IP Office

ContactStore 7.8

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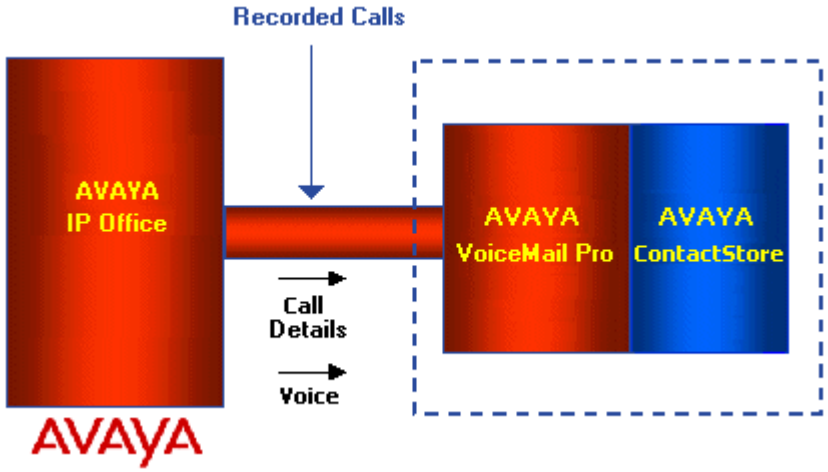
Chapter 1.
ContactStore Overview

1. ContactStore Overview

This documentation covers version 7.8 of ContactStore for IP Office, supported in conjunction with IP Office 5.0 and higher with Voicemail Pro 5.0 and higher.

The standard call recording facilities provided with IP Office and Voicemail Pro can be extended further by using ContactStore. ContactStore stores and catalogs recordings so that they are easily accessible for later retrieval. Any recordings that you instruct Voicemail Pro to 'send to the Voice Recording library' are placed in a database.



ContactStore for IP Office (referred to as ContactStore from now on) is provided with the Voicemail Pro software CD set and has an inbuilt 90 day trial license. A fully featured ContactStore system can be installed and used for 90 days from the creation of the first recording. After this time the system will stop taking recordings until a license is purchased and installed into the IP Office. All of the existing recordings can be accessed but no new ones can be made.

It is important to understand how the ContactStore operates so that you can best maintain and update it. This section takes you from an overview diagram through to a detailed discussion of the operation of the system.

ContactStore complements the voice recording capabilities of Voicemail Pro. It stores and catalogs the recordings so that they are easily accessible. Any recordings that you instruct Voicemail Pro to “send to the Voice Recording Library” are placed in a folder that is visible to ContactStore. ContactStore checks this folder every few seconds and if it finds a new recording file there, it:

- Reads the information about the recording from the file.
- Compresses the audio to 16kbps G.726 format.
- Stores the resultant file in the configured ContactStore hard disk, either on a separate server or in a specified partition.
- Updates its integral database with details of the recording.
- Deletes the original .wav file from the handover directory.

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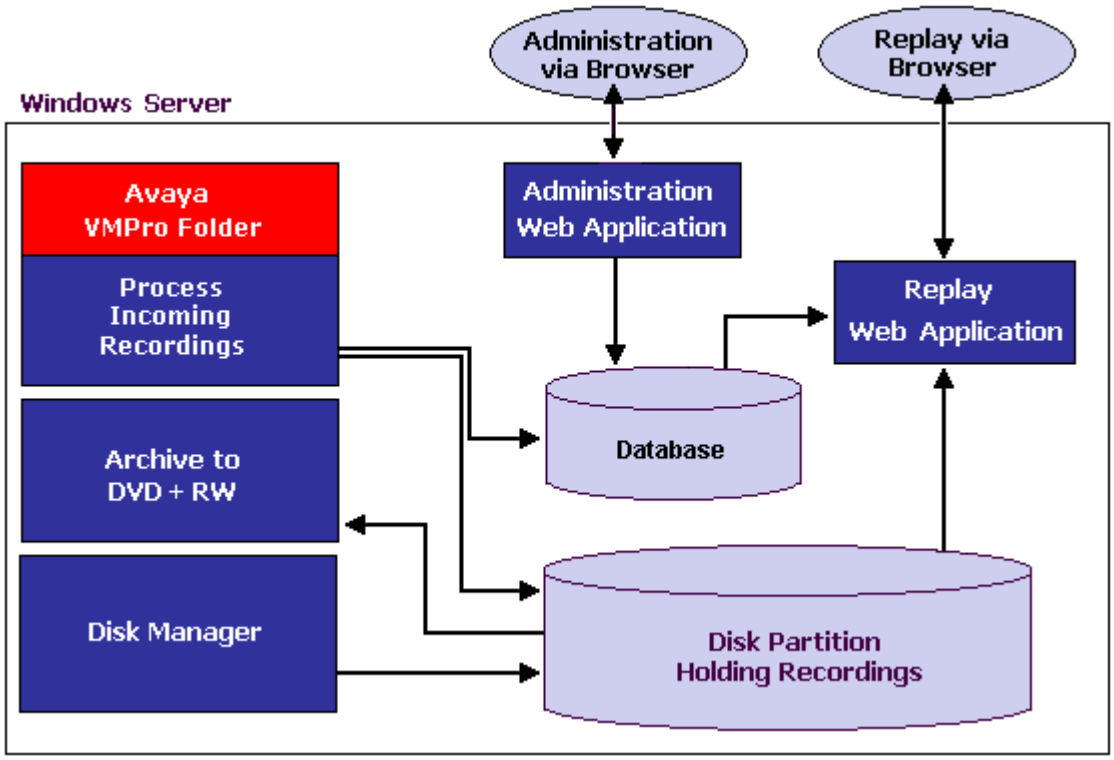
1.2 Functional Components

ContactStore can run on the same server as Voicemail Pro or a separate one. The ContactStore application contains several distinct Functional components as shown in the diagram.



The major functional components of the ContactStore server are:

- A folder into which Voicemail Pro deposits .wav files as recordings complete.
- A file path into which call contents and derived files are written as industry standard .wav and .xml files.
- A PostgreSQL database into which details of all recorded calls are inserted.
- A browser-based call search and replay application.
- A browser-based system configuration and status monitoring application.
- Disk space management - Oldest recordings are automatically deleted as needed.
- Optional archive management - Recordings can be automatically written to a DVD+RW drive.

The rest of this section provides details about these components.

1.3 Recordings

ContactStore stores recorded calls with certain security in place. Access to recordings is strictly controlled according to the security constraints configured within the System Administration pages. Each recording has an owner; the call owner is the number of the extension that recorded the call. You can specify to which extensions each user has replay rights. The user can search for and replay calls 'owned' by those stations. Typically an individual may be given rights to replay calls owned by their own extension number while managers may have rights to extension numbers of all their staff.

Recording files

Calls are stored in an industry standard .wav file.

When each call is completed and as each recording becomes available, ContactStore compresses the audio and updates the database with a record of the call. These files are stored in a hierarchy of folders beneath a root path, which you set after installing the software.

Every recording results in:

- **One .wav file.**
  The .wav file contains the actual audio of the recording. You can double-click some .wav files to play them directly. Others are in audio formats that are not directly supported by Microsoft's Media Player; these must be converted into a supported format before they can be played. Since ContactStore's Search and Replay application does this conversion automatically, you do not need to access these files directly.
- **One .xml file.**
  The .xml files contain details about the recorded calls. Although most users typically search against the ContactStore's database of calls, you can view these files directly in a browser if required. Within each .xml file there are:
  - All the details known about this recording. Most of the information, but not all, will be inserted into the calls database. Some of the information is only of interest for diagnostic and maintenance purposes.
  - A link to the final audio file.
  - Start and end time.

You should always use the integral DVD archiver to automatically back up these files.

Audio compression

ContactStore uses the G.726 16kbps ADPCM compression standard, which provides the best compromise between storage capacity and CPU loading.

ContactStore is designed to perform compression as a background task, which does not impact your ability to record, search or play other calls. It takes approximately 1 minute to compress a two hour recording; there is a delay (from a few seconds to a few minutes) between completion of a recording and its availability in the Search and Replay application.

1.4 Internal Database

If you have retained all of the .xml and .wav files, then you have kept all of the details about the recordings you have made. However, the system uses a database to hold this information in more readily accessible forms. This database is located on the ContactStore server.

The database stores details of the recordings as well as details of the ContactStore configuration.

- **Recording details**
  The call details database is stored beneath the location into which you installed ContactStore, under the ***\postgresql\data*** sub-directory and occupies approximately 1KB per call. To allow you to search for calls easily, the details of the recordings are normally inserted into this database. It contains one record for each call recorded and additional records for each party on the call and the owner of the call. The information stored for each call is:
  - A unique reference for the recording.
  - The start date and time.
  - The duration of the recording.
  - The name and number of the parties on the call where this was available to IP Office (through ANI, CLI or dialed digits) at the time of the call.
  - The direction of the call (incoming or outgoing).
  - The owners of the recording (an internal call, recorded by both parties will appear one but have two owners).
  - The target or dialed number, which may be different from the number that actually took the call.
- **Configuration details**
  Several tables hold details of system configuration, such as file paths, time-outs and user authorization rights.

Archiving

To avoid having to repopulate these databases in the event of corruption or disk failure, you should back up the data files 57.

1.5 Licensing

The full functionality of the ContactStore is available through purchasing a license which is entered into the IP Office configuration. However, ContactStore will operate with a free 90-day evaluation license. This time period starts from the time at which you make your first recording with the system. During this period, the product is fully functional.

- During the timed trial period, the administration pages will warn you that you are running on a timed license and that following the expiration date, ContactStore will DELETE subsequent recordings. It is therefore important that you install a full license BEFORE the end of the trial period if you wish to continue making recordings.

Even after the trial period, you will still be able to access recordings made during the trial - it is only newly made recordings that will be deleted rather than processed by ContactStore.

- This does not apply to recordings made and kept within your Voicemail Pro system - only to those directed to the Voice Recording Library (VRL).

At any time during the trial period, or after it, you may purchase a license for the product to run on one or more of your IP Office systems. As you install the supplied license on an IP Office, the ContactStore will automatically detect this as you make the next recording and will process recordings from that system. Until a recording is made you will continue to see a warning message on the ContactStore administration screens. If you have multiple IP Office systems in a Small Community Network (SCN), you must purchase and install a separate license for each.

- Once one or more of your IP Office systems has had a full license installed and a recording has been made, you will continue to receive daily warnings about the trial period - for any other IP Office systems which are not licensed. Recordings made on these unlicensed systems will continue to be processed up to 90 days from the date of the first recording (made by the system as a whole) but thereafter recordings made on these systems will not be saved. Daily warnings will continue to be raised in this case.

You can add ContactStore licenses to additional IP Offices (if your VMPro supports multiple IP Offices) at any time. These will be detected automatically by ContactStore as the first recording from each switch is processed after the installation of the license. This will be applicable if you have multiple IP Offices in a Small Community Network (SCN) using Centralized Voicemail Pro. Until you do so, any recordings received from unlicensed IP Office servers will result in a warning alarm being generated each day to ensure that you are aware that the timed license will expire or has expired.

- **Important**
  After 90 days no further recordings are saved until the system is licensed.

1.6 Supported Languages

ContactStore is supported in several languages.

- US English
- Dutch
- German
- French
- Korean
- Brazilian Portuguese
- UK English
- Italian
- Russian
- Japanese
- Latin Spanish
- Simplified Chinese

Time Zone and Daylight Savings Time (DST) Support

All dates and times are stored in the database in Coordinated Universal Time (UTC). However, when you view records using the search and replay application, these are converted to your local time. If you view the records using a database query tool the times will be shown in the time zone of the client machine, which may be different from the server time. The XML files relating to the recordings include ISO standard time stamps, giving both UTC and offset from Greenwich Mean Time (GMT).

Chapter 2. Installation

2. Installation

The platform required for a ContactStore server varies according to the volume of recordings to be made and the number of concurrent users of the search and replay application.

The sizing guidelines given assume a sustained recording load of up to 15 concurrent recordings and a moderate replay load of up to 5 concurrent replays.

ContactStore manages disk space so as to maintain a small amount of free space on the disk. To do this, install it on its own partition so that the whole partition can be used for the storage of the application and the recordings made by it. For more information, see Calculating the Disk Size Required for Recordings 17 for instructions on how to determine the total hard disk requirements.

Variant	RAM	HD	Pentium 4	Celeron	AMD	XP Pro	Vista	2003 Server	2008 Server (32-bit)
VM Pro Server and ContactStore	512MB	20GB[1]	P4 2.8GHz	Not Tested	Athlon XP 3000+ All Athlon 64	✗	✗	✗	✓
ContactStore	512MB	10GB[2]	2.GHz	Not Tested	Athlon XP 3000+ All Athlon 64	✗	✗	✗	✓

Notes

1. For all voicemail servers, allow 1mb per minute for messages and greeting storage.
2. Also allow 7.2MB per hour for recordings in the ContactStore disk partition.

Disk Partitions

We recommend that you install ContactStore on a dedicated drive partition. This enables the software to monitor the available disk space and automatically delete your oldest recordings to make room for newer ones as your disk fills.

- Ideally, use 2 partitions; one for the ContactStore application and calls database plus a further partition which will be used solely to store the actual recordings.

If you install the software onto a partition that other software uses, you may find that, over time, the amount of storage available for your recordings decreases, due to gradual build-up of log files, internet caches, temporary files, and so on. ContactStore is designed to control the growth of its own such files in its own partition but cannot do so for other applications.

The first step of the installation process is for you to specify the partition and path onto which ContactStore should be installed. A minimum of 20GB is recommended to allow for at least 10GB of recordings (over 1000 hours of audio) to be held online. For more information, see Calculating the Disk Size Required for Recordings 17.

The following scenarios are supported by Avaya for installing the ContactStore solution. These scenarios relate to installing the ContactStore and Voicemail Pro application.

- Same Drive - Separate Partition.
- Same Server - Separate Drives.
- Separate Servers.

Sound Card

To replay calls from the ContactStore server itself, it must be equipped with a sound card and appropriate Windows drivers installed. However, this is not essential since replays can be performed via a browser on another computer.

Local DVD+RW drive

Single-sided 4.7GB DVD+RW media are supported.

You should install the DVD+RW before you install the software. You can do this after you install the ContactStore software; however, no archive media will be created until you install the drive.

Network connectivity

The ContactStore server must have LAN speed of 100Mbps or better access to the directory into which Voicemail Pro deposits recordings and to the storage location into which ContactStore compresses and retains the recordings.

- Internet Explorer 6.0 or higher required.

2.1 Calculating Disk Size Required for Recordings

The table shows how many gigabytes (GB) per day you typically use given the number of recording ports you have and the average utilization of these ports over the working day. The figures are based on the assumption that your compressed recordings will be at 16kbps (a single G.726 file) and that the utilization is averaged over an 8-hour working day. Should your circumstances differ, recalculate the figures according to the hours over which your port utilization is averaged.

The assumptions are:

- **Compressed Audio** - G.726 16kbps per call.
- **Resulting in** - 7.2MB per hour of recording.
- **Hours per day** - 8 (typical single shift).

Type of Operation

	PBX Extn	Busy - Extn	Typical Call Center	Extreme Call Center
Ports Utilization	10%	30%	70%	100%
10	0.1	0.2	0.4	0.6
20	0.1	0.3	0.8	1.2
30	0.2	0.5	1.2	1.7
40	0.2	0.6	1.6	2.3

- **Note** - All figures are in GB per day.

Total requirements

Use the following table to determine the required disk capacity for your recorder.

Allow	For	Comments
10GB	System overhead and call details database	PostgreSQL database, Java Virtual Machine, and call details for 5 million call records online. Buffering space for DVD archive, etc.
Daily Usage x (days required online + safety margin)	Compressed recordings.	

Examples

Environment	Daily Storage	Total Storage
Typical office recording • 30 extensions in normal PBX environment • 10% utilization over 8 hour day) • 30 days online storage • 1 million call records kept online	0.2GB/day (G.726 16kbps recording)	10 + (30 x 0.2) = 16GB
Small Informal Call Center • 30 extensions in light use (30% utilization over 8 hour day) • 90 days online storage	0.5GB/day (G.726 16kbps recording)	10 + (90 x 0.5) = 55GB

2.2 Installing ContactStore

If a version of ContactStore is already installed, follow the instructions for Upgrading ContactStore 22.

Pre-Requisites

Before installing ContactStore software make sure that you have completed the following pre-requisites:

1. Installed and verified the IP Office system for general telephony operation.
2. Added the ContactStore license to the IP Office configuration.
3. Installed the Voicemail Pro server application and verified general voicemail mailbox operation.
4. If ContactStore is to be installed on a separate machine from the Voicemail Pro server:
    1. Check that the Voice Recording Library folder (by default ***c:\Program Files\Avaya\IP Office\Voicemail Pro\VM\VRL***) on the Voicemail Pro server is visible as a network share from the ContactStore server.
    2. Configure your security so that the ContactStore service can read and write to the share for that folder.
    3. Create and set a registry key on the ContactStore server to tell ContactStore the location of the share. Set the key **HKEY_LOCAL_MACHINE\SOFTWARE\Network Alchemy\Voicemail\Directories\VRLDir** to be a string containing the name of the share.

Install the ContactStore Software

1. Insert the ContactStore Distribution CD. Installation should auto-start. The **Choose Setup Language** window opens.
    - If the installation program does not start automatically, use Windows Explorer to access the CD drive and double-click ***setup.exe*** to start the program.
2. Select the installation language. The language is used for the installation.
3. Click **OK**. Installation preparation begins. The Welcome to the InstallShield Wizard for ContactStore window opens.
4. Click **Next**. The **Choose Destination Location** window opens.
5. Select the path into which to install the application.
6. Click **Next**. Installation will take a few minutes. When the software has been installed the InstallShield Wizard Complete window opens. The PostgreSQL will be installed automatically.
7. Click **Finish**.
8. To complete the installation reboot the server.
9. Connect the ContactStore server to the IP Office via the Local Area Network port.
10. Verify connection by entering **http://myservername:8888/** in your browser, replacing ***myservername*** with the IP address or host name of the ContactStore.

