Verint Financial Compliance Capture (Verba)
1. Install

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Install

Installing your Verba Recording System

Correct installation of your Verba Recording System ensures stable operation of your system.

Installation steps:

- Step 1 - Download your Verba Install Kit
- Step 2 - Install your Verba Server(s)
- Step 3 - (Optional) Install your Verba Desktop Recorders

Step 1 - Download your Verba Install Kit

Download your Verba Install Kit from support site (requires login) and place it on your servers.

If you have no login for the Support Site register here: http://support.verba.com

Step 2 - Install your Verba Server(s)

Make sure your servers fulfill the requirements of our Select your server page. The Verba Recording System supports Virtualization.

Based on the chose deployment architecture and recording method, you can start installing the Verba servers and components.

- Single server - your Media Repository and Recording Server components will be installed on a single server.
- Multiple servers - you will install a Media Repository and standalone Recording Servers on multiple servers.

After all servers are prepared, start installing your Verba servers.

Step 3 - (Optional) Install your Verba Desktop Recorders

The Verba Desktop Recorder component provides desktop recording services. It requires a Verba server deployed in your network for operation. This component is required if you plan to use desktop screen capturing.

Start Installing the Verba Desktop Agent.

Table of contents

- Installing the Verba Desktop Agent
- Installing Verba Unified Media Codec
- Installing your Verba servers
- Upgrade procedure from Carin recorders
- Verba Remote Installation Service Description
- Installing the Verba Lync extension for Lync 2010
- Installing the Verba Lync extension for Lync 2013
- Setting up a Verba demo environment
- Requesting and assigning certificates
- Verba PowerShell Deployment Toolkit
- How to Install your Verba license
- Adding the Logon As A Service Right
- How to switch from Oracle to OpenJDK Java Runtime Environment

Do you need installation help?

You can book a remote installation session with our support team.
Installing the Verba Desktop Agent

A Verba Media Repository must be installed before starting Desktop Agent installation. The desktop agent installer kit checks only a limited set of hardware and 3rd party software prerequisites, it is very important to fully understand the requirements before the installation procedure.

Make sure that the following TCP ports are open on the desktops where the Verba Desktop Agent is deployed: 10012 (TCP), 4433 (TCP). See Firewall configuration.

Manual installation

Installation

Please follow the steps below to install the Verba Desktop Agent:

Step 1 - Launch the VerbaDesktop.msi installer as Administrator

Step 2 - The install kit starts installing Verba components. Simply press the Next button to start the installation.

Step 3 - Read the Verba license agreement carefully before you click Next button.

Step 4 - Select the destination folder for the Verba Desktop Agent. You can change the default setting by clicking on the Change button and selecting another folder. If you have finished the destination folder configuration, press the Next button.

Step 5a - If a Verba CA is being used, then select the "Generate Certificate Signed by Verba Media Repository CA" option, then click on the Generate button. In the Generate the Verba Server Certificate window provide the address of the first Media Repository server, the Verba administrator username and password, then click Generate. Finally, click on the Next button. (If this option is being used, Step 5b can be skipped.)

Step 5b - If there is an existing certificate from a previous Verba Desktop Agent installation (in case of reinstall or upgrade), or a pre-generated certificate for the desktop exists (requested from a local or a 3rd party CA), then select the "Select Certificate" option, then click on the Browse button.

Step 6 - Select the service account type. If the Domain Account is selected then please note the followings:

- The account name has to be entered with the domain

Certificates generated by the Verba CA

Based on the Friendly Name of the certificates the server and the CA certificate can be identified easily. On the screenshot, the first one is the server certificate and the second one is the CA certificate.

When do I need domain account?

- If the media files will be stored on a network location. In this case, make sure that the service account has rights to the folder.
The Domain Account have to be part of the Local Administrators group and requires the Log on as a service right.

If windows authentication will be used for the SQL connection (Step 7). In this case, the same account has to be used for the services.

Step 7a - The Verba installer is asking for the MS SQL Server credentials. The server name can be entered either as an IP address or an FQDN. Both SQL server based and windows authentication is supported. All Verba servers and components have to use the same database! If SQL Mirroring is being used or AlwaysOn with Multi-Subnet failover, then a different SQL Driver has to be selected. In this case, the driver has to be installed on the server. Click 'Test Connection' to verify your input. If the tests were successful, click Next.

Step 7b - If the incoming connection from the desktop is not possible (because of firewall), then uncheck the "Enable Automatic Node Registration" setting. In this case, the desktop has to be added manually to the server list in the System \ Servers menu after the installation. Click Next.

Step 8 - Provide the address of the Verba Media Repository server, and the API user password. The API user created at Step 14 during the installation of the Media Repository server.

Step 9 - Click Next again to start installing the services. When it's done, click Finish to exit the installer.

Database connection troubleshooting tips

- Try to ping the database server. Try to connect to the 1433 port on the database server. (telnet or Test-NetConnection)
- Check if the user has the DB Creator role.
- If Windows Authentication used then check if the user has the Local Administrator group membership and the 'Logon as a service right'.
- Check if the correct instance name is provided at the SQL Server name. If there are multiple instances, then the SQL Server Browser service must run on the SQL server side.
- If you installed SQL Server Express Edition, then check if the TCP/IP protocol is enabled under the SQL Server Network Configuration in the SQL Server Configuration Manager.

Verba API instead of direct database connection

If the direct database connection is not possible from the desktop PCs, the Verba Desktop Agent can use the Verba API connection for reaching the database. In this case, the Verba Web Application will work as a proxy between the Verba Desktop Agent and the database.
The Verba Desktop Agent **must be configured** from the central web interface before it can work. For more information see Configuring the Verba Desktop Agent

**Unattended installation**

The Verba Desktop Agent installation package provides an **unattended installation feature** to support automated, enterprise-wide installation of the software. The installer is MSI based. For more information see Installer Parameters
Installing Verba Unified Media Codec

The Verba system is able to store recorded video and telepresence calls in a unique format called VF (Verba Media Format). Standard Windows Media Player cannot support this file type, so the Verba Unified Media Codec has to be installed on every computer, which would like to playback VF files.

You will need this codec for silent monitoring (listening to ongoing calls) over the web application. For silent monitoring, please make sure to open UDP port range 16384-16500 on your client PCs, where you install the Verba Unified Media Codec.

Manual installation

Installation

Please follow the steps below to install the Verba Unified Media Codec:

**Step 1** - Launch the VerbaCodec.msi installer

**Step 2** - Press the Next button to start the installation

**Step 3** - Read the Verba license agreement and accept it, before you click Next button

**Step 4** - Installer asks for the destination folder (default: C:\Program Files\Verba Media Codec\), click the Change button to change it.

**Step 5** - Press the Install button. Verba setup will copy and install the codec files.

Update

Please follow the steps below to update the Verba software:

**Step 1** - Launch the VerbaCodec.msi installer file

**Step 2** - Press the Next button to start the update (If the installer finds a newer or the same version of the product on the computer, the update is not possible. Press the Finish button.)

**Step 3** - Please press the Install button. Verba setup will copy and update the components onto the server.

**Step 4** - After the successful update, please Restart the computer to start the updated services.

Unattended installation

The Verba Unified Media Codec installation package provides an unattended installation feature to support the automated, enterprise-wide installation of the software. The installer is MSI based.

Installation

The MSI installer file can be located in the Verba Recording System installation package.

Put the Verba Unified Media Codec MSI installer into a local folder on your desktop PC. Customize the following command for your environment:

`msiexec /i VerbaCodec.msi /quiet /LE verbacodec_install.txt`

Parameters:

<table>
<thead>
<tr>
<th>Command Line Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i</td>
<td>Installation action.</td>
</tr>
<tr>
<td>VerbaCodec.msi</td>
<td>Name of the Verba Unified Media Codec MSI package.</td>
</tr>
<tr>
<td>/quiet</td>
<td>Invokes quiet/unattended installation.</td>
</tr>
<tr>
<td>/LE verbacodec_install.txt</td>
<td>Write the error log into the verbacodec_install.txt file.</td>
</tr>
</tbody>
</table>
**Update**

The MSI installer file can be located in the Verba Recording System installation package.

Put the Verba Unified Media Codec installer into a local folder on your desktop PC. Customize the following command for your environment:

`msiexec /i VerbaCodec.msi /quiet /LE verbacodec_update.txt`

Parameters:

<table>
<thead>
<tr>
<th>Command Line Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i</td>
<td>Installation action.</td>
</tr>
<tr>
<td>VerbaCodec.msi</td>
<td>Name of the Verba Unified Media Codec MSI package.</td>
</tr>
<tr>
<td>/quiet</td>
<td>Invokes quiet/unattended installation.</td>
</tr>
<tr>
<td>/LE verbacodec_update.txt</td>
<td>Write the error log into the verbacodec_install.txt file.</td>
</tr>
</tbody>
</table>

**Troubleshooting**

For more verbose logging in case of an installation error use /L*v instead of /LE.

**Uninstallation**

Command example:

`msiexec /X VerbaCodec.msi /quiet /LE verbacodec_uninstall.txt`

Parameters:

<table>
<thead>
<tr>
<th>Command Line Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/X</td>
<td>Uninstallation action.</td>
</tr>
<tr>
<td>VerbaCodec.msi</td>
<td>Name of the Verba Desktop Recorder MSI package.</td>
</tr>
<tr>
<td>/quiet</td>
<td>Invokes quiet/unattended installation.</td>
</tr>
<tr>
<td>/LE verbacodec_uninstall.txt</td>
<td>Write the error log into the verbacodec_install.txt file.</td>
</tr>
</tbody>
</table>

**Troubleshooting**

After you’ve installed the Verba Media Codec and you are still not able to playback Verba video files or start Silent Monitoring, please follow the instructions below:

**Step 1** Close all browser window and media player

**Step 2** Open a command prompt as administrator

**Step 3** Navigate to Verba Media Codec's folder with the following command: `cd C:\Program Files\Verba Media Codec`

**Step 4** Run the following command in the codec's folder: `regsvr32 verbacodec.dll` (If registration was successful a dialog panel is prompted)

**Step 5** Test the playback

If the playback works with a downloaded file, but not in Internet Explorer, please follow the instructions below:

**Step 1** Close all browser window and media player
Step 2  Open the Start menu, type "regedit" and press Enter.

Step 3  Locate and then select the following registry entry HKLM\SOFTWARE\Microsoft\Internet Explorer\Main\TabProcGrowth

Step 4  Delete the selected key

Step 5  Test the playback
Installing your Verba servers

Overview of installation types

In your Verba Recording System you have components for media repository, network-based recorders and desktop recorders. Correct installation is crucial.

Step 1 - Prepare your server

Prepare your server based on the following steps:

- Operating system configuration
- Firewall configuration
- Antivirus scanning exclusions for Verba servers

For all installation types you will start with the following steps:

1. Unzip the Verba Install Kit
2. Run the autorun program, it will open the installer framework window
3. Click Open Prerequisites Installer Tool under point 2 Install Prerequisites
4. Install all missing prerequisites from top to bottom

We recommend you turn off

Step 2 - Install SQL Server

Please refer to the SQL Server installation article.

Step 3 - Install the Verba software

Your Verba Recording System can have one central component, the Media Repository and multiple Recording Servers.

The following diagram shows the major installation steps for the three major Verba installation types:

- Installing the Verba Media Repository - Database and the web application without the recording engine
- Installing a Verba Recording Server - Recording engine without database and web application
- Installing a single server Verba solution - When the Media Repository and Recording Server are installed on a single server

Server installation overview
The following topics guide you through the installation:

- Prepare your server
- SQL Server installation
- Install the Verba software
- Upgrading your Verba system
### Prepare your server

#### Overview

The Verba Recording System has specific server requirements that must be met before the installation of the Verba components can be started. The **Verba server installation pack** includes the **Verba Recording System Prerequisites** tool that opens when you start your installation.

We also provide standalone **Verba Recording System Prerequisites** tool to evaluate if all software requirements are met by your system without downloading the entire installation pack. The exact same functionality can be found in the installation pack, this is provided for installations where server OS and Verba installation are done by different teams.

You can download the installation files from the support site.

#### Verba Recording System Prerequisites tool

We recommend you **use our installation pack** to install your system, it guides you through the requirements below.

This chapter is only for documentation purposes.

This tool asks a couple of **questions** about your installation before it creates a customized prerequisite list.

(“-” means that the question does not have any effect whether the requirement is shown or not, or it is not applicable.)

<table>
<thead>
<tr>
<th>Question 1: Verba components</th>
<th>Question 2: SQL Server</th>
<th>Question 3: SQL Server Management Studio</th>
<th>Prerequisite title</th>
<th>Hint provided by the tool</th>
<th>Mode</th>
<th>Installer in the installation pack</th>
</tr>
</thead>
</table>
|                            |                        |                                          | Verify Windows version | The Verba Recording System server components require one of the following operating systems:  
  - Windows Server 2012 R2  
  - Windows Server 2016  
  - Windows Server 2019 | Mandatory | -                                  |
|                            |                        |                                          | No existing Verba installation | If you are installing a new system, you should uninstall your existing Verba Recording System before installation.  
If you are upgrading this system, you do not have to use this Deployment Planner, just exit and run the Verba MSI Installer directly. | Mandatory | -                                  |
<p>|                            |                        |                                          | Verify Administrator Privileges | The Windows User that installs the Verba Recording System must have | Mandatory | -                                  |</p>
<table>
<thead>
<tr>
<th>Single Server or Media Repository</th>
<th>-</th>
<th>-</th>
<th>No Pending Windows Restart</th>
<th>There should be no Windows restart operation pending on your server, since it might interfere with your new installation.</th>
<th>Mandatory</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Server or Media Repository</td>
<td>-</td>
<td>-</td>
<td>Install Windows Installer 4.5</td>
<td>The Verba MSI installer package requires Windows Installer 4.5.</td>
<td>Mandatory</td>
<td>Included</td>
</tr>
</tbody>
</table>
| -                               | - | - | Uninstall Internet Information Server | The Verba Recording System comes with a built in Tomcat-based web application that collides with the Microsoft IIS web server. Follow these steps to uninstall it:  
  **Step 1** - Open Windows Server Manager  
  **Step 2** - Click Roles in the tree on the left  
  **Step 3** - Click Remove Roles on the right  
  **Step 4** - Click Next  
  **Step 5** - Uncheck Web Server (IIS)  
  **Step 6** - Click Next  
  **Step 7** - Click Remove | Mandatory | - |
| All                             | - | - | Install Java SE 11 RE | Java Runtime is required by multiple Verba Recording System services. Both Oracle and OpenJDK Java 11 runtimes are supported. | Mandatory | Included |
| Single Server or Media Repository | - | When selected | Install Microsoft .NET Framework 4.6.2 | Microsoft .NET Framework 4.6.2 is required by the Microsoft SQL Server Management Studio. Follow these steps to install it:  
  **Step 1** - Open Windows Server | Mandatory | Included |
Manager

Step 2 - Click Features

Clic

Step 3 - Click Add Features on the right

Clic

Step 4 - Click Next

Clic

Step 5 - Select .Net Framework

Step 6 - Open the tree below the .Net feature and uncheck WCF activation (important)

Clic

Step 7 - Click Next

Clic

Step 8 - Click Install Single Server or Media Repository

When SQL Server is selected - Install SQL Server 2012 or newer

Microsoft SQL Server provides SQL database server functionality for the Verba Recording System. We recommend to use Standard or Enterprise edition if you are planning to store and search more than 500,000 calls in your recording system.

Mandatory

Included

Single Server or Media Repository

When installed on another server

When not selected

Install SQL Server Management Studio

The Microsoft SQL Server Management Studio provides management capabilities for Microsoft SQL Server.

Optional

Not included

Single Server or Media Repository

When installed on another server

When not selected

Install SQL Server Native Client x64

The Verba Recording System uses Microsoft SQL Server to store data and is capable of using the advanced failover functionality of the SQL Server Native Client 10.0 database driver.

Mandatory

Included

Single Server or Media Repository

When installed on another server

When not selected

Install SQL Server Native Client

The Verba Recording System uses Microsoft SQL Server to store data and is capable of using the advanced failover functionality of the SQL Server Native Client 10.0 database driver.

Mandatory

Included

Single Server or Media Repository

When installed on another server

When not selected

Install SQL Server Express

Microsoft SQL Server Express Edition provides free of charge SQL database server backend for the Verba Recording System.

We recommend to use Standard or Enterprise edition if you are planning to store and search more than 500,000 calls in your recording system.

Mandatory

Included

Single Server or Media Repository

When installed on another server

When not selected

Install SQL Server Management Studio

The Microsoft SQL Server Management Studio provides management capabilities for Microsoft SQL Server.

Optional

Not included

Single Server or Media Repository

When installed on another server

When not selected

Install SQL Server Native Client x64

The Verba Recording System uses Microsoft SQL Server to store data and is capable of using the advanced failover functionality of the SQL Server Native Client 10.0 database driver.

Mandatory

Included

Single Server or Media Repository

When installed on another server

When not selected

Install SQL Server Native Client

The Verba Recording System uses Microsoft SQL Server to store data and is capable of using the advanced failover functionality of the SQL Server Native Client 10.0 database driver.

Mandatory

Included

Single Server or Media Repository

When installed on another server

When not selected

Install SQL Server Express
<table>
<thead>
<tr>
<th>Single Server or Media Repository</th>
<th>-</th>
<th>-</th>
<th>Install Windows Desktop Experience (Windows Server 2012 R2)</th>
<th>Recommended</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>In case you plan to use PC desktop screen and video call recording features your Verba Media Repository requires the Windows Desktop Experience feature. Follow these steps to install it:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Step 1</strong> - Open Windows Server Manager</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Step 2</strong> - Click Features in the tree on the left</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Step 3</strong> - Click Add Features on the right</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Step 4</strong> - Click Next</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Step 5</strong> - Select Desktop Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Step 6</strong> - Click Next</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Step 7</strong> - Click Install</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Step 8</strong> - Restart the server (Important)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Server or Media Repository</td>
<td>-</td>
<td>-</td>
<td>Configure Virus Scanning</td>
<td>Recommended</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If not configured properly, any virus scanner on this server can severely impact the performance and reliability of your recording system. Please make sure you turn off background virus scanning of all your Verba media and log folders.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Server or Media Repository</td>
<td>-</td>
<td>-</td>
<td>Verify Time Settings</td>
<td>Recommended</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The Verba Recording System stores all dates in timezone independent UTC time and presents correct local time to each user. Please verify:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Server Time Zone
- Server time zone matches your local time zone
- Server time is correct

| Single Server or Media Repository | - | - | Use Separate System and Media Disk | For reliability, performance and backup reasons, we recommend you use separate disk volumes for system and recorded media. C: (System Disk) D: (Media Disk) | Recommended | - |

### Further information
Find more information in these articles:
- Operating system configuration
- Firewall configuration
- Antivirus scanning exclusions for Verba servers
Operating system configuration

Please read the following topic carefully before you begin Verba installation! In order to maximize your satisfaction with the Verba recording system please read the following carefully and follow the guidelines of this topic before you begin software installation.

It is important that you follow this topic when you build your Verba servers. Failure to comply with the guidelines in this topic may lead to degraded performance and eventual data loss in your Verba environment. Verba Technologies is not responsible for the security of the HW, operating system and database layers of the Verba recording system. The customer shall install and configure these in accordance with industry best practices for security.

Please follow the following guidelines during the installation of your Windows operating system.

In case you install your server from a customized Windows installer or image please try to configure the installed server according to the guidelines below.

Disk partitioning

The Verba Recording System does not require special disk partitioning, but in order to achieve the best performance and better serviceability we have some recommendations.

- **System** (e.g. C:) - Operating System and application binaries: minimum 80 GB
- **Media** (e.g. D:) - Media and database files: the rest of the capacity, please use the storage calculator tool to properly size the hard disks

Regional and Language Options

Set these options to your normal local settings.

Date and Time Settings

For correct time handling please set timezone properly on all servers.

NTP-based time synchronization is strongly recommended.

It is important to note that most date/time information is stored in UTC standard time format in Verba. On the web interface these times are converted to the actual users local time zone. The following table summarizes the time zones used by Verba's different system elements to present date information:

<table>
<thead>
<tr>
<th>System elements</th>
<th>Time zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>User interfaces</td>
<td>Web interfaces</td>
</tr>
<tr>
<td></td>
<td>Time zone setting of the Verba user that logs into the web interface.</td>
</tr>
<tr>
<td></td>
<td>Configuration interfaces</td>
</tr>
<tr>
<td></td>
<td>Time zone setting of the computer that runs the configuration tools.</td>
</tr>
<tr>
<td>Log files</td>
<td>Local time on the computer that writes the log.</td>
</tr>
<tr>
<td>Internal storage</td>
<td>SQL database (e.g. call data)</td>
</tr>
<tr>
<td></td>
<td>UTC time</td>
</tr>
<tr>
<td></td>
<td>Configuration data</td>
</tr>
<tr>
<td></td>
<td>UTC time</td>
</tr>
</tbody>
</table>

Network settings (during installation)

During installation just pick the “typical” settings or configure the network according to your policies. Network settings shall be reconfigured for Verba after the Windows installation is complete.

Install Critical Security Updates and disable automatic updates

After installation please use Windows Update to install the latest patch level for your Windows Server. Be sure that the automatic updates are disabled.

