mail server must support the following standards:
- ◆ IMAP4Rev1 (RFC2060) - current IMAP4 standard
- ◆ IMAP4 UIDPLUS extensions (RFC2359) - extensions to IMAP4 standard for handling message IDs
- ◆ TOL Unified Messaging integrates with MS Exchange 2000 / 2003 / 2007 / 2010, Groupwise 6.5 / 7.0 / 8.0 and Lotus 6.0 / 6.5 / 7.0.
- ◆ IMAP services enabled on the email server
- ◆ IMAP services must be installed and fully operational prior to deploying TOL with the IMAP Gateway
- ◆ MS Exchange 2000 / 2003 / 2007 / 2010 should be operational ahead of time if Unified Messaging is desired
- ◆ User name and password (with permission) so UC can access user mailboxes on existing mail server
- ◆ Free IMAP TCP/IP port available between the TOL and email server

## Server Network Requirements

Networking requirements depend on what configuration and what traffic load the system will bear. In most cases, 100 Mbps (minimum 100BaseT) will suffice between the TOL, IMAP TSE, and the Email servers. In larger (500+ UC user) configurations, a 1 GB network connection between the TOL and Email servers is required. In such cases, a 1GB layer 2-switch between all servers is also required.

The TOL Server can exist as a network-connected server on a LAN allowing for network-based user and system administration.

## Server Email Integration Requirements

The TOL Server can be a voice mail only system. Although, most deployments will involve some email functionality. Refer to **Server Messaging Type Characteristics And Deployment Scenarios on page 41** in this document for more information on the possible system deployment scenarios.

## Language Support

Refer to the following table for details on the languages supported by TOL in Release 8.0:

Features   Language	NA English	NA French	NA Spanish	British English	Dutch	German	Italian	EU French
Voice Prompts	Y	Y	Y	N	N	N	N	N
Text to Speech	Y	Y	Y	Y	Y	Y	Y	Y
System Admin	Y	N	N	N	N	N	N	N
UC Client Manager	Y	N	N	N	N	N	N	N
Web Client	Y	N	N	N	N	N	N	N
End User Documentation	Y	N	N	N	N	N	N	N
Admin Documentation	Y	N	N	N	N	N	N	N
ASR	Y	Y	Y	Y	Y	Y	Y	Y

The TOL Installation Pack includes a second DVD containing all available languages. Please note that in order to use these languages, additional licenses will have to be acquired.

# General System Configuration

## Message Compression and Storage

Depending on which deployment scenario you select messages may be stored on the TOL Server, on the Email Server or both.

For more information on deployment scenarios visit [Deployment: Basic Unified Messaging](#).

It is very important that you know the message storage requirements of your particular environment. The following factors will affect this calculation:

- ♦ days to keep read messages
- ♦ days to keep unread messages
- ♦ message format used
- ♦ maximum message length
- ♦ maximum number of messages allotted for per user (inbox only)
- ♦ number of Unified Messaging users (must account for email on the TOL Server)

The message format used is the factor used to calculate storage capacity as the format determines the size of the actual messages.

**ADPCM32** and **WAVGSM** are the two most commonly used message formats. Normally, voice mail only users are configured to use ADPCM32, while Integrated and Unified Messaging users typically use WAVGSM.

File Format	kbytes/sec	kbytes/min	MB/hour
ADPCM OKI 32 (4bit)	4	240	14.4
G.726 ADPCM 4 bit			
MPEG-1 Audio Layer 3 (MP3)			
Rhetorex ADPCM 32 (4bit)			
Wave ALAW 8kHz (G711)			
Wave MS ADPCM			
Wave MS GSM 6.10	1.6	96	5.8
Wave IMA ADPCM			
Wave MuLAW 8kHz (G711)			
Wave PCM 16bit 11kHz			
Wave PCM 16bit 8kHz			
Wave PCM 8bit 8kHz			

In certain deployments where copies of voice mail messages are stored on the Email Server storage capacities per email mailbox remain the same. Use WAVGSM format sizing when calculating storage requirements for the Email Server.

Additional coding algorithms (i.e., G.726) are available providing voice formats in WAVE while enabling compression at 1.6 kb/sec.

→ **System Configuration - Sample  
(\*Base License - TOL 8.0 Enterprise Edition)**

- ◆ 20 000 voice mailboxes
- ◆ 4 voice channels
- ◆ Unified Messaging services (or IMAP Gateway)
- ◆ 2 Text-to-Speech (TTS) ports - RealSpeak 4.0
- ◆ 2 Speech Recognition (ASR) ports - Nuance 8.5 for 250 Names
- ◆ 50 UC licenses
- ◆ SMTP services (VPIM not enabled)
- ◆ POP3/IMAP services
- ◆ Web Client / Web Reporting
- ◆ Third-party Collaboration services
- ◆ Fax services (Inbound fax, Fax messaging (Fax mail), Fax On Demand, soft fax (1 soft fax port included))

→ **TOL can be configured to support many user environments:**

1. Voice Mail only
2. Voice Mail + Integrated Messaging
3. Voice Mail + Integrated Messaging & Unified Messaging
4. Voice Mail + Integrated Messaging & Unified Messaging + ASR
5. Voice Mail + Integrated Messaging & Unified Messaging + TTS
6. Voice Mail + Integrated Messaging & Unified Messaging + ASR + TTS

→ **The following options can be added:**

- ◆ voice channels
- ◆ fax & soft fax channels
- ◆ ASR channels (increase the number of names that can be supported)
- ◆ outbound fax
- ◆ Fax Server
- ◆ TTS channels
- ◆ WAP services
- ◆ VPIM Networking
- ◆ AMIS Networking
- ◆ PMS (Hospitality) integration
- ◆ COMLinX ActiveX services
- ◆ additional languages services
- ◆ Local Area Paging (LAP)
- ◆ IVR Services
- ◆ upgrade the User type to access increased functionality

## Server Configurations

The following PC configuration have been created to address different system sizes:

### → **CONFIGURATION 'A' (Port/Channel Capacity: 16)**

- ◆ Single Server Configuration
  - TOL Server (*IMAPTSE on same machine if used*)
  - Intel® Dual Core Processor (2.7 GHz) or higher
  - 2 GB RAM
  - 40 GB SATA HD, *7,200 RPM* minimum
  - 100 MB NIC or higher

### → **CONFIGURATION 'B' (Port/Channel Capacity: 24)**

- ◆ Single Server Configuration
  - TOL Server (*IMAPTSE on same machine if used*)
  - Intel® Dual Core Processor (2.7 GHz) or higher
  - 2 GB RAM
  - RAID 1+0 *4X146 GB SCSI/SATA/SAS HD, 10,000 RPM* minimum
  - 1 GB NIC
  - Storage available 292 GB

### → **CONFIGURATION 'C' (Port/Channel Capacity: 80)**

- ◆ Single Server Configuration
  - TOL Server
  - Intel® Quad-Core Xeon 5600 series CPU or higher
  - 2 GB RAM (*3 GB if ASR is Used*)
  - RAID 1+0 *4X146 GB SCSI/SATA/SAS HD, 10,000 RPM* minimum
  - 1 GB NIC or higher
  - Storage available 292 GB