Basic Configuration

1. Start ContactStore 24. Enter a user name with a blank password. As the first user to log in, that user name will become the administrator for ContactStore.
2. When requested to change the password, leave the **Old Password** field blank and enter password for the administrator in the **New Password** and **Verify New** Password fields.
3. Select the option **Server** shown on the left-hand panel.
4. The key setting that must be configured is the **Call storage path**. Set this to the location in which you want ContactStore to store recordings. Ideally this should be a dedicated partition.
5. Set the other server settings 26 as required.
6. Using IP Office Manager, edit the IP Office configuration 42 to have a selected user's outgoing calls recorded.
7. Test recording operation 19.

The first time you access the Search and Replay page you will be asked to install an ActiveX control. For more information, see Starting ContactStore 24.

2.3 Testing the Recording Operation

Once you have installed and configured the ContactStore, you need to verify that the recorder is storing and indexing recordings correctly.

Testing the recording operation

You are now in a position to make test calls to verify correct operation. You should make calls using each of the stations and call types you have configured to be recorded and passed to ContactStore. This test will confirm basic setup.

You should also check the recording and tagging of any complex call scenarios to be used. These include various transfers, conferences, and so on. This test is recommended to ensure that any configuration problems are discovered early.

To test the recording operation of the ContactStore server, you must replay the recordings. ContactStore performs replay of recordings by means of a browser-based application that is accessible with Internet Explorer (IE) V5.0 and higher. The following sections describe how to set up your browser and how to access the application.

- **Configuring your Browser** 19.
- **Adding ContactStore to a Zone** 20.
- **Accessing Search and Replay** 60.

Monitoring the system

Monitor the system status regularly over the first few days of operation to confirm that utilization levels and storage volumes are in line with your expectations. You can reconfigure or add additional storage if necessary.

2.3.1 Configuring your Browser

The Search and Replay page downloads an ActiveX control, which it uses to decompress the audio for replay. If your default security settings prohibit downloading such controls, you need to provide a means of getting the ActiveX control to your users' desktops. Internet Explorer (IE) determines rights by putting web servers into zones and then granting those zones specific rights.

To access and use the page, the zone needs the following rights:

- **Run ActiveX controls and plug-ins**.
- **Script ActiveX controls marked safe for scripting**.
- **ActiveX Scripting**.
- **Download signed ActiveX controls**.
- On Windows Vista you must also clear the **Enable Protected Mode** checkbox.

Your Intranet zone and/or the Trusted Site zone may already be assigned these rights. If so, you need to verify that the ContactStore is in one of these zones 20.

2.3.2 Adding ContactStore to a Zone

You can add ContactStore to a Trusted Site or Intranet zone.

To add ContactStore to Trusted sites:

1. In the Control Panel, open **Internet Options**.
2. Click the **Security** tab.
3. Click the **Trusted sites** icon.
4. Click **Sites**.
5. Uncheck the **require HTTPS** box (unless you are using **HTTPS/SSL** 35).
6. Enter the URL of the ContactStore server and click **Add**. Internet Explorer does not recognize that a Fully Qualified Domain Name (FQDN) and IP address are the same; you must add the URL to the list exactly as you type it in the address bar.
7. Click **OK**.

To verify that you have configured the Zone information correctly, the icon on the lower right side of the IE status bar should show Trusted Site instead of Internet.

To add ContactStore to a Local intranet Zone:

1. In the Control Panel, open **Internet Options**.
2. Click the **Security** tab.
3. Click the **Local intranet** icon.
4. Click **Sites**.
5. Click **Advanced**.
6. Uncheck the **require HTTPS** box (unless you are using **HTTPS/SSL** 35).
7. Enter the URL of the ContactStore server and click **Add**. Internet Explorer does not recognize that a certain Fully Qualified Domain Name (FQDN) and IP address are the same; you must add the URL to the list exactly as you type it in the address bar.
8. Click **OK**.

Note

- You can also specify that sites that bypass the proxy server are in this Zone.

2.4 Upgrading from ContactStore 7.2

The previous supported version of ContactStore for IP Office is version 7.2.09. That version uses an MSDE database for the storage of the call data whereas version 7.8 uses a PostgresSQL database.

It is not possible to restore backups of 7.2.09 systems to a newly installed 7.8 system due to the different database formats. However, the installer for version 7.8 supports the direct upgrading of an existing version 7.2.09 system, creating a PostgreSQL copy of the MSDE database during the installation process.

Therefore the recommended upgrade process is to first upgrade to 7.2.09 if not already on that release, backup the system, then upgrade to 7.8.

If upgrading an existing Contact 7.2 Server

1. Backup the partitions containing the MSDE database and the partition being used for call storage. This is purely precaution should it become necessary to revert to version 7.2.
2. Upgrade the system to version 7.2.09 is not already done.
3. Install ContactStore 7.8 18, allowing it to upgrade the MSDE database to a PostgreSQL database.
4. Set the **Call storage path** (**System Settings | Server**) to match the current location of the call store.
5. Test that you can search for, find and play existing calls.

If intending to install ContactStore 7.2 on a new server PC

1. Install ContactStore 7.2 on a new server. (It will install on Vista but if you have User Account Control on, right-click on setup.exe and select "Run as Administrator". You will not be able to replay calls from the Vista machine until you have upgraded to 7.8. This is normal).
2. Back up the old MSDE database and restore it to the new server.
3. Backup the call recordings and restore them to the new server.
4. Check you can replay old recordings on the new ContactStore 7.2 system.
5. Upgrade the new server to ContactStore 7.8.

2.5 Upgrading ContactStore 7.8

If a version of ContactStore 7.8 is already installed, you need to complete the following steps before installing the new software version.

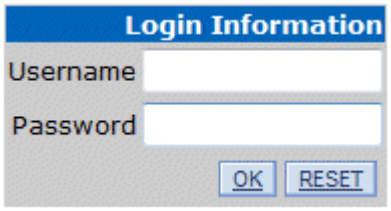
1. Backup the PostgresSQL database 57.
2. Upgrade the software.
3. Test operation to confirm the that the upgrade has been successful.

Chapter 3.
Accessing ContactStore

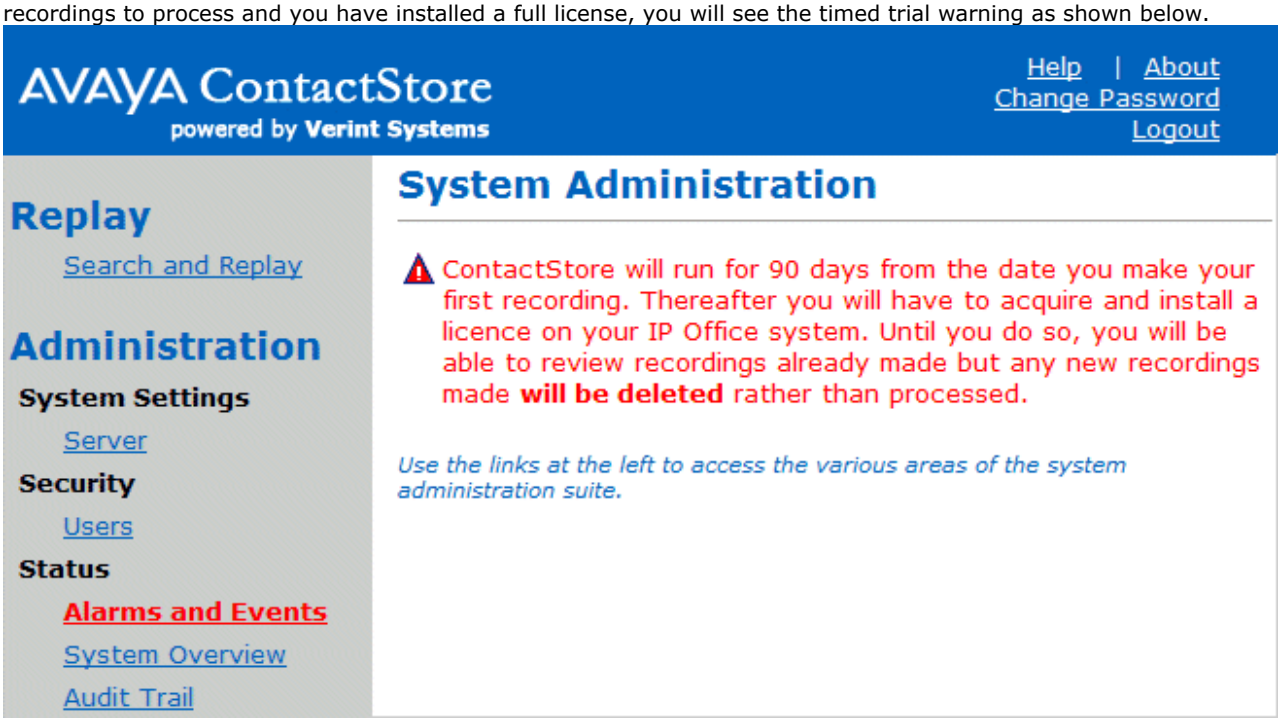
3. Accessing ContactStore

If you have trouble accessing ContactStore, make sure that ContactStore is part of a trusted site or intranet zone 20 within your browser's settings.

1. Open a browser window (using Internet Explorer) on any PC that can access the ContactStore server.
2. Enter ***http://myservername:8888*** (where ***myservername*** is the host name or IP address of the ContactStore server).
3. You will be directed to the login page as shown in the example.



4. Enter your username and password.
   - If it is the first time that ContactStore has been logged into, enter a username of your choice. Leave the password field blank as it is ignored on the initial login.
   - Click **OK**. As the first user of the system, you are automatically added to the user database with administrator rights. You are then redirected to the **Change Password** page.
   - Leaving the **Old Password** field blank. Enter a **New Password** and enter it again in the **Verify New Password** box.
5. Click **OK**. You are now logged into the system and the Introduction page is displayed. Unless there are already any recordings to process and you have installed a full license, you will see the timed trial warning as shown below.



If it is the first time that you have logged in to ContactStore you can now configure the system 26.

Note

- If you logged into the application with a local user account, you should always use the Logout link from any page in the Administration application to exit the application.

Chapter 4.

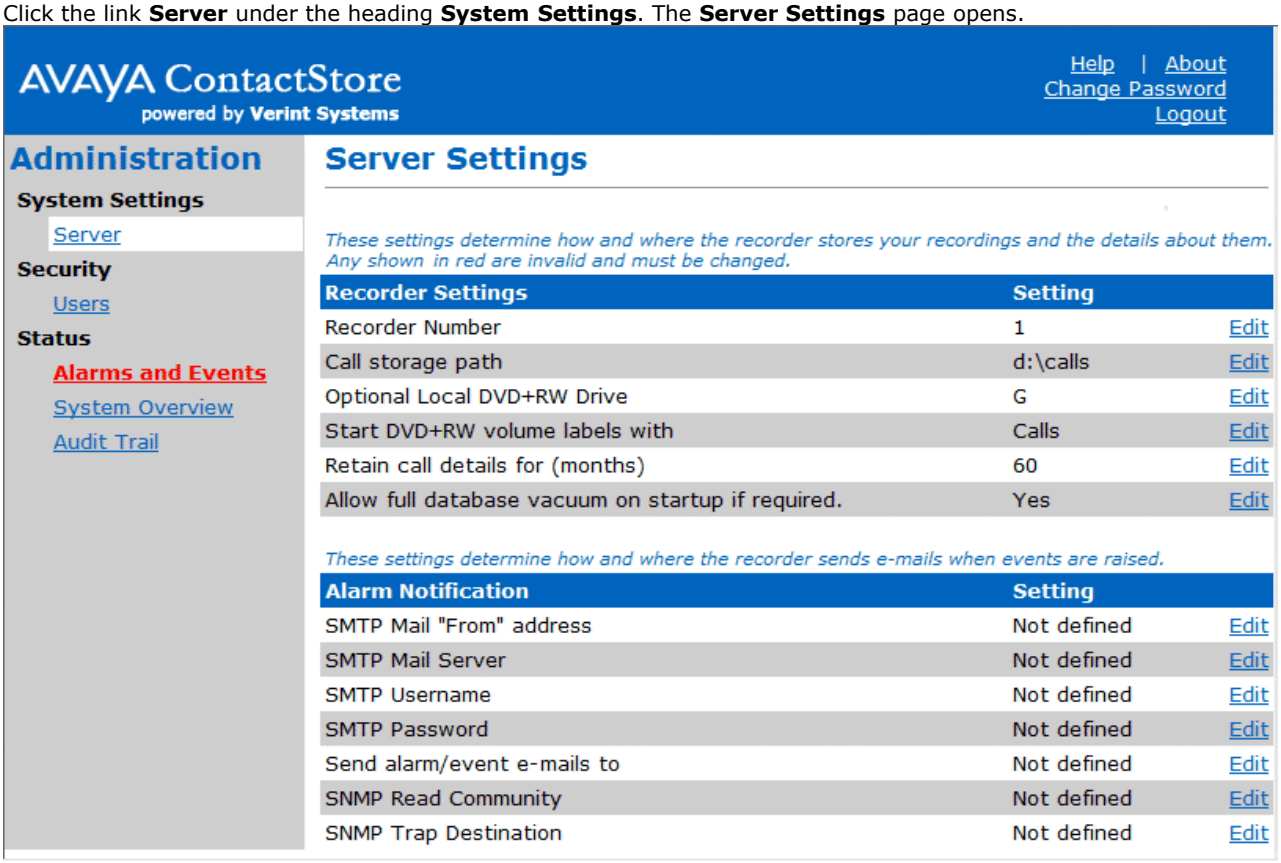
Configuring ContactStore Settings

4. Configuring ContactStore Settings

There are some configuration details that must be set in order to safeguard the operation and recoverability of your system. Any that cannot be left at automatic defaults are shown in red on the appropriate administration page.

To complete the configuration:

1. Click the link **Server** under the heading **System Settings**. The **Server Settings** page opens.



2. The **Server Settings** page determines how the ContactStore server operates. Verify that all settings are appropriate for your system. Any values that are shown in red must be edited and valid values entered.

- **Recorder Settings**
  - **Recorder Number**
    This defaults to 1. If you have more than one IP Office within your business, you should set each one to a different number to ensure that recordings made on each of your systems are readily distinguishable from each other. The ContactStore application gives each recording a unique recording reference number. If you do not set each of your systems to a different number, it may be impossible to identify which system a given recording came from.
  - **Call storage path**
    This specifies the path into which recordings will be stored. All recordings are stored beneath this root folder. Before you start recording you must specify this path. Use a dedicated partition if possible. You can also use a share on another server but only if access rights are established such that this share is automatically visible to the application without the need for additional authentication. Be sure that the share is always accessible to the recorder. Avaya cannot take responsibility for failures due to network outages between the recorder and the share. To change this setting once you have already started recording, copy all folders and files beneath the old location to the new location before you make any further recordings.
  - **Optional Local DVD+RW Drive**
    This setting shows the drive letter of the DVD+RW drive being used to archive calls. This setting is typically D. If you do not have such a drive, or do not want to use it for recording archival, leave it blank. It will show as Not defined.
    - If you intend to install a DVD driver shortly, set this value to something so that recordings are queued up for archival. While the setting is blank, recordings made are not marked as needing to be archived.
  - **Start DVD+RW volume labels with**
    Each DVD+RW media to which calls are written is given a unique label. These are sequentially numbered and start with the string specified here. The setting defaults to Calls but can be set to any string of up to 5 characters. This field is short so that a 4-digit sequence number can be appended to it.

- If you only have a single ContactStore server, you can leave this at the default. If you have more than one ContactStore server in your enterprise, verify that each has a different string set for this label root so that media produced by each system can be clearly distinguished from each other.
- If you change this setting while a DVD is being written, the system will stop writing to that disk. Insert a new one, which will be labeled with the new name. The sequence numbers after the name will continue to increase rather than be reset to 0000.

- **Retain call details for (months)**
  At some point, the size of the call details database will become either unmanageable or will fill the available disk space. Specify, in months, how long call detail records are retained before they are purged from the system. This ensures that the database stabilizes at a finite size.
  - Purging is carried out at, or shortly after, 1:00 each morning and does not impact recording or replay.