Update firmware and driver versions
Please consult the hardware vendors support site and verify that the following most important items are upgraded to the latest recommended version:

- chipset driver
- network card driver
- the RAID controller drivers, RAID controller firmware
- disk firmware

Since Verba is a high disk I/O application you should be extra careful with your disk I/O subsystems, such as RAID controllers and disks.

**Network configuration**

The following configuration in this topic should only be applied to Recording Server servers or servers where the Media Repository and Recording Server are installed together.

**Step 1 Rename network interfaces**

In the Network Connections window change the name of the recording interface to **Recording Port**, the other interface can get the name **Network access**. These new interface names are not used by the Verba system. Verba recording ports must be configured later on. Naming the interface will however avoid confusion in your IT team.

**Step 2 Configure the "Recording" interface**

If passive recording technology is used, open the properties sheet of this interface and disable Client for Microsoft Networks and File and Printer Sharing. For other recording methods, use the default settings.

Click Show icon in notification area when connected to show the icon to administrators.

**Disable Windows Firewall**

Disable Windows Firewall on the server in order to provide communication among the networked system components. If your company policy does not allow you to do this, carefully open all ports, which are required for Verba (more information: [Firewall configuration](#)).

Make sure you are reactivating your Windows Firewall after the installation with the proper port and executable exception rules.
Firewall configuration

The components of the system use several network ports for communication. These ports must be open and accessible and not blocked by network or server firewalls. The firewall requirements are available for the following integrations:

- Firewall configuration for Skype for Business - Lync deployments
- Firewall configuration for Ethical Wall deployments
- Firewall configuration for Avaya recording deployments
- Firewall configuration for Cisco recording deployments
- Firewall Configuration for IPC Unigy recording deployments
- Firewall configuration for BT IP Trade recording deployments
- Firewall configuration for BT ITS recording deployments
- Firewall configuration for Speakerbus recording deployments
- Firewall configuration for Microsoft Teams recording deployments
- Firewall configuration for SIPREC recording deployments
- Firewall configuration for Genesys active recording deployments
Firewall configuration for Skype for Business - Lync deployments

This chapter summarizes the required inbound firewall configuration for Lync recording deployments. For more general information see Firewall configuration.

<table>
<thead>
<tr>
<th>Server</th>
<th>Verba Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>Lync Front-End Server / SBA</td>
<td>Lync Filter</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Lync Filter Service</td>
<td>All Verba Servers</td>
<td>10017</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Lync IM Filter Service</td>
<td>All Verba Servers</td>
<td>10019</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
<tr>
<td>Lync Front-End Server / SBA with Mediation Server role</td>
<td>Media Collector and Lync Filter</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
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<td></td>
<td>Verba Lync Filter Service</td>
<td>All Verba Servers</td>
<td>10017</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
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<td></td>
<td>Verba Lync IM Filter Service</td>
<td>All Verba Servers</td>
<td>10019</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Collector and Proxy Service</td>
<td>All Verba Servers</td>
<td>10024</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Collector and Proxy Service</td>
<td>Lync Front-End Server / SBA</td>
<td>10201</td>
<td>TCP</td>
<td>Communication with the Verba Lync Filter services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Collector and Proxy Service</td>
<td>Verba Recording Server</td>
<td>11112</td>
<td>TCP</td>
<td>Communication with Verba Passive Recording services</td>
</tr>
<tr>
<td>Lync Mediation Server</td>
<td>Media Collector and Proxy Server</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Collector and Proxy Service</td>
<td>All Verba Servers</td>
<td>10024</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
<tr>
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<td>Verba Media Collector and Proxy Service</td>
<td>Lync Front-End Server / SBA</td>
<td>10201</td>
<td>TCP</td>
<td>Communication with the Verba Lync Filter services</td>
</tr>
<tr>
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<td>Verba Media Collector and Proxy Service</td>
<td>Verba Recording Server</td>
<td>11112</td>
<td>TCP</td>
<td>Communication with Verba Passive Recording services</td>
</tr>
<tr>
<td>Lync Edge Server</td>
<td>Media Collector and Proxy Server</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Collector and Proxy Service</td>
<td>All Verba Servers</td>
<td>10024</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Collector and Proxy Service</td>
<td>Lync Front-End Server / SBA</td>
<td>10201</td>
<td>TCP</td>
<td>Communication with the Verba Lync Filter services</td>
</tr>
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<td>Verba Proxy Server</td>
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<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------------------------</td>
<td>--------------------------</td>
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<td>------</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>All Verba Servers</td>
<td>10024</td>
<td>TCP</td>
<td>Service API port</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lync Front-End Server / SBA</td>
<td>10201</td>
<td>TCP</td>
<td>Communication with Verba Passive Recording services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Recording Server</td>
<td>11112</td>
<td>TCP</td>
<td>Communication with Verba Passive Recording services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Any</td>
<td>16384 - 65535</td>
<td>UDP</td>
<td>Media port range used for relaying</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verba Announcement Server</th>
<th>Announcement Service</th>
<th>Verba Node Manager Agent</th>
<th>Verba Media Repository</th>
<th>4433</th>
<th>TCP</th>
<th>Central configuration from Verba Web Application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lync Front-End Server / SBA</td>
<td>6000</td>
<td>TCP</td>
<td>SIP communication with Lync</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lync Front-End Server / SBA</td>
<td>10210</td>
<td>TCP</td>
<td>Communication with Verba Lync Filter services</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verba Recording Server</td>
<td>12222</td>
<td>TCP</td>
<td>Communication with Verba Passive Recording services</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any</td>
<td>1024 - 65535</td>
<td>UDP</td>
<td>Media port range, depends on Lync configuration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verba Recording Server</th>
<th>Recording Service</th>
<th>Verba Node Manager Agent</th>
<th>Verba Media Repository</th>
<th>4433</th>
<th>TCP</th>
<th>Central configuration from Verba Web Application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Verba Servers</td>
<td>10000</td>
<td>TCP/UDP</td>
<td>Service API port</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All Verba Desktop Agents (if used) (plus all playback stations if silent monitoring is used)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All Verba Servers</td>
<td>10024</td>
<td>TCP</td>
<td>Service API port</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lync Front-End Server / SBA</td>
<td>10201</td>
<td>TCP</td>
<td>Communication with the Verba Lync Filter services</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any</td>
<td>16384 - 65535</td>
<td>UDP</td>
<td>Media port range used for relaying</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lync Front-End Server / SBA</td>
<td>6000</td>
<td>TCP</td>
<td>SIP communication with Lync</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lync Front-End Server / SBA</td>
<td>10210</td>
<td>TCP</td>
<td>Communication with Verba Lync Filter services</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Verba Recording Announcement Service

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Target</th>
<th>Port(s)</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Recording Announcement Service</td>
<td>Any</td>
<td>1024 - 65535</td>
<td>UDP</td>
<td>Media port range, depends on Lync configuration</td>
</tr>
</tbody>
</table>

### Verba Lync IM Recorder Service

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Target</th>
<th>Port(s)</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Lync IM Recorder Service</td>
<td>Lync Front-End Server / SBA</td>
<td>10220</td>
<td>TCP</td>
<td>Communication with Verba Lync IM Filter services</td>
</tr>
</tbody>
</table>

### Verba Dial-in Recorder Service

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Target</th>
<th>Port(s)</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Dial-in Recorder Service</td>
<td>All Verba Servers, All Verba Desktop Agents (if used), plus all playback stations if silent monitoring is used</td>
<td>10006</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
</tbody>
</table>

### Verba Dial-in Recorder Service

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Target</th>
<th>Port(s)</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Dial-in Recorder Service</td>
<td>Lync Front-End Server / SBA</td>
<td>5065</td>
<td>TCP</td>
<td>SIP communication with Lync</td>
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</table>

### Verba Dial-in Recorder Service

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Target</th>
<th>Port(s)</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Dial-in Recorder Service</td>
<td>Any</td>
<td>16384 - 65535</td>
<td>UDP</td>
<td>Media port range, depends on Lync configuration</td>
</tr>
</tbody>
</table>

### Verba Media Repository Server

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Media Repository</th>
<th>Port(s)</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP-based web access</td>
</tr>
<tr>
<td>Verba Web Application</td>
<td>Any</td>
<td>443</td>
<td>TCP</td>
<td>Used for HTTPS-based web access</td>
</tr>
<tr>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10105</td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
</tr>
<tr>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10106</td>
<td>TCP</td>
<td>Media port for playback via HTTPS</td>
</tr>
<tr>
<td>Verba Storage Management Service</td>
<td>Verba Recording Server</td>
<td>20111</td>
<td>TCP</td>
<td>Communication with Verba Storage Management services, used for secure file upload</td>
</tr>
<tr>
<td>Verba Recording Announcement Service</td>
<td>Lync Front-End Server / SBA</td>
<td>6000</td>
<td>TCP</td>
<td>SIP communication with Lync</td>
</tr>
<tr>
<td>Verba Recording Announcement Service</td>
<td>Lync Front-End Server / SBA</td>
<td>10210</td>
<td>TCP</td>
<td>Communication with Verba Lync Filter services</td>
</tr>
<tr>
<td>Verba Recording Announcement Service</td>
<td>Verba Recording Server</td>
<td>12222</td>
<td>TCP</td>
<td>Communication with Verba Passive Recording services</td>
</tr>
<tr>
<td>Verba Recording Announcement Service</td>
<td>Any</td>
<td>1024 - 65535</td>
<td>UDP</td>
<td>Media port range, depends on Lync configuration</td>
</tr>
<tr>
<td>SQL Server (if co-located on Verba Media Repository)</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
</tbody>
</table>
## Firewall configuration for Ethical Wall deployments

### Cisco

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>Verba Compliance Server</td>
<td>Compliance Server</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Cisco Compliance Service</td>
<td>Cisco Unified Presence Server</td>
<td>10042 - 1004x</td>
<td>TCP</td>
<td>Compliance server connection, one port is needed for every Cisco Presence Server in the topology</td>
</tr>
<tr>
<td>Verba Compliance Server</td>
<td>Compliance Service</td>
<td>Verba Cisco Compliance Service</td>
<td>Cisco Unified Communication Manager</td>
<td>10041</td>
<td>TCP</td>
<td>Compliance server connection for Cisco Unified Communication Manager</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP based web access</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>443</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verba Web Application</td>
<td>Any</td>
<td>443 TCP</td>
<td>Used for HTTPS based web access</td>
<td></td>
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<td></td>
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</tbody>
</table>

### Skype for Business (Lync)

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP based web access</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>443 TCP</td>
<td>Used for HTTPS based web access</td>
<td></td>
</tr>
<tr>
<td>Lync Front-End Server / SBA</td>
<td>Lync Filter</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>Verba Announcement Server</td>
<td>Announcement Server</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>Verba Recording Announcement Service</td>
<td>Lync Front-End Server / SBA</td>
<td>Verba Recording Announcement Service</td>
<td>6000</td>
<td>TCP</td>
<td>SIP communication with Lync</td>
<td></td>
</tr>
<tr>
<td>Verba Recording Announcement Service</td>
<td>Lync Front-End Server / SBA</td>
<td>Verba Recording Announcement Service</td>
<td>10211</td>
<td>TCP</td>
<td>Communication with Verba Lync Filter services</td>
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</tr>
</tbody>
</table>
Firewall configuration for Avaya recording deployments

This chapter summarizes the required firewall configuration for Avaya recording deployments. For more general information see Firewall configuration.

**Common ports**

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP-based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Web Application</td>
<td>Any</td>
<td>443</td>
<td>TCP</td>
<td>Used for HTTPS-based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Storage Management Service</td>
<td>Verba Recording Server</td>
<td>2011</td>
<td>TCP</td>
<td>Communication with Verba Storage Management services, used for secure file upload</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10105</td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10106</td>
<td>TCP</td>
<td>Media port for playback via HTTPS</td>
</tr>
</tbody>
</table>

**Avaya Central Recording**

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Recording Server</td>
<td>Recording Server</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avaya Unified Call Recorder Service</td>
<td>Avaya Media Resource</td>
<td>16384-65535</td>
<td>UDP</td>
<td>Media port range</td>
</tr>
<tr>
<td></td>
<td>Avaya Avaya Recorder Service</td>
<td>All Verba Servers</td>
<td>10003</td>
<td>TCP</td>
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<td>Service API port</td>
</tr>
<tr>
<td></td>
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<td>Avaya Avaya Recorder Service</td>
<td>Any</td>
<td>10014</td>
<td>TCP</td>
<td>Recording control port</td>
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<td></td>
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<td>Avaya Avaya Recorder Service</td>
<td>Any</td>
<td>10013</td>
<td>TCP</td>
<td>Service API port</td>
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<td></td>
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<td>Avaya Avaya Recorder Service</td>
<td>Any</td>
<td>10099</td>
<td>TCP</td>
<td>Service API port</td>
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</table>

**Avaya Application Enablement Services**

<table>
<thead>
<tr>
<th>Server</th>
<th>CTI Server</th>
<th>Avaya Application Enablement Services</th>
<th>Verba Avaya Recorder Service</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Avaya Application Enablement Services</td>
<td>Verba Avaya Recorder Service</td>
<td>4721</td>
<td>TCP</td>
<td>AES communication port (unsecured)</td>
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<td></td>
<td>Avaya Application Enablement Services</td>
<td>Verba Avaya Recorder Service</td>
<td>4722</td>
<td>TCP</td>
<td>AES communication port (secure)</td>
</tr>
</tbody>
</table>
Firewall configuration for Cisco recording deployments

This chapter summarizes the required firewall configuration for Cisco recording deployments. For more general information see **Firewall configuration**.

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
<td></td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Web Application</td>
<td>Any</td>
<td>443</td>
<td>TCP</td>
<td>Used for HTTPS based web access</td>
</tr>
<tr>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>Verba Media Streamer and Content Server Service</td>
<td>10105</td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
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</tr>
<tr>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>Verba Media Streamer and Content Server Service</td>
<td>10106</td>
<td>TCP</td>
<td>Media port for playback via HTTPS</td>
<td></td>
</tr>
<tr>
<td>Verba Storage Management Service</td>
<td>Verba Recording Server</td>
<td>Any</td>
<td>Verba Recording Server</td>
<td>20111</td>
<td>TCP</td>
<td>Communication with Verba Storage Management services, used for secure file upload</td>
</tr>
<tr>
<td>Verba Storage Management Service</td>
<td>All Verba Servers</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
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### Cisco network-based recording

<table>
<thead>
<tr>
<th>Verba Recording Server</th>
<th>Recording Server</th>
<th>Verba Node Manager Agent</th>
<th>Verba Media Repository</th>
<th>4433</th>
<th>TCP</th>
<th>Central configuration from Verba Web Application</th>
</tr>
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<tbody>
<tr>
<td>Verba Unified Call Recorder Service</td>
<td>Any</td>
<td>16384 - 65535</td>
<td>UDP</td>
<td>Media port range</td>
<td></td>
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<tr>
<td>Verba Unified Call Recorder Service</td>
<td>Cisco Unified Call Manager</td>
<td>5060</td>
<td>TCP</td>
<td>SIP signaling communication port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verba Unified Call Recorder Service</td>
<td>All Verba Servers</td>
<td>All Verba Desktop Agents (if used)</td>
<td>10031</td>
<td>TCP</td>
<td>Service API port</td>
<td></td>
</tr>
<tr>
<td>Cisco JTAPI Service</td>
<td>Verba Media Repository</td>
<td>10014</td>
<td>TCP</td>
<td>Service API port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verba Unified Call Recorder Service</td>
<td>Verba Recording Server</td>
<td>10500</td>
<td>TCP</td>
<td>Recording Director - Media Recorder connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verba Cisco Central Silent Monitoring Service</td>
<td>Any</td>
<td>10013</td>
<td>TCP</td>
<td>Service API port (when phone-based silent monitoring is used)</td>
<td></td>
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<tr>
<td>Cisco JTAPI Service</td>
<td>Verba Recording Server</td>
<td>11200</td>
<td>TCP</td>
<td>JTAPI service registration port</td>
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<table>
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<tr>
<th>Cisco Unified Communication Manager</th>
<th>Communication Manager</th>
<th>JTAPI</th>
<th>Cisco JTAPI Service</th>
<th>2748</th>
<th>TCP</th>
<th>Used for JTAPI connection</th>
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<tbody>
<tr>
<td>JTAPI</td>
<td>Cisco JTAPI Service</td>
<td>2749</td>
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<td>JTAPI</td>
<td>Cisco JTAPI Service</td>
<td>2789</td>
<td>TCP</td>
<td>Used for JTAPI connection</td>
<td></td>
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<td></td>
<td>Recording Server</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
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<td><strong>Cisco gateway recording</strong></td>
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</tr>
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<td><strong>Cisco Instant Message capture</strong></td>
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<td></td>
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<td><strong>Cisco ethical wall</strong></td>
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</tr>
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<td><strong>Verba Recording Server</strong></td>
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<td><strong>Compliance Server</strong></td>
<td>Compliance Server</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
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<td></td>
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<td>Compliance server connection, one port is needed for every Cisco Presence Server in the topology</td>
</tr>
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<td>Compliance server connection for Cisco Unified Communication Manager</td>
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# Firewall Configuration for IPC Unigy recording deployments

This chapter summarizes the required firewall configuration for IPC Unigy recording deployments.

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
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<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
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<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>All Verba Servers</td>
<td>-</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP-based web access</td>
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<tr>
<td></td>
<td></td>
<td>Verba Web Application</td>
<td>Any</td>
<td>443</td>
<td>TCP</td>
<td>Used for HTTPS-based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10105</td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10106</td>
<td>TCP</td>
<td>Media port for playback via HTTPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Storage Management Service</td>
<td>Verba Recording Server</td>
<td>20111</td>
<td>TCP</td>
<td>Communication with Verba Storage Management services, used for secure file upload</td>
</tr>
<tr>
<td>SQL Server (if co-located on Verba Media Repository)</td>
<td></td>
<td></td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>Verba Recording Server</td>
<td>Recording Director</td>
<td>Verba Unified Call Recorder Service</td>
<td>IPC CCM</td>
<td>1024 - 65535</td>
<td>TCP</td>
<td>CTI communication port range</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Unified Call Recorder Service</td>
<td>IPC CCM</td>
<td>5060 / 5061</td>
<td>TCP</td>
<td>SIP signaling communication port (non-secure / secure)</td>
</tr>
<tr>
<td></td>
<td>Media Recorder</td>
<td>Verba Unified Call Recorder Service</td>
<td>Any</td>
<td>16384 - 65535</td>
<td>UDP</td>
<td>Media port range</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Unified Call Recorder Service</td>
<td>Verba Recording Server</td>
<td>10500</td>
<td>TCP</td>
<td>Recording Director - Media Recorder connector</td>
</tr>
<tr>
<td></td>
<td>Recording Director</td>
<td>Media Recorder</td>
<td>Verba Unified Call Recorder Service</td>
<td>All Verba Servers</td>
<td>All Verba Desktop Agents (if used)</td>
<td>10031</td>
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</table>
## Firewall configuration for BT IP Trade recording deployments

This chapter summarizes the required firewall configuration for BT IP Trade recording deployments.

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>All Verba Servers</td>
<td>-</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP-based web access</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>443</td>
<td>TCP</td>
<td>Used for HTTPS-based web access</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10105</td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10106</td>
<td>TCP</td>
<td>Media port for playback via HTTPS</td>
</tr>
<tr>
<td>Verba Storage Management Service</td>
<td>Verba Recording Server</td>
<td>Verba Recording Server</td>
<td>Verba Recording Server</td>
<td>20111</td>
<td>TCP</td>
<td>Communication with Verba Storage Management services, used for secure file upload</td>
</tr>
<tr>
<td>SQL Server (if co-located on Verba Media Repository)</td>
<td>All Verba Servers</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>Verba Recording Server</td>
<td>Recording Director</td>
<td>Verba Unified Call Recorder Service</td>
<td>Any</td>
<td>8000 / 8001</td>
<td>TCP</td>
<td>CTI/Call Control communication port range (Primary / Secondary Server)</td>
</tr>
<tr>
<td>Media Recorder</td>
<td>Verba Unified Call Recorder Service</td>
<td>Any</td>
<td>16384 - 65535</td>
<td>UDP</td>
<td>Media port range</td>
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</tr>
<tr>
<td>Verba Unified Call Recorder Service</td>
<td>Verba Recording Server</td>
<td>Verba Recording Server</td>
<td>10500</td>
<td>TCP</td>
<td>Recording Director - Media Recorder connector</td>
<td></td>
</tr>
<tr>
<td>Recording Director</td>
<td>Verba Unified Call Recorder Service</td>
<td>All Verba Servers All Verba Desktop Agents (if used)</td>
<td>10031</td>
<td>TCP</td>
<td>Service API port</td>
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</tr>
</tbody>
</table>
Firewall configuration for BT ITS recording deployments

This chapter summarizes the required firewall configuration for BT ITS recording deployments.

