

## WINSCRIBE HARDWARE SPECIFICATIONS

### Technology Overview

WinScribe proposes centralization of resources by providing a networked solution that fits into the existing framework of your server environment with minimal impact on network resources.

The WinScribe solution is based on a centralized management dictation model and will utilize a server/redundant server located at an office nominated by your organization. The bandwidth requirements of your WAN can be drastically reduced by implementing the WinScribe Distributed Voice system keeping the dictation local to the users. WinScribe utilizes port based transport mechanisms and is managed proactively by your network operations using bandwidth limiting Quality of Service technologies.

Our solution will provide a standard WinScribe desktop for all users. The management of software upgrades for both the server and workstations can be coordinated using our remote management utilities. WinScribe applications can be installed using the inbuilt HTTP installation or alternatively through unattended installations using MSI packages and Group Policies.

Users accessing the system remotely can do this via a Virtual Private Network or via a secure HTTPS web portal. WinScribe has solutions for WinScribe services to be held in a DMZ zone, further enhancing your security model. WinScribe uses Microsoft-based web services and, if correctly implemented, provide the highest standard of security.

### WinScribe Server Requirements

WinScribe server software has a number of components that can be installed on a single server and/or several servers. Typically several servers are used at a large site or when redundancy is required. The table below explains the various components and their operating system requirements:

Component	Software	Notes
WinScribe Dictation Service	Windows 2000 Server (SP2 or higher) Windows 2003 Server XP Professional Windows 2000 Professional (SP2 or higher)	<b>Warning:</b> Always install the latest service pack.
WinScribe Telephony Service	Windows 2000 Server (SP2 or higher) Windows 2003 Server XP Professional Windows 2000 Professional (SP2 or higher)	Usually installed on the Dictation Server but can be installed on separate servers.



## WinScribe Server Hardware and Network Minimum Bandwidth Requirements

The table below provides a list of the minimum hardware required for the various WinScribe Server components. Keep in mind that more memory and faster hard drives will improve performance.

Component	Hardware	Notes
WinScribe Dictation Services (Primary Server)	Pentium IV or higher 256MB RAM 800MB disk space for software (not including dictation storage space)	Should be a dedicated server  Redundant disks recommended e.g. Raid5.  <b>Warning:</b> See Dictation Storage requirements for details on storage requirements.  <b>Security Warning:</b> For security purposes, Microsoft recommend that all drives are formatted with NTFS. Also the working directories that are created during the WinScribe installation should be on a separate partition to the operating system.
WinScribe Telephony Service (Primary or Secondary Server)	Pentium IV or higher 256MB RAM PCI or ISA slot free for each telephone card	Usually installed on the same server as the WinScribe Dictation Service however ensure 512 RAM is available (256 x 2). You can install this component on up to 4 additional servers (secondary servers), with a maximum 96 telephone ports per server, providing up to 480 ports in total.
WinScribe WEB Components	Pentium IV or higher 256MB RAM	Can be installed on the same server as the WinScribe Dictation service or on the customer's existing WEB server.  <b>Security Warning:</b> For security purposes, Microsoft recommends that all drives used with IIS be formatted with NTFS, also the working directories that are related during the WinScribe Web Components installation should be on a separate partition to the operating system.
Database	Pentium IV or higher 256MB RAM	By default installed on the same server as the WinScribe Dictation Server but can be installed on a customer's SQL server.
Network	Static IP address for each server 100Mbit or faster network card for each server	Public IP address if Internet clients require off-site access.

## WinScribe Speech Recognition Server Requirements

It is unnecessary to specify Speech Recognition requirements since any modern server will process an audio job. What needs to be considered is how long it will take to process a job given that the server can only process one job at a time.

As a minimum, we recommend the following specifications:

- Controller and License server running on the same machine
- Pentium IV, 2Ghz, 1GB RAM
- Speech Recognition Engine

Note that Pentium IV, 2.4Ghz 1GB RAM will produce recognized text at 1.5 x real time.

## LAN/WAN/Internet Bandwidth Requirements

Many large organizations have sites that are spread out in various geographical locations. These sites need a way to connect and remain connected to the main or central site where the WinScribe server is located. One of these methods may also be used to connect to an ISP for WinScribe Internet clients who work offsite. Different wide-area-Internet connection media are used in different parts of the world. The table below describes the various wide-area technologies and their uses.