### → **CONFIGURATION 'D' (Port/Channel Capacity: 100)**

- ◆ Multiple Server Configuration
  - TOL Server & Sybase Mobilink Server
  - Intel® Quad-Core Xeon 5600 series CPU or higher
  - 4 GB RAM
  - RAID 1+0 *4X146 GB SCSI/SATA/SAS HD, 10,000 RPM* minimum
  - 1 GB NIC
  - Storage available 292 GB
- ◆ IMAP TSE Server
  - Intel® Quad-Core Xeon 5600 series CPU or higher
  - 1GB RAM
  - RAID 1 *2x40 GB SCSI/SATA/SAS HD, 10,000 RPM* minimum
  - 1 GB NIC

→ **CONFIGURATION 'E' (Port/Channel Capacity: 100)**

- ◆ Multiple Server Configuration
  - TOL Server & Sybase Mobilink Server
  - Dual Intel® Quad-Core Xeon 5600 series CPU or higher
  - 4GB RAM
  - RAID 1+0 *4X146GB SCSI/SATA/SAS HD, 10,000 RPM minimum*
  - 1GB NIC
  - Storage available 292 GB
- ◆ IMAP TSE Server (Min Quantity 2)
  - Intel® Quad-Core Xeon 5500 series CPU or higher
  - 1GB RAM
  - RAID 1 *2x40 GB SCSI/SATA/SAS HD, 10,000 RPM minimum*
  - 1 GB NIC
- ◆ Additional Applications Server (Used for IIS)
  - Intel® Quad-Core Xeon 5500 series CPU or higher
  - 2GB RAM
  - RAID 1+0 *4x40 GB SCSI/SATA/SAS HD, 10,000 RPM minimum*
  - 1 GB NIC

→ **CONFIGURATION 'F' (Port/Channel Capacity: 100)**

- ◆ Multiple Server Configuration
  - TOL Server & Sybase Mobilink Server
  - Dual Intel® Quad-Core Xeon 5600 series CPU or higher
  - 4 GB RAM
  - RAID 1+0 *4X146 GB SCSI/SATA/SAS HD, 10,000 RPM minimum*
  - 1 GB NIC
  - Storage available 292 GB
- ◆ IMAP TSE Server (min Quantity 3)
  - Intel® Quad-Core Xeon 5500 series CPU or higher
  - 1GB RAM
  - RAID 1 *2x40 GB SCSI/SATA/SAS HD, 10,000 RPM minimum*
  - 1 GB NIC
- ◆ Additional Applications Server (used for IIS)
  - Intel® Quad-Core Xeon 5500 series CPU or higher
  - 2GB RAM
  - RAID 1+0 *4x40 GB SCSI/SATA/SAS HD, 10,000 RPM minimum*
  - 1 GB NIC

## Configurations

### → Email

Email traffic is broken down into the following three measurable categories

Mailbox Profile	Daily Message Profile
Low	5 sent / 20 received
Medium	10 sent / 40 received
Heavy	20 sent / 80 received

### → Voice Mail

Assuming the average message length is 30 seconds the voice mail traffic is broken down into the following three measurable categories:

Mailbox Profile	Daily Message Profile
Low	3 received
Medium	7 received
Heavy	15 received

- ☑ **Note:** IMAP TSE performance is directly proportional to the performance of the site's email server. The higher the performance on the email server the higher the performance and speed on the TOL server. Failure to maintain an adequate email server may result in slower than necessary message updates.
- ☑ **Note:** System performance can be drastically affected in environments where an individual or groups of users receive messages that are considered greater than those of a heavy mailbox profile. Iwatsu Voice Networks accepts no liability from any customers whose daily email usage is greater than the those outlined in the above charts.

→ **From 1 - 100 UC users (up to 250 VM users)**

		Email traffic		
		Low	Medium	High
Voice Mail Traffic	Low	A	A	B
	Medium	A	A	B
	High	A	A	B

→ **From 101 - 250 UC users (up to 500 VM users)**

		Email traffic		
		Low	Medium	High
Voice Mail Traffic	Low	A	A	B
	Medium	B	B	B
	High	B	B	B

→ **From 251 - 500 UC users (up to 1,000 VM users)**

		Email traffic		
		Low	Medium	High
Voice Mail Traffic	Low	B	B	A
	Medium	B	B	C
	High	B	B	C

→ **From 501 - 1 000 UC users (up to 2,500 VM users)**

		Email traffic		
		Low	Medium	High
Voice Mail Traffic	Low	B	C	C
	Medium	B	C	C
	High	B	C	C

→ **From 1,001 - 2,500 UC users (up to 5,000 VM users)**

		Email traffic		
		Low	Medium	High
Voice Mail Traffic	Low	C	C	D
	Medium	C	D	D
	High	C	D	D

→ **From 2,501 - 5,000 UC users (up to 10,000 VM users)**

		Email traffic		
		Low	Medium	High
Voice Mail Traffic	Low	D	E	E
	Medium	D	E	E
	High	D	E	E

→ **From 5,001 - 10,000 UC users (up to 20,000 VM users)**

		Email traffic		
		Low	Medium	High
Voice Mail Traffic	Low	D	E	F
	Medium	E	F	F
	High	E	F	F

## Supported Servers

- ☑ **Note:** 64 bit operating systems and hardware are not supported on any platform.

### Current Models

#### → **CIARA ([www.ciaratech.com](http://www.ciaratech.com)) 2U 080310 Nehalem Server**

- **Esnatech Certified**
- Chassis: 2U Chassis, Redundant PSU 700 Watts
- Processor: Intel® Xeon CPU Quad E5530, 2.4 GHz
- Memory: 3GB RAM
- Storage: 4 X 146GB SAS Drive (RAID 10)
- Platform: Windows 2003 Standard SP1/Windows 2003 R2
- To order, contact Roberto Lavoie at 877-242-7272 Ext. 6403 or [rlavoie@ciaratech.com](mailto:rlavoie@ciaratech.com)

For 3 Year Warranty, 4 hours same day on site service, use the part number **ESNA2474**

For 3 Year Warranty, next business day on site service, use the part number **ESNA247**

For 1 Year Warranty, return to depot for service, use the part number **ESNARTD**

#### → **Dell PowerEdge T410**

- **Esnatech Certified**
- Processor: Intel® Xeon E5620 2.4Ghz, 8M Cache
- Memory: 4GB RAM, 1333MHz UDIMM
- Storage: 4 X 146GB 15K RPM SCSI (RAID 10)
- Server OS: Windows 2008 32 bit
- For IP integrated systems only. Dialogic cards not supported.

#### → **Dell PowerEdge R710**

- **Validated through customer installation**
- Processor: Intel® Xeon E5520 2.4Ghz, 8M Cache
- Memory: 4GB RAM, 1333MHz UDIMM
- Storage: 4 X 146GB 15K RPM SCSI (RAID 10)
- Server OS: Windows 2003 R2 SP2
- For IP integrated systems only. Dialogic cards not supported.

#### → **Dell PowerEdge R510**

- **Validated through customer installation**
- Processor: Intel® Xeon E5520 2.4Ghz, 8M Cache
- Memory: 4GB RAM, 1333MHz UDIMM
- Storage: 4 X 146GB 15K RPM SCSI (RAID 10)
- Server OS: Windows 2003 R2 SP2
- For IP integrated systems only. Dialogic cards not supported.