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
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<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
</tbody>
</table>

All Verba Servers

- Verba Node Manager Agent
  - Verba Media Repository
  - Port: 4433
  - Protocol: TCP
  - Notes: Central configuration from Verba Web Application

Verba Media Repository Server

- Media Repository
  - Verba Web Application
    - Source: Any
    - Port: 80
    - Protocol: TCP
    - Notes: Used for HTTP-based web access
  - Verba Web Application
    - Source: Any
    - Port: 443
    - Protocol: TCP
    - Notes: Used for HTTPS-based web access
  - Verba Media Streamer and Content Server Service
    - Source: Any
    - Port: 10105
    - Protocol: TCP
    - Notes: Media port for playback via HTTP
  - Verba Media Streamer and Content Server Service
    - Source: Any
    - Port: 10106
    - Protocol: TCP
    - Notes: Media port for playback via HTTPS
  - Verba Storage Management Service
    - Verba Recording Server
    - Port: 20111
    - Protocol: TCP
    - Notes: Communication with Verba Storage Management services, used for secure file upload
  - SQL Server (if co-located on Verba Media Repository)
    - All Verba Servers
    - Port: 1433
    - Protocol: TCP
    - Notes: SQL connection

Verba Recording Server

- Media Recorder
  - Verba Unified Call Recorder Service
    - IPSI Card
    - Port range: 53250-53251
    - Protocol: UDP
    - Notes: Default media port range; can be configured in global_config
  - BT Heartbeat and Directory Service
    - For additional information, please consult BT
  - Verba Unified Call Recorder Service
    - Verba Recording Server
    - Port: 10500
    - Protocol: TCP
    - Notes: Recording Director - Media Recorder connector

Recording Director

- Media Recorder
  - Verba Unified Call Recorder Service
    - All Verba Servers
    - Port: 10031
    - Protocol: TCP
    - Notes: Service API port
**Firewall configuration for Speakerbus recording deployments**

This chapter summarizes the required firewall configuration for Speakerbus recording deployments.

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>All Verba Servers</td>
<td>-</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>Verba Media Repository</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP-based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Web Application</td>
<td>Any</td>
<td>443</td>
<td>TCP</td>
<td>Used for HTTPS-based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10105</td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10106</td>
<td>TCP</td>
<td>Media port for playback via HTTPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Storage Management Service</td>
<td>Verba Recording Server</td>
<td>20111</td>
<td>TCP</td>
<td>Communication with Verba Storage Management services, used for secure file upload</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SQL Server (if co-located on Verba Media Repository)</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
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<td>Verba Recording Server</td>
<td>Recording Director</td>
<td>Verba Unified Call Recorder Service</td>
<td>Speakerbus ICDS Service</td>
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<td>Media Recorder</td>
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<td>3000-3007</td>
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<td>Media port range</td>
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<td>Verba Unified Call Recorder Service</td>
<td>Verba Recording Server</td>
<td>10500</td>
<td>TCP</td>
<td>Recording Director - Media Recorder connector</td>
</tr>
<tr>
<td>Recording Director</td>
<td>Media Recorder</td>
<td>Verba Unified Call Recorder Service</td>
<td>All Verba Servers</td>
<td>10031</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All Verba Desktop Agents (if used)</td>
<td>All Verba Desktop Agents</td>
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</table>
Firewall configuration for Microsoft Teams recording deployments

This chapter summarizes the required firewall configuration for Microsoft Teams recording deployments.

Inbound rules

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>All Verba Servers</td>
<td>-</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>443</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>Verba Media Repository</td>
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<td>TCP</td>
<td>Used for HTTP-based web access</td>
</tr>
<tr>
<td>Media Repository</td>
<td>Verba Web Application</td>
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<td>Verba Media Repository</td>
<td></td>
<td>TCP</td>
<td>Used for HTTPS-based web access</td>
</tr>
<tr>
<td>Verba Media Streamer and Content Server Service</td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>Verba Media Repository</td>
<td></td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
</tr>
<tr>
<td>Verba Storage</td>
<td>Verba Recording</td>
<td>Any</td>
<td>Verba Media Repository</td>
<td></td>
<td>TCP</td>
<td>Media port for playback via HTTPS</td>
</tr>
</tbody>
</table>

Notes:
- SQL Server: SQL connection
- Central configuration from Verba Web Application
<table>
<thead>
<tr>
<th>Service</th>
<th>Server</th>
<th>Port</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server (if co-located on Verba Media Repository)</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>Verba Recording Server</td>
<td>Verba Microsoft Teams Bot Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any</td>
<td>8445</td>
<td>TCP</td>
<td>Media control port for Teams</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verba Microsoft Teams Bot Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any</td>
<td>9440</td>
<td>TCP</td>
<td>Call invite from Teams, HTTPS health probe for Azure Traffic Manager and Application Gateway</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verba Microsoft Teams Bot Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any</td>
<td>10100</td>
<td>TCP</td>
<td>Call control port for Teams</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verba Recording Server</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verba Recording Server / Verba</td>
<td>10501</td>
<td>TCP</td>
<td>Recording Director connection (it is)</td>
</tr>
<tr>
<td>Recording Server</td>
<td>Verba Microsoft Teams Bot Service</td>
<td>Verba Recording Server / Verba Unified Call Recorder Service</td>
<td>10502</td>
<td>TCP</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------</td>
<td>-------------------------------------------------------------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>Recording Server</td>
<td>Verba Microsoft Teams Bot Service</td>
<td>52.112.0.0/14 <a href="https://docs.microsoft.com/en-us/office365/enterprise/urls-and-ip-address-ranges#skype-for-business-online-and-microsoft-teams">https://docs.microsoft.com/en-us/office365/enterprise/urls-and-ip-address-ranges#skype-for-business-online-and-microsoft-teams</a></td>
<td>16384 - 65535</td>
<td>UDP</td>
</tr>
<tr>
<td>Recording Server</td>
<td>Verba Microsoft Teams Bot Service</td>
<td>Any</td>
<td>10038</td>
<td>TCP</td>
</tr>
<tr>
<td>Recording Server</td>
<td>Verba Unified Call Recorder Service</td>
<td>All Verba Servers All Verba Desktop Agents (if used) (plus all playback stations if silent monitoring is used)</td>
<td>10031</td>
<td>TCP</td>
</tr>
</tbody>
</table>

**Outbound rules**

The Microsoft Teams Bot Service is considered as a standard Microsoft Teams endpoint and the standard firewall rules can be applied.

The following Microsoft documentation contains all the required endpoints and ports which has to be accessible for a Teams endpoint: [Office 365 URLs and IP address ranges](https://docs.microsoft.com/en-us/office365/enterprise/urls-and-ip-address-ranges#skype-for-business-online-and-microsoft-teams) (section Skype for Business Online and Microsoft Teams)

In addition, the Microsoft Teams Bot Service uses Microsoft Graph API via the [https://graph.microsoft.com/v1.0](https://graph.microsoft.com/v1.0) endpoint for sending requests to Microsoft Teams (e.g.: Call answer, Azure AD queries)
**Firewall configuration for SIPREC recording deployments**

This chapter summarizes the required firewall configuration for Microsoft Teams recording deployments.

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>All Verba Servers</td>
<td>-</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP-based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Web Application</td>
<td>Any</td>
<td>443</td>
<td>TCP</td>
<td>Used for HTTPS-based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10105</td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10106</td>
<td>TCP</td>
<td>Media port for playback via HTTPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Storage Management Service</td>
<td>Verba Recording Server</td>
<td>20111</td>
<td>TCP</td>
<td>Communication with Verba Storage Management services, used for secure file upload</td>
</tr>
<tr>
<td>SQL Server (if co-located on Verba Media Repository)</td>
<td>All Verba Servers</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Server</th>
<th>Recording Director</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Recording Server</td>
<td>Recording Director</td>
<td>Verba Unified Call Recorder Service</td>
<td>Verba Recording Server</td>
<td>10500</td>
<td>TCP</td>
<td>Recording Director - Media Recorder connection</td>
</tr>
<tr>
<td>Media Recorder</td>
<td>Verba Unified Call Recorder Service</td>
<td>Any</td>
<td>Verba Recording Server</td>
<td>16384 - 65535</td>
<td>UDP</td>
<td>Media port range</td>
</tr>
<tr>
<td>Recording Director</td>
<td>Verba Unified Call Recorder Service</td>
<td>Any</td>
<td>Verba Recording Server</td>
<td>5060</td>
<td>TCP</td>
<td>SIP signaling communication port</td>
</tr>
<tr>
<td>Recording Director</td>
<td>Verba Unified Call Recorder Service</td>
<td>Any</td>
<td>Verba Recording Server</td>
<td>5061</td>
<td>TCP</td>
<td>Secure SIP signaling communication port</td>
</tr>
<tr>
<td>Recording Director</td>
<td>Verba Unified Call Recorder Service</td>
<td>All Verba Servers All Verba Desktop Agents (if used) (plus all playback stations if silent monitoring is used)</td>
<td>All Verba Servers</td>
<td>10031</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
</tbody>
</table>
## Firewall configuration for Genesys active recording deployments

This chapter summarizes the required firewall configuration for Genesys active recording deployments.

<table>
<thead>
<tr>
<th>Server</th>
<th>Server Role</th>
<th>Service name</th>
<th>Source</th>
<th>Port</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server</td>
<td>-</td>
<td>-</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>All Verba Servers</td>
<td>-</td>
<td>Verba Node Manager Agent</td>
<td>Verba Media Repository</td>
<td>4433</td>
<td>TCP</td>
<td>Central configuration from Verba Web Application</td>
</tr>
<tr>
<td>Verba Media Repository Server</td>
<td>Media Repository</td>
<td>Verba Web Application</td>
<td>Any</td>
<td>80</td>
<td>TCP</td>
<td>Used for HTTP-based web access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Media Streamer and Content Server Service</td>
<td>Any</td>
<td>10105</td>
<td>TCP</td>
<td>Media port for playback via HTTP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Storage Management Service</td>
<td>Verba Recording Server</td>
<td>20111</td>
<td>TCP</td>
<td>Communication with Verba Storage Management services, used for secure file upload</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SQL Server (if co-located on Verba Media Repository)</td>
<td>All Verba Servers</td>
<td>1433</td>
<td>TCP</td>
<td>SQL connection</td>
</tr>
<tr>
<td>Verba Recording Server</td>
<td>Recording Server</td>
<td>Verba Unified Call Recorder Service</td>
<td>Genesys Media Server</td>
<td>5060</td>
<td>TCP</td>
<td>SIP signaling communication port</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Any</td>
<td>16384 - 65535</td>
<td>UDP</td>
<td>Media port range</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verba Unified Call Recorder Service</td>
<td>All Verba Servers</td>
<td>10031</td>
<td>TCP</td>
<td>Service API port</td>
</tr>
<tr>
<td></td>
<td>Verba Genesys CTI Service</td>
<td>Verba Recording Server</td>
<td>11300</td>
<td>TCP</td>
<td>CTI service registration port</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verba Genesys CTI Service</td>
<td>Verba Media Repository</td>
<td>10040</td>
<td>TCP</td>
<td>Service API port</td>
<td></td>
</tr>
</tbody>
</table>
Antivirus scanning exclusions for Verba servers

To ensure that the antivirus scanner does not interfere with the operation of the Verba system, you must exclude specific processes and directories for each Verba server or server role on which you run an antivirus scanner. The following processes and directories should be excluded:

Directory and file locations listed below are the default locations for the Verba system. For any locations for which you did not use the default, exclude the locations you specified instead of the default locations specified in this article.

Media Repository and Recording Server Role:

Verba Processes:

<table>
<thead>
<tr>
<th>Verba Service Name</th>
<th>Executable Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement for Java Services:</td>
<td>wrapper.exe</td>
</tr>
<tr>
<td>• Verba Avaya DMCC/JTAPI Service</td>
<td></td>
</tr>
<tr>
<td>• Verba Cisco JTAPI Service</td>
<td></td>
</tr>
<tr>
<td>• Verba Cisco Central Silent Monitoring Service</td>
<td></td>
</tr>
<tr>
<td>• Verba Cisco Compliance Service</td>
<td></td>
</tr>
<tr>
<td>• Verba Web Application</td>
<td></td>
</tr>
<tr>
<td>Verba Passive Recorder Service</td>
<td>verbaengine.exe</td>
</tr>
<tr>
<td>Verba Media Collector and Proxy Service</td>
<td>recorderproxy.exe</td>
</tr>
<tr>
<td>Verba Legacy Cisco Central Recorder Service</td>
<td>nativerecorder.exe</td>
</tr>
<tr>
<td>Verba Analogue and Radio Recorder Service (Verba General Media Recorder Service)</td>
<td>mediareceiver.exe</td>
</tr>
<tr>
<td>Verba Legacy Cisco Gateway Recorder Service</td>
<td>ciscogatewayrec.exe</td>
</tr>
<tr>
<td>Verba Labeling Service</td>
<td>label-processor.exe</td>
</tr>
<tr>
<td>Verba Media Utility Service (Verba Waveformatter Service)</td>
<td>waveform.exe</td>
</tr>
<tr>
<td>Verba Media Streamer and Content Server Service</td>
<td>mediastreamer.exe</td>
</tr>
<tr>
<td>Verba Legacy IP Trade Recorder Service</td>
<td>verbaiptrade.exe</td>
</tr>
<tr>
<td>Verba Screen Capture Multiplexer Service</td>
<td>multiplexer.exe</td>
</tr>
<tr>
<td>Verba Unified Call Recorder Service</td>
<td>unifiedrec.exe</td>
</tr>
<tr>
<td>Verba Active Recorder and Streamer Service</td>
<td>activerecorder.exe</td>
</tr>
<tr>
<td>Verba Storage Management Service = verbastorage.exe</td>
<td>verbastorage.exe</td>
</tr>
<tr>
<td>Verba Media Transcoder Service</td>
<td>transcoder.exe</td>
</tr>
<tr>
<td>Verba System Monitor Service</td>
<td>verbasysmon.exe</td>
</tr>
<tr>
<td>Verba Centile Connector</td>
<td>centile-connector.exe</td>
</tr>
<tr>
<td>Verba Node Manager Agent Service</td>
<td>verbaagent.exe</td>
</tr>
<tr>
<td>Verba SfB/Lync Announcement Service</td>
<td>rec-announcement.exe</td>
</tr>
<tr>
<td>Verba CDR and Archived Content Importer Service</td>
<td>cdrimport.exe</td>
</tr>
<tr>
<td>Verba SfB/Lync IM Recorder Service</td>
<td>lyncchatrecorder.exe</td>
</tr>
<tr>
<td>Verba Cisco MediaSense Connector</td>
<td>mediasense-connector.exe</td>
</tr>
<tr>
<td>Verba Speech Analytics Service</td>
<td>speech-analytics.exe</td>
</tr>
<tr>
<td>(Verba TroubleshootingTool)</td>
<td>verbacapture.exe</td>
</tr>
</tbody>
</table>
Built-in Microsoft SQL Server Express processes:

- `%ProgramFiles%\Microsoft SQL Server\MSSQL{nn}.MSSQLSERVER\MSSQL\Binn\SQLServr.exe`
- `%ProgramFiles%\Microsoft SQL Server\MSRS{nn}.MSSQLSERVER\Reporting Services\ReportServer\Bin\ReportingServicesService.exe`
- `%ProgramFiles%\Microsoft SQL Server\MSAS{nn}.MSSQLSERVER\OLAP\Bin\MSMDSrv.exe`

Anti-virus exceptions for SQL Server processes are only necessary if the SQL Server is co-located with the Verba server. The list above shows the default paths and processes for a built-in MS SQL Express Server, but the installed SQL Server version and location can be different in each deployment.

The following table identifies versions for the paths. {nn} is the version value used in the instance ID.

<table>
<thead>
<tr>
<th>Version</th>
<th>{NN}</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server 2019 (15.x)</td>
<td>15</td>
</tr>
<tr>
<td>SQL Server 2017 (14.x)</td>
<td>14</td>
</tr>
<tr>
<td>SQL Server 2016 (13.x)</td>
<td>13</td>
</tr>
<tr>
<td>SQL Server 2014 (12.x)</td>
<td>12</td>
</tr>
<tr>
<td>SQL Server 2012 (11.x)</td>
<td>11</td>
</tr>
</tbody>
</table>

Directories and Files:

- The installation folder (%programfiles%\Verba)
- The configured media folder (%programfiles%\Verba\media)
- The configured log folder (%programfiles%\Verba\log)

Media Collector and Lync Filter Server Role:

Verba Processes:

<table>
<thead>
<tr>
<th>Verba Service Name</th>
<th>Executable Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Legacy Remote Capture Service</td>
<td>remote-capture.exe</td>
</tr>
<tr>
<td>Verba Media Collector and Proxy Service</td>
<td>recorderproxy.exe</td>
</tr>
<tr>
<td>Verba SfB/Lync Call Filter Service</td>
<td>LyncFilterConsole.exe</td>
</tr>
<tr>
<td>Verba SfB/Lync Communication Policy Service</td>
<td>lyncethicalwall.exe</td>
</tr>
<tr>
<td>Verba SfB/Lync IM Filter Service</td>
<td>lyncimfilter.exe</td>
</tr>
<tr>
<td>Verba System Monitor Service</td>
<td>verbasysmon.exe</td>
</tr>
<tr>
<td>Verba Node Manager Agent Service</td>
<td>verbaagent.exe</td>
</tr>
</tbody>
</table>

Folders:

- The installation folder (%programfiles%\Verba)
- The configured log folder (%programfiles%\Verba\log)

Media Collector and Proxy Server Role:

Verba Processes:

<table>
<thead>
<tr>
<th>Verba Service Name</th>
<th>Executable Name</th>
</tr>
</thead>
</table>
Verint Verba Collaboration Compliance Platform

Verba Legacy Remote Capture Service: remote-capture.exe
Verba Media Collector and Proxy Service: recorderproxy.exe
Verba System Monitor Service: verbasysmon.exe
Verba Node Manager Agent Service: verbaagent.exe

Folders:
- The installation folder (%programfiles%\Verba)
- The configured log folder (%programfiles%\Verba\log)

Announcement Server Role:

Verba Processes:

<table>
<thead>
<tr>
<th>Verba Service Name</th>
<th>Executable Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba SfB/Lync Announcement Service</td>
<td>rec-announcement.exe</td>
</tr>
<tr>
<td>Verba System Monitor Service</td>
<td>verbasysmon.exe</td>
</tr>
<tr>
<td>Verba Node Manager Agent Service</td>
<td>verbaagent.exe</td>
</tr>
</tbody>
</table>

Directories and Files:
- The installation folder (%programfiles%\Verba)
- The configured log folder (%programfiles%\Verba\log)

Speech Analytics Server Role:

Verba Processes:

<table>
<thead>
<tr>
<th>Verba Service Name</th>
<th>Executable Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Labeling Service</td>
<td>label-processor.exe</td>
</tr>
<tr>
<td>Verba Speech Analytics Service</td>
<td>speech-analytics.exe</td>
</tr>
<tr>
<td>Verba System Monitor Service</td>
<td>verbasysmon.exe</td>
</tr>
<tr>
<td>Verba Node Manager Agent Service</td>
<td>verbaagent.exe</td>
</tr>
</tbody>
</table>

Directories and Files:
- The installation folder (%programfiles%\Verba)
- The configured media folder (%programfiles%\Verba\media)
- The configured log folder (%programfiles%\Verba\log)

Desktop Agent Role:

Verba Processes:

<table>
<thead>
<tr>
<th>Verba Service Name</th>
<th>Executable Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba Screen Capturing Service</td>
<td>agentcontroller.exe</td>
</tr>
<tr>
<td>Verba Screen Capturing Service</td>
<td>captureagent.exe</td>
</tr>
<tr>
<td>Verba Storage Management Service</td>
<td>verbastorage.exe</td>
</tr>
<tr>
<td>Verba System Monitor Service</td>
<td>verbasysmon.exe</td>
</tr>
<tr>
<td>Verba Node Manager Agent Service</td>
<td>verbaagent.exe</td>
</tr>
</tbody>
</table>

Directories and Files:
• The installation folder (%programfiles%\Verba)
• The configured media folder (%programfiles%\Verba\media)
• The configured log folder (%programfiles%\Verba\log)

Offline Player Role:

Verba Processes:
• verbaplayer.exe

Directories and Files:
• The installation folder (%programfiles%\Verba)
SQL Server installation
To learn more about selecting the SQL Server version, editions and requirements, see SQL Server requirements.

Installing a Microsoft SQL Server instance
In the Verba install kit, we provide a simple, unattended installation procedure for Microsoft SQL Server Express (see the Prerequisites Installer Tool).

For information on how to install other Microsoft SQL server editions, please refer to the following articles.
https://msdn.microsoft.com/library/bb500469(v=sql.120).aspx

When installing .NET framework as a prerequisite of MS SQL server, make sure that HTTP Activation is NOT installed (can be found under WCF Services)

Feature selection
The following features need to be selected during the install:
- Database Engine Services
- Full -Text and Semantic Extractions for Search
- (Management Tools - Complete) Not necessary but recommended.

On the collation tab please make sure that the case-sensitive checkbox is left UNCHECKED. Verba requires a case-insensitive database.

Some of the options may be part of the MS SQL Management Studio install pack if you are using a separate installer.

After the Full-Text Search feature added or removed from an existing SQL Server installation, the Verba Web Application Service has to be restarted.

Instance configuration
It is recommended to install the Verba database as the default instance, however, the system supports named instances as well.

Database configuration
The Containment type setting of the Verba database has to be left on None.