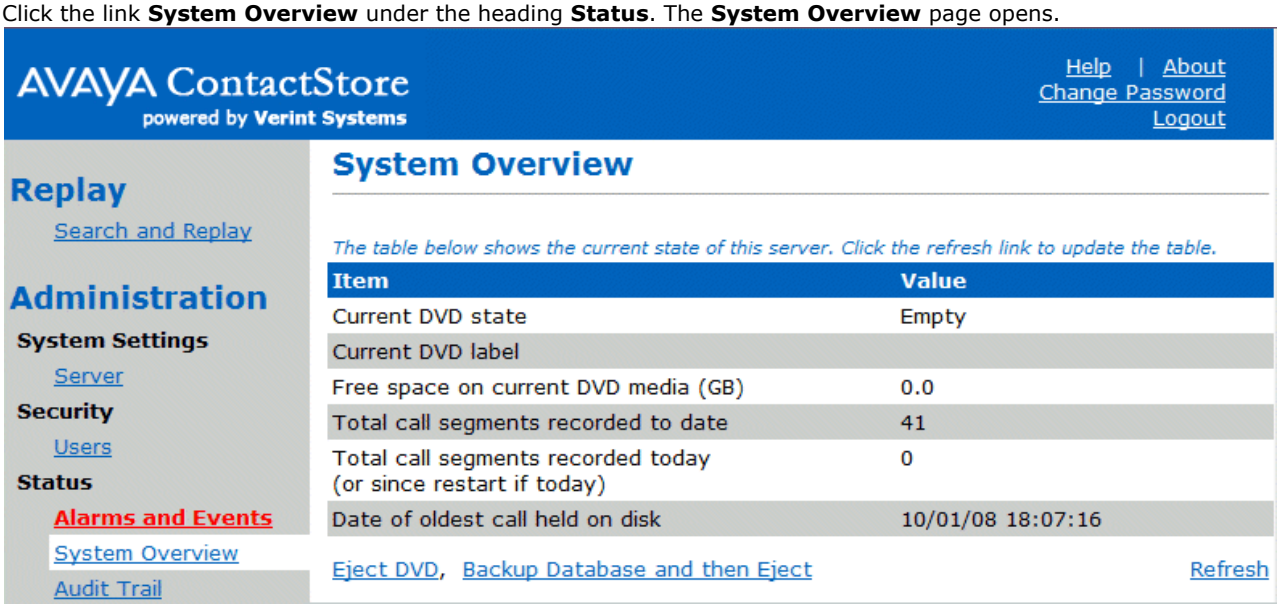
- **Alarm Notification**
  These settings are used to allow sending of alarms and events via email. Emails are only sent every 10 minutes at most.
  - **SMTP Mail "From" Address**
    Set the name from which alarm email messages originate, for example, "ContactStore Head Office." Confirm that you are receiving emails correctly after you make any changes to these settings.
  - **SMTP Mail Server**
    Enter the name of the SMTP mail server on which you have established an email account that the ContactStore can use to send email messages regarding alarms and events. If you leave this blank, the system will not send email messages when alarms occur. If you leave this setting blank, you can leave the remaining settings on this page blank.
  - **SMTP Username**
    Leave this blank unless your SMTP server requires that any sender be authenticated. If required, set the username of the SMTP account here.
  - **SMTP Password**
    Leave this blank unless your SMTP server requires that any sender be authenticated first. If required, set the password of the SMTP account here. The password is masked when entered in this field.
  - **Send alarm/event emails to**
    Specify the email addresses to which alarm and event messages should be sent. Separate multiple addresses with a semi-colon (;). The email recipient can be a local system administrator, a manned help-desk and/or suppliers' support desks if you have a support agreement that includes this facility. The system sends an email message each time an alarm occurs or is cleared. It also sends an email once per night to let you know it is still operating. Failure to receive the nightly email message should be investigated; it could indicate that the server has failed.
  - **SNMP Read Community**
    You can use an SNMP monitoring system such as HP OpenView to monitor IP Office ContactStore. To do so, set the name of the SNMP Read Community. The recorder will then respond to SNMPV1 Get messages. The MIB files for the recorder specific variables are provided on the installation CD.
    - For security reasons, recorders:
      - Do not allow "well known" community names like private or public
      - Do not respond to SNMP Gets until a community name has been set
      - Do not use the usual port of 161, but instead use 2161.
  - **SNMP Trap Destination**
    Enter the IP address (if any) that SNMP traps should be sent to.

4.1 System Overview Page

The System Overview page shows summary information about the current state of the ContactStore server.

To view the System Overview page:

1. Click the link **System Overview** under the heading **Status**. The **System Overview** page opens.



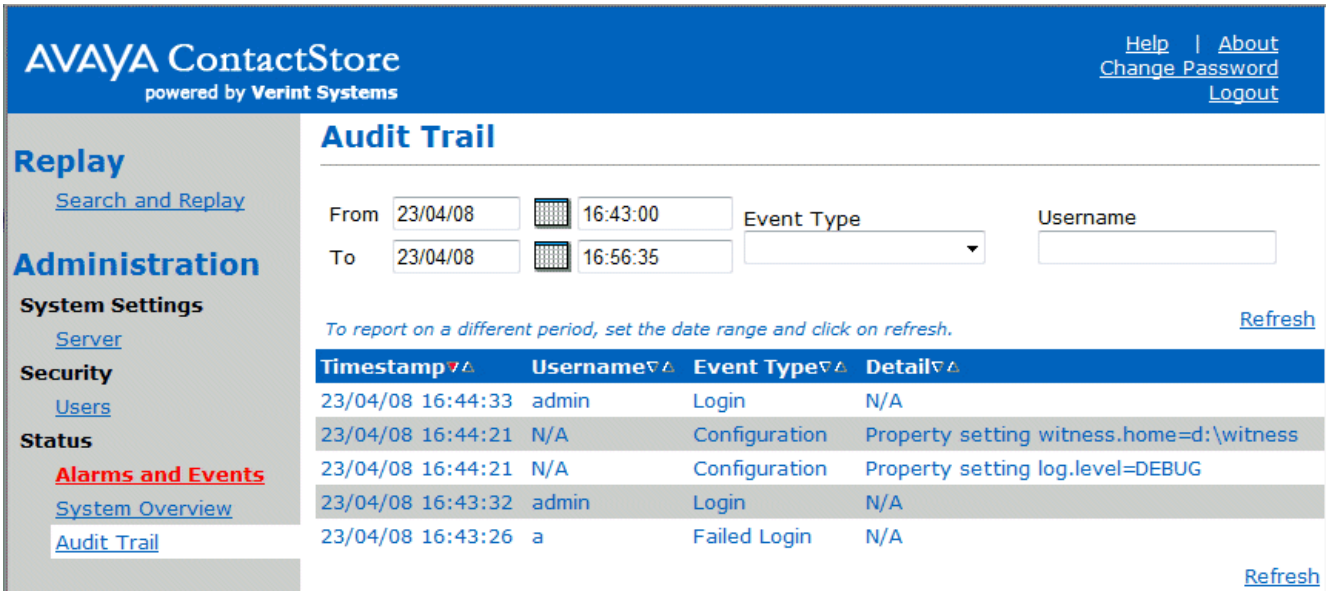
   - Note: The DVD entries are only shown if you have configured a DVD+RW drive on the **System Settings | Server** 26 page.

- **Current DVD state**
  Use this entry to confirm that the DVD drive has sensed, and is using, a valid disk. Unless it is showing ***Active*** , or you are replaying from a previous disk, you should insert a new or the latest partially filled disk so that archiving can continue.
  - ***Active*** if it is able to record to the disk
  - ***Foreign*** if it cannot use or recognize the inserted disk
  - ***Old*** if a previously closed disk has been reinserted
  - ***Empty*** if there is no disk in the drive.
- **Current DVD Label**
  Use this value to label the current disk. Disks are sequentially numbered. You should label the next disk (with the next available number) before inserting it.
- **Free Space on current DVD media**
  Use this value to determine when you will need to change the DVD media. A blank media shows 4 GB free space.
- **Total call segments recorded to date**
  This value shows the total number of call segments that have been recorded by the system to date.
- **Total call segments recorded today**
  Use this value to confirm that recordings are being made today. If you have restarted the server today, this will show the number of call segments recorded since that restart.
- **Date of oldest call held on disk**
  Until your disk has filled for the first time, monitor the available space on the drive until you have confirmed that the rate at which space is being consumed is in line with your predictions. You should be able to estimate when the disk will fill and when the first calls recorded will be deleted to make way for new calls. Once the disk has started to "wrap" and calls are being deleted daily, use this figure to monitor the online retrieval capacity. If the figure starts to fall, your disk space is being used more rapidly than before; the recording volumes are increasing, so you may need to expand the disk capacity before the duration of calls it can hold falls below your minimum requirement.

2. Use the **Refresh** link to update the page.

4.2 Audit Trail

The **Status > Audit Trail** page shows administrator and user actions over a specific period. The default reporting period is the current day. You can also filter this report according to Event Type and Username.



To generate a report for a different period, enter the date range in the calendar controls, and click the Refresh link.

The Audit Trail functions track the following user actions:

- Successful user logins
- Failed user logins
- Password changes (although, for security reasons, the actual password is not stored)
- End user searches on the database
- Replay requests

It also tracks all administrator actions that affect recording, such as configuration changes and creation or deletion of user accounts.

The Detail column includes the SQL statement used in searching for calls. It also uses the internal name of a setting rather than the user-friendly, localized name. This avoids any change of meaning that could occur in internationalization.

Each report is restricted to a maximum of 1000 audit records. To report on more, break your reporting period into a number of smaller date ranges.

Use your browser's print, save, or email features to provide a permanent record of the details. To create a summary that presents all results on a single page, click the Show All link at the top. The Show All and Page at a Time links are not shown if the list of audit entries is less than one page long.

Configuration records (which include the audit trail) are retained for 13 months. Each night after that period has elapsed, a background job deletes any records older than 13 months.

If you want to retain the records longer, back up the database as described in Backing up the Database 57.

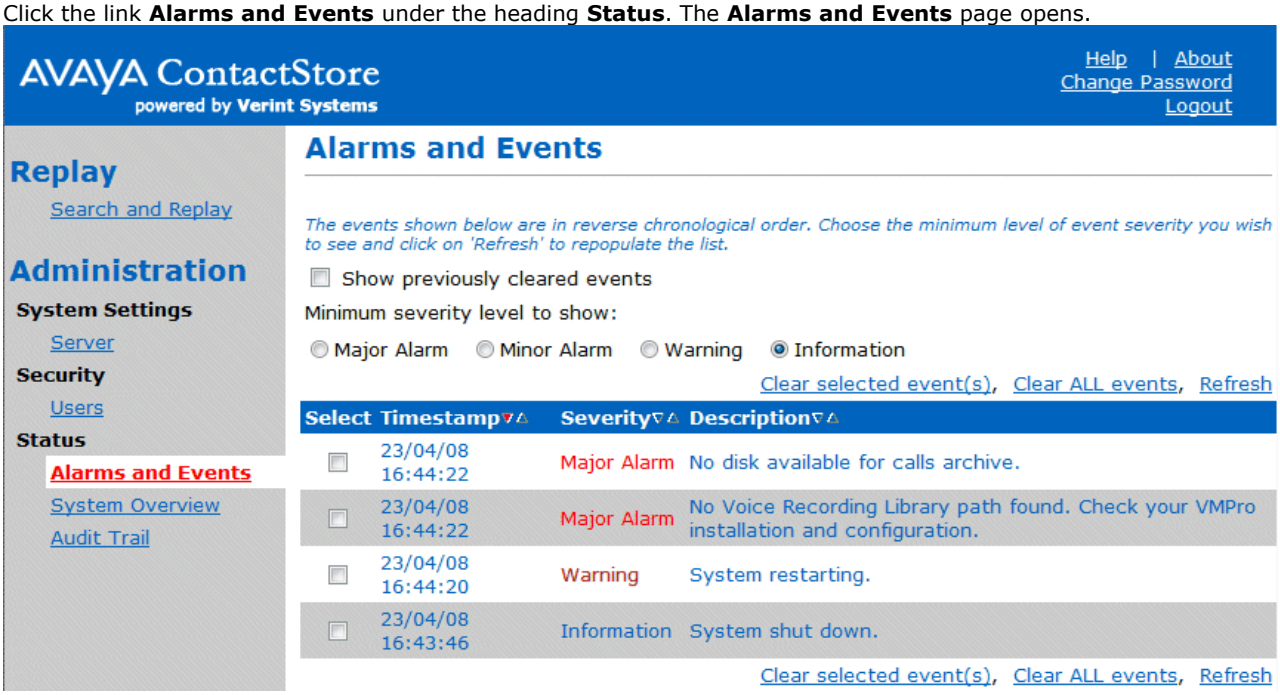
4.3 Viewing Alarms and Events

The Alarms and Events page shows system warnings, alarms and events. Alarms are logged to ContactStore's database and held for a month before being purged at 1:00 each morning.

- As long as you have set up mail account information on the Server page, an email message detailing alarms and events will be sent to the addresses listed there.

To view the Alarms and Events page:

1. Click the link **Alarms and Events** under the heading **Status**. The **Alarms and Events** page opens.



The controls at the top of the page allow you to view:

- Only those events that you have not previously cleared versus all alarms and events.
- Alarms and events above a selected severity level.

Use the links above and below the table to refresh the page and to clear some or all alarms.

The default on the page is to show all alarms and events that have not yet been cleared; you can see any new or outstanding issues on first viewing the page.

To change the set of events shown:

1. Click the check box and/or radio button to specify your preferences.
2. Click the **Refresh** link above or below the table.

As each alarm or event is generated, it is initially active.

To clear an individual alarm or event:

1. Click the check box to the left of the event.
2. Click the **Clear selected event(s)** link.

Be careful using the **Clear All events** link. Acknowledging an alarm without consciously noting its details may lead to system problems being "hidden" without your knowledge.

- Alarms and events are generated for a variety of reasons. A list of alarms and events that may be generated and what to do about them can be found in the appendix 71.

4.4 Adding Hierarchical File Storage Support

If you intend to configure the recorder so that recordings are stored on a network share, where the ContactStore cannot or should not attempt to determine the amount of free disk space, you may need to disable the deletion of old call recordings. You will then need to ensure that the share does not fill (either manually or by some automated means, such as a Hierarchical File Storage system) to ensure that there is always space available for new recordings.

To disable the deletion of old call recordings, add the following line to the properties file: ***csipo.diskmanager=false***

The recorder will now not attempt to delete old recording files; therefore, you must configure the HFS system to migrate older files to your tape library as necessary.

When attempting to replay calls from files that have been migrated to tape, there is a delay before the call is replayed. If the delay is 30s or so, then the replay application will work; longer delays may trigger a time-out. If a time-out occurs, wait a few minutes and then retry. The file may be restored by the time the second replay request is made.

4.5 Advanced Configuration Options

A number of advanced options require that you edit the properties file ***properties**csipo.properties***. The file is located beneath the path into which you installed ContactStore. (The default path is ***C:\Program Files\Witness***). You can use Notepad or any other text editor to make the changes to this file. Before editing this file it is recommended you create a backup.

Chapter 5.

Administration of User Accounts

5. Administration of User Accounts

User accounts can be added, modified or deleted from the **User Security** page.

- **IMPORTANT**
  The System Administration application will run for anyone if there is no user defined with administrator rights. To avoid locking yourself out of the system by accident, first create a user record for each administrator you need, then add search and replay only users.

To view user accounts:

1. Click the link **Users** under the heading **Security**. The **User Security** page opens.

5.1 Windows Domain Authentication

You can create local user accounts within the recorder application itself. However, it is more secure to use Windows domain accounts and you may wish to enable this feature - or even restrict access so that only windows domain accounts have access to the system.

- **Tip**
  If users are prompted for their domain passwords when they access the web interface, make sure that the recorder is either part of the intranet zone, or make it a trusted site and configure Internet Explorer to automatically log on to trusted sites.

To Enable Windows Domain Authentication:

1. Create a user account (as described below) who's username is ***domain\username*** - for example, ***CORP1\JSmith***. Note that the username is case sensitive and must match exactly the case of the username stored in the domain controller.
2. Add properties to the properties file to define either your domain controller or WINS controller as follows:

   sso.dc=*IP address of domain controller*

   or

   sso.domain=*domain name to use*
   sso.wins=*IP address of WINS server to use*

To Enforce Windows Domain Authentication only:

1. Enable Windows Domain Authentication as above.
2. Log in as an Administrator using a domain account
3. On the **Security > Users page**, set **Allow local user accounts?** to ***No***.

5.2 Use of SSL

You should consider whether you wish to enforce the use of Secure Sockets Layer (SSL) 80. By default, users can access the recorder via http (on port 8888) or by encrypted https (on port 8443). You can force users to use the secure https port, by setting **Allow unencrypted (http) access?** to ***No*** on the **Security | Users administration** page. When you do this, any user who attempts to access the recorder through the unsecured (http) route is automatically redirected to the secure (https) address.

The application is distributed with an SSL certificate that is valid for 3 years from the date it was issued. The certificate makes it possible to give users secure access to the server. When users access it through this secure https port, the traffic between their browser and the recorder is automatically encrypted.

However, Internet Explorer will warn your users that the name on the certificate does not match the name of the server using it. You can either advise your users that this is acceptable and should be ignored or, for greater security, you may acquire and install your own SSL certificate.

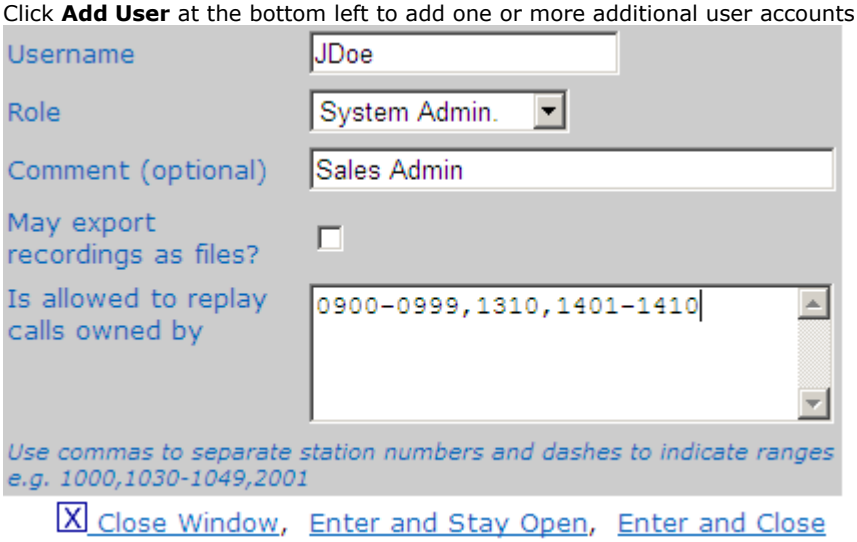
5.3 Session Inactivity Timeout

If a user does not access the administration or search and replay screen for a period in minutes exceeding this setting, they will have to log in again (unless you are using Windows Domain Authentication 35).

5.4 Creating a New Account

For a user to use ContactStore they need an account name and password. The account will determine what features and settings the user can access.