→ **HP ProLiant DL380 G6**

- **Validated through customer installation**
- Processor: Intel® Xeon 5500 series processor, 8MB L3 Cache
- Memory: 4GB RAM, 1333MHz UDIMM
- Storage: 4 X 146 GB SAS 10K RPM HD (RAID 10)
- Server OS: Windows 2003 R2 SP2
- For IP integrated systems only. Dialogic cards not supported.

## Previous Models (Discontinued by Manufacturer)

→ **Dell PowerEdge 2950**

- **Esnatech Certified**
- Processor: Dual Core Intel® Xeon 5110 1.6GHz
- Memory: 2GB RAM
- Storage: 73GB SCSI Drive (RAID 10)
- Drives: CD/DVD ROM Drive
- Server OS: Windows 2003 R2 SP2
- For IP integrated systems only. Dialogic cards not supported.

→ **Dell PowerEdge 1900**

- **Esnatech Certified**
- Processor: Quad Core Intel® Xeon E5310 1.6GHz
- Memory: 4GB RAM
- PERC 5 SCSI Card
- Storage: 4x 146GB SAS Drive (RAID 10)
- Drives: CD/DVD ROM Drive
- Server OS: Windows 2003 R2 SP2 or Windows 2008 32 bit
- For IP integrated systems only. Dialogic cards not supported.

→ **Dell PowerEdge SC440**

- **Validated through customer installation**
- Processor: Dual Core Intel® Xeon 3050 2.13GHz
- Memory: 4GB RAM
- SAS 5I Controller
- Storage: 2x 146GB SAS Drive (RAID 0)
- Drives: CD/DVD ROM Drive
- Server OS: Windows 2003 R2 SP2 or Windows 2008 32 bit
- For IP integrated systems only. Dialogic cards not supported.

→ **Dell Optiplex 745**

- **Esnatech Certified**
- Processor: Intel® Core 2 Duo 2.8GHz
- Memory: 2GB RAM
- Storage: 120GB SATA Drive
- Drives: CD/DVD ROM Drive
- Server OS: Windows XP SP2
- For IP integrated systems only. Dialogic cards not supported.

→ **Dell Vostro 740**

- **Esnatech Certified**
- Processor: Intel® Core 2 Quad 2.4GHz
- Memory: 4GB RAM
- Storage: 300GB SATA Drive
- Server OS: Windows XP SP2
- For IP integrated systems only. Dialogic cards not supported.

→ **Dell Precision 390**

- **Esnatech Certified**
- Entry workstation which supports latest dual-core / fastest Intel P4 processors.
- Processor: Intel® Core 2 Duo E3400 1.8GHz/800MHz
- Memory: 2GB RAM
- Storage: 80GB SATA HD
- Server OS: Windows XP SP2

→ **HP ML 350**

- **Validated through customer installation**
- Processor: Dual Core Intel® Xeon 5110 1.6GHz
- Memory: 2GB RAM
- Drive: CD/DVD ROM Drive
- Storage: RAID 10 SATA/SCSI Hard drive
- Server OS: Windows 2003 R2 SP2
- For IP integrated systems only. Dialogic cards not supported.

→ **HP DL 360**

- **Validated through customer installation**
- Processor: Dual Core Intel® Xeon 5110 1.6GHz
- Memory: 2GB RAM
- Drives: CD/DVD ROM Drive
- Storage: RAID 10 SATA/SCSI Hard drive
- Server OS: Windows 2003 R2 SP2
- For IP integrated systems only. Dialogic cards not supported.

→ **HP ProLiant DL140**

- **Validated through customer installation**
- Processor: Dual Core Intel® Xeon 5110 1.6GHz
- Memory: 2GB PC2-3200 DDR2 SDRAM w/ advanced ECC capabilities
- Storage: RAID 10 SATA/SCSI Disk Array
- Server OS: Windows 2003 R2 SP2
- For IP integrated systems only. Dialogic cards not supported.

→ **IBM eServer x3200**

- **Esnatech Certified**
- Processor: Intel® Pentium D (dual-core = 3.4GHz/800MHz)
- Memory: 2GB RAM
- Storage: RAID 10 SATA disk array
- Server OS: Windows 2003 R2 SP2

→ **IBM eServer x3500**

- **Esnatech Certified**
- Processor: Dual Core Intel® Xeon 5120 1.86GHz/1066MHz
- Memory: 2GB RAM
- Storage: RAID 10 SATA disk array
- Server OS: Windows 2003 R2 SP2

## Server Requirement Q & A

Please refer to the below Q&A article for a general understanding of the hardware requirement of the TOL system.

### What is a RAID 10 system?

RAID 10, also known as RAID 1+0 or RAID 0+1, is a RAID system where 2 drives are mirrored and then spanned with 2 other mirrored drives. This gives you the ability to lose 1 of each in the set in each mirror (1/2 of the drives) and still work at full speed. This is the recommended setup for the TOL system and the RAID 0+1 is the preferred choice.

### How about RAID 6 or RAID 5?

RAID 5 and 6 would be an optimal choice if the TOL system were to be a read only system. Unfortunately the act of writing burdens the RAID system since every log entry requires the entire span to be updated (parity needs to be updated with every change). If a RAID 5 or RAID 6 becomes fragmented there is a problem since small pieces of info will still take the entire stripe and parity needs to be calculated for every change once again.

### What speed Hard Drives should we use?

Most typical server hard disk drives are 10,000 RPM or 15,000 RPM. Either of these hard drives is sufficient for the TOL system. The 15,000 RPM drives run much hotter but are also 50% faster. The trade off is consumption of electricity over performance. If it the install base has large number of UM with IP voice ports the 15,000 RPM hard drive is recommended, but not required.

### What can I do to increase the effectiveness of the RAID system?

An extra drive (one or more) may be configured as a hot swap spare. In general, this is a good practice since it will automatically start rebuilding the RAID if one of the drives fail, removing the need for human interaction.

### What is the total storage of a RAID system?

Total storage is about ½ of the combined storage of all the drives.

### Is there a numerical restriction on the RAID system?

The number of drives to be used in the RAID system must be an even number, four is the minimum (4, 6, 8, etc.).

### Can I install TOL on an existing server that is already in use?

TOL is a dedicated application which should only be installed as a **primary application** on any server. Sharing system resources with other applications may prohibit proper TOL function.

# 7

## PBX Specifications



### Chapter Summary

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# PBX Specifications

## Introduction

Use the information in this section as a general guideline to the types of integration the TOL can support as well as what is required from the phone system in order for specific features to function.

## SIP

SIP stands for Session Initiation Protocol (set of formal rules) that provides the basic signals used to initiate (hence session initiation protocol), manage, and terminate communications sessions. SIP is an open standard which allows carrier voice equipment to interoperate seamlessly with customer premise equipment. The logical voice channel established between them is a SIP Trunk. A SIP Trunk is a virtual phone line that utilizes the customer's internet connection for access. Trunks come with unlimited local inbound minutes and long distance usage based at rates far below traditional phone service. SIP Trunking is a business-class telecommunications solution that delivers local, toll-free, domestic and international long distance service.