Services
For the Verba system, the following SQL Server services must be enabled and running (other services are not required):
- SQL Server
- SQL Server Browser if named instances are used
- SQL Server Agent to run the maintenance jobs (not available on Express Edition)

Services accounts
Use the built-in System account and set it to Network service and check the SQL Server Agent to start at the end of the setup.

Collation
Choose the collation based on the requirement. The system does not support Case Sensitive (CS) collations, only Case Insensitive (CI) collations are supported.

Account provisioning
If you would like to use SQL authentication, then select **Mixed Mode authentication**. Set the sa password and **make a note of it**. The Verba installer will need this information.

If you would like to use Windows Authentication, then select **Windows Authentication**.

Make sure you have the necessary database roles assigned to the user account which is configured for the system. For more information see SQL Server requirements.

**Using the Verba Prerequisites tool to install SQL Server Express edition**

MS SQL Server Express Edition unattended installer is included in the Verba install media.

Please, follow the steps below to install MS SQL Server Express Edition:

- **Step 1** - Copy the Verba Installation kit to the appropriate drive.
- **Step 2** - Click on the **setup.exe** file
- **Step 4** - Select the type of Verba server that you will be installing on this machine. (Single server solution or Media Repository)
- **Step 5** - Click on **Install SQL Server Express** and then on the button with the same name
- **Step 6** - The unattended installation starts automatically.

Set the sa password in the corresponding batch file. This information will need to be entered during the installation process of the Verba servers.

Verba utilizes the SQL Server's full-text index feature when searching for specific phrases in Instant Message recordings. The full-text index feature is not part of SQL Server Express edition by default, it is only included in SQL Server Express with Advanced Services.
Install the Verba software

- Prerequisites
- Installing the required prerequisites
- Installing a Verba Media Repository
- Installing a Verba Recording Server
- Installing a Verba Single Server solution
- Installing a Verba Announcement Server
- Installing a Verba Speech Analytics Server
- Installing the Verba Media Collector and Proxy component
- Installing the Verba Skype for Business - Lync Filter
- Changing the role of a Verba server
- Installer Parameters and Unattended Installation
## Prerequisites

The following table lists all required prerequisites for the available Verba server roles:

<table>
<thead>
<tr>
<th>Verba Server Role</th>
<th>Prerequisite</th>
<th>Mandatory / Optional</th>
<th>Download / Notes</th>
<th>Included in the installer package</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application Server / Media Repository and Recording Server</strong></td>
<td>Java SE 11 Runtime Environment (Windows x64)</td>
<td>Mandatory</td>
<td>Both Oracle and OpenJDK Java 11 runtimes are supported. OpenJDK JRE 11 download: <a href="https://adoptopenjdk.net/releases.html?variant=adoptjdk11&amp;jvmVariant=hotspotx64_win">https://adoptopenjdk.net/releases.html?variant=adoptjdk11&amp;jvmVariant=hotspotx64_win</a></td>
<td>Yes (OpenJDK)</td>
</tr>
<tr>
<td></td>
<td>Visual Studio C++ Runtime 2015, 2017 and 2019 (x64)</td>
<td>Mandatory</td>
<td><a href="https://aka.ms/vs/16/release/VC_redist.x64.exe">https://aka.ms/vs/16/release/VC_redist.x64.exe</a></td>
<td>Yes</td>
</tr>
</tbody>
</table>
| | | | If the installer fails you need to download and install the following Windows Update packages:  
  - KB2919355  
  - KB2999226 | |
| | Media Foundation | Optional | Required for screen capture multiplexing and media transcoding for the following services:  
  - Verba Storage Management Service  
  - Verba Screen Capture Multiplexer Service  
  - Verba Import Service  
  - Verba Speech Analytics Service  
  - Verba Media Streamer and Content Server Service  
  - Verba Media Utility Service | No |
| | WinPcap Service | Optional | Required for Skype for Business / Lync recording and network port mirroring based recording  
  http://www.winpcap.org/install/bin/WinPcap_4_1_3.exe | Yes |
| | Skype for Business/Lync Management Shell | Optional | Required for Skype for Business / Lync Archive import  
<p>| <strong>Application Server / Media Repository</strong> | Java SE 11 Runtime Environment (Windows x64) | Mandatory | Both Oracle and OpenJDK Java 11 runtimes are supported. OpenJDK JRE 11 download: <a href="https://adoptopenjdk.net/releases.html">https://adoptopenjdk.net/releases.html</a>? | Yes (OpenJDK) |</p>
<table>
<thead>
<tr>
<th>Application</th>
<th>Requirement</th>
<th>Description</th>
<th>URL</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Studio C++ Runtime 2015, 2017 and 2019 (x64)</td>
<td>Mandatory</td>
<td>Required for screen capture multiplexing and media transcoding for the following services:</td>
<td><a href="https://aka.ms/vs/16/release/VC_redist.x64.exe">https://aka.ms/vs/16/release/VC_redist.x64.exe</a></td>
<td>Yes</td>
</tr>
<tr>
<td>Media Foundation</td>
<td>Optional</td>
<td>Required for screen capture multiplexing and media transcoding for the following services:</td>
<td>- Verba Storage Management Service</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Verba Screen Capture Multiplexer Service</td>
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<td></td>
<td></td>
<td>- Verba Import Service</td>
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<td></td>
<td>- Verba Speech Analytics Service</td>
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<td></td>
<td></td>
<td></td>
<td>- Verba Media Streamer and Content Server Service</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Verba Media Utility Service</td>
<td></td>
</tr>
<tr>
<td>Recording Server</td>
<td>Mandatory</td>
<td>Both Oracle and OpenJDK Java 11 runtimes are supported.</td>
<td>- OpenJDK JRE 11 download: <a href="https://adoptopenjdk.net/releases.html?variant=openjdk11&amp;jvmVariant=hotspot#x64_win">https://adoptopenjdk.net/releases.html?variant=openjdk11&amp;jvmVariant=hotspot#x64_win</a></td>
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</tr>
<tr>
<td>Visual Studio C++ Runtime 2015, 2017 and 2019 (x64)</td>
<td>Mandatory</td>
<td>If the installer fails you need to download and install the following Windows Update packages:</td>
<td><a href="https://aka.ms/vs/16/release/VC_redist.x64.exe">https://aka.ms/vs/16/release/VC_redist.x64.exe</a></td>
<td>Yes</td>
</tr>
<tr>
<td>WinPcap Service</td>
<td>Optional</td>
<td>Required for Skype for Business / Lync recording and network port mirroring based recording</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Application</td>
<td>Framework</td>
<td>Version</td>
<td>Mandatory</td>
<td>Required for</td>
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<td>-------------------------------------</td>
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</tr>
<tr>
<td>Microsoft ODBC Driver 17 (x64)</td>
<td></td>
<td></td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>Media Foundation</td>
<td></td>
<td></td>
<td>Optional</td>
<td>Required for screen capture</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>multiplexing and media transcoding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>for the following services:</td>
</tr>
<tr>
<td>Lync Filter</td>
<td>Microsoft .Net Framework 4.8</td>
<td>Mandatory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verba Media Collector and Lync Filter</td>
<td>Microsoft .Net Framework 4.8</td>
<td>Mandatory</td>
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<td>WinPcap Service</td>
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<td></td>
<td>Required for Lync recording and</td>
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<td></td>
<td></td>
<td>network port mirroring based</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>recording</td>
</tr>
<tr>
<td>Verba Media Collector and Proxy Server</td>
<td>Microsoft .Net Framework 4.8</td>
<td>Mandatory</td>
<td></td>
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<tr>
<td>WinPcap Service</td>
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<td>Mandatory</td>
<td></td>
<td>Required for Skype for Business /</td>
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<td></td>
<td>Lync recording and network port</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>mirroring based recording</td>
</tr>
<tr>
<td>Verba Announcement Server</td>
<td>Microsoft .Net Framework 4.8</td>
<td>Mandatory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unified Communications Managed API 4.0 Runtime</td>
<td></td>
<td>Mandatory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verba Speech Analytics Server</td>
<td>Microsoft .Net Framework 4.8</td>
<td>Mandatory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Microsoft ODBC Driver 17 (x64)</td>
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<td>the following services:</td>
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<td></td>
<td>Media Foundation</td>
<td>Optional</td>
<td></td>
<td></td>
</tr>
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<td>Visual Studio C++ Runtime 2015, 2017 and 2019 (x64)</td>
<td>Mandatory</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Verba Speech Analytics Service</td>
</tr>
<tr>
<td>Verba Desktop Recorder</td>
<td>Visual Studio C++ Runtime</td>
<td>Mandatory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015, 2017 and 2019 (x64)</td>
<td><a href="https://aka.ms/vs/16/release/VC_redist.x64.exe">https://aka.ms/vs/16/release/VC_redist.x64.exe</a></td>
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<td>• KB2919355</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• KB2999226</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Microsoft ODBC Driver 17 (x64)</th>
<th>Mandatory</th>
<th>Required for advanced SQL Server features: always-on, failover partner</th>
<th>Yes (in the main package)</th>
</tr>
</thead>
</table>
Installing the required prerequisites

For a detailed overview on the prerequisites, visit the Prerequisites page.

The Verba installer kit contains a prerequisite checking tool. You can use it to install all the third party software prerequisites before starting the Verba installer.

The tool is only suitable for the following server roles:

- Verba Media Repository and Recording Server
- Verba Media Repository
- Verba Recording Server
- Verba Lync Filter
- Verba Media Collector and Lync Filter
- Verba Media Collector and Proxy Server
- Verba Announcement Server
- Verba Speech Analytics Server

Please follow the steps below to install the prerequisites for your Verba system:

**Step 1** - Unzip the Verba Install Kit to a local drive of the server.

**Step 2** - Launch the prerequisite tool by starting setup.exe in the VerbaInstallKit folder. The following image illustrates this step.

**Step 3** - Select the Verba server role to be installed in the top right corner. Depending on your choice, the list of prerequisites on the right will dynamically change to show only the required software for that Verba component.

**Step 4** - Select the SQL server you want to use. The Verba installation package contains the free Microsoft SQL Server Express edition. It’s recommended that you install it if you don’t have a separate SQL database server in your system.

**Step 5** - Decide if you want to install SQL Server Management Studio on this server for easier database management (recommended).

**Step 6** - Use the list on the right to check, install and verify the required third party software. They are included in the Verba installation package, so you can install them by selecting them from the list then clicking on the install button located at the bottom of the list.

**Step 7** - After a prerequisite is installed, click the **Done, please verify** button, to verify it.

**Step 8** - Repeat steps 6 and 7 until all the prerequisites are installed.

**Step 9** - Click **Start the Verba Installer** to start installing the Verba Recording System.
After this point please refer to the corresponding article depending on the server role you chose to install.

- Media Repository: http://kb.verba.com/display/docs/Installing+a+Verba+Media+Repository
- Recording Server: http://kb.verba.com/display/docs/Installing+a+Verba+Recording+Server
Installing a Verba Media Repository

If you haven't already done so, please make sure all the prerequisites are installed for your Media Repository. Refer to http://kb.verba.com/display/docs/Installing+the+required+prerequisites

The Verba Media Repository is the central controlling component of the Recording System. It contains the management web application and various other services necessary for the system to function. This component should always be installed first when deploying a new system. If you don't have a separate SQL server to install the database on, this server will run the Verba database services as well.

Please follow the steps below to install a Verba Media Repository. Note that, all Installer components must be run as Administrator.

**Step 1** - The install kit starts installing Verba components. Simply press the Next button to start the installation.

**Step 2** - Read the Verba license agreement carefully before you check the "I accept the terms in the License Agreement" checkbox, then click Next button.

**Step 3** - Select the Media Repository role from the list. Click Next.

**Step 4** - Select the destination folder for Verba system and the desired location of the media files. You can change the default setting by clicking on the Change button and selecting another folder. Network share also can be provided for the media folder. If you have finished the destination folder configuration, press the Next button.

**Step 5a** - If the server is going to be the first Media Repository server in the deployment, and pre-generated certificates won't be used, then select the "Generate Certificate Signed by Verba Media Repository CA" option, and check the "First Media Repository in the deployment" checkbox. Click on the Generate button, and in the Generate the Verba Server Certificate window click Generate. Finally, click on the Next button. (If this option is being used, then Step 5b and Step 5c can be skipped.)

**Step 5b** - If the server won't be the first Media Repository server in the deployment, and pre-generated certificates won't be used, then select the "Generate Certificate Signed by Verba Media Repository CA" option, then click on the Generate button. In the Generate the Verba Server Certificate window provide the address of the first Media Repository server, the administrator username and password, then click Generate. Finally, click on the Next button. (If this option is being used, Step 5c can be skipped.)

**Step 5c** - If there is an existing certificate from a previous Verba installation (in case of reinstall or upgrade), or a pre-generated certificate for the server exists (requested from a local or a 3rd party CA), then select the "Select Certificate" option, then click on the Browse button. If the server was a CA previously, then select the CA certificate also by clicking on the Browse button under the CA Certificate Thumbprint.

**Certificates generated by Verba CA vs pre-generated certificates**

In case of using the Verba-generated certificates, the first Media Repository server becomes a CA also. During the installation of the other Verba components, the server certificates will be requested from this CA. This is done through the TCP port 443 with SSL. The server certificates and the CA certificate will be placed in the certificate stores of the servers automatically, to the Personal folder. The certificates generated by the Verba CA uses SHA512 for the signature algorithm, and RSA2048 for the public key.

If certificates are generated for the Verba servers in advance using an other CA, then make sure that the certificates are placed into the certificate stores of the servers under the Personal folder, and the CA certificates are placed into the Personal or into the Trusted Root Certification Authorities folder. The only requirement for the server certificates is making the private key exportable.

**Certificates generated by the Verba CA**

Based on the Friendly Name of the certificates the server and the CA certificate can be identified easily. On the screenshot, the first one is the server certificate and the second one is the CA certificate.
Step 6.1 - The Verba installer is asking for the MS SQL Server connection details. These settings will be used for all Verba services on the server, and the same settings has to be used during the installation of the other Verba components also.

- Both SQL server based and windows authentication is supported. If a domain account will be used for the SQL connection, then select Windows Authentication. In case of windows authentication, the Account name has to be provided in UPN or domain\username format. Please provide a DB Creator role user account for the connection.
- The server name can be entered either as an IP address or an FQDN.
- The Verba database doesn't have to be created in advance. The installer will create a database with the name given in the "Database Name" setting, and build the schema.
- If SQL Mirroring is being used or AlwaysOn with Multi-Subnet failover, then a different SQL Driver has to be selected. In this case, the driver has to be installed on the server.

Step 6.2 - Click 'Test Connection' to verify your input.

Step 6.3 - If the test was successful, click on the Execute button. The installer will start executing the scripts on the database, so it created the database schema. In the case of upgrade, the installer upgrades the existing schema. The script log will be save to C:\Users\[user]\AppData\Local\Temp\ folder. If an error occurs during the

Database connection troubleshooting tips

- Try to ping the database server. Try to connect to the 1433 port on the database server. (telnet or Test-NetConnection)
- Check if the user has the necessary roles assigned, refer to SQL Server requirements for more information
- If Windows Authentication used then check if the user has the Local Administrator group membership and the 'Logon as a service right'.
- Check if the correct instance name is provided at the SQL Server name. If there are multiple instances, then the SQL Server Browser service must run on the SQL server side.
- If you installed SQL Server Express Edition, then check if the TCP/IP protocol is enabled under the SQL Server Network Configuration in the SQL Server Configuration Manager.

Upgrading from Verba 8.x to Verba 9.x

From version 9.0, the Verba software changed to x64 platform from x86, and also introduced a new Windows certificate-based secure API for the internal connection between the Verba services. When upgrading from
script execution, it can be restarted by closing the window, then clicking on the Execute button again in the installer window.

**Step 6.3** - Click on the **Close** button. In the installer window, click **Next**.

Verint Verba Collaboration Compliance Platform

Verba 7.x or 8.x, the installer offers changing the configuration stored in the database according to the new settings. In this case, all settings pointing to the "Program Files (x86)" folder will be changed to "Program Files", and all settings related to the old security configuration will be removed.

The installer also offers upgrading the schema of the IM recordings. If this step is skipped, then the old recordings won't be visible in the Verba web interface. **Note that this step can take hours to execute!**

**Step 7** - Please specify the ports for running the Verba web server. Click the **Test Connection** button to check if they are free. If one of them is taken you will be asked for another port number (you are not allowed to run more than one HTTP server on the same port). It is recommended to use the default 80 and 443 port numbers. If successful, click Next.
Step 8a - If this is a new Verba installation, and there is no pre-created SSL certificate for the HTTPS connection, then select the “Generate Self-signed Certificate” option, then click on the Generate button. In the “Generate the Verba Web server SSL Certificate” window, enter a password for the certificate, provide the Subject Alternative names, then click Generate. In this case a verba-tomcat.crt and a verba-tomcat.key file will be generated in the C:\ root. Click on the Next button. (If this option is being used, then Step 9b can be skipped)

Step 8b - If this is not a new Verba installation (in case of reinstall or upgrade), or there is a pre-created SSL certificate for the HTTPS connection, then select the “Select Certificate” option. Under the Certificate Path, click on the Certificate button, and provide the .crt file. Under the Certificate Key Path click on the Browse button, and provide the .key file. Provide the password of the SSL certificate. Click on the Next button.

Subject Alternatives Names for the SSL Certificate
To make sure that the browser always going to trust the certificate, provide every possible address at the Subject Alternative Names. The recommended addresses are:
- The hostname of the server.
- The FQDN of the server.
- The IP address of the server.
- "localhost"
- Aliases
- If load-balancer is being used, then it's hostname, FQDN and IP address.

Certificates in .pfx or .p12 format
If the SSL certificate is in .pfx or .p12 format, then it has to be converted to a pair of .crt and .key files. For the conversion process, please refer to the "Creating .key and .crt files from .p12 or .pfx file" section in the Installing an SSL certificate for HTTPS access article.

Step 9 - Please specify a free port for the Verba storage server. Use the Test Connection button to check the port's availability. If successful, click Next.
Step 10 - Select the primary IP address of the server from the list, then click Next.
Step 11 - Select the desired time zone from the list, then click Next.

Step 12 - Please provide a target email address, a source email address and an SMTP server address for system alerts. If authentication required then please enter the credentials. The target email address will receive alerts concerning the various services of the recording system. This step can be skipped and the details can be provided or modified after the installation. When you are done, click Next.
Step 13 - Enter a password for the Administrator login then click Next.
Step 14 - Enter a password for the Verba API user then click Next. Note that this user going to be required at the installation of the other Verba components.

Step 15 - Click Next again to start installing the services. When it's done, click Finish to exit the installer.
Installing a Verba Recording Server

If you haven't already done so, please make sure all the prerequisites are installed for your Recording Server. Refer to [Installing the required prerequisites](http://kb.verba.com/display/docs/Installing+the+required+prerequisites).

The Verba Recording Server role is responsible for the various recording tasks. The media files will only be stored temporarily on these servers, they will upload the media files to the configured media repository and apply updates to the Verba database (usually located on the Media Repository server or a separate SQL server).

Before starting to install a Recording Server, please make sure that you already have a Media Repository installed and that the PC you are installing the Recording Server on can reach the server containing the database.

**Step 1** - The install kit starts installing Verba components. Simply press the **Next** button to start the installation.

**Step 2** - Read the Verba license agreement carefully before you click **Next** button.

**Step 3** - Select the **Recording Server** role from the list. Click **Next**.

**Step 4** - Select the destination folder for Verba system and the desired location of the media files. You can change the default setting by clicking on the Change button and selecting another folder. Please note that this is just a temporary folder for the media files. After the recording completed the files will be uploaded to the right location. If you have finished the destination folder configuration, press the **Next** button.

Drive root cannot be provided for the media folder (ex: D:\). A folder has to be created.

In case of the Recording Server, the media folder is just a temporary folder. The recording services are working in this folder during the recording, but when the recording completes, the files usually uploaded to a Media Repository server or to another location. Therefore, this always should be on the local disk.

**Step 5a** - If a Verba CA is being used, then select the "Generate Certificate Signed by Verba Media Repository CA" option, then click on the **Generate** button. In the Generate the Verba Server Certificate window provide the address of the first Media Repository server, the Verba administrator username and password, then click **Generate**. Finally, click on the **Next** button. (If this option is being used, Step 5b can be skipped.)

**Step 5b** - If there is an existing certificate from a previous Verba installation (in case of reinstall or upgrade), or a pre-generated certificate for the server exists (requested from a local or a 3rd party CA), then select the "Select Certificate" option, then click on the **Browse** button.

**Certificates generated by the Verba CA**

Based on the Friendly Name of the certificates the server and the CA certificate can be identified easily. On the screenshot, the first one is the server certificate and the second one is the CA certificate.
Step 6 - The Verba installer is asking for the MS SQL Server credentials. The server name can be entered either as an IP address or an FQDN. Both SQL server based and windows authentication is supported. In case of windows authentication, the Account name has to be provided in UPN or domain\username format. All Verba servers and components have to use the same database! If SQL Mirroring is being used or AlwaysOn with Multi-Subnet failover, then a different SQL Driver has to be selected. In this case, the driver has to be installed on the server. Click ‘Test Connection’ to verify your input. If the tests were successful, click Next.