1. Click **Add User** at the bottom left to add one or more additional user accounts. The following window opens:



- **Username**
  Enter a **Username**. This can be a Windows domain qualified username (for example, ***corpdomain\johnd***) or a local application username (for example ***johnd***).
  - To use a domain qualified username, which will be authenticated using Windows authentication, you must configure Windows Domain Authentication 35. To allow users from other domains to log in, you must establish reciprocal arrangements between the domain controller for the domain that the ContactStore server is in and the other domain.
  - When a local username account is created, the account is initially given a blank password. The new local user is automatically redirected to the **Change Password** form the first time they log in.
- **Role**
  Select a role for the user:
  - **System Admin**
    This type of user has full access to the ContactStore menus.
  - **Restricted Admin**
    This type of user can see the system status and alarms; eject DVDs and administer **Replay Only** user accounts. They cannot change the system configuration settings.
  - **Replay Only**
    This type of user can only replay messages.
- **Comment**
  Use the **Comment** text box to enter the full name, job title or other identifying information that will help you to administer the user's account.
- **May export recordings as files?**
  This option controls whether the email and export options are available to the user.
- **Is allowed to replay calls owned by**
  Use this field to enter the list of stations or agents that this user is allowed to search for and replay. The initial account created when the first user logs in is automatically given replay rights to all 2 to 10 digit station numbers. You can modify these rights as required.
  - Enter a comma separated list of individual station or agent numbers. You can also use a hyphen to separate the ranges. If you have several users with the same replay rights, you can select the text in this area and right-click to copy it to the clipboard. You can then paste it into the next account, saving a lot of typing and potential for error. Some typical examples are:
    - **Note**
      The number of digits is important. For example, giving a user rights over 0000-9999 does not give them rights over any 3, 5, 6, ..., digit numbers.
    - **4000**
      User can only replay calls owned by agent 4000. This is a typical entry for a CSR with this Agent identifier that indicates that they can only play their own calls.

- **4000-4019**
  User can replay calls owned by any agent in the range 4000-4019. This is a typical entry for a supervisor in a call center in which agent ranges are assigned to teams.
- **4000,4003,4010-4019,4124-4128**
  Mixture of ranges and individual numbers. This is a typical "real-world" scenario for a supervisor in a call center where the originally assigned numbering plan has been added to over the years.
- **1000-9999**
  Blanket coverage of all 4-digit station/agent numbers. This is a typical entry for a senior manager with search and replay rights over all recordings.

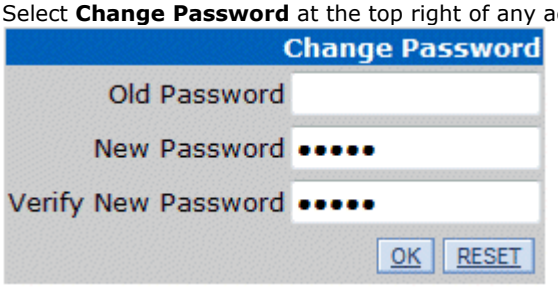
2. Click **Enter and Stay Open** to save the account definition and keep the window open to create additional user accounts. Click **Enter and Close** to save the account definition and close the window. Click **Close Window** to quit without changing the account definition.

5.5 Changing Your Password

Unless using an account authenticated using Windows Domain Authentication 35, when your account is created, it will have a blank password. You are automatically asked to change the password the first time you attempt to login. You should change your password regularly.

To change the password:

1. Select **Change Password** at the top right of any administration page. The **Change Password** prompt is opened.



2. Enter your **Old Password**.
3. Enter your **New Password**.
4. Enter the new password again to **Confirm New Password**.
5. Click **OK**.

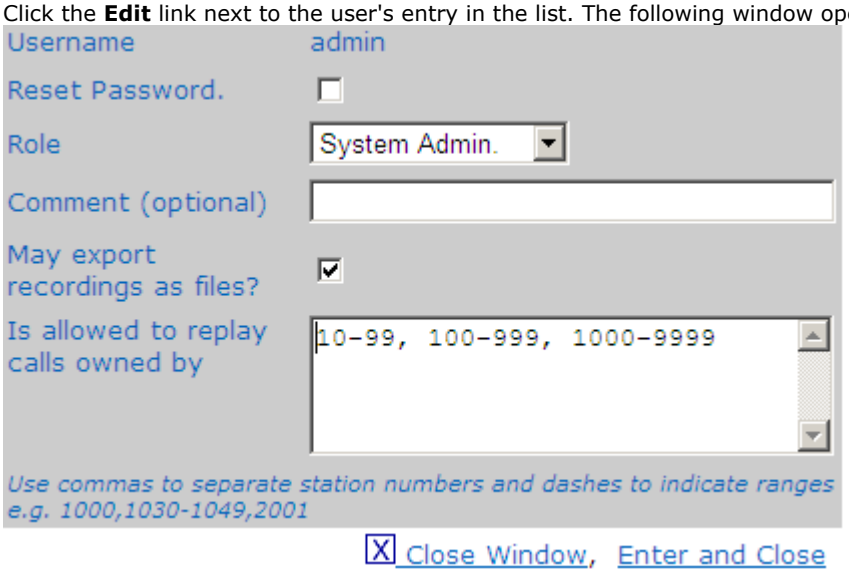
5.6 Editing an Account

Any account can be changed. You can change any of the fields except the user's name. To change the users name, note their account details, create a new account 36 with the same details and required name and then delete the old user 39.

- To reset a local user's password for any reason, check the box marked **Reset Password** and click **Enter and Close**. Instruct the user to log in promptly.
- If you use a Windows domain qualified username, Windows authentication is performed, so the **Reset Password** checkbox is irrelevant.

To edit an account:

1. Click the **Edit** link next to the user's entry in the list. The following window opens:



2. Alter the details as required.

   - **Role**
     Select a role for the user:
     - **System Admin**
       This type of user has full access to the ContactStore menus.
     - **Restricted Admin**
       This type of user can see the system status and alarms; eject DVDs and administer **Replay Only** user accounts. They cannot change the system configuration settings.
     - **Replay Only**
       This type of user can only replay messages.
   - **Comment**
     Use the **Comment** text box to enter the full name, job title or other identifying information that will help you to administer the user's account.
   - **May export recordings as files?**
     This option controls whether the email and export options are available to the user.
   - **Is allowed to replay calls owned by**
     Use this field to enter the list of stations or agents that this user is allowed to search for and replay. The initial account created when the first user logs in is automatically given replay rights to all 2 to 10 digit station numbers. You can modify these rights as required.
     - Enter a comma separated list of individual station or agent numbers. You can also use a hyphen to separate the ranges. If you have several users with the same replay rights, you can select the text in this area and right-click to copy it to the clipboard. You can then paste it into the next account, saving a lot of typing and potential for error. Some typical examples are:
       - **Note**
         The number of digits is important. For example, giving a user rights over 0000-9999 does not give them rights over any 3, 5, 6, ..., digit numbers.
       - **4000**
         User can only replay calls owned by agent 4000. This is a typical entry for a CSR with this Agent identifier that indicates that they can only play their own calls.

- **4000-4019**
  User can replay calls owned by any agent in the range 4000-4019. This is a typical entry for a supervisor in a call center in which agent ranges are assigned to teams.
- **4000,4003,4010-4019,4124-4128**
  Mixture of ranges and individual numbers. This is a typical "real-world" scenario for a supervisor in a call center where the originally assigned numbering plan has been added to over the years.
- **1000-9999**
  Blanket coverage of all 4-digit station/agent numbers. This is a typical entry for a senior manager with search and replay rights over all recordings.

3. Click **Enter and Close** to save the changes. Click **Close Window** to quit without changing the account definition.

5.7 Deleting an Account

Any accounts can be deleted. However, there must always be one administrator account. If you need to change the name of the administrator account you must enter a new administrator account and then delete the account no longer required.

To delete accounts:

1. Click the checkbox in the **Select** column for each user to delete
2. Click the **Delete selected user(s)** link.

Chapter 6.

IP Office/Voicemail Pro Configuration

6. IP Office/Voicemail Pro Configuration

IP Office can use the Voicemail Pro server to manually and automatically record calls. When licensed, it can also be configured to pass those recordings to ContactStore.

- **Conference Capacity**
  Call recording uses conferencing capacity and so is subject to the available conferencing capacity of the IP Office system.
- **Call Recording Warning** 43
  In many locations, it is a local or national requirement to warn those involved in a call that they are being recorded. The Voicemail Pro does this by playing an **Advice of Call Recording** prompt which can be switched off. On automatically recorded call, some telephones may also display a recording symbol.
- **Recording Duration** 44
  Call recording is limited to the maximum length of 1 hour.
- **Voice Recording Library (VRL)**
  Recordings are normally placed into standard mailboxes. VRL operation allows recordings to be transferred to a specialist archiving application, in this case ContactStore. This allows both longer recording and the sorting and searching of recordings.

6.1 Call Recording Warning

In many locations, it is a local or national requirement to warn those involved in a call that they are being recorded. One method for doing this is to enable the Advice of Call Recording (AOCR) message provided by the Voicemail Pro server.

- The 'advice of recording' will always be played if the Advice of Call Recording message is enabled.
- It can not be guaranteed that a caller will hear an 'advice of recording' announcement when the call is using analogue trunks. Analogue trunks do not support call status signalling so the 'advice of recording' announcement is played as soon as the trunk is seized even if the call is ringing and has not been answered.
- The Play Advice on Call Recording option is **on** by default.

The Advice of Call Recording Message

This message is provided in the file ***aor_00.wav***. For each language installed on the Voicemail Pro server, a copy is located in the sub-folders of *c:\Program Files\Avaya\IP Office\Voicemail Server\WAVS.*

To switch the recording warning on or off:

1. From the Voicemail Pro Client, click or select **Administration** > **Preferences** > **General**.
2. Click **Play Advice on Call Recording** to switch this option on (checked) or off (unchecked).
3. Click **OK**.
4. Click **Save & Make Live**.

To hide the auto record indication

In addition to the audible advice of call recording prompt , some Avaya terminals display REC to show that the call is being recorded. The display can be suppressed.

1. Open IP Office Manager and load the configuration from IP Office.
2. In the Navigation pane, click **System**.
3. In the System Configuration window, click the **System** tab.
4. Check **Hide auto recording**. The terminal display **REC** will be suppressed.
5. Save the configuration back to the IP Office system.

6.2 Changing the Recording Time

For recordings being placed into a Voicemail Pro mailbox, the maximum recording time is 1 hour.

To change the recording length:

1. Start the Voicemail Pro Client.
2. Click or select **Administration > Preferences** > **General**.
3. The **Max. VRL Record Length (secs)** setting is used only for calls being recorded to VRL. The maximum record length is 3600 seconds (60 minutes).
4. Click **OK**.
5. Click **Save & Make Live**.

6.3 Manual Call Recording

There are several ways to start manually recording a call.

Phone Manager Pro

Users can initiate call recording using Phone Manager Pro when they are working in Agent Mode. The recording feature is active during a telephone call and when call recording is available.

- Press on the toolbar to start recording. Press on the toolbar to stop the recording.
- Select **Actions** > **Start Recording**. The call will be recorded. Press **Actions** > **Stop Recording** to finish recording the call.

SoftConsole

The SoftConsole operator can manually record all or part of a current telephone call.

- Press the button on the toolbar. The button acts as a toggle. Press the button again to stop recording.
- Select **Actions** > **Record Call**. This action toggles and so is also used to stop recording.
- Press **F5** to start recording. Press F5 again to stop the recording.

4400 Series

Telephones in the 4400 Series with a Menu key can manually trigger call recording by:

- Press **Menu** **| Menu** **| Func| Recor**.

Using DSS Keys

The call record function can be programmed against a DSS key. When a DSS key has been programmed it can be pressed during a call to record the conversation.

To set a DSS key for manual recording:

1. Open IP Office Manager and load the configuration from IP Office.
2. In the Navigation pane, click **User** and select the individual user.
3. Select the **Button Programming** tab.
4. Select the required DSS key and click **Edit**.
5. Click browse for the **Action**. The Button Programming window opens.
6. Select **Advanced | Call | Call Record**. Click **OK**.
7. In the **Action Data** field, enter a description that will appear on the telephone display.
8. Click **OK**.
9. Click to save the configuration file.

A call is recorded if the user presses the programmed DSS key during any call. The caller will hear an announcement that the call is being recorded if the mandatory call recording warning is active. See Call Recording Warning 43.

Using Short Codes

The short code feature "Call Record" can be used to trigger recording of calls into the user's designated mailbox. The example short code (*95) can be set up as a user short code or a system short code. In either case it will trigger recording

Field	Contains...
Code	*95
Feature	Call Record
Telephone Number	[Leave blank]
Line Group Id	0

To use the short code

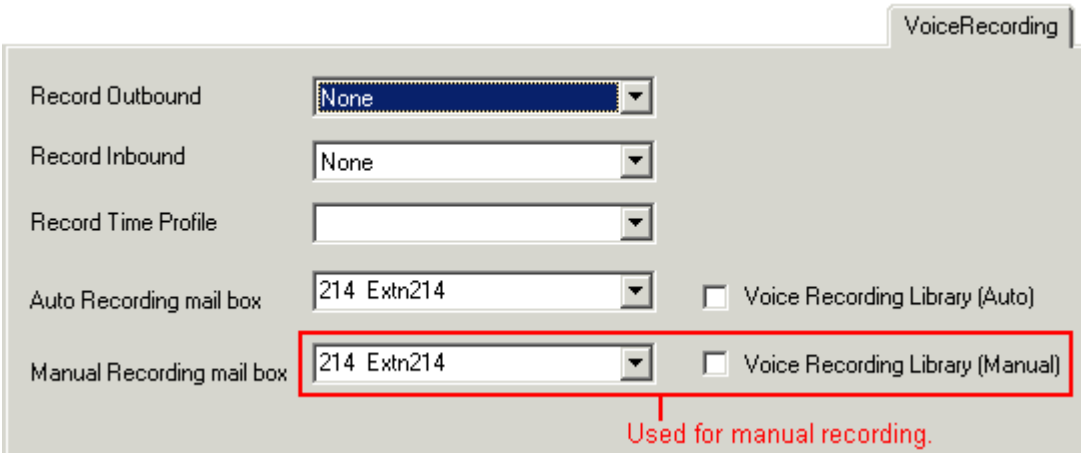
1. During a call, put the caller on hold.
2. Dial the short code. The call is automatically reconnected and recording begins.

Recording Location

The IP Office Manager can be used to specify where recordings triggered by a user are placed:

To configure a user's recording options:

1. Open IP Office Manager and load the configuration from IP Office.
2. In the Navigation pane, click **User** and select the individual user.
3. Select the **Voice Recording** tab.



4. In **Manual Recording Mailbox**, select from the list the mailbox that is to be used to contain recordings triggered by the user. For ContactStore, select **Voice Recording Library (Manual)**.
5. Click **OK**.
6. Click to merge the configuration change back to the IP Office.

6.4 Automatic Recording Options

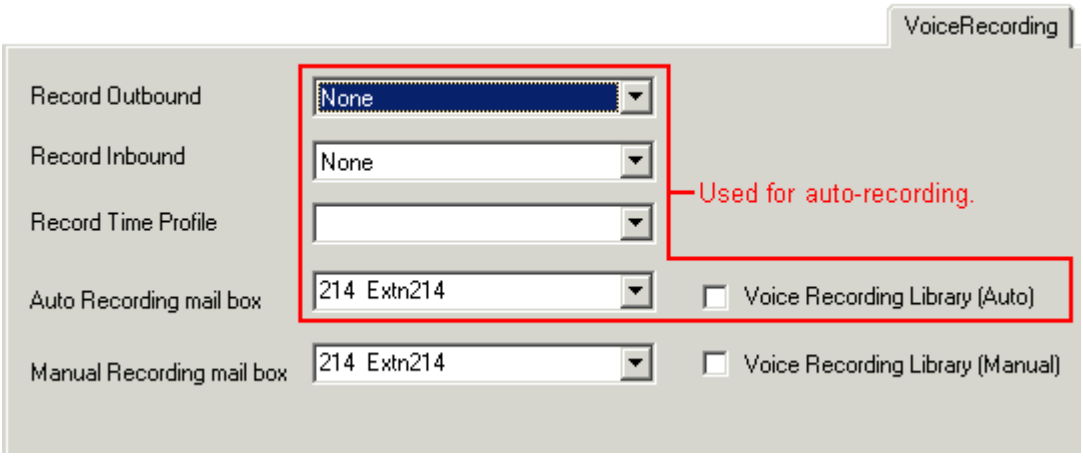
The IP Office system can be configured to automatically record calls based on the user, hunt group, incoming call route or account code.

Trigger	Incoming	Outgoing	Default Recording Destination	Duration*
Incoming Call Route	✓	✗	None	For the call duration.
Hunt Group	✓	✗	Hunt group mailbox	Until ended or transferred to a user outside the hunt group or its overflow group.
User	✓	✓	User mailbox	Until the user ends or transfers call.
Account Code	✗	✓	User mailbox	Until the user ends or transfers calls.

- Individual calls may match several recording criteria. Where that is the case, the following applies:
  - If the destinations for the recordings are different, separate recordings occur with the durations are indicated above.
  - If the destinations for the recordings are the same, a single recording is made using either the incoming call route, hunt group or user duration in that order or priority.
- Multiple recordings of the same call use multiple voicemail channels.
- Time profiles can be used to control when automatic call recording is used.
- For inbound calls recording will not take place if the call goes to normal voicemail.
- Different frequency settings, set in percentage terms, can be applied to the automatic recording of inbound and outbound calls.
- A mandatory setting can be used to return a busy tone when call recording is triggered but no voicemail ports are available.
- Where calls have been answered using a Line appearance button, the call recording goes to the mailbox setting of the original call route destination.