## Inband

Inband integration is possible on supported switches through the use of Dual Tone Multiple Frequency (DTMF) signalling. Strings of DTMF tones are transmitted on the analog voice channel after the channel connects to answer the call but before the voice is cut through.

Typically the string contains the Calling Line Identification, the Called Party Identification, reason for the call (re-direction or direct call), and will allow the following functionality among others:

- ◆ Direct Log-In in which TOL recognizes a direct station call, identifies the internal caller's extension number and prompts the caller to enter the security code of the subscriber mailbox associated with that number.
- ◆ Call Forwarding to a personal greeting if an extension is Busy, not answered, Do Not Disturb or Forward All. Both internal and external callers can be forwarded to the subscriber's personal greeting. Depending on how the subscriber's mailbox is configured and what information is provided by the telephone system an appropriate greeting can be played for both a Busy and a Ring No Answer condition. Callers can then leave messages in the subscriber's mailbox or be presented with another list of options through voice menus.
- ◆ Call Routing based on the trunk number, DNIS number or forwarded PBX extension number. These types of calls can be routed to a specific mailbox, ACD agent or call center. The time frame (when voice mail is waiting for signalling) is configurable so that it can be adjusted regardless of the PBX.

# T1

## SUPPORTED PROTOCOLS

### → Robbed Bit Signaling

Channel Associated Signaling (CAS), also referred to as Robbed Bit Signaling, is a method of signaling each traffic channel rather than having a dedicated signaling channel (like ISDN). In other words, the signaling for a particular traffic circuit is permanently associated with that circuit.

The most common forms of CAS signaling are loopstart, groundstart, Equal Access North American (EANA) and E&M. The biggest disadvantage of CAS signaling is its use of user bandwidth to perform signaling functions. In addition to receiving and placing calls CAS signaling also processes the receipt of Dialed Number Identification Service (DNIS) and automatic number identification (ANI) information which is used to support authentication and other functions.

Each T1 channel carries a sequence of frames. These frames consist of 192 bits and an additional bit designated as the framing bit, for a total of 193 bits per frame. Super Frame (SF) groups 12 of these 193 bit frames together and designates the framing bits of the even numbered frames as signalling bits. CAS looks specifically at every sixth frame for the timeslot's or channel's associated signaling information. These bits are commonly referred to as A- and B-bits. Extended super frame (ESF), due to grouping the frames in sets of twenty-four, has four signaling bits per channel or timeslot. These occur in frames 6, 12, 18, and 24 and are called the A-, B-, C-, and D-bits respectively.

### → ISDN Signaling Concepts

The Integrated Services Digital Network (ISDN) is a digital communications network capable of carrying all forms (voice, computer and facsimile) of digitized data between switched end points. This network is a digital-switched system that makes a connection only when requested.

Control over switched connections is provided by a protocol of messages that pass between the two ends of the digital link. Any type of equipment can be connected to an ISDN provided the equipment is capable of generating a digital bit stream that conforms to ISDN standards.

ISDN technology offers the benefits inherent in digital connectivity such as fast connection (setup and tear down), fast Direct Dialing In service (DDI) and fast Automatic Number Identification (ANI) acquisition.

ISDN protocols use an out-of-band signaling method carrying signaling data on a channel or channels separate from user data channels. This means that one signaling channel (D channel) carries signaling data for more than one bearer channel (B channel). This signaling technique is referred to as common channel signaling (CCS). Signaling data carries information such as the current state of the channel (for example, whether the telephone is on-hook or off-hook). Common channel signaling allows the transmission of additional information, such as ANI and DNIS digits, over the signaling channel.

An ISDN Primary Rate Interface (PRI) trunk provides a digital link that carries some number of TDM (Time Division Multiplexed) channels:

a T-1 trunk carries 24 64 Kbit channels, 23 voice/data channels (B channels) and one signaling channel (D channel) on a single 1.544 MHz digital link

an E-1 trunk carries 32 64 Kbit channels, 30 voice/data channels and two additional channels: one signaling channel (D channel) and one framing channel to handle synchronization on a single 2.048 MHz digital link.

The ISDN digital data stream contains two kinds of information: user data and signaling data used to control the communication process. For example, in telephony applications user data is digitally encoded voice data. Voice data from each time slot is routed to a separate B channel. Signaling data carries information such as the current state of the channel (for example, whether the telephone is on-hook or off-hook). The signaling information for all B channel information is routed to the D channel of the device.



# 8

## High Availability Description



### Chapter Summary

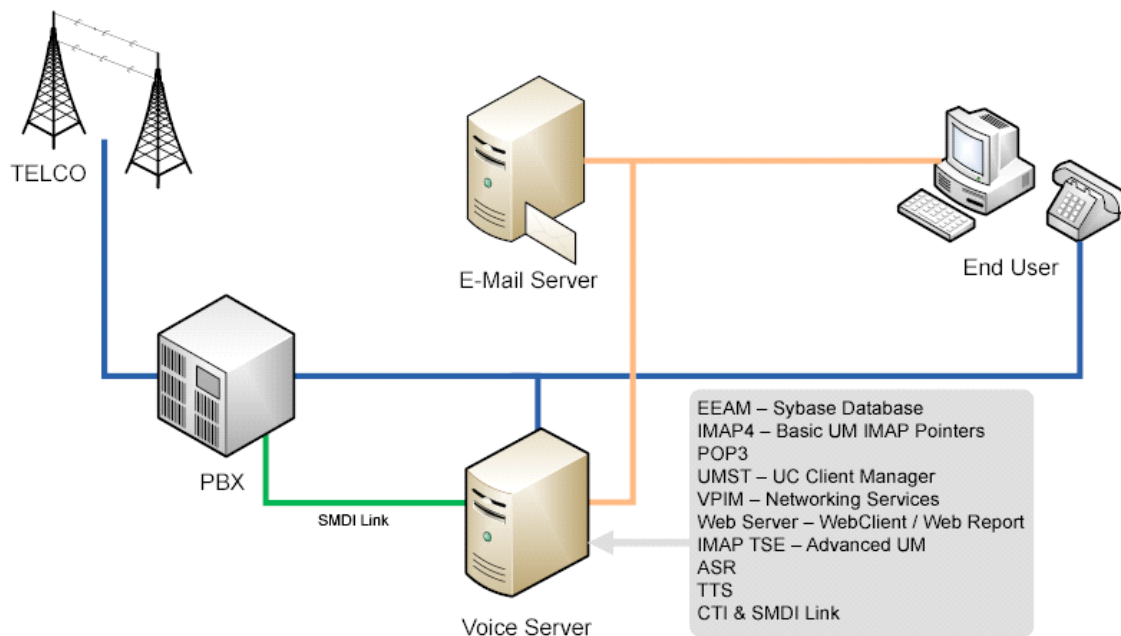
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## High Availability Description

- ☑ **Note:** HA is only available on the **previous version of TOL (7.X)**. The support of HA in the current TOL 8.0 environment is to be announced in the near future. If the HA feature is critical at the site at hand, it is recommended that you utilize the existing TOL 7.X package and upgrade at a later point to TOL 8.x which has HA support.
- ☑ **Note:** The HA section of the TOG currently only explains the general concept of HA and only covers the basic scenarios that are involved. For a full list of features that are supported/not supported by the HA system and other HA failure/recovery scenarios, please check for future updates on the TOG.