Database connection troubleshooting tips
- Try to ping the database server. Try to connect to the 1433 port on the database server. (telnet or Test-NetConnection)
- Check if the user has the necessary roles assigned, refer to SQL Server requirements for more information
- If Windows Authentication used then check if the user has the Local Administrator group membership and the 'Logon as a service right'.
- Check if the correct instance name is provided at the SQL Server name. If there are multiple instances, then the SQL Server Browser service must run on the SQL server side.
- If you installed SQL Server Express Edition, then check if the TCP/IP protocol is enabled under the SQL Server Network Configuration in the SQL Server Configuration Manager.

Step 7 - Provide the address of the Verba Media Repository server, and the API user password. The API user created at Step 14 during the installation of the Media Repository server.
Step 8 - Select the primary IP address of the server from the list, then click Next.

Step 9 - Please provide a target email address, a source email address and an SMTP server address for system alerts. If authentication required then please enter the credentials. The target email address will receive alerts concerning the various services of the recording system. This step can be skipped and the details can be provided or modified after the installation. When you are done, click Next.
Step 10 - Click **Next** again to start installing the services. When it's done, click **Finish** to exit the installer.
Installing a Verba Single Server solution

If you haven't already done so, please make sure all the prerequisites are installed for your Single Server. Refer to http://kb.verba.com/display/docs/Installing+the+required+prerequisites

The Single Server role combines the features and functions of a Verba Recording Server and Media Repository in one server. The management interface, system services, and recording functions will all run on the same server. If you don't use a separate SQL server, the database will be located on this server as well.

Please follow the steps below to install a Verba Single Server solution. Note that, all Installer components must be run as Administrator.

**Step 1** - The install kit starts installing Verba components. Simply press the Next button to start the installation.

**Step 2** - Read the Verba license agreement carefully before you click Next button.

**Step 3** - Select the Single Server role from the list. Click Next.

**Step 4** - Select the destination folder for Verba system and the desired location of the media files. You can change the default setting by clicking on the Change button and selecting another folder. If you have finished the destination folder configuration, press the Next button.

Drive root cannot be provided for the media folder (ex: D:\). A folder has to be created.

**Step 5a** - If the server is going to be the first Single Server (Media Repository) server in the deployment, and pre-generated certificates won’t be used, then select the “Generate Certificate Signed by Verba Media Repository CA” option, and check the “First Media Repository in the deployment” checkbox. Click on the Generate button, and in the Generate the Verba Server Certificate window click Generate. Finally, click on the Next button. (If this option is being used, then Step 5b and Step 5c can be skipped.)

**Step 5b** - If the server won’t be the first Single Server (Media Repository) server in the deployment, and pre-generated certificates won’t be used, then select the “Generate Certificate Signed by Verba Media Repository CA” option, then click on the Generate button. In the Generate the Verba Server Certificate window provide the address of the first Media Repository server, the administrator username and password, then click Generate. Finally, click on the Next button. (If this option is being used, Step 5c can be skipped.)

**Step 5c** - If there is an existing certificate from a previous Verba installation (in case of reinstall or upgrade), or a pre-generated certificate for the server exists (requested from a local or a 3rd party CA), then select the “Select Certificate” option, then click on the Browse button. If the server was a CA previously, then select the CA certificate also by clicking on the Browse button under the CA Certificate Thumbsnail.

**Certificates generated by Verba CA vs pre-generated certificates**

In case of using the Verba-generated certificates, the first Singe Server (Media Repository) server becomes a CA also. During the installation of the other Verba components, the server certificates will be requested from this CA. This is done through the TCP port 443 with SSL. The server certificates and the CA certificate will be placed in the certificate stores of the servers automatically, to the Personal folder. The certificates generated by the Verba CA uses SHA512 for the signature algorithm, and RSA2048 for the public key.

If certificates are generated for the Verba servers in advance using another CA, then make sure that the certificates are placed into the certificate stores of the servers under the Personal folder, and the CA certificates are placed into the Personal or into the Trusted Root Certification Authorities folder. The only requirement for the server certificates is making the private key exportable.

**Certificates generated by the Verba CA**

Based on the Friendly Name of the certificates the server and the CA certificate can be identified easily. On the screenshot, the first one is the server certificate and the second one is the CA certificate.
Step 6.1 - The Verba installer is asking for the MS SQL Server connection details. These settings will be used for all Verba services on the server, and the same settings has to be used during the installation of the other Verba components also.

- Both SQL server based and windows authentication is supported. If a domain account will be used for the SQL connection, then select Windows Authentication. In case of windows authentication, the Account name has to be provided in UPN or domain\username format. Please provide a DB Creator role user account for the connection.
- The server name can be entered either as an IP address or an FQDN.
- The Verba database doesn't have to be created in advance. The installer will create a database with the name given in the "Database Name" setting, and build the schema.
- If SQL Mirroring is being used or AlwaysOn with Multi-Subnet failover, then a different SQL Driver has to be selected. In this case, the driver has to be installed on the server.

Step 6.2 - Click 'Test Connection' to verify your input.

Database connection troubleshooting tips

- Try to ping the database server. Try to connect to the 1433 port on the database server. (telnet or Test-NetConnection)
- Check if the user has the necessary roles assigned, refer to SQL Server requirements for more information.
- If Windows Authentication used then check if the user has the Local Administrator group membership and the 'Logon as a service right'.
- Check if the correct instance name is provided at the SQL Server name. If there are multiple instances, then the SQL Server Browser service must run on the SQL server side.
- If you installed SQL Server Express Edition, then check if the TCP/IP protocol is enabled under the SQL Server Network Configuration in the SQL Server Configuration Manager.

Step 6.3 - If the test was successful, click on the Execute button. The installer will start executing the scripts on the database, so it created the database schema. In the case of upgrade, the installer upgrades the existing schema. The script log will be saved to C:\Users\[user]\AppData\Local\Temp\ folder. If an error occurs during the

Upgrading from Verba 8.x to Verba 9.x

From version 9.0, the Verba software changed to x64 platform from x86, and also introduced a new Windows certificate-based secure API for the internal connection
script execution, it can be restarted by closing the window, then clicking on the Execute button again in the installer window.

**Step 6.3** - Click on the Close button. In the installer window, click Next.

The installer also offers upgrading the schema of the IM recordings. If this step is skipped, then the old recordings won’t be visible in the Verba web interface. **Note that this step can take hours to execute!**

**Step 7** - Please specify the ports for running the Verba web server. Click the Test Connection button to check if they are free. If one of them is taken you will be asked for another port number (you are not allowed to run more than one HTTP server on the same port). It is recommended to use the default 80 and 443 port numbers. If successful, click Next.
Step 8a - If this is a new Verba installation, and there is no pre-created SSL certificate for the HTTPS connection, then select the **Generate Self-signed Certificate** option, then click on the **Generate** button. In the “Generate the Verba Web server SSL Certificate” window, enter a password for the certificate, provide the Subject Alternative names, then click **Generate**. In this case a verba-tomcat.crt and a verba-tomcat.key file will be generated in the C:\root. Click on the **Next** button. (If this option is being used, then Step 9b can be skipped)

Step 8b - If this is not a new Verba installation (in case of reinstall or upgrade), or there is a pre-created SSL certificate for the HTTPS connection, then select the **Select Certificate** option. Under the Certificate Path, click on the **Certificate** button, and provide the **.crt file**. Under the Certificate Key Path click on the **Browse** button, and provide the **.key file**. Provide the password of the SSL certificate. Click on the **Next** button.

Subject Alternatives Names for the SSL Certificate

To make sure that the browser always going to trust the certificate, provide every possible address at the Subject Alternative Names. The recommended addresses are:

- The hostname of the server.
- The FQDN of the server.
- The IP address of the server.
- ”localhost”
- Aliases
- If load-balancer is being used, then it's hostname, FQDN and IP address.

Certificates in .pfx or .p12 format

If the SSL certificate is in .pfx or .p12 format, then it has to be converted to a pair of .crt and .key files. For the conversion process, please refer to the “Creating .key and .crt files from .p12 or .pfx file” section in the installing an SSL certificate for HTTPS access article.
Step 9 - Please specify a free port for the Verba storage server. Use the Test Connection button to check the port's availability. If successful, click Next.

Step 10 - Select the primary IP address of the server from the list, then click Next.
Step 11 - Select the desired time zone from the list, then click Next.
**Step 12** - Please provide a target email address, a source email address and an SMTP server address for system alerts. If authentication required then please enter the credentials. The target email address will receive alerts concerning the various services of the recording system. This step can be skipped and the details can be provided or modified after the installation. When you are done, click **Next**.

**Step 13** - Enter a password for the Administrator login then click **Next**.
Step 14 - Enter a password for the Verba API user then click Next. Note that this user going to be required at the installation of the other Verba components.
Step 15 - Click Next again to start installing the services. When it's done, click Finish to exit the installer.
Installing a Verba Announcement Server

You can install the server using the provided MSI installation package (VerbaAdditionalServices.msi):

Do not install the VerbaAdditionalRoles.msi on a Combo, Media Repository or Recording server because the Verba Announcement Service is already installed there and you will end up with corrupt registry settings.

**Step 1** - The install kit starts installing Verba components. Simply press the **Next** button to start the installation.

**Step 2** - Read the Verba license agreement carefully before you click **Next** button.

**Step 3** - Select the **Announcement Server** role from the list. Click **Next**.

**Step 4** - Select the destination folder for Verba software. You can change the default setting by clicking on the Change button and selecting another folder. If you have finished the destination folder configuration, press the **Next** button.

**Step 5a** - If a Verba CA is being used, then select the "Generate Certificate Signed by Verba Media Repository CA" option, then click on the **Generate** button. In the Generate the Verba Server Certificate window provide the address of the first Media Repository server, the administrator username and password, then click **Generate**. Finally, click on the **Next** button. (If this option is being used, Step 5b can be skipped.)

**Step 5b** - If there is an existing certificate from a previous Verba installation (in case of reinstall or upgrade), or a pre-generated certificate for the server exists (requested from a local or a 3rd party CA), then select the "Select Certificate" option, then click on the **Browse** button.

**Step 6a** - The Verba installer is asking for the MS SQL Server credentials. The server name can be entered either as an IP address or an FQDN. Both SQL server based and windows authentication is supported. In case of windows authentication, the Account name has to be provided in UPN or domain\username format. All Verba servers and components have to use the same database! If SQL Mirroring is being used or AlwaysOn with Multi-Subnet failover, then a different SQL Driver has to be selected. In this case, the driver has to be installed on the server. Click ' **Test Connection**' to verify your input. If the tests were successful, click **Next**.

**Step 6b** - If the incoming connection from the server is not possible (because the server is in DMZ for example), then uncheck the "Enable Automatic Node Registration" setting. In this case, the server has to be added manually to the server list in the System \ Servers menu after the installation. Click **Next**.

**Certificates generated by the Verba CA**

Based on the Friendly Name of the certificates the server and the CA certificate can be identified easily. On the screenshot, the first one is the server certificate and the second one is the CA certificate.

**Database connection troubleshooting tips**

- Try to ping the database server. Try to connect to the 1433 port on the database server. (telnet or Test-NetConnection)
- Check if the user has the necessary roles assigned, refer to SQL Server requirements for more information
- If Windows Authentication used then check if the user has the Local Administrator group membership and the 'Logon as a service right'.
- Check if the correct instance name is provided at the SQL Server name. If there are multiple instances, then the SQL Server Browser service must run on the SQL server side.
- If you installed SQL Server Express Edition, then check if the TCP/IP protocol is enabled under the SQL Server Network Configuration in the SQL Server Configuration Manager.
Step 7 - Provide the address of the Verba Media Repository server, and the API user password. The API user created at Step 14 during the installation of the Media Repository server.

Step 8 - Select the primary IP address of the server from the list, then click Next.
Step 9 - Please provide a target email address, a source email address and an SMTP server address for system alerts. If authentication required then please enter the credentials. The target email address will receive alerts concerning the various services of the recording system. This step can be skipped and the details can be provided or modified after the installation. When you are done, click Next.
Step 10 - Click Next again to start installing the services. When it's done, click Finish to exit the installer.

For the configuration of the Verba Announcement service, refer to Installing and configuring the Verba SfB - Lync Announcement service.
Installing a Verba Speech Analytics Server

You can install the server using the provided MSI installation package (VerbaAdditionalServices.msi):

Do not install the VerbaAdditionalRoles.msi on a Combo or Media Repository server because the Verba Speech Analytics Service is already installed there and you will end up with corrupt registry settings.

Step 1 - The install kit starts installing Verba components. Simply press the **Next** button to start the installation.

Step 2 - Read the Verba license agreement carefully before you click **Next** button.

Step 3 - Select the **Speech Analytics Server** role from the list. Click **Next**.

Step 4 - Select the destination folder for Verba software. You can change the default setting by clicking on the Change button and selecting another folder. If you have finished the destination folder configuration, press the **Next** button.

Step 5a - If a Verba CA is being used, then select the "**Generate Certificate Signed by Verba Media Repository CA**" option, then click on the **Generate** button. In the Generate the Verba Server Certificate window provide the address of the first Media Repository server, the administrator username and password, then click **Generate**. Finally, click on the **Next** button. (If this option is being used, Step 5b can be skipped.)

Step 5b - If there is an existing certificate from a previous Verba installation (in case of reinstall or upgrade), or a pre-generated certificate for the server exists (requested from a local or a 3rd party CA), then select the "**Select Certificate**" option, then click on the **Browse** button.

Step 6a - The Verba installer is asking for the MS SQL Server credentials. The server name can be entered either as an IP address or an FQDN. Both SQL server based and windows authentication is supported. In case of windows authentication, the Account name has to be provided in UPN or domain/username format. All Verba servers and components have to use the same database! If SQL Mirroring is being used or AlwaysOn with Multi-Subnet failover, then a different SQL Driver has to be selected. In this case, the driver has to be installed on the server. Click ‘**Test Connection**’ to verify your input. If the tests were successful, click **Next**.

Step 6b - If the incoming connection from the server is not possible (because the server is in DMZ for example), then uncheck the “**Enable Automatic Node Registration**” setting.

Certificates generated by the Verba CA

Based on the Friendly Name of the certificates the server and the CA certificate can be identified easily. On the screenshot, the first one is the server certificate and the second one is the CA certificate.

Database connection troubleshooting tips

- Try to ping the database server. Try to connect to the 1433 port on the database server. (telnet or Test-NetConnection)
- Check if the user has the necessary roles assigned, refer to SQL Server requirements for more information.
- If Windows Authentication used then check if the user has the Local Administrator group membership and the 'Logon as a service right'.
- Check if the correct instance name is provided at the SQL Server name. If there are multiple instances, then the SQL Server Browser service must run on the SQL server side.
- If you installed SQL Server Express Edition, then check if the TCP/IP protocol is enabled...
g. In this case, the server has to be added manually to the server list in the System \ Servers menu after the installation. Click **Next**.

**Step 7** - Provide the address of the Verba Media Repository server, and the API user password. The API user created at **Step 14** during the installation of the Media Repository server.

**Step 8** - Select the primary IP address of the server from the list, then click **Next**.
Step 9 - Please provide a target email address, a source email address and an SMTP server address for system alerts. If authentication required then please enter the credentials. The target email address will receive alerts concerning the various services of the recording system. This step can be skipped and the details can be provided or modified after the installation. When you are done, click Next.
Step 10 - Click Next again to start installing the services. When it's done, click Finish to exit the installer.
Installing the Verba Media Collector and Proxy component

The Verba Media Collector and Proxy component is responsible for capturing the media streams on the node it's installed on and forwarding it to a Verba Recording Server. In a Lync environment, it's typically installed on the Edge server or the Mediation server depending on your recording needs.

Do not install the VerbaAdditionalRoles.msi on a SingleServer or Recording Server because the Verba Media Collector and Proxy Service is already installed there and you will end up with corrupt registry settings.

Please follow the steps below to install the component:

**Step 1** - The install kit starts installing Verba components. Simply press the Next button to start the installation.

**Step 2** - Read the Verba license agreement carefully before you click Next button.

**Step 3** - Select the Media Collector & Proxy Server role from the list. Click Next.

**Step 4** - Select the destination folder for Verba software. You can change the default setting by clicking on the Change button and selecting another folder. If you have finished the destination folder configuration, press the Next button.

**Step 5a** - If a Verba CA is being used, then select the "Generate Certificate Signed by Verba Media Repository CA" option, then click on the Generate button. In the Generate the Verba Server Certificate window provide the address of the first Media Repository server, the administrator username and password, then click Generate. Finally, click on the Next button. (If this option is being used, Step 5b can be skipped.)

**Step 5b** - If there is an existing certificate from a previous Verba installation (in case of reinstall or upgrade), or a pre-generated certificate for the server exists (requested from a local or a 3rd party CA), then select the "Select Certificate" option, then click on the Browse button.

**Servers in DMZ and Verba CA**

If the server is in DMZ (for example in case of Edge servers), then the server certificate cannot be requested directly from the Verba CA, and Step 5b has to be selected. In this case, there are two prerequisites:

- The server certificate has to be downloaded from the Verba Web Interface, and imported into the server's certificate store manually. For the certificate downloading guide see: Server Certificates
- The CA certificate of the Verba CA has to be manually exported from the certificate store of the first Media Repository (or Single) server, then imported manually into the server's certificate store.

**Certificates generated by the Verba CA**

Based on the Friendly Name of the certificates the server and the CA certificate can be identified easily. On the screenshot, the first one is the server certificate and the second one is the CA certificate.

**Database connection troubleshooting tips**

- Try to ping the database server. Try to connect to the 1433 port on the database server. (telnet or Test-NetConnection)
Mirroring is being used or AlwaysOn with Multi-Subnet failover, then a different SQL Driver has to be selected. In this case, the driver has to be installed on the server. Click ‘Test Connection’ to verify your input. If the tests were successful, click Next.

Step 6b - If the incoming connection from the server is not possible (because the server is in DMZ for example), then uncheck the “Enable Automatic Node Registration” setting. In this case, the server has to be added manually to the server list in the System \ Servers menu after the installation. Click Next.

- Check if the user has the necessary roles assigned, refer to SQL Server requirements for more information.
- If Windows Authentication used then check if the user has the Local Administrator group membership and the 'Logon as a service right'.
- Check if the correct instance name is provided at the SQL Server name. If there are multiple instances, then the SQL Server Browser service must run on the SQL server side.
- If you installed SQL Server Express Edition, then check if the TCP/IP protocol is enabled under the SQL Server Network Configuration in the SQL Server Configuration Manager.

Step 7 - Provide the address of the Verba Media Repository server, and the API user password. The API user created at Step 14 during the installation of the Media Repository server.
Step 8 - Select the primary IP address of the server from the list, then click **Next**.

Step 9 - Please provide a target email address, a source email address and an SMTP server address for system alerts. If authentication required then please enter the credentials. The target email address will receive alerts concerning the various services of the recording system. This step can be skipped and the details can be provided or modified after the installation. When you are done, click **Next**.
Step 10 - Click Next again to start installing the services. When it's done, click Finish to exit the installer.
Installing the Verba Skype for Business - Lync Filter

Overview

For the complete overview of the installation process, visit Microsoft Skype for Business

The Verba system uses the Microsoft Skype for Business / Lync Server SDK and specific components have to be installed on all Microsoft SfB/Lync Front-End servers (including SBSs and SBAs) where recorded/controlled users are located. For mediation and AVMCU based recording, the Media Collector component needs to be installed as well. There are two different Verba server roles available:

The **Lync Filter** server role contains the following services:

- Verba SfB/Lync Call Filter Service: required for voice/video call recording
- Verba SfB/Lync IM Filter Service: required for IM and persistent chat recording
- Verba SfB/Lync Communication Policy Service: required for ethical wall deployments

The **Media Collector and Lync Filter** server role contains the following services:

- Verba Media Collector & Proxy Service: required for mediation and AVMCU based recording
- Verba SfB/Lync Call Filter Service: required for voice/video call recording
- Verba SfB/Lync IM Filter Service: required for IM and persistent chat recording
- Verba SfB/Lync Communication Policy Service: required for ethical wall deployments

Follow the guidelines of this chapter to install the Verba SfB/Lync Filter component on the Microsoft SfB/Lync servers:

1. **Prerequisites**
   - Installing the Verba components
   - Registering the Verba components into the SfB/Lync environment
     - Verba SfB/Lync Call Filter Service
     - Verba SfB/Lync IM Filter Service
     - Verba SfB/Lync Communication Policy Service
   - Verifying and removing the Verba components

2. **Prerequisites**
   - There is at least one Verba Media Repository or Verba Media Repository & Recording Server installed
   - Use a Windows user account for the installation with the following privileges:
     - Local Administrator
     - RTCUniversalServerAdmins
   - Create a new service user account in the domain for the Verba services (e.g. svcverbalync);
     - The service user account must be the same as the one used on other Verba servers.
     - Add the service user account to the following local groups on all Front-End server(s), SBSs and SBAs:
       - Administrators
       - RTC Server Applications
     - Add the Logon As A Service Right for the service user account

Configure the service user account and group memberships in a way that it does not violate your Group Policies. If the group membership or privileges of the service user account is modified during regular Group Policy processing, the Verba system will stop recording conversations or enforcing communication policies.