To set automatic call recording for a user:

1. Open IP Office Manager and load the configuration from IP Office.
2. In the Navigation pane, click **User**.
3. Select the required user.
4. Select the **Voice Recording** tab.



5. From the **Record Inbound** and **Record Outbound** drop-down lists select the recording frequency required.
   - **None:** Do not record.
   - **On:** Record all calls if possible.
   - **Mandatory:** Record all calls. If recording is not possible, return busy tone to the caller.
   - **xx%:** Record calls at intervals matching the set percentage, eg. for every other call for ***50%***.
   - For inbound calls, recording will not take place if the call also goes to normal voicemail.
6. Specify the destination for the recordings. By default, this is a user's own mailbox. For ContactStore, select **Voice Recording Library (Auto)**.
7. Click **OK**.
8. Click to send the configuration back to the IP Office.

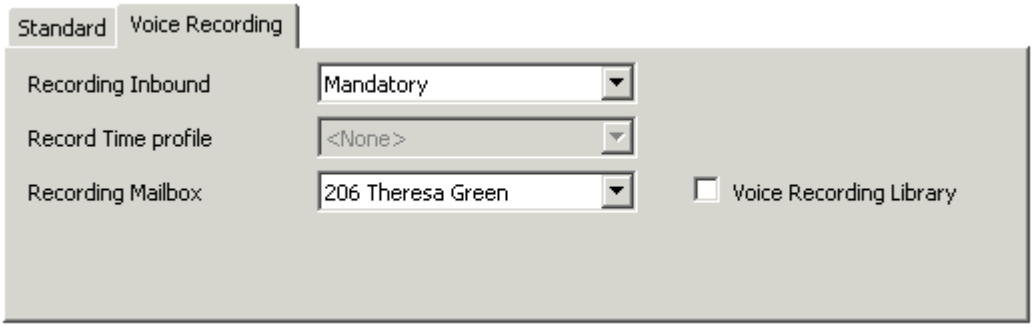
To set automatic call recording for a hunt group:

1. Open IP Office Manager and load the configuration from IP Office.
2. In the Navigation pane, click **HuntGroup**.
3. Select the required hunt group.
4. Select the **Voice Recording** tab.

5. From the **Record Inbound** drop-down lists select the recording frequency required.
   - **None:** Do not record.
   - **On:** Record all calls if possible.
   - **Mandatory:** Record all calls. If recording is not possible, return busy tone to the caller.
   - **xx%:** Record calls at intervals matching the set percentage, eg. for every other call for ***50%***.
6. For inbound calls, recording will not take place if the call also goes to normal voicemail.
7. Select the **Recording Time Profile** is required. If not set, recording is applied at all times.
8. The **Recording Mailbox** option is available for IP Office 4.1+. For previous releases the destination is always the mailbox of the user making the call. For ContactStore, select **Voice Recording Library**.
9. Click **OK**.
10. Click to send the configuration back to the IP Office.

To set automatic call recording for an incoming call route:

1. Open IP Office Manager and load the configuration from IP Office.
2. In the Navigation pane, click **Incoming Call Route**.
3. Select the required incoming call route.
4. Select the **Voice Recording** tab.



5. From the **Record Inbound** drop-down lists select the recording frequency required.
   - **None:** Do not record.
   - **On:** Record all calls if possible.
   - **Mandatory:** Record all calls. If recording is not possible, return busy tone to the caller.
   - **xx%:** Record calls at intervals matching the set percentage, eg. for every other call for ***50%***.
6. For inbound calls, recording will not take place if the call also goes to normal voicemail.
7. Select the **Recording Time Profile** is required. If not set, recording is applied at all times.
8. Specify the destination for the recordings or select the option to place the recordings in the voice recording library. For ContactStore, select **Voice Recording Library**.
9. Click **OK**.
10. Click to send the configuration back to the IP Office.

To set automatic call recording for an outgoing account call:

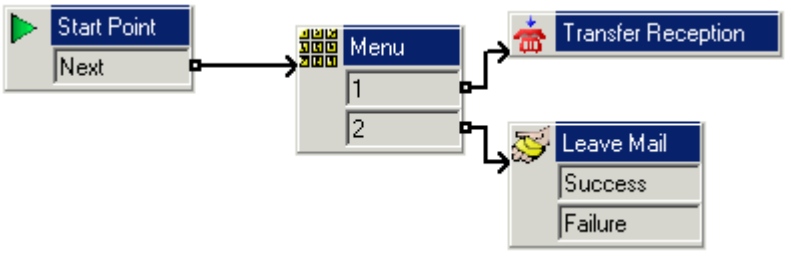
1. Open IP Office Manager and load the configuration from IP Office.
2. In the Navigation pane, click **Account Code**.
3. Select the required account code.
4. Select the **Voice Recording** tab.

5. From the **Record Outbound** drop-down lists select the recording frequency required.
   - **None:** Do not record.
   - **On:** Record all calls if possible.
   - **Mandatory:** Record all calls. If recording is not possible, return busy tone to the caller.
   - **xx%:** Record calls at intervals matching the set percentage, eg. for every other call for ***50%***.
6. For inbound calls, recording will not take place if the call also goes to normal voicemail.
7. Select the **Recording Time Profile** is required. If not set, recording is applied at all times.
8. The **Recording Mailbox** option is available for IP Office 4.1+. For previous releases the destination is always the mailbox of the user making the call. For ContactStore, select **Voice Recording Library**.
9. Select the option to place the recordings in the voice recording library.
10. Click **OK**.

6.5 Creating a Call Flow

A call flow can be created in Voicemail Pro that enables a caller to leave messages in ContactStore. When the call flow is used all voicemail messages are routed to the ContactStore Voice Recording Library. The action used is Leave Mail where the VRL option is selected in the specific tab.

The following exercise will take you through creating a call flow where the voicemail messages are routed to the ContactStore Voice recording Library. The exercise is only an example and not intended to reflect a real-life customer call flow. When completed the call flow will look similar to the example shown.



1. From **Start > Programs > IP Office**, open **Voicemail Pro**.
2. Right-click **Modules** and select **Add**.
3. In the Name field, type ***AutoAttend*** and click **OK**. The Start Point is placed in the Details pane.
4. A menu needs to be added to the Start Point.
   - Click the Start Point action to select it.
   - Click the **Basic Actions** icon and select **Menu**.
   - Click the details pane to place the action.
5. The menu options 1, and 2 need to be added.
   - Right-click the Menu action and select Properties.
   - In the **Touch Tones** tab, check ***1*** and ***2*** and click **OK**.
6. The transfer locations of Reception group need to be added.
   - Click the **Telephony Actions** icon and select **Transfer**.
   - Click in the details pane to place the action.
   - Open the Properties for the **Transfer** action by double-clicking on the **Transfer** action.
   - In the **General** tab change the **Token Name** to ***Transfer Reception***.
   - Select the **Specific** tab. Type the destination as ***Reception*** or ***301***. During this example exercise it is assumed that the hunt group Reception number is 301.
   - Select **OK**.
7. A Leave Mail action needs to be added.
   - Click the **Mailbox Actions** icon and select **Leave Mail**.
   - Click the details pane to place the action.
   - Open the properties for the **Leave Mail** action by double clicking on the **Leave Mail** action.
   - In the **Specific** tab select the **VRL** option. This will route all voicemails to the ContactStore Voice Recording Library.
   - Select **OK**.
8. The actions need to be connected.
   - Click the **Connection** icon on the toolbar and connect the Start Point **Next** result and drag to the **Menu**.
   - The options in the **Menu** need to be connected to the transfer locations. Click the **Connection** icon and connect **1** to **Transfer Reception**.
   - Click the **Connection** icon and connect **2** to **Leave Mail**.

9. Click the **Save & Make Live** icon.
    - Choose **Yes** to make the changes permanent.

This part of the example exercise, adds a system short code so that you can make test calls to the AutoAttend call flow.

1. In IP Office Manager, add a short code. The example uses ****90*** but any short code can be used.

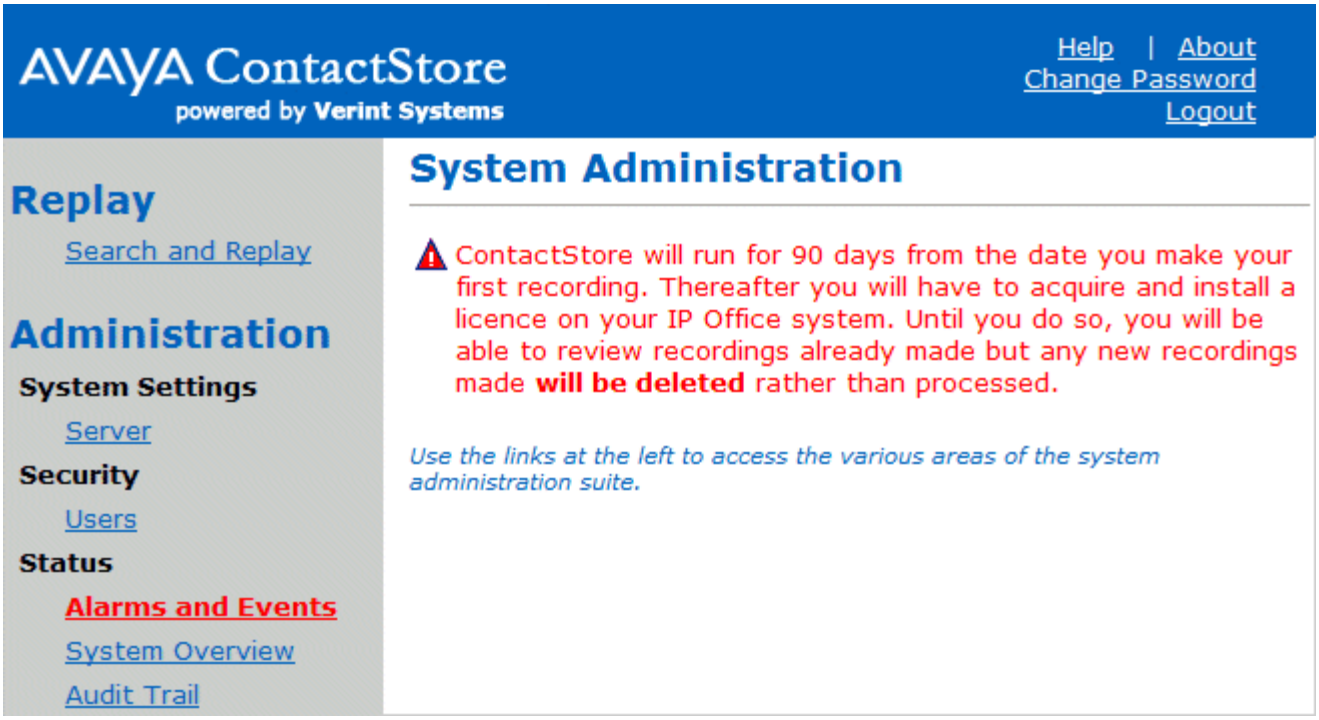
Field	Enter
Code	*90
Feature	Voicemail Collect
Telephone Number	"AutoAttend"
Line Group ID	0
Locale	[leave blank]
Force Account Code	[leave blank]

2. Save and merge the configuration to the IP Office unit.
3. Test the short code by dialing ****90*** from any extension other than 301.
4. Press ***1*** and you should be transferred to the Reception group (in this example, extension 301).
5. Press ***2*** and you should be transferred to voicemail. Leave a message.
6. Check in ContactStore that the message you recorded has been stored.

Chapter 7.
Administrative Tasks

7. Administrative Tasks

The System Administration pages are used to maintain, update, and monitor your system. The ContactStore recording system includes an administration application that is accessible only to specified administrators. Use the pages in this web application to maintain, update, and monitor the system.



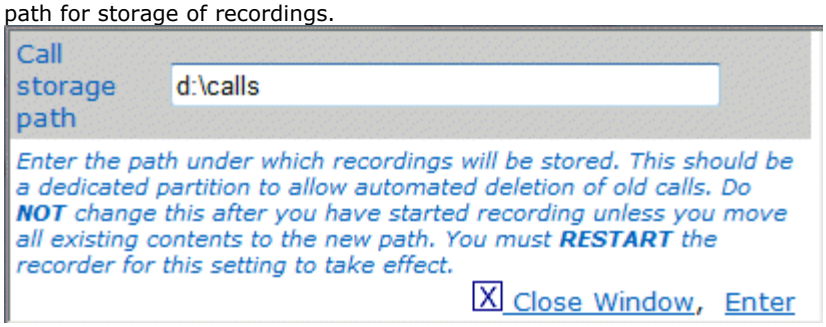
The left navigation pane on each page provides access to the following key areas:

- **System Settings**
  Use this page to view and change the configuration of the ContactStore application and how it interacts with your IP Office switch. For more information, see Changing Server Settings 26.
- **Security**
  Use this page to control which calls can be replayed by whom, and who can administer the system. For more information, see Viewing User Accounts 34.
- **Status**
  Use these pages to monitor the current state of the server. For more information, see System Overview 28 and Viewing Alarms and Event 30.

Key points

Before using the System Administration pages, you should familiarize yourself with the following key points.

- **Invalid settings**
  Any of the system's settings that are known to be invalid are shown in red. Use the information in this guide to change the settings to valid values. If you change a setting, but submit an invalid entry, a message indicates the reason that the entry is rejected and you are prompted to re-enter it. To quit without changing a parameter, click on the **Close Window** link.
- **Alarms and Events**
  If the link to the **Alarms and Events** page is shown in red, it means that at least one alarm has been raised and has not yet been cleared. Click on the link to see the new alarms.
- **Impact of changes**
  When you change a setting, the window into which you enter the new setting explains the meaning of that setting and the consequences of changing it. The following screen shows the message displayed when you change the path for storage of recordings.



7.1 Daily Procedures

Unless you have fully automated alerting of these conditions, the following procedures should be carried out at the start of each day:

- **Alarms**
  Check the Alarms and Events page for new problems.
- **Disk capacity**
  Check the available disk space daily for the partition on which your recordings are stored until the disk has filled and starts to wrap. Past that point, the amount of free space should stay close to 1GB.
  - ContactStore is designed to run with the partition holding the recordings almost full. This maximizes the number of recordings that are available online to you.
  - Unless you have explicitly disabled disk management, the ContactStore's disk manager thread will delete files on a FIFO (First In First Out) basis to preserve the specified amount of free space.
- **Web Logs**
  Check the contents of the web log files and examine any errors logged since the previous check. The default installation location for the web logs is in the sub-folder \logs.
  - While the above directory holds the ContactStore's log files (***cscm.log***), you may also want to check for server errors in ***\tomcat5525\logs***.

Look at all error and warning messages, not just those generated by the ContactStore services.

- **System Status**
  Some problems are not easily trapped automatically; check the system status regularly via the System Overview page. Verify that all figures are in line with expectations and investigate any anomalies, such as no recordings today. The table below summarizes the values to check and what constitutes an abnormal reading.

Variable	Check this value...	If not, it probably indicates that...
ContactStore Server		
Total call segments recorded today.	>0	Either no one is using recording or there is a major problem.
Date of oldest call held on disk.	Is the date you installed the system or within acceptable bounds once your disk has filled.	The disk is filling too rapidly forcing calls to be overwritten that are younger than your planned retention period.
Archival *(only shows if drive is configured)*		
Current DVD Label.	Is a valid label	Drive is empty, disk is corrupt, or drive is broken.
Free space on current DVD media (GB).	Is 0.1GB or higher	The disk should be changed.

- **Confirm recording and replay**
  To confirm recording and replay:
  - Check the daily recording count as listed in the table to verify that calls are being uploaded into the database.
  - Use the Search and Replay page to select the most recent calls to verify that calls are accessible.
  - Confirm that the start time of these calls is as you would expect. Verify that the start time corresponds to the most recent calls made on the extensions being recorded.
  - Confirm that these calls are playable and that audio quality is good.
- **Archive**
  If using DVD+RW archive, check the current disk's available capacity. Change the disk if the available capacity is less than 0.8GB. Total disk capacity allowed is 4.7GB. However, due to limitations in the DVD+RW writing, the last 0.6GB is not available for individual files to be written to and hence cannot be used by ContactStore.

Be sure that the disks are not filled completely; there is then an indeterminate time before they are changed during which calls cannot be written to removable media.

If you change them before they fill, then calls are written to removable media as soon as a reasonable volume of recordings is available (100MB) or 24 hours have elapsed since the oldest unarchived call started.

7.2 Weekly Procedures

As you become confident of the normal operation of your recorder, you can reduce the frequency of the daily tasks. For example, if you know that the rate at which your disk is filling is much less than the available space, you can check it weekly.

Perform the following tasks each week:

- **Disk capacity-main recording store**
  When ContactStore is first installed, the disk is almost empty. As it gradually fills, you should note the rate at which it is being used (at least weekly) and extrapolate to estimate when the disk will be full. At this point, the ContactStore will begin deleting the oldest calls to make room for new ones.
  - If this happens to calls that are younger than planned, check the configuration of the ContactStore to ensure the correct calls only are being recorded. Add additional disk capacity to the partition before it fills.
- **Disk capacity check all partitions**
  Check the available space on any other disk partitions. Verify that these other drives have sufficient space. The recorder will warn you should the space on a partition it is using falls below 500MB. Accumulated temporary files or log files that may need to be manually purged can cause this drop in available space.
  - When purging files, remember that files you delete go to the **Recycle Bin** directory and that the space they occupy is not freed until you click **Empty Recycle Bin**.
- **Call detail database purging**
  If you have enabled automatic purging of aged call detail records, you should still monitor the size of the calls database during the first few months of use so that you can predict how large it will get by the time old records begin to be purged.
  - Many customers plan never to purge call detail records; they add disk capacity every year or two as the database grows. If you do this, you should upgrade your server every few years to compensate for the increasing size of the database and the reduction in search and update speed.
- **Complete Server Backup**
  Changes to system configuration that affect user access rights are stored in the database, so they are backed up along with the call detail records.