### Vulnerability of the Single Server System

The High Availability system is designed to deliver a redundancy solution to environments where the guarantee in uptime is critical. The HA system achieves redundancy through Slave servers that are constantly online along with the Master server. In a traditional single server environment as show below, the system is vulnerable to downtimes which can be caused by the malfunction of the single Voice Server computer.

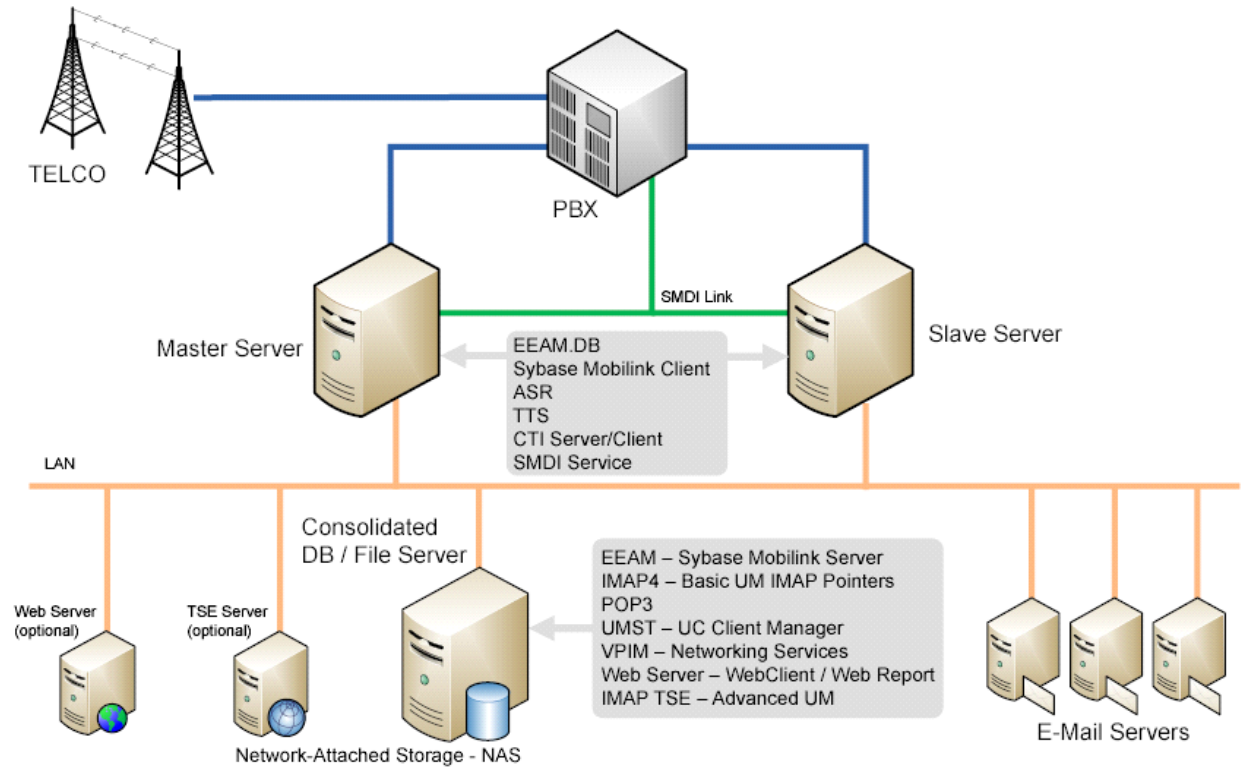


#### Single Server Configuration

Since only one Voice Server is functional at all times, any type of malfunction in the voice server equates to downtime. Even regular tasks such as maintenance or simple reboot procedure will cause downtimes in a single server configuration.

## Reliability of the Multi-Server System

In a multiple server environment illustrated below, the Master server is supported by the Slave server at all times. This means that a site can remain functional even if one of the voice servers fail. When the Master server malfunctions, the Slave server can take over the entire task until the Master server is brought online again. The Master and Slave servers are able to work in unison through the help of the Consolidated (DB/File) server, also referred to as the Common server. The Consolidated server manages the flow of data between all servers and ensures proper synchronization of files. For detailed explanation on database synchronization, please refer to Database Management on page 79, Failure Scenario on page 80 and Recovery Scenario on page 81.

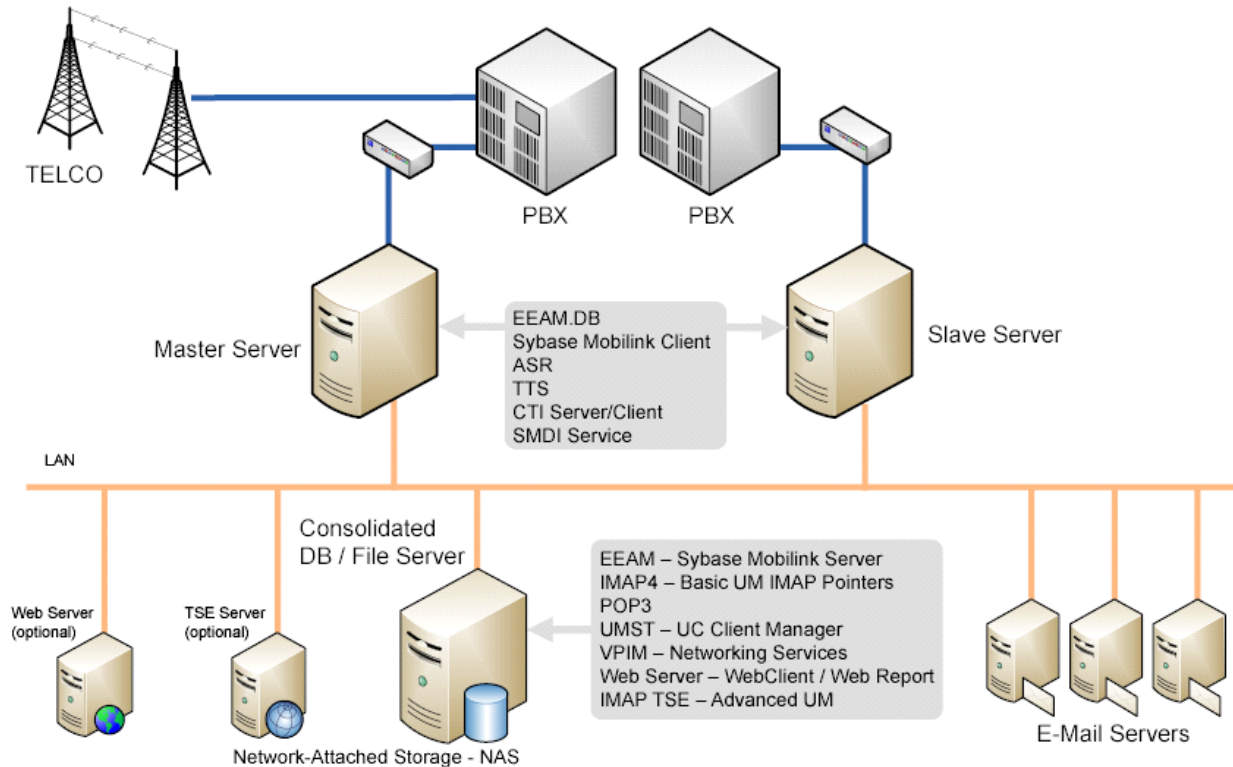


### Multiple Server Configuration

But while the Multi-Server guarantees the uptime of the voice servers, there may be scenarios in which the PBX itself malfunctions.