Wide-Area Technology	Definition
T1	Transmits at a speed of 1.544 Mbps, and consists of 23 B channels, which are used for data and a 1 D channel which is used for clocking. T1 can also be fractionalised into separate 64 kilobytes per second (Kbps) segments.
E1	Used primarily in Europe. Transmits at a speed of 2.048 Mbps.
T3	Transmits DS3 data at 44.736 Mbps.
Frame Relay	Packet-switched technology that is considered the replacement for X.25. Commonly runs at speeds up to T1
Digital Subscriber Line (DSL)	DSL consists of an asymmetric digital subscriber line (ADSL), a high-data-rate digital subscriber line (HDSL), a single-line digital subscriber line (SDSL) and a very-high-data-rate digital subscriber line (VDSL).

Site connectivity can also rely on the use of dial-up mediums such as Integrated Services Digital Network (ISDN), or analogue phone lines (POTS) for low traffic links.

To assist you with calculating the bandwidth requirements for LAN/WAN remote sites or Internet connections, WinScribe can provide a bandwidth calculator. WinScribe uses 3 levels of GSM format – low, medium or high. The example below shows network impact on a T1 connection.

### GSM, Low

<b>Total System Dictations</b>	
Total dictations per day	100
Average length of dictation in minutes	4
<b>Network Impact Calculations</b>	
Total dictated minutes	400
Total dictated seconds	24,000
Total bits @ 13Kbps (GSM Low)	312,000,000
<b>Time on T1 in seconds</b>	
10Mb (average speed of 1.5 Mbs)	208
Total seconds in 8 hour day	28,800
<b>Traffic (as a percentage) impact on Net 10Mb</b>	0.72%

### GSM, Medium

<b>Total System Dictations</b>	
Total dictations per day	100
Average length of dictation in minutes	4
<b>Network Impact Calculations</b>	
Total dictated minutes	400
Total dictated seconds	24,000
Total bits @ 17.912 Kbps (GSM Med)	429,888,000
<b>Time on T1 in seconds</b>	
10Mb (average speed of 1.5 Mbs)	286.6
Total seconds in 8 hour day	28,800
<b>Traffic (as a percentage) impact on Net 10Mb</b>	0.99%

### GSM, High

<b>Total System Dictations</b>	
Total dictations per day	100
Average length of dictation in minutes	4
<b>Network Impact Calculations</b>	
Total dictated minutes	400
Total dictated seconds	24,000
Total bits @ 35.824Kbps (GSM High)	859,776,000
<b>Time on T1 in seconds</b>	
10Mb (average speed of 1.5 Mbs)	573.2
Total seconds in 8 hour day	28,800
<b>Traffic (as a percentage) impact on Net 10Mb</b>	1.99%

## Dictation Storage Requirements

The following example may be used as a basis for calculating storage needs. The example assumes that each dictation will be kept on the system for two weeks, during which time it will be typed and then archived from the system.

- One hour of dictation requires 5.5MB or 95kb per minute of disk storage using GSM Low format
- One hour of dictation requires 7.69MB or 131kb per minute of disk storage using GSM Medium format
- One hour of dictation requires 15.37MB or 262kb per minute of disk storage using GSM High format

The below calculations have been made using GSM Medium format.

- If each author were to produce an average of 25 minutes of dictation per day we can calculate:
  - 25 minutes x 131kb = 3.3MB per author per day x 10 working days = 30.3MB per author.
  - Therefore: one Gigabyte of drive space will support  $1000/30 = 33$  authors.

Note: The actual requirement will vary based on how long you wish to store completed dictation, how long the average dictation is, how quickly jobs are typed, the archive and deletion settings in the job type profile and the length of time archived jobs are retained. We suggest that you undertake analysis to determine your exact requirements.

## SQL Server Desktop Engine versus SQL Server

When installing WinScribe in a multi-facility environment you can use Microsoft SQL Server Desktop Engine, supplied with WinScribe. However, keep in mind the Desktop version has some limitations. These are:

- Limited 2Gb RAM
- 2Gb database limit (each facility in WinScribe is a new database and in theory will not reach the 2Gb limit)
- Five concurrent users or less is recommended (WinScribe uses 4 connections at most)
- No automatic backup
- No publishing for transaction replication. No database server failover support
- No full-text search
- No GUI interface (there are no SQL Server Enterprise Manager, SQL Server Profiler, Query Analyser, Database Upgrade Wizard, Index Tuning Wizard, Import and Export Wizards and so on)

Function	MSDE	SQL Server
File size limitation	2Gb	Unlimited (dependent on HDD space)
Enterprise Tools	No	Yes
Automated Backup	No	Yes
Users	Up to 5 recommended	Unlimited

Note: WinScribe recommends that large multi-facility installations be run on SQL Server.