If you are not using RAID arrays, Avaya strongly recommends that you take a ghost image of the ContactStore server (or at least of the partitions on which your operating system and program files are installed) to allow for easy restoration in the event of catastrophic system failure.

7.3 Monthly Procedures

Check the following aspects of the system on a monthly basis:

- **Loading trends**
  Note the total call volumes recorded every month to be aware of gradually increasing traffic trends. If it appears that the load is increasing, consider increasing server specification or disk space. To do this:
  - Note the number of calls recorded at the end of each month and compare with previous month's accumulated total.
  - Note the age of the oldest call on the disk (only applicable once the disk has filled for the first time).
  - Note the CPU load during busy hour.
- **Server Backup**
  Back up your server on a regular basis, particularly if you make any changes to the setup of your server. Make a ghost image of the server so that you can quickly rebuild it in the event of major hardware failure.
- **Recording Check**
  Any changes to the system may affect the system’s capabilities. To be sure that the system is functioning correctly, periodically verify that the physical setup is properly specified in the Administration application.
  - In addition, if you change the IP addresses or node names of any system components, you should perform a full commissioning test to confirm correct storage of all required calls.

7.4 Backing Up the Database

You can back up your recorder's database using a command line procedure. The procedure uses the PostgreSQL ***pg_dump*** command to extract data from the database. It must be executed while the database is running. Do not stop the ContactStore service or the PostgreSQL service before proceeding.

1. Log on as an administrator and open a command window.
2. Change directory ("***cd***") to the **\bin** folder in the installation path
3. Create a backup file by entering the command: ***winbackup*** <*backupfile*> where <*backupfile*> is the full path name for the backup file. Make sure there is enough space on the target drive for the backup file. Consider copying the backup file to another server, or external media.

7.5 Restoring the Database

The following process erases the default database that exists after a complete re-installation and replaces it with the database that you have previously backed up 57.

1. Re-install the operating system.
2. Log on as administrator and install the recorder .
3. Stop the IP Office ContactStore service.
4. Open a command window
5. Change Directory (***"cd"***) to the ***\bin*** directory beneath the install path.
6. Enter the command ***winbackup*** <*backupfile*> ***restore*** where <*backupfile*> is the full path name for the backup file.
7. Ignore the warning stating that *"pgpsql already exists"*.
8. Start the IP Office ContactStore service.

7.6 Backing Up The Voice Recordings

ContactStore stores voice recordings in the path you specify on the **System Setting | Server** page. This path quickly fills up with thousands of directories and millions of files. When the partition is nearly full, the server maintains only a tiny amount of free space on the partition by deleting batches of 100 recordings (and the directory that catalogued them) at a time, as it requires space for new recordings. This causes a huge churn of files every day on a large system.

Limitations of Full and Incremental Backup Procedures

On a ContactStore server, two issues make it difficult to back up voice files:

- the file size
- the rate of change of the voice recording files

Together these issues make most traditional backup strategies for the voice recordings ineffective. Traditional full backups are required more frequently than normal, which wastes backup media, and incremental backups are larger than expected because of the large churn of creations and deletions. For a backup strategy to be successful, it must be easy to restore the data if necessary.

Traditional "full plus incremental" backup solutions are ineffective because these backup solutions cannot complete fully. In the event of a complete disk failure, the process restores the full backup, then the increments in chronological order. This procedure immediately overflows the disk when the restore program tries to create the increments because the partition holding the call is almost at capacity to begin with. The full plus incremental backup will fail because it runs out of disk space before it has processed the "removals" part of the procedure. Traditional restore procedures are also ineffective. If you use this solution to review a recording that has been deleted because of age, the ContactStore service immediately deletes any restored file as part of its disk maintenance. Finally, traditional backup solutions often require locks on the disk while they work. This can seriously disrupt the working of the recorder.

This simplest and cheapest strategy for backing up the recordings is to use the built in DVD+RW archive mechanism. This is not only fully integrated with the workings of the recorder and its search and replay mechanism, but also is well suited to the incremental recording required for a recorder. As recordings are added to the calls path they are copied to DVD in an efficient manner. Even when they have been deleted from the hard disk, the recorder is still able to play them because it knows which DVD they are on and can replay directly from DVD, without an intervening 'restoration' step. Each DVD holds about 4GB, which means it can hold about 150 channel-days worth of recordings from a busy system. For less than dollar a day, even a busy system can have limitless backup.

7.7 Moving to a New PC

If it becomes necessary to move the ContactStore server to a new PC, use the following process.

1. Take backup of call details database 57.
2. Install ContactStore on the new server PC.
3. Restore the call details database 57 to new machine.
4. Copy the calls folder used by the previous server to the location (**Server | Call Storage Path**) set for the new server.

Chapter 8.
Search and Replay

8. Search and Replay

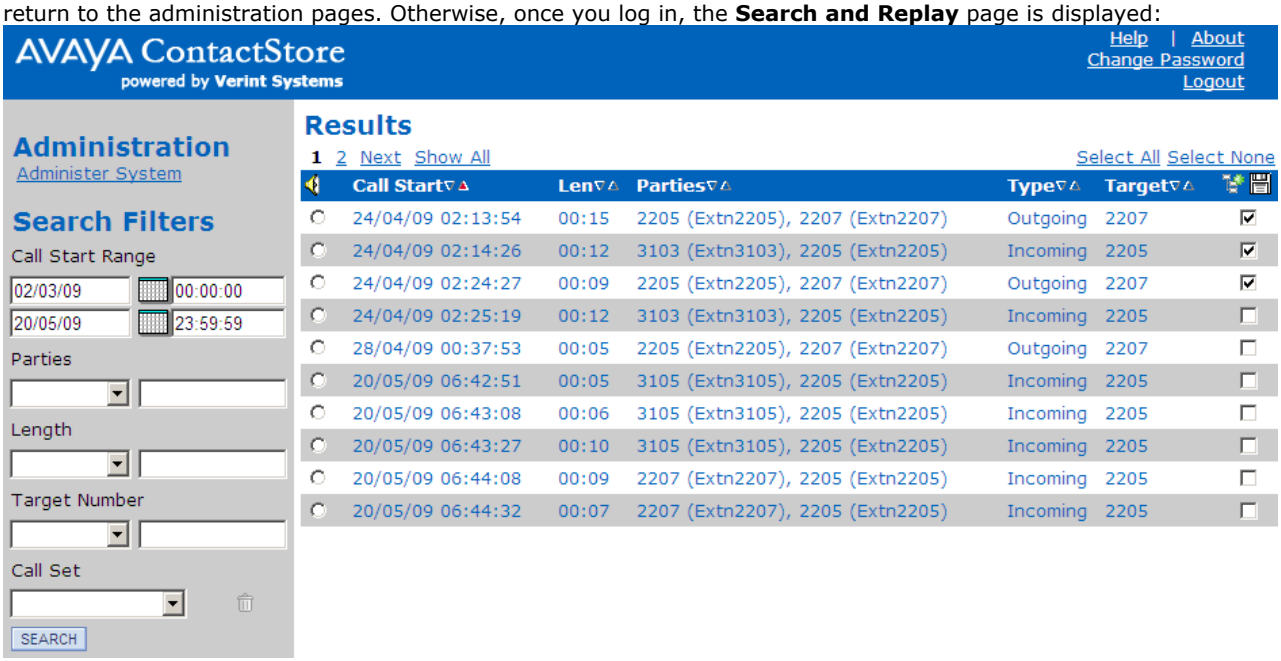
ContactStore performs replay of recordings by means of a browser-based application that is accessible with Internet Explorer Version 8.0 and higher. The Search and Replay page includes the following features:

- Personal security restrictions. The restrictions are applied as you log into the web server.
- Criteria-based searches. Use the **Search** filter fields to perform specific searches.
- Calls matching your requested search appear in the right-hand pane.
- Replay controls. Use the replay controls to start, stop, pause, skip forward, skip backward, or to export the recording to a readily playable .wav file.
- Audio waveform display. The waveform presents a graphic representation of the audio content of the call. Use the waveform to avoid replaying static or silences, and to move easily to specific portions of a call.

8.1 Accessing Search and Replay

Internet Explorer is used to view the Search and Replay application.

1. Enter the URL for the ContactStore server in the form: ***http://myservername:8888***, replacing ***myservername*** with the IP address or host name of the ContactStore. To use the host name, it must be entered into your DNS server.
2. Enter your **Username** and **Password**.
   - If you are already logged on as a Windows user and this account has been entered into ContactStore, you will immediately access the application.
   - If this is your first time logging on, or if the password has just been reset, the password field is ignored. However, before you can continue, you must change your password.
3. If your user account has administration privileges, the **Administration** page is displayed when you log in. Use the link at the top left to access the **Search and Replay** page. The **Search and Replay** page also provides a link to return to the administration pages. Otherwise, once you log in, the **Search and Replay** page is displayed:



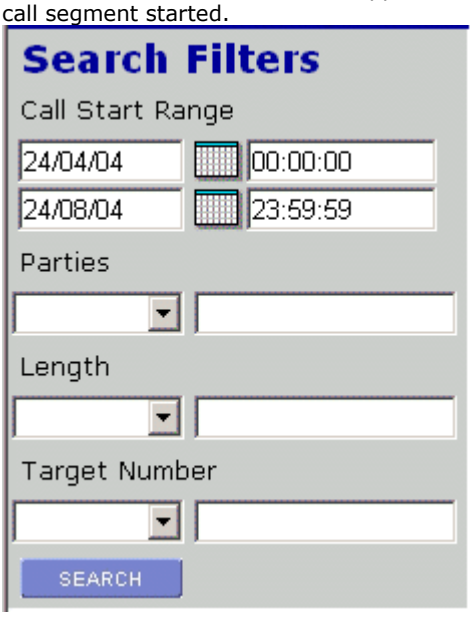
8.2 Searching for Calls

Search filters can be used to find specific records. As you search for calls, keep in mind:

- Searching on the basis of the details of one or more of the "parties" involved in the call is the most common way to find the calls you are looking for. This will find calls to or from a station, number, or name (partial or entire) that you enter.
- You will find that Incl (includes) is the most useful search method when searching for calls involving specific parties.
- If you select the blank option in the drop-down box, any existing entry in the text box next to it will be retained. It won't be applied to the current search, but it makes it easy to add it back into the search criteria later.
- If a recording has a blank entry for a field, it is listed as "N/A" (not available). You cannot, however, search for such records by specifying "starts with N" or "ends with A" or "includes N/A" in the **Search** field; this tag is not present in the database.

To search for calls:

1. Use the calendar controls at the upper left to specify the date and time range. Time and date reference when the call segment started.



2. Use the drop-down boxes for each criterion, for example, Parties, to specify the operand, such as = equals (numeric fields only).
   The drop-down box lists the following operands:

Drop-down	Meaning
	No criteria
=	Equals (numeric fields only)
<	Less than (numeric fields only)
>	Greater than (numeric fields only)
Incl	Includes or Contains (string fields only)
Starts	Starts with (string fields only)
Ends	Ends with (string fields only)

3. In the corresponding text box, enter the specific criterion, such as 3.
4. Select **Search** to execute the specified search.

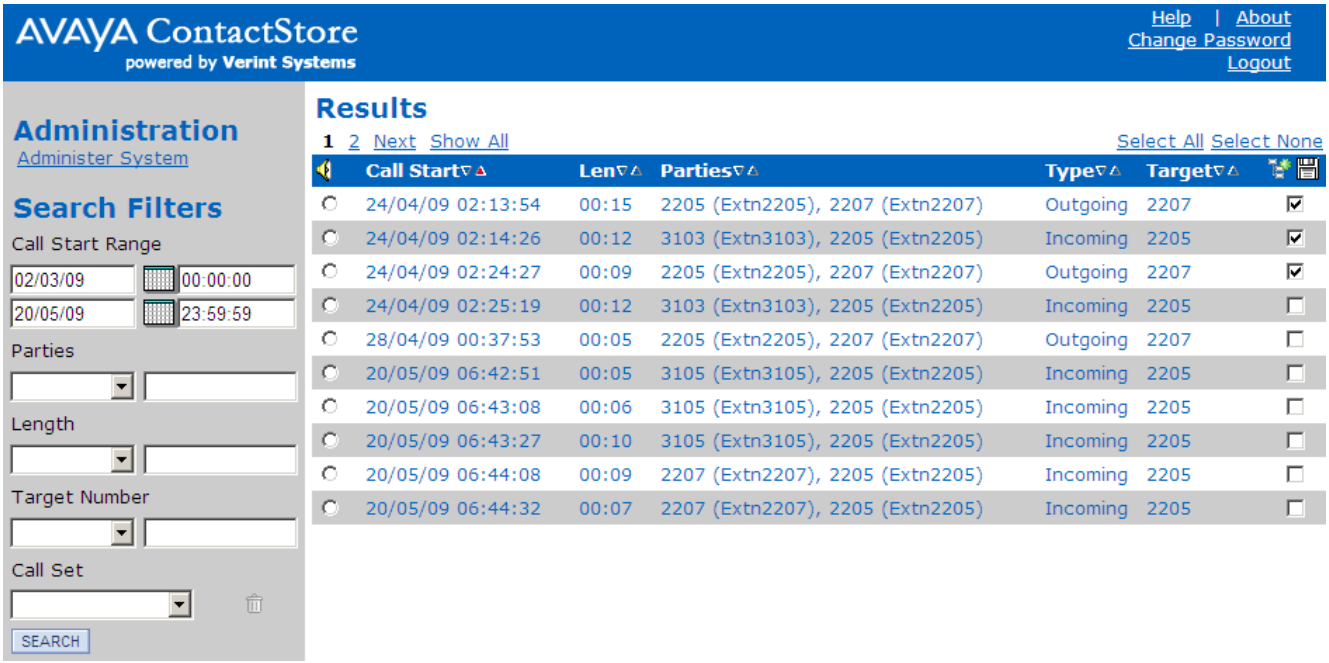
8.3 Viewing Results

The example shows a typical result set. The Results list includes the following information:

- Call start time.
- Call length in minutes and seconds.
- Name (where available) and number of the parties on the call.
- Call type - incoming or outgoing.
- target number (the number dialed which may not be the same as the number that answered the call).

When you view the results you can:

- Click the page indicators (1 2 3 ... 8 Next) above the Results table to move through the list of results.
- Click the arrows within the column headers to sort the results by that column. A blue arrow indicates the active sort field and direction.



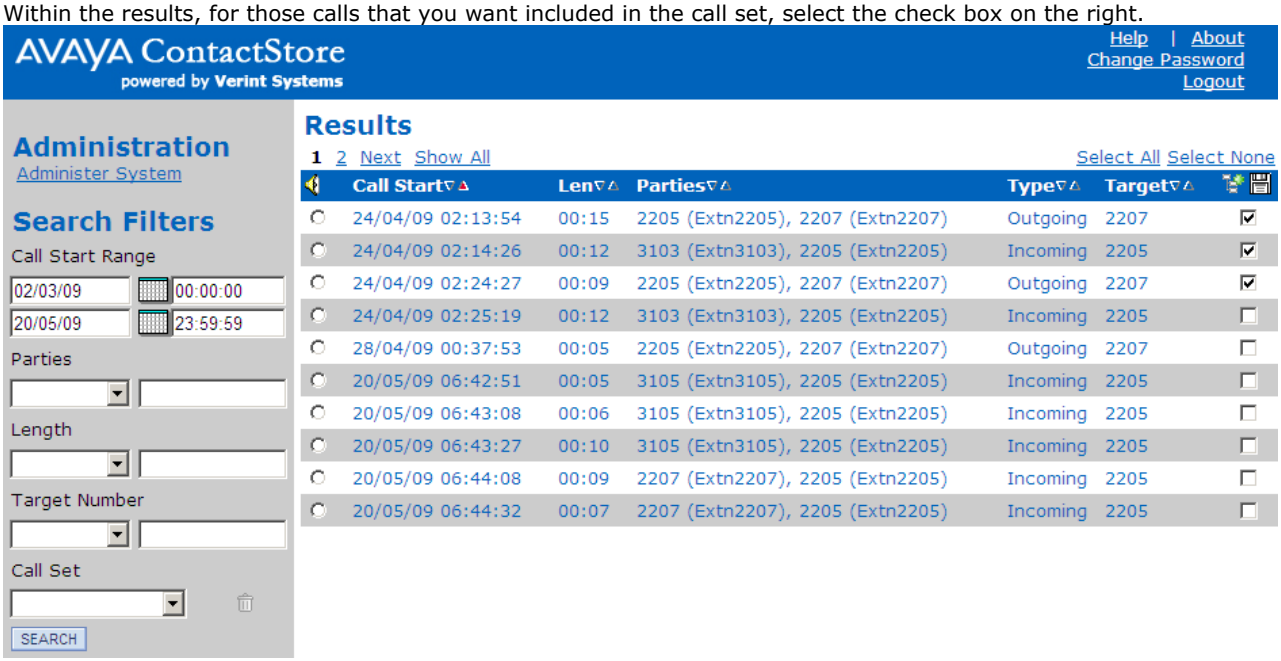
- **Note**
  By default ContactStore only returns the first 100 matching call records. This limit can be increased, however setting the limit too high may slow down the return of results. To set a limit, add the string ***viewerx.limit=N*** to the file ***csipo.properties***, replacing ***N*** with the maximum number of records required.