## Multiple Server Multiple PBX System

The multiple server system combined with multiple PBX provides the single most reliable configuration. In this scenario, you are guaranteed uptime even if the PBX fails along with the Master server. The secondary PBX and the Slave server will be able to continuously accept calls during the recovery of the Master voice server and the primary PBX.

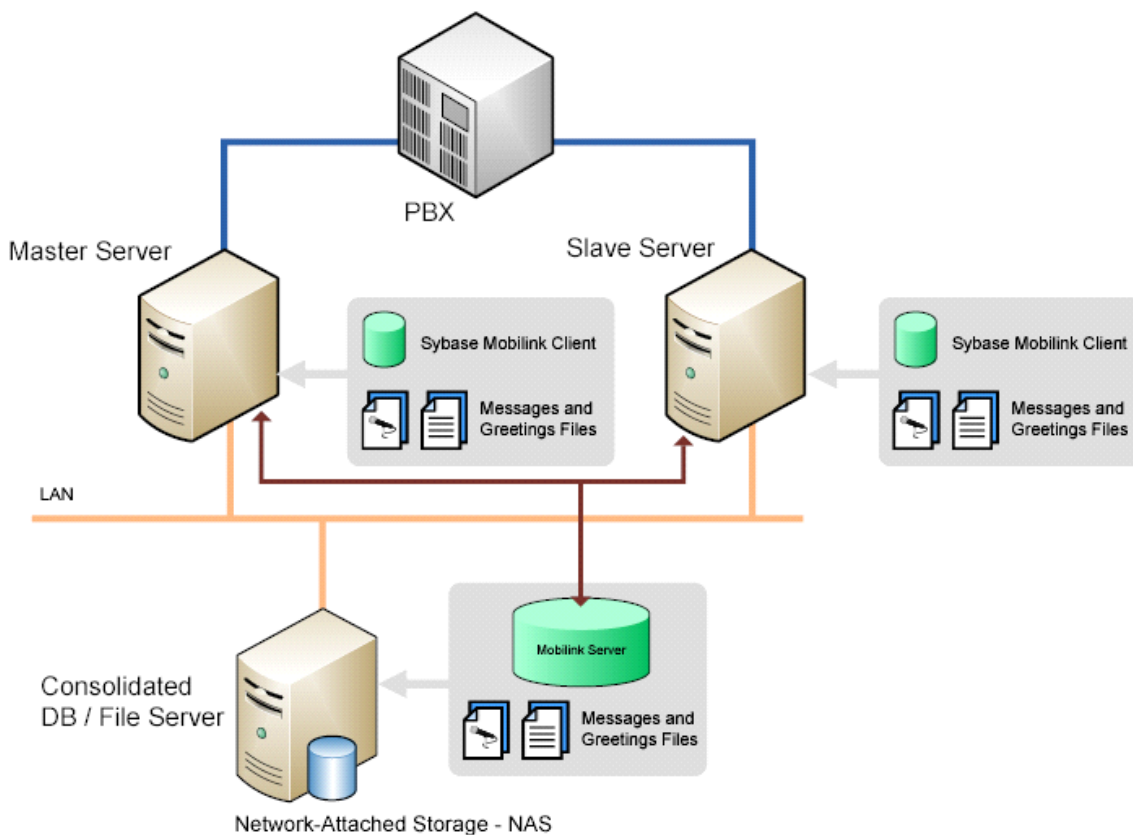


Multiple Server + PBX Configuration

# Database Management

In a High Availability environment, the database in all the servers are synchronized through the Sybase Mobilink system. The Consolidated (Common) server acts as the Mobilink Server and manages the database for all the Master and Slave Servers.

This architecture allows the sites to enjoy full message access during all times, and not just full uptime on the Voice server functionalities. Whenever a change is made in either the Master or Slave servers, the Consolidated server appends the same change to all databases in the system, allowing the end users to maintain their messages and greetings even when one of the servers become unavailable.

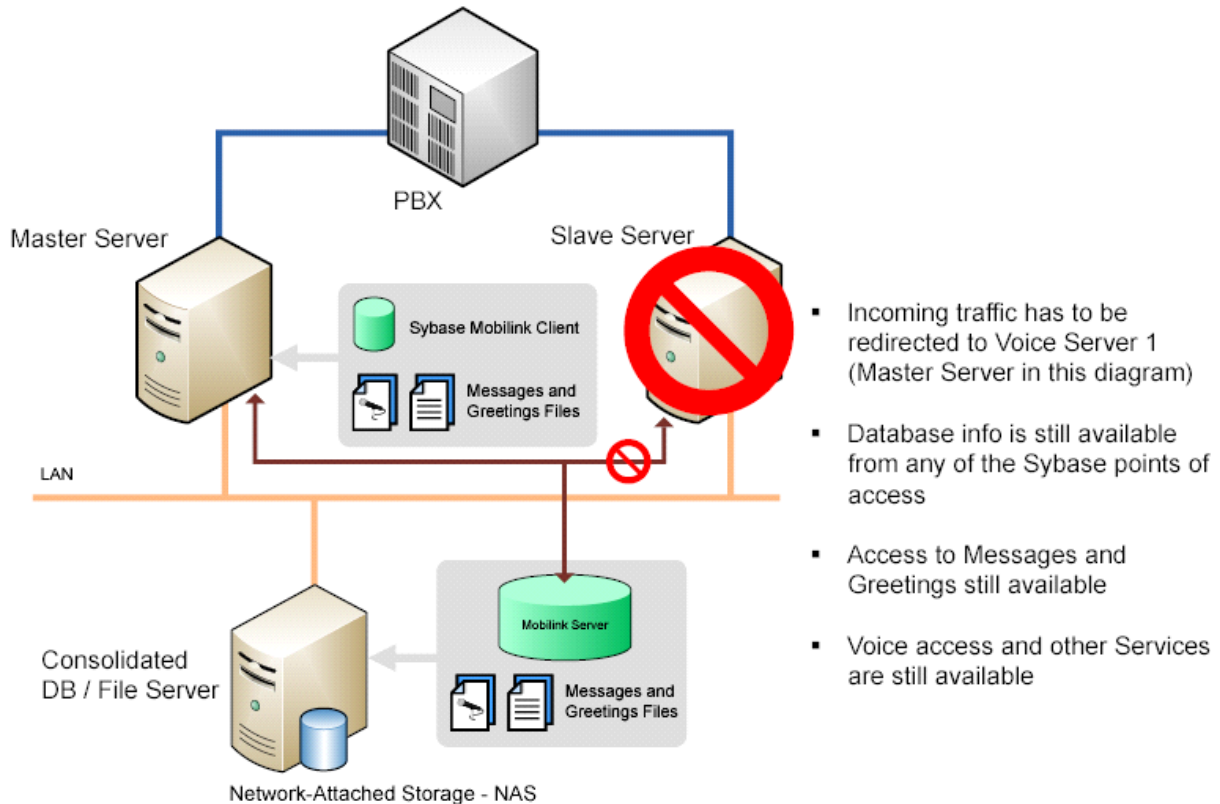


HA System Database Diagram

## Failure Scenario

In this scenario, the Slave server is unavailable due to a malfunction, severing the tie between the databases. The new messages received in the Master server will continuously be synchronized with the Consolidated server but the Slave server will be left behind during the down time.