3. **Installing the Verba components**
   - Install the software prerequisites: Installing the required prerequisites
   - Configure the firewall on the SfB/Lync servers: Firewall configuration for Skype for Business - Lync deployments

Make sure you are running the MSI package from an administrator command prompt.

**Step 1** - Locate and run the VerbaAdditionlRoles.msi package from administrator command prompt. The install kit starts installing Verba components. Simply press the Next button to start the installation.

**Step 2** - Read the Verba license agreement carefully before you click the Next button.
Step 3 - Select the server role and click Next.

- **Lync Filter** for proxy based recording and ethical wall deployments.
- **Media Collector & Lync Filter** role for mediation and AVMCU based recording deployments.

Step 4 - Select the destination folder for the Verba SfB/Lync Filter. You can change the default setting by clicking on the **Change** button and selecting another folder. If you have finished the destination folder configuration, press the **Next** button.

Step 5a - If a Verba CA is being used, then select the "Generate Certificate Signed by Verba Media Repository CA" option, then click on the **Generate** button. In the Generate the Verba Server Certificate window provide the address of the first Media Repository server, the administrator username and password, then click Generate. Finally, click on the **Next** button. (If this option is being used, Step 5b can be skipped.)

Step 5b - If there is an existing certificate from a previous Verba installation (in case of reinstall or upgrade), or a pre-generated certificate for the server exists (requested from a local or a 3rd party CA), then select the "Select Certificate" option, then click on the **Browse** button.

Step 6a - The Verba installer is asking for the MS SQL Server credentials. The server name can be entered either as an IP address or an FQDN. Both SQL server based and windows authentication is supported. In case of windows authentication, the Account name has to be provided in UPN or domain\username format. All Verba servers and components have to use the same database! If SQL Mirroring is being used or AlwaysOn with Multi-Subnet failover, then a different SQL Driver has to be selected. In this case, the driver has to be installed on the server. Click 'Test Connection' to verify your input. If the tests were successful, click Next.

Step 6b - If the incoming connection from the server is not possible (because the server is in DMZ for example), then uncheck the "Enable Automatic Node Registration" setting. In this case, the server has to be added manually to the server list in the System \ Servers menu after the installation. Click Next.

Certificates generated by the Verba CA

Based on the Friendly Name of the certificates the server and the CA certificate can be identified easily. On the screenshot, the first one is the server certificate and the second one is the CA certificate.

Database connection troubleshooting tips

- Try to ping the database server. Try to connect to the 1433 port on the database server. (telnet or Test-NetConnection)
- Check if the user has the necessary roles assigned, refer to SQL Server requirements for more information.
- If Windows Authentication used then check if the user has the Local Administrator group membership and the 'Logon as a service right'.
- Check if the correct instance name is provided at the SQL Server name. If there are multiple instances, then the SQL Server Browser service must run on the SQL server side.
- If you installed SQL Server Express Edition, then check if the TCP/IP protocol is enabled under the SQL Server Network Configuration in the SQL Server Configuration Manager.
Step 7 - Provide the address of the Verba Media Repository server, and the API user password. The API user created at Step 14 during the installation of the Media Repository server.

Step 8 - Select the primary IP address of the server from the list, then click Next.
Step 9 - Provide the username and the password for the service user. Use the Verify logon and the Verify memberships buttons to check if the service user account has sufficient rights. If either of the tests fails, please make sure it has all the necessary privileges mentioned at Step 2 of the Prerequisites section. If the service user account has the proper privileges and the test keeps failing, then you can also click the Skip Role Check checkbox. Click Next to continue.
Step 10 - Please provide a target email address, a source email address and an SMTP server address for system alerts. If authentication required then please enter the credentials. The target email address will receive alerts concerning the various services of the recording system. This step can be skipped and the details can be provided or modified after the installation. When you are done, click Next.

Step 11 - Click Next again to start installing the services. When it's done, click Finish to exit the installer.

Registering the Verba components into the SfB/Lync environment

The Verba applications have to be added as new server applications to the SfB/Lync system. Open the Skype for Business / Lync Server Management Shell from the Start Menu and use the following command(s):

Verba SfB/Lync Call Filter Service

Required for voice/video call recording.

```
```

Verba SfB/Lync IM Filter Service

Required for IM and persistent chat recording.
Verint Verba Collaboration Compliance Platform


Verba SfB/Lync Communication Policy Service

Required for ethical wall deployments.

Verifying and removing the Verba components

You can verify the list of the registered server applications using this command from the Lync Server Management Shell:

Get-CsServerApplication

You can always remove these filters if you make a configuration mistake:

Remove-CsServerApplication -Identity "Service:Registrar:lync-pool-address.yourdomain.com/VerbaLyncFilter"
Remove-CsServerApplication -Identity "Service:Registrar:lync-pool-address.yourdomain.com/LyncChatRecorder"
Remove-CsServerApplication -Identity "Service:Registrar:lync-pool-address.yourdomain.com/EthicalWall"
Remove-CsServerApplication -Identity "Service:Registrar:lync-pool-address.yourdomain.com/EthicalWallInit"

<UserServicesPriority> is the current priority of the User Services Lync server application. The reason for this is that the EthicalWallInit application needs to run before this. After this, the User Services application will have the priority of its initial priority+1.
You can use the Get-CsServerApplication command to see what priority that service currently has.
Changing the role of a Verba server

If the requirements are changing, or if the wrong role was installed because of a mistake, the role of an already installed Verba server or component can be changed.

The optional steps are required only when the existing configuration needs to be preserved.

**Step 1 (Optional)** - If the existing settings of the installed services are required after the role change, the Verba registry has to be exported. Open the Start menu, type "regedit" and press Enter. The Registry Editor opens. Go to the HKEY_LOCAL_MACHINE\SOFTWARE\Verba node. Right-click on the Verba key, then select Export.

**Step 2** - Uninstall the Verba application from the server.

During the uninstallation, the Verba registry set also becomes removed. If the configuration needs to be preserved, then export the registry set as described at Step 1.

**Step 3** - Install the Verba application as usual, but now by using the desired role. For the installation guides, see: Install the Verba software

**Step 4 (Optional)** - Open the Start menu, type "regedit" and press Enter. The Registry Editor opens. Click on the File \ Import menu, and import the registry set previously exported at Step 1.

**Step 5 (Optional)** - Edit the HKEY_LOCAL_MACHINE\SOFTWARE\Verba\Storage\Role value. The new value should represent the new role of the server.

<table>
<thead>
<tr>
<th>Verba role</th>
<th>Registry code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Server</td>
<td>Combo</td>
</tr>
<tr>
<td>Media Repository</td>
<td>MR</td>
</tr>
<tr>
<td>Recording Server</td>
<td>RS</td>
</tr>
</tbody>
</table>

**Examples**

The configuration usually needed to be preserved when:

- Changing between Single Server and Recording Server roles, and the configuration of the recording services are required.
- Changing from SfB/Lync Filter to Media Collector and Filter role, and the configuration of the filter service(s) is required.
Step 6 - Open the Verba Web Interface and go to the System \ Servers menu.

Step 7 - Select the changed Verba server node from the list, then click on the Delete button.

When deleting a server from the list, the configuration stored in the central database will be removed. If the configuration needs to be preserved, then export the registry set as described at Step 1.

Step 8 - On the Verba server list page, click on the Add New Verba Server link at the upper right corner.

Step 9 - Provide the FQDN of the server at the Hostname, select the new role at the Role setting, select a Configuration Profile, then click Save.

Step 10 - Go to the Change Configuration Settings tab.

Step 11 - Select the "Use configuration only from the server’s local registry" option, then click on the Start button.

When selecting the local registry, the configuration is copied into the central database.

Step 12 (Optional) - Go to the Service Activation tab and activate the previously used services. Start the services at the Service Control tab.
Installer Parameters and Unattended Installation

The Verba msi installers files can be started from the command line with additional parameters. The installers can be started the following way:

```
msiexec /i VerbaRecording.msi [logging setting] [/quiet] [verba parameters]
```

Logging setting

Logging can be added by the /L parameter, plus the letters which specify the required information. For example /LE means logging the errors only, or /LEI means logging the errors and the status messages. For Verba, the recommended setting is /L*V. After the logging setting, a file name also has to be specified for the output, for example "/L*V installer.log". The following table describes the available options:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Log entries</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>Verbose output</td>
</tr>
<tr>
<td>O</td>
<td>Out-of-disk-space messages</td>
</tr>
<tr>
<td>I</td>
<td>Status messages</td>
</tr>
<tr>
<td>C</td>
<td>Initial UI parameters</td>
</tr>
<tr>
<td>E</td>
<td>All error messages</td>
</tr>
<tr>
<td>W</td>
<td>Non-fatal warnings</td>
</tr>
<tr>
<td>A</td>
<td>Startup of actions</td>
</tr>
<tr>
<td>R</td>
<td>Action-specific records</td>
</tr>
<tr>
<td>M</td>
<td>Out-of-memory or fatal exit information</td>
</tr>
<tr>
<td>U</td>
<td>User requests</td>
</tr>
<tr>
<td>P</td>
<td>Terminal properties</td>
</tr>
<tr>
<td>X</td>
<td>Extra debugging information.</td>
</tr>
<tr>
<td>*</td>
<td>Wildcard for adding all parameters, except the V and X.</td>
</tr>
<tr>
<td>+</td>
<td>Append to existing file</td>
</tr>
<tr>
<td>!</td>
<td>Flush each line to the log</td>
</tr>
</tbody>
</table>

Quiet Mode

Quiet mode enables the installation of the Verba software with a single command, without using the GUI. In this case, all settings going to be set based on the provided parameters.

If quiet mode is used, the SKIPSQLSEQUENCE=1 parameter is mandatory!

Verba parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Mandatory</th>
<th>Default value</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>SELECTEDROLE</td>
<td>The role to be installed on the server. Available values: MR - Media Repository, RS - Recording Server, Combo - Single Server, AS - Announcement Server</td>
<td>Yes</td>
<td></td>
<td>SELECTEDROLE=RS</td>
</tr>
<tr>
<td>FILTERINSTALLFOLDER</td>
<td>Application installation folder. C:\Program Files\Verba</td>
<td>FILTERINSTALLFOLDER=D:\Apps\Verba</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------</td>
<td>-----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIA</td>
<td>Media folder. C:\Program Files\Verba\media\</td>
<td>MEDIA=&quot;D:\Verba media&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USEADVANCEDAPI</td>
<td>Sets if the advanced certificate based secure communication going to be used. 1 USEADVANCEDAPI=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCERTTHUMBLABEL</td>
<td>The thumbprint or path of the server certificate. VCERTTHUMBLABEL=6B5 A1D380F5D73BB63A9C0EC 47936E578521A7DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCERTPASS</td>
<td>The password of the server certificate, if file path was provided at the VCERTTHUMBLABEL parameter. VCERTPASS=your_password_here</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCACERTTHUMBLABEL</td>
<td>The thumbprint of the CA certificate. (Verba CA) VCACERTTHUMBLABEL=7E234956683BA5B306B86E547E25173D8AC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSERVICEUSERNAME</td>
<td>Username for the service user. If not set, then Local System is going to be used as a service account. VSERVICEUSERNAME=contoso\srv-verba</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSERVICEUSERPASSWD</td>
<td>Password for the service user. Yes, if the VSERVICEUSERNAME is set. VSERVICEUSERPASSWD=your_password_here</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKIPSQSEQUENCE</td>
<td>Sets if the SQL database going to be created. Yes, if the installer runs in quiet mode. 0 SKIPSQSEQUENCE=1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKIPREGISTRATIONCHECK</td>
<td>If set to 1, the node won't register itself in the Verba database. 0 SKIPREGISTRATIONCHECK=1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SERVERNAMEFORMAT</td>
<td>Sets format for the registration. 0 - NETBIOS name 1 - FQDN SERVERNAMEFORMAT=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VNATIVELOGON</td>
<td>Sets authentication type for the SQL access. 0 - SQL account 1 - Windows account VNATIVELOGON=1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLADDRESS</td>
<td>The address of the SQL server. (local) SQLADDRESS=sql1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLCATALOG</td>
<td>The name of the SQL database. verba SQLCATALOG=verba</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLUSER</td>
<td>SQL username. sa SQLUSER=contoso\srv-verba</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLPASSWORD</td>
<td>SQL password. SQLPASSWORD=your_password_here</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment Variable</td>
<td>Description</td>
<td>Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------</td>
<td>--------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSSLCERTIFICATEPATH</td>
<td>Path to the SSL certificate .crt file.</td>
<td>C:\certs\verbassl.crt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSSLKEYPATH</td>
<td>Path to the SSL certificate .key file.</td>
<td>C:\certs\verbassl.key</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSSLPASSWORD</td>
<td>SSL certificate key password.</td>
<td>your_password_here</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGON_USERNAME</td>
<td>Username for the service user at the filter services.</td>
<td>contro..oso\srv-verba</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGON_PASSWORD</td>
<td>Password for the service user at the filter services.</td>
<td>your_password_here</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESOLVEDIPV4</td>
<td>The IP address of the server.</td>
<td>192.168.1.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADMIN_PASSWORD</td>
<td>Administrator password.</td>
<td>your_password_here</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRHOST</td>
<td>First Media Repository server address.</td>
<td>testmr1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>API_PASSWORD</td>
<td>API user password.</td>
<td>your_password_here</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Upgrading your Verba system

Upgrading a Verba system consist of various steps executed by the installer and includes some manual step also. Before starting the upgrade make sure you have the followings available:

- New Verba system installers
- Valid license file
- Existing Verba system installer in case you need to roll back during the upgrade process
- Servers, OS, database, and prerequisites (Java, .Net, etc.) meeting the requirements of the new system
- A clear and definite plan for the upgrade including backup plan, upgrade plan and rollback plan
- Since the upgrade might require to stop recording for a while, make sure it does not interfere with your business and regulations
- When you have a complex deployment, make sure you have the right engineering resources available knowledgeable of Verba deployments

Verba does not support partial upgrades, all system components and servers need to be upgraded at once. There might be exceptions, but it needs to be authorized and confirmed by a Verba representative.

Verba supports upgrade from version 5 up to the latest version following the procedures described in this document.

If you are aware of any customization (custom database procedures, triggers or customized web interface including branding) in your system, please contact your Verba representative before the upgrade.

The following list briefly outlines the upgrade process:

- Backup Verba database and prepare it for the upgrade process
- Backup existing servers and verify server and OS compatibility
- Uninstall the existing Verba software
- Install the new Verba software
- Configure servers
- Test the new system

Backup Verba database and prepare it for the upgrade process

During the upgrade process, the database has to be altered to support the new version of the software. In order to ensure a fallback option is available, it is mandatory to create a full backup of your Verba database.

For more information, see https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/create-a-full-database-backup-sql-server

Upgrading from 9.3 or earlier

With version 9.4, several database performance improvements were implemented, and this caused major changes in the database. The upgrade process may take significantly longer, (up to 30 minutes for every million records, depending on the resources of the SQL server) when you upgrade from version 9.3 or earlier to version 9.4 or later.

The number of the records currently in the database can be checked by running the following SQL query:

```
SELECT COUNT(*) FROM v_section
```

Based on the number of the database records, SQL version and available free space the following configurations are required.

**Step 1** - Optionally set the recovery mode to simple. When the upgrade is complete, you can change it back to its original setting. This step is recommended if the disk space available for the transaction log is limited. For more information, see https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/view-or-change-the-recovery-model-of-a-database-sql-server

**Step 2** - Set the SQL Server Agent service to automatic start and start it (except when using SQL Express Edition, which does not include the SQL Server Agent service). For more information, see https://docs.microsoft.com/en-us/sql/ssms/agent/autostart-sql-server-agent-sql-server-management-studio

**Step 3** - Optionally rebuild the indexes on the database tables. If the database contains more than one million entries, it is recommended to run the manual-index-rebuild.sql on the Verba database before the upgrade. This script should be run outside of business hours.

**Database partitioning (9.5 or earlier)**
With version 9.6 partitioning was added as a recommended step during the installation, when more than 100 million conversations are expected to be stored in the database. The installer configures database partitioning only for future conversations. In order to improve performance for the already recorded conversations, it is possible to add partitioning for historical records.

For more information, see: Database table partitioning

Backup Verba servers and verify server and OS compatibility

In order to ensure that you can restore the system at any point during the upgrade procedure, you need to make a backup of the entire system.

The easiest and most efficient way to backup your current system is to create snapshots of your (virtual) servers. If your upgrade fails, you can simply restore the system by loading the snapshots.

The uninstall process does not affect or delete the database and the media folders. However, other data needs to be removed from the server. If you would like to keep the application log files for some reason, you need to back the log folder to an external location first.

Follow the steps below to backup the servers to be able to restore the system if you need to roll back changes.

**Step 1** - Make a note of all active Verba services on the servers by navigating to Service Activation tab under System / Servers for 9.x or later versions and under Administration / Verba Servers in earlier versions. You will need this information when you re-apply the configuration on the servers running the new version.

**Step 2** - Stop all Verba services on all servers. If you need to continue recording or you want to minimize downtime, you can continue recording on the Verba Recording Servers by disabling the database access. Before doing so, please consult your Verba representatives to confirm the available options and compatibility issues between the existing and the new system.

**Step 3** - Check if your media folders or storage targets are not under C:\Program Files (x86)\Verba. If your media folders or storage targets are under C:\Program Files (x86)\Verba, move the folder to another, more appropriate location.

**Step 4** - Optionally make a copy of your log folders to an external location on all servers.

**Step 5** - Optionally make a copy of the C:\Program Files (x86)\Verba\resources\webapp\ folder on the Media Repository server to backup branding and other web application customization.

**Step 6** - Make a copy of the server registry under HKLM\SOFTWARE\Wow6432Node\Verba key.

**Step 7** - Check server configuration (CPU, memory, disk, network), operating system and database version compatibility for the new Verba version.

Uninstall Verba servers

**Step 1** - Check that you have valid and up to date backups of your servers, and you verified server and OS compatibility with the new version.

**Step 2** - Uninstall the Verba Media Repository Server first, unless you have a single server in your deployment.

**Step 3** - Check that you do not have remaining files under C:\Program Files (x86)\Verba folder. If you have, check that no media folder is used under this folder and you made a backup of all relevant content (for instance log files). After checking all of these, delete the content of the folder.

**Step 4** - Check that you do not have remaining entries under HKLM\SOFTWARE\Wow6432Node\Verba key. If you have, delete them completely.

**Step 5** - Repeat Step 2 through Step 4 for all other Verba servers, including the ones installed on external servers such as Lync/SfB servers.

Install Verba servers

Once you completed the uninstall of your servers, you can go ahead and install the new version.

**Step 1** - Run the prerequisites tool from the new installer package to check if there is any missing prerequisite. Install the missing ones and make sure you have Java Runtime version 11 installed on Verba Media Repository and Verba Recording Servers.

**Step 2** - Install the new version on the Verba Media Repository server first. The installer will automatically update your database, it can take hours depending on the size of your database.

**Step 3** - Install the new version on all Verba Recording Servers and other server roles.

Configure Verba servers and test
Once you installed the new version on your servers, you need to apply the previous configuration and test the new system.

**Step 1** - Login to the web interface and navigate to the Verba server and select the **Service Activation** tab. Activate all Verba services according to the previous configuration.

**Step 2** - Navigate to **Change Configuration Settings** tab. The system will offer you an option to apply the previous configuration (the configuration in the database) on the server. Select the **Use configuration only from central database** option, or you can manually select the appropriate option below.

If you select the **Use configuration only from server's registry** option, you will overwrite the working configuration and the system needs to be set up again. Use this with care.

**Step 3** - Press **Start** and follow the instructions on the screen to apply the new configuration on the server.

**Step 4** - Repeat these steps for all Verba servers in your deployment.

**Step 5** - If you have added new servers during the upgrade, simply configure them using an existing configuration template or direct server configuration.

**Step 6** - Now you have finished the upgrade. Check all configuration settings (especially the new ones) and execute your test plan to ensure that your system is functioning properly.

**Roll back to the previous version**

If you encounter any issues during the upgrade and you are unable to resolve them, you need to roll back to the previous, working copy. If you have managed to create server snapshots, you can simply restore them. If you need to manually restore the system, follow the steps below:

**Step 1** - Uninstall the new Verba servers by following the uninstall steps above. Make sure you execute the manual checks also.

**Step 2** - Run the prerequisites tool from the previous installer package. Make sure you have the right Java Runtime on the server.

**Step 3** - Restore the Verba database from the backup.

**Step 4** - Install the Verba Media Repository server first.

**Step 5** - Install the previous version on all other servers.

**Step 6** - Apply the configuration on the servers and test the configuration by following the steps described above.
Upgrade procedure from Carin recorders

The Carin - Verba upgrade procedure consists of three essential steps.

- Making a backup of the existing Carin installation
- Removing the existing Carin installation
- Installing and configuring Verba Recording System and restoring from backup

Making a backup of the existing Carin installation

Step 1 Registry backup - Launch regedit from Start - Run..., Navigate to HKEY_LOCAL_MACHINE/SOFTWARE, right click on Carin and choose Export.

Step 2 Media backup - After the registry backup is done, close regedit, open a file manager, navigate to the Carin media folder (by default it is C:\Program Files\Carin\media) and backup all files and directories.