8.4 Call Sets

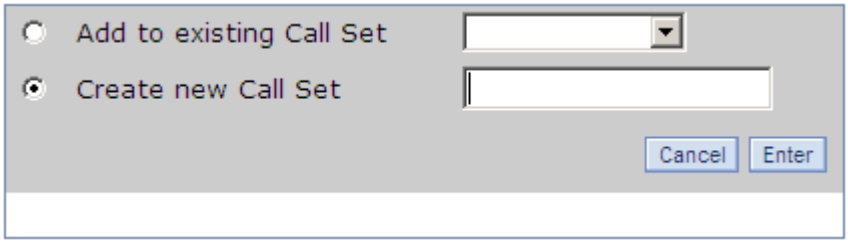
Call sets allow you to save the results of a search and to then be able to re-access that set of calls by name. You can then remove files from the call set or use other searches to add additional calls to the call set.

To create a call set

1. Perform a search.
2. Within the results, for those calls that you want included in the call set, select the check box on the right.



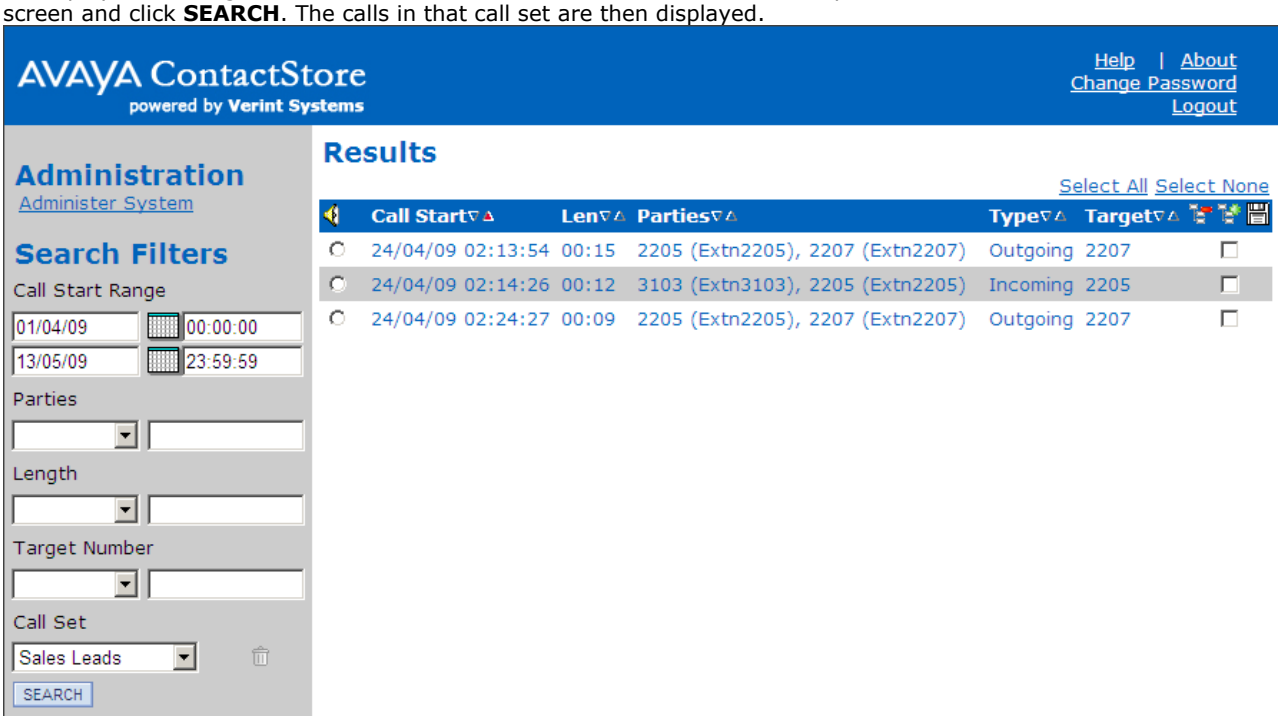
3. Click on the icon.



- To add the selected calls to an existing call set, select **Add to existing Call Set** and use the drop down list to select the call set. Click **Enter**.
- To add the selected calls to a new call set, select **Create new Call Set**. Enter a name for the call set and click **Enter**.

Viewing and Editing a Call Set

1. To display an existing call set, select the call set name from the **Call Set** drop down at the bottom left of the screen and click **SEARCH**. The calls in that call set are then displayed.

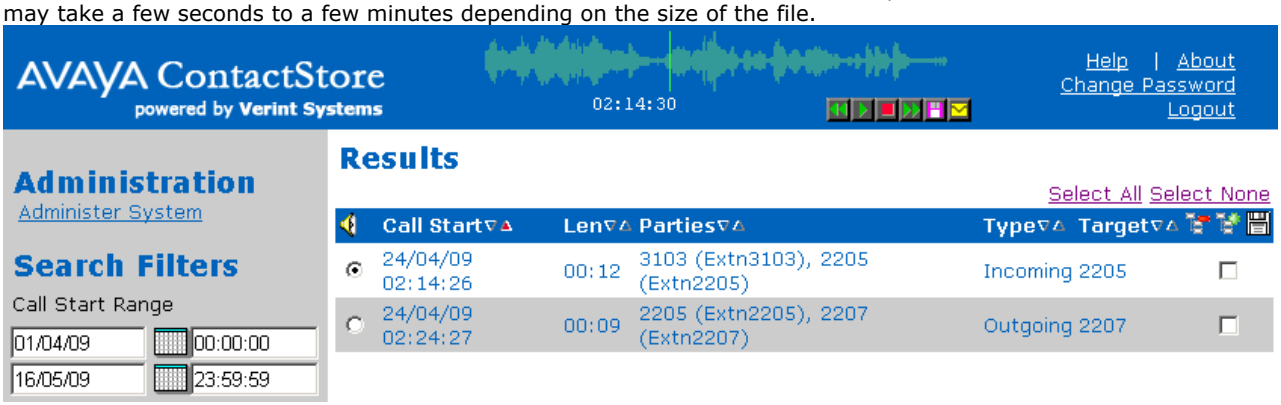


2. To remove calls from the call set, select the check box next to the calls to be removed and then click on the icon.

8.5 Playing a Call

When a call recording has been found you can play the recording.

1. Click the radio button to the left of the call you want to play, ie the column with the icon.
2. The audio is retrieved from the server and an audio wave form is shown at the top of the screen. Audio retrieval may take a few seconds to a few minutes depending on the size of the file.



3. Click on the audio waveform to play it. Click anywhere in the audio waveform to play from that point in the call. Click just to the left of the audio waveform to play from the very beginning of the call.
4. Placing your mouse over the audio waveform displays a small control panel that you can use to control playback and to perform other actions:

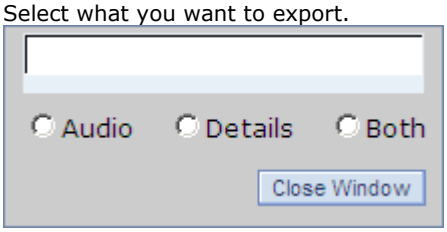
- **Skip back.**
- **Play.**
- **Pause.**
- **Skip forwards.**
- The following additional options are only available for users who have **May export recordings as files?** enabled in their user account settings. These users can also export multiple calls 66 at the same time.
  - **Save as .wav file.**
  - **Email as .wav file.**

8.6 Exporting Multiple Calls

Users who have the **May export recordings as files?** option enabled in their account can export calls. They can export an individual call while playing it. 65 They can also export multiple calls with or without a call details file.

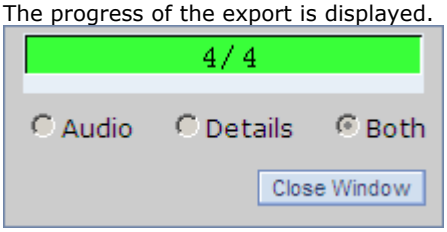
1. Perform a search.
2. Within the results, for those calls that you want included in the export, select the check box on the right.

3. Click on the icon.
4. Select what you want to export.



- **Audio**
  Export just an audio file for each selected call.
- **Details**
  Export a .csv text file of call details for the selected calls.
- **Both**
  Export both file types.

5. A menu will appear for you to browse to the folder location where you want the files exported. If you are also exporting the file details you can set the name of the .csv file at this time. Select a location and click **OK**.
6. The progress of the export is displayed.

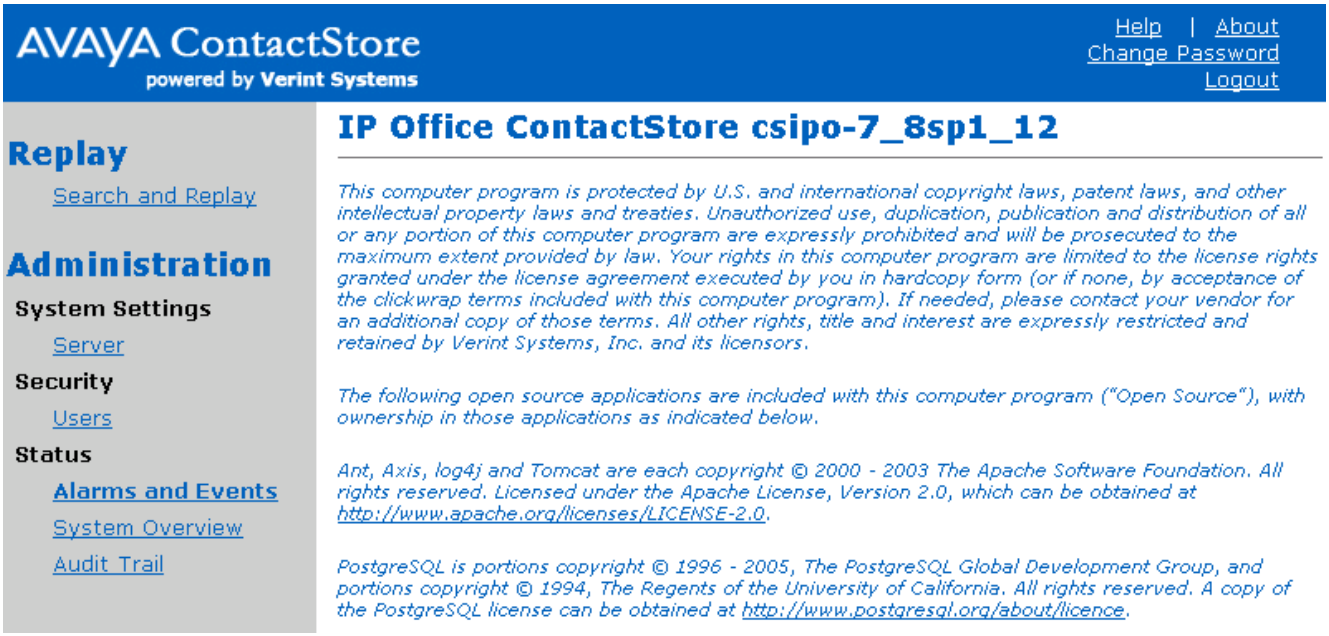


Chapter 9.
Appendix

9. Appendix

9.1 ContactStore Version

To discover the version of ContactStore that is installed click on the **About** link at the top right of the screen.



9.2 Archiving

The hard disk has limited storage capabilities. When the available hard disk space is full, older recordings will be deleted, overwritten by newer recordings.

- When you have configured a local archive drive, all your recordings will be archived. However, recordings made before this was configured are not archived.

To keep copies of recordings or to protect the recordings in the event of failure/theft/destruction of the hard disk on the recorder or to provide longer-term archive and replay capability, you can use a DVD+RW drive in or connected to the ContactStore server.

With a DVD+RW drive installed or connected to the ContactStore server, you can archive calls automatically. The application writes files to disk in batches as calls are recorded. It also archives the call details to the disks. Note that the DVD+RW must be installed before ContactStore.

Recording files are copied to the DVD disk:

- When 14 hours of recordings have been made (equivalent to 100MB when recording in G.726 mode).

or

- When 24 hours have passed since the last write to DVD.

When a recording is archived, the index and the recording are stored. The index for the file is stored as an xml file on the DVD. When a call is deleted from the hard disk, ContactStore prompts for the DVD that is specified as part of the archive configuration.

The xml files associated with each recording are archived to the DVD along with the .wav files that contain the actual recording. The xml files describe the recording and are useful for long term identification if necessary, for example if an archived call needs to be retrieved after a number of years. If you need to retrieve an archived recording you can find the index in the database and from it find out which DVD the recording is on.

- **Tip**
  It is also advisable to keep backups of the call records from the database.

DVD+RW Media Control and Care

To find calls easily and reliably, be sure that all media are labeled, handled and stored correctly. To ensure maximum reliability and consistent high quality recording and playback, follow these DVD+RW care procedures rigorously at all times:

- Follow the manufacturer's guidelines for cleaning the drive's lens.
- Disks exposed to temperatures outside the operating environment must be stabilized before use. Leave the cartridges in the operating environment temperature for a MINIMUM of two hours.
- Protect disks from extremes of heat. Do not store disks in direct sunlight.
- Avoid excessively damp environments; disks can be damaged by liquids and also by extreme humidity.
- Do not let disks get dirty. When not in use, store disks in their supplied protective container.
- Do not drop disks.
- Do not touch the optical media inside the cartridge.

Archival Procedures

The following section explain how to complete the basic archival procedures:

Loading a disk

To load a new disk:

1. Insert a blank DVD+RW disk in the drive.
2. Wait 10 seconds for it to spin up.
3. In the ContactStore System Administration application, click the System Overview link to confirm that the ContactStore has recognized the disk.

The Current DVD media field shows that the disk has been recognized and is being written to; it also shows the volume label that has been assigned to the new disk. The Free Space on current DVD media line shows 4.0GB available on a clean disk.

Changing Disks

The System Overview page shows when the disk is full; however, you should change disks at regular intervals, for example, daily, or every Monday at 9:00 am. Do not wait for a disk to fill up completely. If a DVD is filled, subsequent calls cannot be archived until the next disk is inserted. You could lose recordings if there is a hard disk failure when the DVD is filled.

- **Tip**
  Check the state of the current disk in the drive daily, though alarms will be generated if the disk is not writable when calls are ready to be archived.

To eject a disk that is still being recorded in order to retrieve calls from another disk, replace the partially full disk and recording will continue to it.

- **Important**
  The archival process never writes to disks out of sequence. For example, if you eject a partially full disk, then insert a blank disk on which the next set of calls is written, you cannot then reinsert the partially full disk.

Labeling a Disk

As you eject each disk, label the disk itself using an approved indelible marker. Your label should indicate:

- The identifier of the ContactStore producing the disk. The identifier is Calls by default; you can change this value on the Server Settings page of the System Administration application.
- The sequential serial number of the disk.
- The date/time the disk became full.

Verifying recorded disks

To verify that the contents of the disks are valid, you must first eject and re-insert the disk. Wait 10 seconds and then open Explorer on the drive.

If the contents of the disk are valid, there will be a single UID file and a set of large.tar files that contain the .wav and .xml files of the original recordings.

If you cannot resolve the problem, contact your supplier's support organization for advice. Be sure to:

- Place the disk back in its protective container.
- Store the disk in a logical order with the other recorded disks.

9.3 Alarms

The system will automatically generate alarms showing system warnings. Alarms are logged to ContactStore for IP Office's database and held a month before being purged.

The administrator can define specific email addresses to which alarms are automatically forwarded. The email recipient could be a local system administrator, a manned help-desk and/or supplier's desks if you have a support agreement that includes this facility.

When configured, the system sends an email message each time an alarm occurs or is cleared up to a maximum of every 10 minutes. It also sends an email once a night to let you know that it is still operating. Failure to receive the overnight message should be investigated; it could indicate that the server has failed.

This appendix lists the alarm conditions that may be reported and offers suggestions for clearing the alarms. The alarms listed are generated by the ContactStore server and reported in the ContactStore System Administration pages and through email. XXX and YYY in the AlarmText column represent a specific parameter, such as a station number, file name, and so on.

Level	AlarmText	Remarks	What to Do
Info	**XXX Job Queue backlog reduced to acceptable level. Currently YYYms.**	Performance acceptable again.	–
Info	**System shut down.**	System shut down for some reason.	If you stopped it, no action required. Otherwise find out why. This message is displayed after a controlled shutdown.
Info	**Wrote to archive disk correctly.**	Previously reported archive problem now cleared.	No action required.
Info	**Correct archive disk now inserted.**	Now able to write to disk in drive.	No action required.
Info	**Mail sent successfully.**	Previously reported problem sending email resolved.	No action required.
Minor	**Cannot insert details of recording XXX into database.**	–	Check available disk space on the partition on which ContactStore is installed. Verify that the PostgreSQL service is running.
Minor	**Failed to delete file XXX. Reason: YYY.**	–	Check the Voicemail Pro's Voice Recording Library path; as long as the call is playable from ContactStore, you can delete the file manually.
Minor	**Failed to copy file XXX. I/O Error: YYY.**	–	Take copy of XXX manually.
Minor	**Failed to create/write target files for recording YYY.**	–	Take copy of XXX manually.
Minor	**Failed to write XML file XXX. Reason: YYY.**	–	Check disk space on the partition on which your calls are being stored.
Minor	**Error processing file XXX. Reason YYY.**	–	Depends on reason shown.
Warning	**XXX Job Queue individual slow job - took YYYms.**	One-off occurrence not important.	Note time of day and report if persistent.
Warning	**XXX Job Queue backlogged. Delay currently YYYms but may go higher.**	One-off occurrence not important.	Note time of day and report if persistent.
Warning	**System restarting.**	System restarted for some reason.	If you restarted it, no action is required. Otherwise find out why. Power failure?
Major	**Error displaying alarm tag.**	ContactStore bug.	Report problem.
Major	**Bad or wrong type of archive disk inserted.**	–	Insert blank DVD+RW
Major	**Unable to write to archive file XXX. Reason: YYY. Check Troubleshooting Guide.**	–	Insert a new blank DVD+RW.
Major	**No disk available for calls archive.**	–	Insert blank DVD+RW.
Major	**Previously closed archive disk inserted.**	–	Insert blank DVD+RW.
Major	**Error displaying ContactStore state tag.**	ContactStore bug.	Report problem.
Major	**Error purging database. Reason: XXX.**	Check PostgreSQL service running.	Depends on reason shown.
Major	**Error sending email.**	–	Check all email settings. Send test email to verify this account.
Major	**Authentication failed attempting to send email.**	–	Check account name and password for email account.