## WinScribe and Terminal Services

The two supported modes of operation are:

### Native Terminal Services

In native Terminal Services mode, WinScribe utilizes the underlying Terminal Services support for audio play back and hardware support to operate.

### Virtual Channel

In virtual channel mode, WinScribe implements its own audio recording, play back and hardware device support utilizing Terminal Services virtual channels. This mode of operation allows WinScribe to support a wider range of hardware devices, as well as support for older versions of Terminal Services.

### Native Terminal Services Mode

Server:

- Windows 2003 Terminal ServicesClient:
- RDP 5.0 client or later

### Virtual Channel Mode

Server (one of the following):

- Windows 2000
- Windows XP
- Windows 2003 Client:
- RDP 5.0 client or later

### Audio Quality

In a Terminal Services environment, WinScribe can be configured (per user) to support one of three audio qualities:

Setting	Description
Low	Uses the least bandwidth, audio quality deteriorates slightly.
Medium	Uses a medium amount of bandwidth, but produces good quality audio.
High	Uses the most bandwidth, but produces the best audio quality. Suitable for speech recognition.

### Bandwidth Usage

Quality	Native Citrix	Virtual Channel
Low	64kbps	13kbps
Medium	64kbps	18kbps
High	64kbps	18kbps play back 32kbps record 25kbps average

### Limitations

#### Native Terminal Services:

Limitation	Notes
Recording	Audio recording is not supported
Hardware Devices	The following dictation devices are supported: <ul style="list-style-type: none"><li>• Serial devices</li></ul>

#### Virtual Channel:

Limitation	Notes
Hardware Devices	The following dictation devices are supported: <ul style="list-style-type: none"><li>• Serial devices</li><li>• Philips SpeechMike and USB foot pedal</li><li>• WinScribe foot pedal</li><li>• Olympus RS foot pedals</li></ul>

- Olympus DS4000

## WinScribe and Citrix

The two supported modes of operation are:

### Native Citrix

In native Citrix mode, WinScribe utilizes the underlying Citrix support for audio recording, play back and hardware support to operate.

### Virtual Channel

In virtual channel mode, WinScribe implements its own audio recording, play back and hardware device support utilizing Citrix virtual channels. This mode of operation allows WinScribe to support a wider range of hardware devices, as well as providing support for older versions of Citrix.

### Native Citrix Mode

#### Server

- Citrix MetaFrame Presentation Server 3 Advanced/ Enterprise Client
- Win32 ICA Client Version 8.0+

### Virtual Channel Mode

#### Server (one of the following)

- Citrix MetaFrame Presentation Server 3 Advanced/ Enterprise
- MetaFrame 1.8 for Windows 2000
- MetaFrame 1.8 for Windows NT 4.0, Terminal Server Edition Client
- Win32 ICA Client Version 6.00.905 or later

### Audio Quality

In a Citrix environment, WinScribe can be configured (per user) to support one of three audio qualities:

Setting	Description
Low	Uses the least bandwidth, audio quality deteriorates slightly.
Medium	Uses a medium amount of bandwidth, but produces good quality audio.
High	Uses the most bandwidth, but produces the best audio quality. Suitable for speech recognition.

### Bandwidth Usage

Quality	Native Citrix	Virtual Channel
Low	64kbps	13kbps
Medium	64kbps	18kbps
High	64kbps	18kbps play back 32kbps record 25kbps average

### Limitations

#### Native Citrix:

Limitation	Notes
Recording	Audio recording is only supported on Metaframe Presentation Server 3 Advanced/Enterprise
Hardware Devices	The following dictation devices are supported: <ul style="list-style-type: none"> <li>• Serial devices</li> <li>• Philips SpeechMike and USB foot pedal (requires Metaframe Presentation Server 3 Advanced/Enterprise)</li> </ul>

#### Virtual Channel:

Limitation	Notes
Hardware Devices	The following dictation devices are supported: <ul style="list-style-type: none"> <li>• Serial devices</li> <li>• Philips SpeechMike and USB foot pedal</li> <li>• WinScribe foot pedal</li> </ul>

- |  |   |
|--|---|
|  | <ul style="list-style-type: none"><li>• Olympus RS foot pedals</li><li>• Olympus DS4000</li></ul> |
|--|---|