Any messages received by the Slave server are still accessible by the users since the database has already been synchronized before the Slave server crash. There is also no disruption in regular service since the Master server is still fully functional. All traffic is handled by the Master server in the meantime.

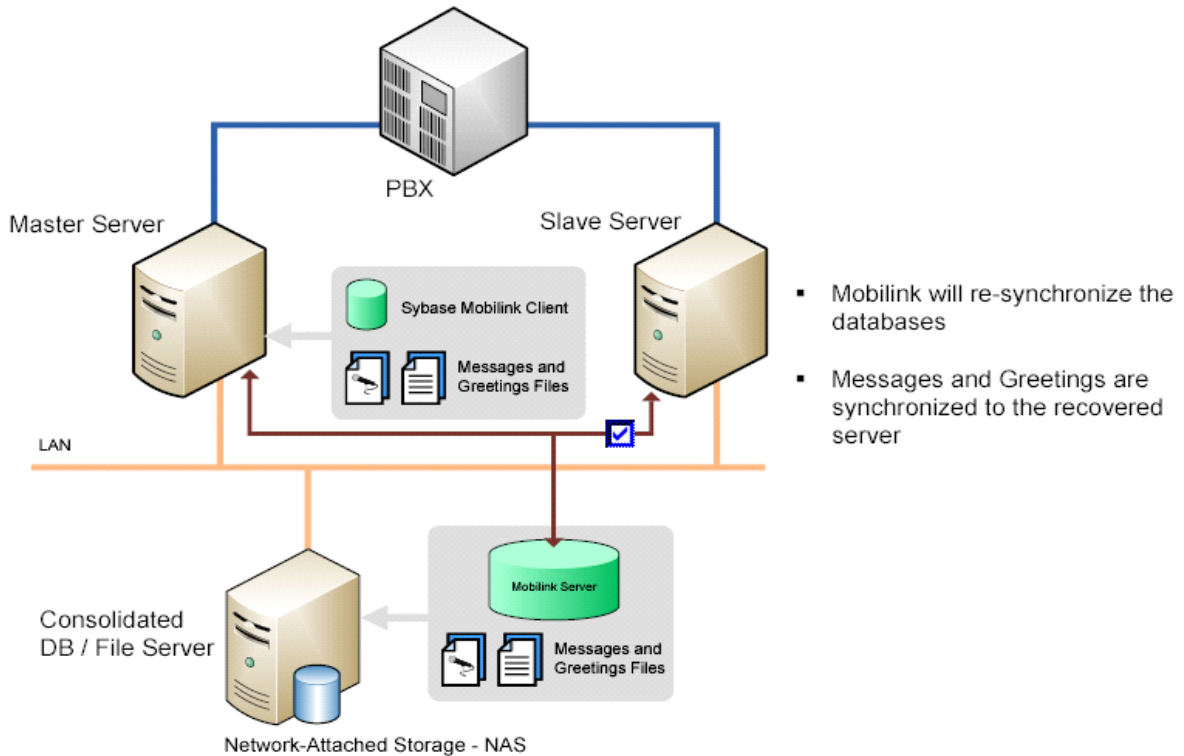


HA System Database During Failure

## Recovery Scenario

In this scenario, the Slave server that was down in the previous example has recovered. Soon after the Slave server comes back online, the Consolidated server will start to synchronize the data between all the servers again, allowing the Slave server to catch-up to the new database.

All messages and greetings will become automatically up to date on the slave system soon after it comes online, which means that the recovery process will be a virtually invisible process that takes place in the background during regular operation.



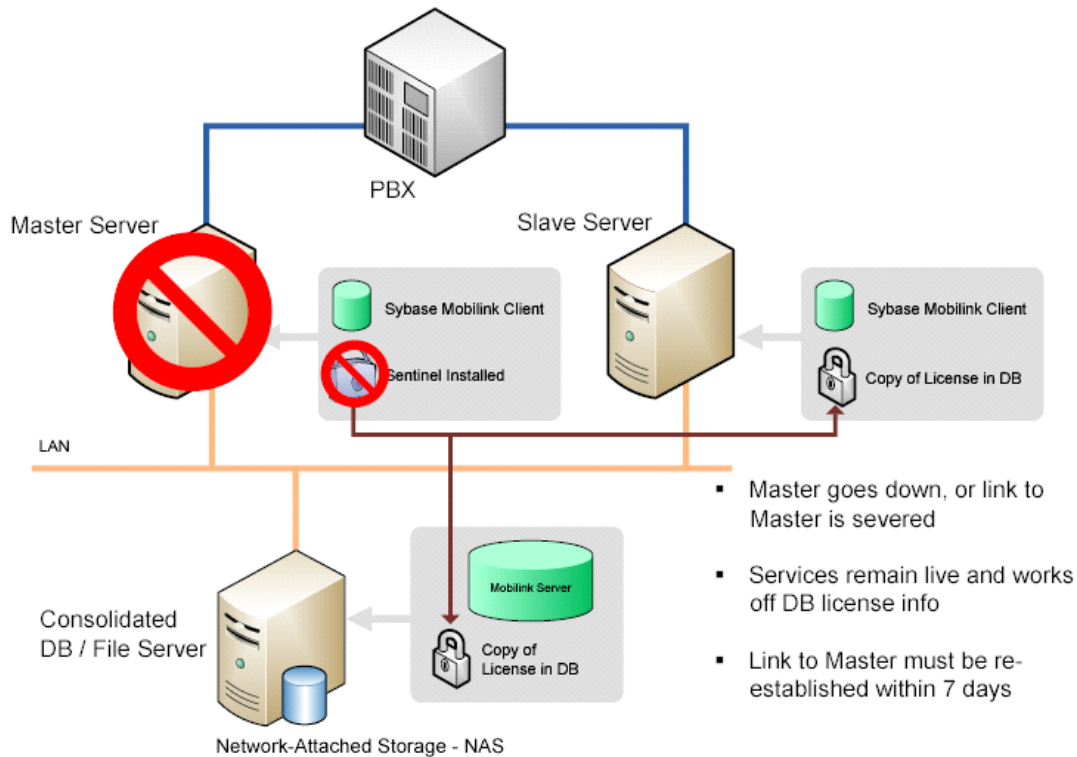
HA System Database During Recovery

## License Management

The High Availability system utilizes a unique licensing feature that allows full functionality of service while only one server holds the Sentinel key. In all cases, the Master server will hold the USB Sentinel and become the primary holder of the license. However, the license file will be copied to all servers in the system through the database synchronization performed by Sybase Mobilink.

The copied license files will allow other servers (other than the Master) to maintain full functionality even when they don't have individual license available to them. This system also allows for easier license management since only the Master server has to be updated, should there be any type of addition or modification to the license.