Step 3 Database backup - After the media file copying procedure is finished, open Microsoft SQL Management Studio, connect to the database engine, right click on the database named carin, select Tasks and choose Detach.... Navigate the file manager to the Microsoft SQL Server Data directory (default: C:\Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\Data) and backup the carin.mdf database file.

Removing the existing Carin installation

Before starting the uninstallation procedure, please make sure that you have completed the steps in the previous part, and you have a valid backup of the registry values, the media files and the database.

Step 1 Launch Add or Remove Programs from Control Panel, select Carin and choose Uninstall.

Step 2 Make sure you backed up the media files from this directory before! Start a file manager, navigate to C:\Program Files (assuming default installation path) and delete the Carin directory.

Make sure you have read and done everything in the Making backups of existing installation part, and also have valid backups of registry data, database and media files.

Verba Technologies does not take responsibility for any data loss occurring during self-made upgrade.

Installing and configuring Verba Recording System and restoring from backup

In order to install the new Verba Recording System, please see Installation Overview. After the regular installation procedure is finished, please follow these steps to restore the backups. The SQL script files mentioned in this topic can be located and downloaded from the Verba Technologies Portal's Support site.

Step 1 Open Control Panel, Administrative Tools and launch Services.

Step 2 Select all running Verba services and stop them one by one.

Step 3 Start Microsoft SQL Management Studio and connect to the database server.

Step 4 Right click on the database named verba, select Tasks and choose Detach...

Step 5 Attach the carin database from the backup, by right clicking on Databases, and selecting Attach...

Step 6 After the attachment is finished, rename the carin database to verba, or run rename-database.sql.

Step 7 Execute the SQL script update-from-carin.sql.

This procedure can take several hours, depending on the database size and record count.

Step 8 Execute update.sql.

Step 9 After the update script has stopped, start the previously stopped Verba services in Services.
Step 10 Configure the Verba Recording System and the Verba services via the Web Interface.

Step 11 Copy the media files from the backup to `C:\Program Files\Verba\media` (assuming default installation path)

After these steps are completed, every password stored in the system, including the database connection’s password has to be re-entered, and saved!
Verba Remote Installation Service Description

This document describes how Verba Technologies will help you with your software installations when you are ordering installation services.

The purpose of this document is to outline the information needed and tasks to be completed during the Installation services for the Verba Recording System product line. Since this installation will be conducted by Verba Technologies personnel from an off-site location (in order to reduce installation fees and expenses) Remote Desktop software will be utilized to complete these tasks. Verba Technologies uses the services of LogMeIn, a web based remote desktop support service. Verba Technologies can support additional forms of remote desktop or temporary VPN access at the client's request.

Verba Technologies respects your confidentiality and acknowledges the trust bestowed when 3rd party vendors access your network, and will only use this connection to fulfill the installation requirements of the Client. For further information on Verba Technologies’ remote support services please see: http://www.verba.com/group/support/service-description

About the information below:

- Information to be collected before installation
- Client’s Responsibilities
  - Pre-installation tasks
  - Installation Tasks
  - Post Installation Tasks
- Verba Technologies’ Responsibilities
  - Pre-Installation
  - Installation Tasks
  - Post Installation Tasks

Information to be collected before installation

To complete the installation the Verba Technologies support engineer will need the following information from the client, prior to scheduling the installation.

Verba Server Hardware/Software information

- CPU type:
- RAM size:
- HDD size/drives:
- Operating System:
- IP Address:
- Hostname:

Cisco UCM Admin information:

- Version:
- IP/Hostname:
- Administrator user:  
  Administrator password: (can be kept confidential and entered by Client)

Gateway information:

- Gateway Model(s):
- IP address(es):
- Cisco Switch Model(s):
- Cisco IP Phone Models:

Verba Installation/Configuration settings

- Log File location:
- Database File location:
- Media File location:
- Outgoing SMTP Server:
- Email account for system alerts:
- SNMP server:
- Type of Recording Method: (Passive or Central)

Client’s Responsibilities

Pre-installation tasks
• Verba Server is ready (hardware is configured and Operating System installed) and can be accessed via the internet or via a remote
desktop from a computer with internet access
• Provide installation information to Verba (see above)
• Configure Monitor Session/SPAN port to capture traffic from the applicable VLAN/switches
• Provide list of users and extensions/directory numbers
• Provide User/Group mapping and which users are Group Supervisors and/or Group Administrators (All users are members of the
default group when created)
• Download the installation files and put them onto the server computer (provide location information to Verba if different from C:
\Downloads\)

Installation Tasks

• Have a knowledgeable IT person responsible for this implementation who is available during the agreed upon days/times
• Access the Verba Support website to initiate a Remote Desktop Session (http://support.verba.com - login required)
• The computer to be controlled needs to have access to: (Verba server or Desktop)
  • Remotely control the server
  • The internet
  • The Cisco UCM Administration webpage

Post Installation Tasks

• Complete and sign user acceptance testing script from a PC (other than the Verba Server) and return to Verba
• Configure Additional Users, Groups, Extensions as needed
• Configure Additional IP Phones for XML Service access as needed
• Configure SQL Server and Media file backup schedule and archiving schedule as desired

Verba Technologies’ Responsibilities

Pre-Installation

• Set time/date for Remote Desktop Support Session
• Send client server requirement information and other information needed
• Make installation files available to client (secured web access) to download

Installation Tasks

• Install Prerequisite items: Java, .NET etc.
• Install and configure SQL Server database
• Install and configure Verba Server Components
• Install and configure the Verba Node Manager
• Validate initial settings and database connectivity
• Validate SPAN port data capture
• Configure Users and user privileges
• Configure User to Extension mapping with recording mode
• Configure User to Group mapping with privileges

Post Installation Tasks

• Configure Cisco UCM phone service for Verba phone service users (Optional)
• Configure Email/SNMP Alerts for basic system monitoring
• Knowledge transfer: Walk through basic user navigation
• Knowledge transfer: Walk through basic system administration and node manager
• Provide Client with Product Support Online access account information
Installing the Verba Lync extension for Lync 2010

The Verba Lync Extension allows to control Lync conference recording directly in the Lync desktop client running Windows OS.

Client registry settings

The extension can be enabled by entering the following registry entries:

Windows Registry Editor Version 5.00

[HKEY_CURRENT_USER\Software\Microsoft\Communicator\ContextPackages\{8551F06A-BCA1-40ED-A57F-04EE5E8C59A3}]

"Name"="Meeting Recorder"
"InternalURL"="http://verbaMR.contoso.com/verba/silverlight/LyncMeetingRecorderExtension2010.jsp"
"ExternalURL"="http://verbaMR.contoso.com/verba/silverlight/LyncMeetingRecorderExtension2010.jsp"
"ExtensibilityWindowSize"=dword:00000001

Description of the fields:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the application. It is displayed in the Lync menu and at the bottom of the Extension window.</td>
</tr>
<tr>
<td>InternalURL</td>
<td>Specifies the application URL in the Microsoft Lync Server 2010 domain. The application automatically detects which URL to use, InternalURL or ExternalURL, based on the client location.</td>
</tr>
<tr>
<td>ExternalURL</td>
<td></td>
</tr>
<tr>
<td>ExtensibilityWindowSize</td>
<td>Sets the minimum size of the extension window. 0 = small (300 x 200 pixels), 1 = medium (400 x 600 pixels), 2 = large (800 x 600 pixels).</td>
</tr>
</tbody>
</table>


Adding the server to Trusted Sites

In addition to applying the configuration to the local registry on the client computers, the http://verbaMR.contoso.com address needs to be added to the Trusted Sites in the Internet Explorer.
Installing the Verba Lync extension for Lync 2013

The Verba Lync Extension allows to control Lync conference recording directly in the Lync desktop client running Windows OS.

Client registry settings

The extension can be enabled by entering the following registry entries:

Windows Registry Editor Version 5.00

[HKEY_CURRENT_USER\Software\Microsoft\Communicator\ContextPackages]

[HKEY_CURRENT_USER\Software\Microsoft\Communicator\ContextPackages\{8551F06A-BCA1-40ED-A57F-04EE8E8C59A3}]

"Name"="Meeting Recorder"

"InternalURL"="http://verbaMR.contoso.com/verba/silverlight/LyncMeetingRecorderExtension2010.jsp"

"ExternalURL"="http://verbaMR.contoso.com/verba/silverlight/LyncMeetingRecorderExtension2010.jsp"

"ExtensibilityWindowSize"=dword:00000001

Description of the fields:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the application. It is displayed in the Lync menu and at the bottom of the Extension window.</td>
</tr>
<tr>
<td>InternalURL, ExternalURL</td>
<td>Specifies the application URL in the Microsoft Lync Server 2013 domain. The application automatically detects which URL to use, InternalURL or ExternalURL, based on the client location.</td>
</tr>
<tr>
<td>ExtensibilityWindowSize</td>
<td>Sets the minimum size of the extension window. 0 = small (300 x 200 pixels), 1 = medium (400 x 600 pixels), 2 = large (800 x 600 pixels).</td>
</tr>
</tbody>
</table>

For more detailed information, please refer to the documentation at http://msdn.microsoft.com/en-us/library/office/jj933101(v=office.15).aspx

Adding the server to Trusted Sites

In addition to applying the configuration to the local registry on the client computers, the http://verbaMR.contoso.com address needs to be added to the Trusted Sites. Lync 2013 has its own location for trusted sites in the registry. This means that you cannot add the server to Trusted Site using Internet Explorer / Internet Options (like in Lync 2010); you need to use a separate registry key. The format for the registry key looks like this:

Windows Registry Editor Version 5.00

[HKEY_CURRENT_USER\Software\Microsoft\Office\Lync\Security\Trusted Sites]

[HKEY_CURRENT_USER\Software\Microsoft\Office\Lync\Security\Trusted Sites\verbaMR.contoso.com]

"https"=dword:00000001

"http"=dword:00000000

This sample indicates that https://verbaMR.contoso.com will be trusted. If the same URL with HTTP should be trusted, then flip the “http” part to a 1.
Setting up a Verba demo environment

Using an OVA template

Please contact Verba Support regarding the OVA template.

Installing Verba and importing demo data into your environment.

To install a Verba demo environment and import the demo data, please follow the instructions below.

The demo scripts can only be run with fresh Verba installs. Do not change anything in the web application before you run the demo scripts.

**Step 1** - Install the Verba system. The demo scripts have been verified to work with 8.4 releases. Use the default name for the database (verba).

**Step 2** - Download the demo media and scripts. Please contact Verba Support to request the items.

**Step 3** - Unzip the media package directly under `DRIVE:\verba_install_path\media` exactly as they are in the zip file.

**Step 4** - Connect to the Verba database using SQL Management Studio and run the SQL scripts in the order shown in the filenames. "1_..." should be run first, "2_..." should be run second, and so on.

If there is an error with one of the scripts, do not continue executing the other scripts. Repair the problem at hand, only then continue.

**Step 5** - Request an NFR license from your Verba sales representative.

The complete demo environment contains:

- Voice, IM, Video, Desktop Screen conversations
- User-Group assignment
- Data Retention Policies, with Storage Targets
- Labels, Legal Hold and Automatic Labeling
- Active Directory Profiles
- Speech Search
- Communication Policies and Content Policies
Requesting and assigning certificates

Certificates are required in several cases when configuring Verba. An SSL certificate is required when a trusted HTTPS access have to be configured to the web application. Certificates are used as well when file encryption and integrity protection or the recording announcement is a requirement. Anyway, all certificates can be replaced used between the Verba services to establish a secure connection.

Certificates can be requested from a 3rd party provider, or from the local CA.

Request a new certificate from the local CA using Microsoft Management Console

Step 1 - Right click (or open it in Windows Server 2008 R2) on the Start menu and click on Run. Type mmc.exe and press enter.

Step 2 - Go to the File / Add/Remove Snap-in... menu.

Step 3 - From the list on the left side select Certificates and click on the Add button.

Step 4 - Select Computer Account then click Next. On the next page, select Local Computer then click Finish. In the MMC windows press OK.

Step 5 - Expand the Certificates and right click on the Personal node. Select the All Tasks / Request New Certificate menu.

Step 6 - On the first page click Next. Select a Certificate Enrollment Policy then click Next.

Step 7 - Select a certificate type. On the right side expand the Details then click on the Properties.

Step 8 - Set the properties of the certificate based on the purpose:

<table>
<thead>
<tr>
<th>Type of Certificate</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate for SSL connection for trusted HTTPS access</td>
<td>Subject tab:</td>
</tr>
<tr>
<td></td>
<td>• Under the Subject name section set the Type to Full DN and Add the server FQDN as Value in the following format: CN=server.name.yourdomain.com</td>
</tr>
<tr>
<td></td>
<td>• Under the Alternative name section set the Type to DNS and add the following Values:</td>
</tr>
<tr>
<td></td>
<td>• The IP address of the server where the web application hosted.</td>
</tr>
<tr>
<td></td>
<td>• The hostname of the server where the web application hosted.</td>
</tr>
<tr>
<td></td>
<td>• The FQDN of the server where the web application hosted.</td>
</tr>
<tr>
<td></td>
<td>• (Optional) The loadbalancer hostname and/or FQDN.</td>
</tr>
<tr>
<td></td>
<td>• (Optional) External URL.</td>
</tr>
<tr>
<td>Certificate for Encryption</td>
<td>Private Key tab:</td>
</tr>
<tr>
<td></td>
<td>• Under the Key options section turn on the 'Make private key exportable' setting.</td>
</tr>
<tr>
<td>Certificate for Signing</td>
<td>Private Key tab:</td>
</tr>
<tr>
<td></td>
<td>• Under the Key options section turn on the 'Make private key exportable' setting</td>
</tr>
<tr>
<td>Certificate for the Announcement service</td>
<td>Subject tab:</td>
</tr>
<tr>
<td></td>
<td>• Under the Subject name section set the Type to Full DN and Add the trusted application server pool FQDN as Value in the following format: CN=poolfqdn.yourdomain.com</td>
</tr>
<tr>
<td></td>
<td>• Under the Alternative name section set the Type to DNS and add the following Values:</td>
</tr>
<tr>
<td></td>
<td>• The FQDNs of the Announcement servers.</td>
</tr>
<tr>
<td></td>
<td>• The FQDN of the trusted application pool.</td>
</tr>
<tr>
<td></td>
<td>General tab:</td>
</tr>
<tr>
<td></td>
<td>• Provide a friendly name. This name have to be configured in the Announcement Service configuration.</td>
</tr>
</tbody>
</table>

Step 9 - In the Certificate Properties window click OK, then click Enroll.
Request a new certificate from the local CA for Announcement service using PowerShell

Certificate can be requested by the following command in PowerShell:

```
Request-CsCertificate -New -Type default -FriendlyName "Announcement service" -CA ca.contoso.com\ContosoCA -ComputerFQDN servername.yourdomain.com
```

If there is more than one nodes in the Trusted Application pool then an additional parameter required for the other nodes:

```
Request-CsCertificate -New -Type default -FriendlyName "Announcement service" -CA ca.contoso.com\ContosoCA -ComputerFQDN servername.yourdomain.com -DomainName "server2.yourdomain.com,server3.yourdomain.com"
```

Description of the parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Sample value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-FriendlyName</td>
<td>The friendly name of the certificate</td>
<td>&quot;Announcement Service&quot;</td>
</tr>
<tr>
<td>-CA</td>
<td>The address of the local Certificate Authority</td>
<td>ca.contoso.com\ContosoCA</td>
</tr>
<tr>
<td>-ComputerFQDN</td>
<td>The FQDN of the Trusted Application pool</td>
<td>servername.yourdomain.com</td>
</tr>
<tr>
<td>-DomainName</td>
<td>The FQDNs of the other Announcement Server nodes</td>
<td>&quot;server2.yourdomain.com,server3.yourdomain.com&quot;</td>
</tr>
</tbody>
</table>

Generating a key pair and Certificate Signing Request with Java Keytool, then signing it with the CA and exporting the certificate

When requesting a certificate from the CA directly is not possible, then a custom request have to be created and sign it with the CA. Then it will be possible to create certificate signed with the CA.

**Step 1 - Generating a key pair.**

Run the following command for generating a new key pair (public and private):

```
"%JAVA_HOME%\bin\keytool" -genkey -keysize 1024 -keyalg RSA -validity 36500 -keystore verba.jks -alias tomcat -dname "CN=verbaserver-fqdn, OU=IT, O=IT, L=Little Rock, ST=Arkansas, C=US"
```

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Description</th>
<th>Sample values</th>
</tr>
</thead>
<tbody>
<tr>
<td>-keysize</td>
<td>The size of the key. The bigger the size, the strongest the encryption.</td>
<td>1024 2048</td>
</tr>
<tr>
<td>-keyalg</td>
<td>The algorithm used for the key.</td>
<td>RSA</td>
</tr>
<tr>
<td>-keypass</td>
<td>The password used for protecting the private key.</td>
<td>P@ssw0rd123</td>
</tr>
</tbody>
</table>
-validity
The validity of the keys in days.
365
3650
-keystore
The store where the keys will be stored. It can be a new keystore (it will be created) or an existing one.
verba.jks
C:\verba.keystore
-storepass
The password used to protect the keystore. This must be specified if we are using an existing keystore which is protected.
P@ssw0rd123
-alias
An alias for the generated key pair.
tomcat
-dname
The subject of the certificate.
"CN=verbaserver-fqdn"
"CN=verbaserver-fqdn, OU=IT, O=IT, L=Little Rock, ST=Arkansas, C=US"

Step 2 - Generating a Certificate Signing Request (CSR).
Run the following command:

```
"%JAVA_HOME%/bin/keytool" -certreq -alias tomcat -keyalg RSA -file request.csr -keystore verba.jks
```

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Description</th>
<th>Sample values</th>
</tr>
</thead>
<tbody>
<tr>
<td>-alias</td>
<td>The alias for the generated key pair. It has to match the one provided at the previous step.</td>
<td>tomcat</td>
</tr>
<tr>
<td>-keyalg</td>
<td>The algorithm used for the key. It has to match the one provided at the previous step.</td>
<td>RSA</td>
</tr>
</tbody>
</table>
| -file          | The name of the generated CSR file. | request.csr
C:\temp\request.csr |
| -keystore      | The store where the keys are stored. It has to match the one provided at the previous step. | verba.jks
C:\verba.keystore |

Step 3 - Sign the CSR file with the CA.
Step 4 - Add the signed certificate to the keystore.
Run the following command for adding the root CA certificate to the keystore:

```
"%JAVA_HOME%/bin/keytool" -import -alias root -keystore verba.jks -trustcacerts -file root.cer
```

(Optional) Run the following command for adding the intermediate CA certificate to the keystore:

```
"%JAVA_HOME%/bin/keytool" -import -alias inter -keystore verba.jks -trustcacerts -file intermediate.cer
```

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Description</th>
<th>Sample values</th>
</tr>
</thead>
<tbody>
<tr>
<td>-alias</td>
<td>The alias for the generated key pair. It has</td>
<td>tomcat</td>
</tr>
</tbody>
</table>
to match to the one provided at the previous step.

- **keystore**  
  The store where the keys will be stored. It has to match to the one provided at the previous step.  
  verba.jsk  
  C:\verba.keystore  

- **file**  
  The CA certificate file.  
  ca-certificate.cer  
  C:\temp\ca-certificate.cer

Run the following command for adding the signed certificate to the keystore:

```
"%JAVA_HOME%\bin\keytool" -import -alias tomcat -keystore verba.jks -file signed-certificate.cer
```

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Description</th>
<th>Sample values</th>
</tr>
</thead>
<tbody>
<tr>
<td>-alias</td>
<td>The alias for the generated key pair. It has to match to the one provided at the previous step.</td>
<td>tomcat</td>
</tr>
</tbody>
</table>
| -keystore      | The store where the keys will be stored. It has to match to the one provided at the previous step. | verba.jsk  
  C:\verba.keystore  

| -file          | The signed certificate file. | signed-certificate.cer  
  C:\temp\signed-certificate.cer |

### Step 5 - Export the signed certificate with the private key.

Run the following command:

```
"%JAVA_HOME%\bin\keytool" -importkeystore -srckeystore verba.jks -alias tomcat -destkeystore verba.p12 -deststoretype PKCS12
```

<table>
<thead>
<tr>
<th>Parameter name</th>
<th>Description</th>
<th>Sample values</th>
</tr>
</thead>
</table>
| -srckeystore   | The store where the keys are stored. It has to match to the one provided at the previous step. | verba.jsk  
  C:\verba.keystore  

| -alias         | The alias for the generated key pair. It has to match to the one provided at the previous step. | tomcat |
| -destkeystore  | The name of the certificate file. | verba.p12 |
| -deststoretype | The type of the exported certificate file. | PKCS12 |

### Step 6 (Optional) - Import the certificate to the Windows Certificate Store.

**Double click** on the exported .p12 file, then click on the **Install Certificate...** button. Select **Local Computer** then click **Next**. On the next page click **Next**, then **Finish**.