However, the copied license files are time stamped to expire after a certain period. The time stamps are constantly updated by the Master server, so it will not have any effect during regular operation.

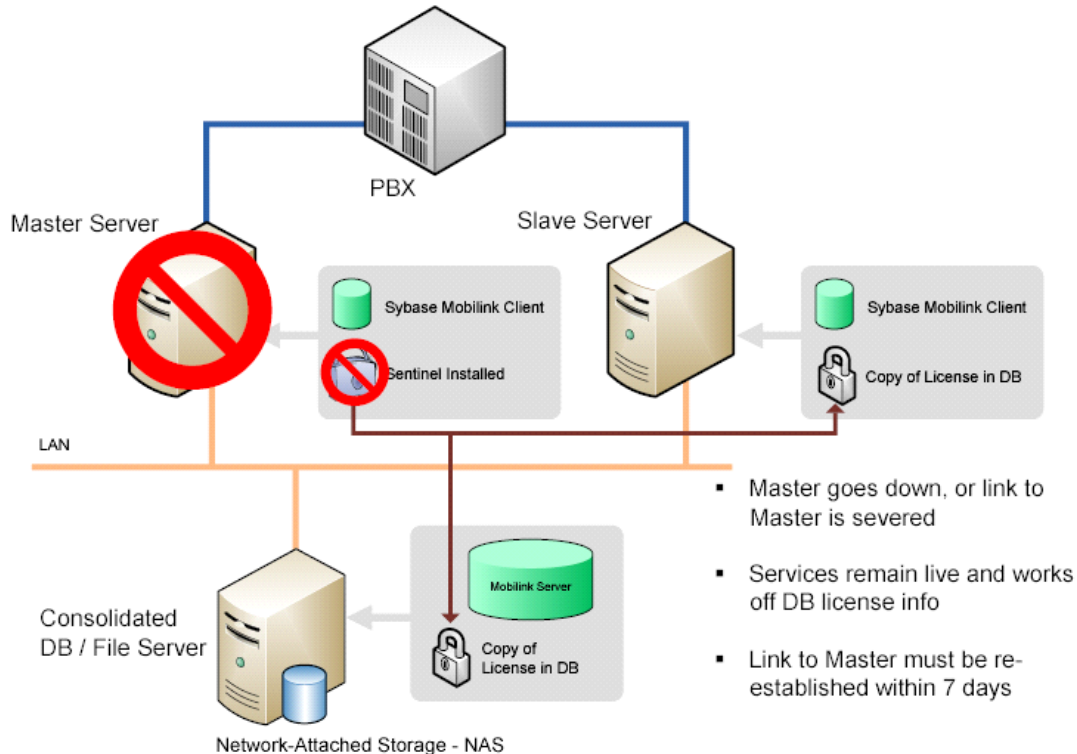


HA System License Structure Diagram

## License Management During Master Server Down Time

When the Master server becomes unavailable, it will also stop updating the time stamps on the copied license files that exist on the Slave server and the Consolidated server. When this happens, the Master server has to be recovered within 7 days. If the Master server isn't brought back online within the 7 days, the copied license files will expire and the system will cease to function due to invalid license status.

Since 7 days is a generous time period for recovery, most sites will not even notice such architecture in licensing. They will experience no problems as long as the Master server is recovered in a timely manner.



HA System License Structure During Master Server Absence

## High Availability Redundancy & Scalability

### Server Specification

The minimum configuration for a High Availability system is three servers, Master, Slave and Consolidated (Common).

As of now, the High Availability system is able to support up to 8 voice servers maximum. This means that a site can maintain 1 Master server and 7 Slave servers in a single High Availability environment.

### Configuration Limitation

Each voice servers are designed to support up to 100 ports (SIP).

A single High Availability environment can support up to 20,000 user accounts (business rules apply).

Single Web server can support up to 10,000 users.

Single IMAP TSE server can support up to 5,000 users.

### Other Rules and Limitations

The private subnet can be used for security and traffic control purposes.

The system is high availability rather than fully redundant.

The MWI function is only available for voice and fax messages.

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## Release 8.0 Software Rollout



### Chapter Summary

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## Release 8.0 Software Rollout

With the release TOL of version 8.0, there will be many new implementations as well as upgrades. This section reviews all the options available for ordering, what information is required to place an order and information on upgrading the system.

### TOL Server Release 8.0 and Options

Each item listed below must be ordered separately when ordering a TOL Server system.

#### → **TOL Server Base Software**

Base software with or without TTS. Includes Sentinel (license key), software, and documentation DVD.

#### → **Text-to-Speech Ports**

available in single-port increments to a maximum of 64 (starting at 2)

- Note:** TOL 8.0 or higher ships with Nuance Realspeak 4.0 and 4.5 which is newer than the in the previous 6.X versions. To upgrade to Realspeak 4.0 or 4.5, a new license file must be purchased.
- Note:** TTS ports are dynamically allocated.

#### → **Unified Messaging Users Licenses**

50 included with the base software  
available in bundles of 50, 100, and 1000

#### → **Integrated Messaging Desktop Licenses**

available in bundles of 50, 100, and 1000

#### → **ASR Ports**

available in single-port increments (starting at 2 ports)

- Note:** TOL 8.0 or higher ships with Nuance 8.5 which is newer than the in the previous 6.X versions. To upgrade to Nuance 8.5 a new license file must be purchased.
- Note:** ASR ports are dynamically allocated.
- ◆ Optional Software
- ◆ additional IMAP-TSE Gateways (for each additional email environment)
- ◆ Fax Mail Integration (incoming faxes only)
- ◆ VPIIM and AMIS networking (AMIS is not supported with IP Integration)
- ◆ additional Voice ports (in 4 port increments)
- ◆ ActiveX Software Developer's Kit (for custom PIM integration)
- ◆ Multilingual Language support (1 language included with base)
- ◆ may require specific language pack to be ordered
- ◆ additional Tenants
- ◆ additional IMAP-TSE activation

→ **Integrated Fax (Outbound faxing)**

→ **Documentation**

all documentation

## Product Support Requirements

Product Support has advised the following mandatory requirements to ensure successful and responsive assistance with regard to any field issues: All systems must be configured for Remotely Accessed support. This can be achieved in 1 of 2 ways:

1. The TOL Server is accessible via an Internet connection. This would enable Iwatsu Support to initiate a WebEx session with the administrator of the TOL Server. This is a low-impact and very powerful tool for remote troubleshooting. This is the preferred method of providing remote support to the TOL Server.
2. A copy of PC Anywhere (v 11) may be loaded by the customer or reseller on the system. This application may be purchased as an option (with your TOL Server order) or acquired separately from another supplier. Using this application Product Support may access the TOL Server via dial-up modem or IP connectivity (where permitted by firewall). This is a viable option for remote support but would only be used if option 1 was unavailable.

Prior to loading third-party applications on the system it is strongly advised that a phone call be placed to Product Support to validate that there are no potential conflicts. Examples of third-party applications may include virus checkers and backup software applications.

- Note:** To avoid unnecessary technical support charges, refer first to the product documentation. The TOL documentation suite can be found on the Installation DVD.
- Note:** To access technical support you must be a certified technician with a valid PIN number and the site must have an active warranty maintenance contract.