**Private Key tab:**

- Under the Key options section turn on the 'Make private key exportable' setting.
- Subject tab:
• Under the Subject name section set the Type to Full DN and Add the trusted application server pool FQDN as Value in the following format: CN=poolfqdn.yourdomain.com
• Under the Alternative name section set the Type to DNS and add the following Values:
  • The FQDNs of the Announcement servers.
  • The FQDN of the trusted application pool.
• General tab:
  • Provide a friendly name. This name has to be configured in the Announcement Service configuration.
Verba PowerShell Deployment Toolkit

The Verba PowerShell Deployment Toolkit simplifies the process of the Verba deployments and upgrades in large environments. The toolkit consists of two PowerShell files:

- **autoinstall.ps1**: Configurable PowerShell script for uninstalling, installing and upgrading Verba servers and components.
- **verba.psm1**: A PowerShell library which contains a collection of functions usable for Verba deployments. For the documentation of the functions see: Verba PowerShell Deployment Library

Preparations

Verba Prerequisites

The Verba PowerShell Deployment Toolkit does not install the prerequisites of the Verba services (Java, Visual C++, etc.) nor does the registration of the SfB/Lync Filter application in the SfB/Lync pool. These have to be done manually.

Deployment Toolkit Prerequisites

On the machine where the Verba Powershell Deployment Toolkit will be started, the **SqlServer Powershell module** has to be installed. Do the following steps in order to install the module:

**Step 1** - Download and install **PowerShell 5.2**. After the installation, restart the machine.

**Step 2** - Open PowerShell as administrator.

**Step 3** - Execute the following command. This will set the security protocol being used at the subsequent commands when communicating through the internet.

```powershell
```

**Step 4** - Execute the following command. When asked, type in **Yes** and press enter to allow the operation. This will download the NuGet package provide provider, and registers it as the default repository for PowerShell modules.

```powershell
Register-PSRepository -Default
```

**Step 5** - Execute the following command. When asked, type in **Yes** and press enter to allow the operation. This will download the SqlServer module.

```powershell
Install-Package -Name SqlServer -RequiredVersion 21.1.18235
```

Group Memberships

The **Windows User who runs the script (logged in to the server)** must be added to the following local groups at all Verba servers.

- Administrators
- Remote Management Users

Database
If database mirroring is used, make sure that the primary database (based on the Verba configuration) is the principal!

**Configuration**

The Verba PowerShell Deployment Toolkit can be configured by editing the autoinstall.ps1 file. The configuration part can be found at the beginning of the file, between the "Configuration" and "End of configuration" lines. Edit the values of the following variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Example value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$installerPath</td>
<td>A network folder which contains the Verba executables (VerbaRecording.msi, VerbaAdditionalRoles.msi). The network folder has to be accessible for the windows user which is used for running the script.</td>
<td>&quot;\storage\Verba\8.8&quot;</td>
</tr>
<tr>
<td>$tempPath</td>
<td>Folder path for temporary files. This folder will be created on each server.</td>
<td>&quot;C:\verba_install&quot;</td>
</tr>
<tr>
<td>$appPath</td>
<td>Verba installation directory.</td>
<td>&quot;C:\Program Files\Verba&quot;</td>
</tr>
<tr>
<td>$test</td>
<td>Tests the servers The script test the following:</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• If the script can log into the server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If the Verba prerequisites are installed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If the server can reach the database server on the port 1433</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Is there enough disk space</td>
<td></td>
</tr>
<tr>
<td>$uninstall</td>
<td>Sets whether the script will uninstall the specified servers. The script removes the Verba software, the registry set and the files from the server. This setting is ignored when $upgrade=1 is used.</td>
<td>1</td>
</tr>
<tr>
<td>$install</td>
<td>Installs the Verba application on the servers. This setting is ignored when $upgrade=1 is used.</td>
<td>1</td>
</tr>
<tr>
<td>$upgrade</td>
<td>Sets whether the script will upgrade the specified servers. The upgrade involves the following process:</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• Backups the existing configuration in the registry and the list of activated Verba services.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Uninstalls the current Verba software.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installs the new version using the executables specified at the $path value.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Restores the previously saved configuration (registry).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Activates and starts the Verba services based on the previous configuration. If turned on, then the $uninstall, $install, $backupconfiguration and $restoreconfiguration values will be ignored.</td>
<td></td>
</tr>
<tr>
<td>$backupconfiguration</td>
<td>Backups the list of the activated services and the registry from the servers. The filenames going to be hostnames of the servers. If the files already exist, the filename going to end with .bak. This setting is ignored when $upgrade=1 is used.</td>
<td>1</td>
</tr>
<tr>
<td>$restoreconfiguration</td>
<td>Restores the list of the activated services and the registry from the files named with the corresponding server hostnames. This</td>
<td>1</td>
</tr>
<tr>
<td>Setting</td>
<td>Description</td>
<td>Value</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>$apiUsername</td>
<td>Verba API username.</td>
<td>verbaapi</td>
</tr>
<tr>
<td>$apiPassword</td>
<td>Verba API password.</td>
<td></td>
</tr>
<tr>
<td>$AdministratorUsername</td>
<td>Verba Administrator username.</td>
<td>administrator</td>
</tr>
<tr>
<td>$AdministratorPassword</td>
<td>Verba Administrator password.</td>
<td></td>
</tr>
<tr>
<td>$keepLogs</td>
<td>Sets whether the script should remove the log folder in case of uninstalling or upgrading.</td>
<td>1</td>
</tr>
<tr>
<td>$resetApiPassword</td>
<td>Set to $true if you want to reset the API user's password. It is recommended when you are upgrading from 8.9.</td>
<td>$false</td>
</tr>
<tr>
<td>$removeLegacyCertificateSettings</td>
<td>Set to $true if you want to delete old legacy certificate settings from the profiles. It is recommended when you are upgrading from 8.9.</td>
<td>$true</td>
</tr>
<tr>
<td>$sslCertificate</td>
<td>The properties of the SSL certificate generated for the Media Repository or Single server. In case of multiple Media Repository server, this setting also has to be multiplied. ($sslCertificate1, $sslCertificate2, ...) Usage: New-VerbaCertificateRequest -Subject &lt;string&gt; [-SAN &lt;string&gt; -FriendlyName &lt;string&gt; -Country &lt;string&gt; -State &lt;string&gt; -City &lt;string&gt; -Organization &lt;string&gt; -OrganizationUnit &lt;string&gt;]</td>
<td></td>
</tr>
<tr>
<td>$skipNodeRegistrationCheck</td>
<td>If enabled, it turns off the automatic node registration at the installed Verba servers.</td>
<td>$false</td>
</tr>
<tr>
<td>$servers</td>
<td>List of Verba servers and their role and certificate configuration.</td>
<td></td>
</tr>
<tr>
<td>Install server with legacy configuration without Advanced API</td>
<td>New-VerbaServer -FQDN &lt;string&gt; -Role &lt;string&gt; -UseLegacyAPI [-CommonParameters&gt;]</td>
<td></td>
</tr>
<tr>
<td>Install server with Advanced API with existing certificate</td>
<td>New-VerbaServer -FQDN &lt;string&gt; -Role &lt;string&gt; -ServerCertThumbprint &lt;string&gt; [-UseAdvancedAPI] [-CommonParameters&gt;]</td>
<td></td>
</tr>
<tr>
<td>Examples</td>
<td>Install server with legacy configuration (Verba 8.x) without Advanced API</td>
<td></td>
</tr>
</tbody>
</table>
Install Verba 9.x with Verba signed certificates

Install Verba 9.x with existing certificates

$startupType The startup type of the Verba services:  
* 0: Disabled  
* 1: Manual  
* 2: Automatic  
* 3: AutomaticDelayed

$serviceUsername The Windows domain account used as a service account in the case of the Verba SfB/Lync Filter installation.  
"contoso\verba-service"

$servicePassword The password of the Windows domain account.  
"P@ssw0rd"
$databaseHost  |  The hostname of the server where the Verba database hosted. | "SQLSERVER"

$databaseName  |  The name of the Verba database. | "Verba"

$sqlAuth  |  Sets whether SQL Authentication will be used for the SQL connection. If set to 0, then Windows authentication will be used for the SQL connection. | 1

$sqlUsername  |  Username for the SQL connection. If the $sqlAuth setting is set to 1, then a SQL user has to be provided. If the $sqlAuth setting is set to 0, then a Windows domain user has to be provided in "domain\user" format. | "verba-user"

$sqlPassword  |  The password of the SQL connection. | "P@ssw0rd"

$enableCouldMode  |  The password of the SQL connection. | 1

$mrPoolName  |  The Media Repository pool name. | "testmr1"

$mrPortNumber  |  The port used at the Media Repository for the incoming registration requests. | 4432

$tokenPassword  |  The password of the registration token. | "P@ssw0rd"

When the configuration is done, the script can be started.

**Running the Deployment Toolkit**

In order to run the Deployment Toolkit, start the autoinstall.ps1 script with an administrator PowerShell.

At the start of the execution, the script will ask if you want to enable CredSSP authentication. This is required if Windows authentication is being used for the SQL Server access.
Verba PowerShell Deployment Library

The Verba PowerShell library makes it possible to automate functions, that would normally need to be done manually.

The available commands are detailed in the table below.

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
</table>
| Install-RemoteVerbaServer -Host $host -Role $role [-WindowsAuth] [-sqlAuth] -SqlServerAddress $sqlserveraddress -DatabaseName $databasename -SqlUser $sqluser -SqlPassword $sqlpassword -WindowsUser $windowsuser -WindowsPassword $windowspassword -Installerpath $installerpath -ManagementAddress $managementaddress -MrPoolName $mrpoolname -MrPort $mrport -Cloudmode $cloudmode -TokenPassword $tokenpassword -Path $path | • Host Type: String The hostname of the server where the Verba software will be installed  
• Role Type: String The Verba server role to be installed.  
• WindowsAuth Type: Switch Sets whether windows authentication will be used for the SQL access.  
• sqlAuth Type: Switch Sets whether SQL authentication will be used for the SQL access.  
• SqlServerAddress Type: String The hostname of the server where the Verba database hosted.  
• DatabaseName Type: String The name of the Verba database.  
• SqlUser Type: String The SQL user name to be used if the -sqlAuth switch is used  
• SqlPassword Type: String The SQL password to be used if the -sqlAuth switch is used  
• WindowsUser Type: String The windows user name to be used if the -WindowsAuth switch is used  
• WindowsPassword Type: String The windows password to be used if the -WindowsAuth switch is used  
• InstallerPath Type: String The path to the Verba executables.  
• ManagementAddress Type: String The IP address of the server  
• MrPoolName Type: String The name of the Media Repository pool if the -Cloudmode is set to 1  
• MrPort Type: Int Default: 4432 The registration port of the Media Repository if the -Cloudmode is set to 1  
• Cloudmode Type: Int Default: 0 Sets whether the cloud mode is turned on.  
• TokenPassword Type: String The token password if the -Cloudmode is set to 1. | Installs the Verba software on the provided host based on the provided parameters.
Install-VerbaApplication -Role $role [-WindowsAuth] [-sqlAuth] -SqlServerAddress $sqlserveraddress -DatabaseName $databasename -SqlUser $sqluser -SqlPassword $sqlpassword -WindowsUser $windowsuser -WindowsPassword $windowspassword -Installerpath $installerpath -ManagementAddress $managementaddress -MrPoolName $mrpoolname -MrPort $mrport -Cloudmode $cloudmode -TokenPassword $tokenpassword -Path $path

**Path**
Type: String
Default: "C:\Program Files (x86)\Verba"
The installation folder

**Role**
Type: String
The Verba server role to be installed.

**WindowsAuth**
Type: Switch
Sets whether windows authentication will be used for the SQL access.

**sqlAuth**
Type: Switch
Sets whether SQL authentication will be used for the SQL access.

**SqlServerAddress**
Type: String
The hostname of the server where the Verba database hosted.

**DatabaseName**
Type: String
Default: "verba"
The name of the Verba database.

**SqlUser**
Type: String
Default: "sa"
The SQL user name to be used if the -sqlAuth switch is used

**SqlPassword**
Type: String
The SQL password to be used if the -sqlAuth switch is used

**WindowsUser**
Type: String
Default: "VERBALABS\Administrator"
The windows user name to be used if the -WindowsAuth switch is used

**WindowsPassword**
Type: String
The windows password to be used if the -WindowsAuth switch is used

**InstallerPath**
Type: String
The path to the Verba executables.

**ManagementAddress**
Type: String
Default: The IP address of the host provided at the -SqlServerAddress
The IP address of the server

**MrPoolName**
Type: String
The name of the Media Repository pool if the -Cloudmode is set to 1

**MrPort**
Type: Int
Default: 4432
The registration port of the Media Repository if the -Cloudmode is set to 1

**Cloudmode**
Type: Int
Default: 0
Sets whether the cloud mode is turned on.

**TokenPassword**
Type: String
The token password if the -Cloudmode is set to 1.

**Path**
Type: String
Installs the Verba software on the local host based on the provided parameters.
<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get-VerbaManagementIP -Hostname $hostname</td>
<td>Returns the IP address of the provided host.</td>
<td>$hostname</td>
</tr>
<tr>
<td>Set-MultistringRegValue -Hostname $hostname -Subkey $subkey -Value $value -Arr $arr</td>
<td>Sets a multi-string registry value on the provided host.</td>
<td>$hostname, $subkey, $value, $arr</td>
</tr>
<tr>
<td>Copy-VerbaInstaller -Hostname $hostname -Role $role -WorkingFolder $workingfolder $Source $source</td>
<td>Copies the executables from the source folder to the work folder on the provided host.</td>
<td>$hostname, $role, $workingfolder, $source</td>
</tr>
<tr>
<td>Install-VerbaDatabase -DbHost $dbhost -DbName $dbname -SqlUser $sqluser -SqlPassword $sqlpassword -sqlScriptFolder [-WinAuth]</td>
<td>Installs a Verba database using the scripts found in the provided folder.</td>
<td>$dbhost, $dbname, $sqluser, $sqlpassword, $sqlScriptFolder</td>
</tr>
<tr>
<td>Get-VerbaSQLExecutionInfo -DbHost $dbhost -DbName $dbname -SqlUser $sqluser -SqlPassword $sqlpassword -sqlScriptName</td>
<td>Provides execution info about the provided SQL script.</td>
<td>$dbhost, $dbname, $sqluser, $sqlpassword, $sqlScriptName</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Uninstall-VerbaApplication $hostname [-keepLogs]</td>
<td>Uninstalls the Verba software from the provided host.</td>
<td></td>
</tr>
<tr>
<td>Copy-VerbaDatabaseScripts $hostname -TargetFolder $targetfolder</td>
<td>Copies the Verba database scripts from the local Verba installation folder to the provided host.</td>
<td></td>
</tr>
<tr>
<td>Export-VerbaRegistry $hostname -BackupPath $backuppath -KeyName $keyname</td>
<td>Exports the specified registry set to the provided path from the provided host.</td>
<td></td>
</tr>
<tr>
<td>Import-VerbaRegistryBackup $hostname -BackupPath $backuppath</td>
<td>Imports the provided registry set on the provided host.</td>
<td></td>
</tr>
<tr>
<td>Set-VerbaServices $hostname -BackupPath $backuppath -StartupType $startuptype [-Restart]</td>
<td>Sets the startup type of the Verba services based on the provided backup on the provided host.</td>
<td></td>
</tr>
</tbody>
</table>

- **SqlUser**
  - Type: String
  - The username to be used for the SQL connection
- **sqlPassword**
  - Type: String
  - The password to be used for the SQL connection
- **sqlScriptName**
  - Type: String
  - The name of the SQL script

- **Hostname**
  - Type: String
  - The hostname of the server
- **keepLogs**
  - Type: Switch
  - Sets whether the log files should be kept or not
- **TargetFolder**
  - Type: String
  - The target folder on the provided host
- **BackupPath**
  - Type: String
  - The path where the registry will be saved to.
- **KeyName**
  - Type: String
  - Default: "SOFTWARE\Wow6432Node\Verba"
  - The key which will be exported.
<table>
<thead>
<tr>
<th>Command</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
</table>
| Export-VerbaActiveServices -Hostname $hostname -BackupPath $backupPath | • Hostname  
  Type: String  
  The hostname of the server  
• BackupPath  
  Type: String  
  The path where the list of the activated services will be saved to. | Creates a backup about the activated Verba services on the provided host. |
| Get-VerbaRegistryEntry -key $key          | • key  
  Type: Microsoft.Win32.RegistryKey  
  The registry key which will be read | Writes out the registry set under the provided key. |
How to Install your Verba license

If you logging into the Verba Web Interface for the first time after the initial installation, the Upload License File page will appear by default. Skip to Step 3.

If you have received a long coded license string, you can just copy/paste that into Verba. If you have a license file, you can upload it.

See the detailed steps below.

Please follow the guidelines below to install your Verba license:

Step 1 - Navigate to the System/License menu item.

Step 2 - On the top right corner of the screen click on the Upload License File link.

Step 3 - On the Upload License File screen there are two possibilities:
- Paste License - You can simply copy/paste the received license string.
- Upload License File - Upload the received .lic license file that includes the license string.

Step 4 - If the license string or file is proper and the upload was successful, the Web application will show the updated License Information.

Step 5 - Once the license is uploaded, it needs activation. There are 60 days to do this. Open a support ticket at support.verba.com, and send the activation code. The Verba support team will provide an activated license shortly.

Step 6 - If the Verba support team provided the activated license, open the Verba Web Interface, and navigate to the System/License menu again.

Step 7 - On the top right corner of the screen click on the Upload License File link.
Step 8 - Upload the activated license.
Adding the Logon As A Service Right

You can add the "Logon as a service" right to an account on the server by following these steps:

**Step 1 - Open Local Security Policy.**

**Step 2 - In the console tree, double-click Local Policies, and then click User Rights Assignments.**

**Step 3 - In the details pane, double-click Log on as a service.**

**Step 4 - Click Add User or Group, and then add the appropriate account to the list of accounts that possess the Log on as a service right.**
How to switch from Oracle to OpenJDK Java Runtime Environment

This article describes the steps required to replace Oracle Java Runtime Environment (JRE) to the OpenJDK equivalent.

Step 1 - Verify your Verba version and check the supported Java version and download the OpenJDK runtime as follows:

<table>
<thead>
<tr>
<th>Verba version</th>
<th>Java version</th>
<th>Download link</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.x</td>
<td>Java SE 8 Runtime Environment 32 bit</td>
<td><a href="https://adoptopenjdk.net/releases.html?variant=openjdk8&amp;jvmVariant=hotspot#x32_win">https://adoptopenjdk.net/releases.html?variant=openjdk8&amp;jvmVariant=hotspot#x32_win</a></td>
</tr>
<tr>
<td>9.0, 9.1 and 9.2</td>
<td>Java SE 8 Runtime Environment 64 bit</td>
<td><a href="https://adoptopenjdk.net/releases.html?variant=openjdk8&amp;jvmVariant=hotspot#x64_win">https://adoptopenjdk.net/releases.html?variant=openjdk8&amp;jvmVariant=hotspot#x64_win</a></td>
</tr>
<tr>
<td>9.3 or later</td>
<td>Java SE 11 Runtime Environment 64 bit</td>
<td><a href="https://adoptopenjdk.net/releases.html?variant=openjdk11&amp;jvmVariant=hotspot#x64_win">https://adoptopenjdk.net/releases.html?variant=openjdk11&amp;jvmVariant=hotspot#x64_win</a></td>
</tr>
</tbody>
</table>

Step 2 - Copy the downloaded OpenJDK package (msi) to the Verba server and install it using the following command-line command:

```bash
cmd /k /c msiexec /i [OpenJDK_installer.msi] INSTALLLEVEL=2
```

Step 3 - Check the JAVA_HOME variable in a new command line window using the command:

```bash
echo %JAVA_HOME%
```

You should see the path to your OpenJDK installation.

Step 4 - Change the following Windows Registry setting:

```plaintext
HKLM\SOFTWARE\WOW6432Node\Apache Software Foundation\Procrun 2.0\VerbaWebApp\Parameters\Java\Jvm
```

to

<table>
<thead>
<tr>
<th>Verba 8.x</th>
<th>C:\Program Files (x86)\AdoptOpenJDK\jre-[version]-hotspot\bin\server\jvm.dll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verba 9.x</td>
<td>C:\Program Files\AdoptOpenJDK\jre-[version]-hotspot\bin\server\jvm.dll</td>
</tr>
</tbody>
</table>

Change the [version] part to the actual folder name!

Step 5 - Restart all Verba services using Java:

- Verba Cisco JTAPI Service
- Verba Avaya DMCC/JTAPI Service
- Verba Web Application Service
- Verba Cisco Central Silent Monitoring Service
- Verba Cisco Compliance Service
- Verba Cloud Compliance Service

Step 6 - Verify functionality by making tests covering your basic use cases.
Rolling back changes

In case the system does not work properly after switching to OpenJDK or you want to continue using Oracle JRE, follow the steps below to roll back the changes:

**Step 1** - Verify that you have Oracle JRE still installed on the Verba server. If not, install the required Oracle JRE depending on the Verba version.

**Step 2** - Change the JAVA_HOME and PATH variables back to the original values pointing to the Oracle JRE installation.

**Step 3** - Change the HKLM\SOFTWARE\WOW6432Node\Apache Software Foundation\Procrun 2.0\VerbaWebApp\Parameters\Java\Jvm registry setting back to 'auto'.

**Step 4** - Restart all Java services using Java.