9.4 Trouble Shooting

9.4.1 Installation Problems

My install CD doesn't autorun in Windows

Use Explorer to view the contents of the CD. Double-click the setup icon to start the program.

9.4.2 Trouble Shooting Tools

When problems occur, check the following:

- **Emailed Alarms and Events**
  If you have been using the email settings to have alarms and events forwarded to one or more email addresses, you should check these carefully. As well as checking the contents of messages you have received, also check for days when the nightly message has not been received.
- **Alarms and Events Page**
  This page within the administration application provides a wealth of information on problems that the system has detected.

Review the alarms carefully. If the problem is not immediately apparent, consider viewing all alarms-including those that have previously been cleared. It may be that someone has cleared an alarm without addressing it or realizing its significance.

- **Web Log Files**
  Check for errors being reported in log files within the following directories beneath the installation path on the ContactStore server:
  - ***\logs***
  - ***\tomcat5525\logs***

The following table gives more details about these log files.

Log File	Naming convention	Default Level	Levels Supported	To change level
cscm.log	Current day's file is cscm.log and previous days are date stamped.	INFO	DEBUG, INFO, WARN, ERROR	a) Permanently from next time service starts: 1. Edit the file (or create it if it does not exist) ***\properties\csipo.properties*** 2. Add the line ***log.level=DEBUG***, replacing ***DEBUG*** with any of the levels supported as shown to the left. 3. Reboot the server or restart the ContactStore service to have this setting take effect. b) Temporarily, until you change it again or the service restarts: 1. Log in to the admin application. 2. Go to: ***http://myservername:8888/log?level=DEBUG*** replacing ***DEBUG*** with any of the levels supported as shown to the left.

9.4.3 System Administration Page Problems

You may encounter problems as you access and use the System Administration application. This section lists those problems and provides steps to take to correct them.

Cannot access the System Administration pages

If you cannot access the System Administration pages, try the following:

- Ping the server to confirm that connectivity is possible. If not, trace the network connections between client and server and double-check the server's IP address, default gateway etc.·
- Use the numeric dot notation IP address instead of the hostname. If this works, then the hostname is wrong or cannot be translated by your DNS services. You may need to use a fully qualified node name, such as contactstore.bigco.com.·
- Use the browser on the server itself to access http://localhost:8888. If this works, then the problem is in the network between server and client. If it does not work, then the problem may be with the Tomcat web server which runs as a Windows service called 'ContactStore'. Check that the service ContactStore is running.
- Verify that the PostgreSQL database service is running on the server.

Cannot log in

If you have trouble logging in, double-check the state of Caps Lock and ensure the password is being entered with the correct case

If you can log in under another account, reset the password of the account that is having problems.

Change Password page appears but not Contents Page

If you managed to set a new password you will need to use this for all subsequent logins, even if you did not reach the main Administration page.

Web pages appear "untidy"

If the forms on the System Administration pages and/or Search and Replay page appear to be out of alignment; fields are truncated; headings or lines that, according to the screens shown in this document, should be on one line actually split across two lines, check your desktop properties. If set to Large Fonts (120dpi), this will impact all website accesses not just the ContactStore pages.

To correct display issues:

1. Right-click your desktop and select Properties.
2. On the **Settings** tab, click **Advanced** and set the **DPI Setting** to ***96dpi***.

On new laptops, especially those with 1400x1050 resolution screens, the DPI is often set to 120dpi. Using too small a window or too large a type (View > Text Size in Internet Explorer) can make the columns and headings on the web pages wrap where they would not normally.

9.4.4 Email Alarm Problems

Invalid entries in any one of the parameters used to define the email settings will result in errors.

To check for invalid entries:

1. Use the settings from ContactStore to set up a standard mail client.
2. Send a message using the account specified to prove that the settings in ContactStore are valid.

If email messages have been working and then stop without any of the settings having changed, verify that nothing has changed on the mail server. This problem occurs, for example, if your password has been reset or changed on the mail server.

If the ContactStore is not sending email messages, it may not be able to access the SMTP server or POP server. Check the network connections to the ContactStore.

9.4.5 ContactStore to VoiceMail Pro Problems

ContactStore continually polls the folder into which Voicemail Pro places recordings. ContactStore identifies this folder from the following registry key:

HKEY_LOCAL_MACHINE\SOFTWARE\Network Alchemy\Voicemail\Directories\VRLDir

If there seems to be a problem between ContactStore and Voicemail Pro:

- Verify that the registry key exists and is set to the expected folder.
- During recording, check the folder **<Voicemail Pro installation folder>/VM/VRL** to see if Voicemail Pro is writing files to the correct folder.
- Make the Voice Recording Library on the VMPro server visible as a network share and that the ContactStore service can read and write to this share.

9.4.6 Search and Replay Problems

For most problems with Search and Replay, consider the following diagnostic approaches to narrow down the cause of the problem:

- Search for a different call, for example, one that is more recent or older; shorter or longer.
- Log in as a different user with different replay restrictions.

Specific issues are listed below.

Cannot access the application

If you cannot get to the login page:

- Try accessing the page from a machine on the network that is closer to the ContactStore:
  - On the same LAN if you are having problems with WAN access.
  - From the same sub-net if having problems from a different sub-net.
  - From the console if having problems from the same sub-net.
- Try using a different browser or a different version of the same browser.
- Try accessing the page from the other side of a firewall.

Problems downloading ActiveX control

If you see error messages relating to ActiveX controls being downloaded-or blocked from being downloaded, your security settings may be too restrictive. For more information, see Configuring your browser 19.

Problems displaying ActiveX control

If the ActiveX control downloads but displays a red cross on white background at the top of the page, upgrade to Internet Explorer 6.0. These symptoms have been seen on Internet Explorer 5.0.

Cannot log in

If you see the login page but cannot get past it:

- Verify that Caps Lock is off and that you are entering the user name and password with the correct case.
- Log in as a different user
- Confirm the spelling of your log in name with the system administrator and check that your account is still configured in the administration pages.
- Ask the system administrator to reset your password. Log in with a blank password and change your password when redirected to the Change Password page.

Search returns no calls

If you get to the search page but no calls are returned when you perform a search:

- Broaden your search criteria to confirm that you can at least find some calls. Start by requesting calls from any parties for today. If that shows no calls, extend the time period. Try setting the date range back to at least the time you know you have seen call records for in the past.
- Check that the system administrator has given you access to the correct calls. Your search and replay restriction may be wrong or too narrow for the search you are attempting.
- Confirm that calls are being recorded. Follow the troubleshooting guidelines for recording problems if you suspect that the system is not actually recording or processing any calls.

Calls missing from the database

Calls might need to be re-imported if the PostgreSQL database was not working when the recordings were processed. To have the system try again to add one or more recordings to its database:

1. Create a text file named "redo.txt" e.g. in Notepad. Enter the 15 digit Index Number (INum) e.g. 800000123456789 of a call to be reprocessed. Repeat for other calls, taking a new line for each call.
2. Place this file into the handover directory (as defined by the Registry key HKEY_LOCAL_MACHINE\SOFTWARE\Network Alchemy\Voicemail\Directories\VRLDir)

Calls listed but cannot play them

If you can see the list of calls that matched your search criteria, but cannot actually play them, look at the area at the top of the browser page where the "graph" of the audio normally shows and match your symptoms to one of the following:

1. **No Audio "graph"**
   This means that the call has not been retrieved from the recorder or DVD disk or has not reached the client PC.
   - Check the server logs for errors.
   - Note the call's 15 digit reference number. (This number is shown as the default file name if you click on the Export button). Search for that .wav file in the recording storage path.
   - Check connectivity and available bandwidth to the client PC.
   - Check the Multimedia on your PC.
2. **Audio graph stops in mid call**
   This implies that the transfer of data from the ContactStore server to your client PC has been stopped or interrupted.
   - Request the same call again. There may have been a temporary network problem.
   - Request a different call. If the problem is only with one call, you may have a corrupt file on your hard disk.
   - Request the problem call from another PC on the same network. If the other PC can retrieve it successfully, assess the differences between the two client PCs; the problem is most likely at the client end.
   - Request the problem call from different sub-nets, ideally working closer to the ContactStore.
   - Request the call from the ContactStore server's own browser. If this works and the others don't, then the problem is likely to be in the network between server and clients.
3. **Audio graph appears but no sound**
   The audio file has reached the client PC successfully; the problem is most likely to be with the PC's multimedia setup or current settings.
   - Verify that the PC has a sound card.
   - Play a .wav file through Media Player or similar application to verify that the sound card is set up correctly.
   - Set any hardware volume and/or mute controls on the speakers/headphones to maximum volume.
   - Double-click the icon in the system tray at the bottom right-hand corner of the screen to verify that the PC's software volume controls are not set to mute or very low.
   - Ensure you are not running any other programs that may be locking the sound card exclusively. If in doubt, shut down all other programs.
   - Try another similar PC. If that works, look for differences in the multimedia setup of the two PCs.
4. **No New Recordings Playable**
   If you can replay old recordings but not newly made calls, there may be a problem with the recording and/or storage components of the system. Follow these steps:
   - On the **System Overview** page of the ContactStore System Administration application, look at the counts for total calls recorded and calls recorded today.
   - Make a test recording.
   - Complete the recording and hang up.
   - Return to the **System Overview** page and note the **New Total Call Count** and **Daily Call Count**. These counts should have increased by at least one, the recording that you just made. If the counts have increased, the ContactStore is processing recordings. This is probably a search/replay problem. See earlier sections for help. If these counts have not increased, the recording has not been successfully compressed and stored on the ContactStore server or inserted into the call details database. Do the following:
     - Look for alarm messages that indicate problems with file read/write. The error message should indicate whether disk space or a directory access problem is the cause. Check that .wav files are appearing in the latest folder beneath your calls storage path (\calls by default) as recordings are made.

- Check disk space in all partitions. If any of these is 0 or less than 50MB, this may be the problem. Check for build up of log files. Check that the call details database hasn't exceeded the available space. Consider reducing the number of months of calls kept-use the purge settings on the Server configuration page to adjust this.
- Check that the Tomcat server is running. This runs as Windows service 'ContactStore'
- Check for messages in the web log files.
- Reboot the ContactStore server and watch for error messages on startup.

Partial recording problems

Since no hardware component in the system is dedicated to specific ports, any hardware problem is likely to affect all recordings equally. Therefore, if some calls are being recorded and are playable but others are not, the problem is probably in the recording configuration of Voicemail Pro.

9.5 Advanced Security

9.5.1 Installing Unlimited Strength Encryption

To support key sizes larger than 128 bits, you will need to replace the standard Java Jurisdiction Policy Files using the following instructions:

1. Using your browser, go to the following link: http://java.sun.com/javase/downloads/index_jdk5.jsp
2. Follow the link entitled: Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files 5.0 at the foot of the page.
3. Download and unzip the files.
4. Follow the instructions in the readme.txt. (The path for installation is /usr/java/jre1.5.0_13/lib/security).
5. You should note the instruction to back up the existing jars that will be replaced

9.5.2 Changing the Tomcat Port Numbers

You can change the default http and https ports (888 and 8443 respectively) by editing /opt/witness/tomcat5525/config/server.xml.

Locate the two Connector elements on roughly lines 20 and 30 and change 8888 to the chosen plain port number and 8443 to the chosen secure port number.

You must also set the following property in the properties file `cscm.localport=nnnn` specifying the replacement for 8888.

- Note: If you are using Central Replay Server you must change all the recorders and the Central Replay Server. The port numbers must be consistent across all of these servers for upload to the Central Replay Server to work.
  - If you use Viewer you should alter the URL entered in the Viewer administration screens to your chosen port number.
- Note: If you change the https port from the default of 8443 and you do not allow http access, you must also set the following line in the properties file so that attempts to use http are redirected to the correct https socket.

  ```
  https.socket=nnnn
  ```

The server.xml may be overwritten on subsequent upgrades. You should keep a copy of the file after editing it so that this can be compared with any changed version and the appropriate set of merged changes determined after the upgrade.

9.5.3 Installing a Signed SSL Certificate

If you want to install your own SSL certificate, you must replace the certificate distributed with the application. Your replacement certificate must be specific to your installed server.

Selecting a Certificate Authority (CA)

If you do not already use a certificate authority, you can use:

- http://www.freessl.com/starterssl/starterssl.html - FreeSSL requires that the web server has a fully qualified domain name (e.g. contactrecorder.bigcorp.com or contactrecorder.division.bigcorp.com) and needs to be able to send an email to an address like ssladmin@bigcorp.com or administrator@division.bigcorp.com. The list of addresses can be found on their website, and it includes admin, ssladmin, root, and administrator.
- http://www.instantssl.com - InstantSSL is more flexible and allows intranet addresses (such as WINS names and IP addresses) as well as fully qualified domain names.

Backing up the Keystore file

In the instructions which follow, replace <installdir> with the location into which you installed Verint ContactStore for Communication Manager.

The certificates and keys are stored beneath your installation folder in the file:

```
/opt/witness/keystore/keystore.jks
```

Because this file contains the original, distributed certificate, it is important to make a backup of it. You will delete this file during the remaining steps. Should it be necessary to restore the original certificate, you can copy the backup to the original filename.

Creating the new Certificate

If you would like to test this implementation, you can practice this procedure with a certificate authority's 30-day trial certificate. Then, to implement real certificates, you can start over from this point.

To create a certificate:

1. Create a new certificate with the real URL of the Verint ContactStore for Communication Manager.
2. Log onto the server and change directory as follows:

   cd /opt/witness/keystore
3. Remove the original keystore file

   rm keystore.jks
4. Run the java keytool utility with

   /javadirectory/bin/keytool -genkey -keystore keystore.jks -alias tomcat -keyalg RSA
5. Fill in the Keytool prompts with the following:

   Password: Contact5tor3

   - Note: You must type this password, exactly as shown. It is case sensitive.

   a. First & Last Name: enter the FQDN, IP address or intranet name

   b. Organizational Unit: enter your division

   c. Organization: enter your company name

   d. City/Location: enter your location

   e. State/Province: enter your state

   f. Country Code: enter the ISO 2 letter code for your country (for example, GB is the code for United Kingdom)
6. Enter yes if the information is correct.
7. Hit enter when prompted for the second password.
8. Restart the Verint ContactStore for Communication Manager service.
9. Access the Administration pages via https.
10. Check that the certificate matches the information entered.

11. Double click the padlock icon. Internet Explorer should warn you that the certificate is unsigned. However, it should no longer display a message that indicates the certificate does not match the web server name.

Tip: If you do get a warning that the certificate does not match, check that the Common Name matches the URL. Double click the padlock, select the details tab, and click the Subject line. This displays the Common Name.

Generating a Certificate Signing Request

You need a Certificate Signing Request (CSR) as the first step of the signing process. When you have it, paste it into the Certificate Authority's web page. To generate a CSR:

1. Re-run the keytool command

   /javadirectory/bin/keytool -certreq -keystore keystore.jks -alias tomcat

2. Enter the password - which is Contact5tor3.
3. Copy and paste the output into the CA's web page. (Include the BEGIN and END lines.)
4. Complete the verification process
5. Reply to the verification emails and other verification steps until you obtain a signed certificate back from the CA.

Importing the CA's certificates

Before you can import your certificate reply, you need to import the certificate authority's

root certificate and any intermediate certificates between their root and your certificate.

To acquire these certificates:

1. Download these certificates from the certificate authority's website.
2. Save the root as rcert.crt and any intermediate as icert.crt. If you have more than one intermediate certificate, give them separate filenames.

To import all your certificates:

1. Import the root certificate by running keytool:

   /javadirectory/bin/keytool -import -keystore keystore.jks -alias root -file rcert.crt

2. Enter the password - which is Contact5tor3.
3. Import the intermediate (if required).

   /javadirectory/bin/keytool -import -keystore keystore.jks -alias inter -file icert.crt

   - If you have more than one intermediate certificate, import them as inter1, etc.

4. Import your signed certificate.
5. Save the file the CA sent as cert.crt.
6. Import with the keytool.

   /javadirectory/bin/keytool -import -keystore keystore.jks -alias tomcat -file cert.crt

7. Restart the Verint ContactStore for Communication Manager service.
8. Access the administration pages using https.
9. Double click the padlock icon and ensure that Internet Explorer no longer displays a message that the certificate is unsigned.

Backing up the keystore file

The keystore file now contains:

- the random private key that is unique to this web server
- the signed certificate you just paid for

These two are linked and cannot be regenerated, so it is important to back up the keystore file. If either one of these components is lost, you must regenerate the certificate and pay again to get it signed.

9.5.4 Configuring Viewer and Archive to use HTTPS

To allow Viewer and Archive to connect to ContactStore using HTTPS, you must first create and install an customized certificate for each recorder in your environment. See Installing a Signed SSL Certificate 80. You must obtain certificates with the exact recorder names, as entered in the Capture Platform setting in Viewer.

Keep the intermediate and root certificates that you received with the signed certificate and imported into the keystore. You will also need to import these into Viewer and Archive.

Importing the public certificates into Viewer and Archive

The following procedure describes how to import the public certificates into a windows server. This process must be followed on both the Viewer and the Archive server. This is necessary so that Viewer and Archive can validate the cscm server.

1. Choose Start > Run, type mmc, and then click OK. The Microsoft Management Console (MMC) window opens
2. Click File > Add Remove Snap-in.
3. In the Add/Remove Snap-in window, click Add.
4. In the Add Standalone Snap-in window, click Certificates, and then click Add.
5. Choose Computer Account (to manage the certificate store on the local computer), and then click Next. The Select Computer window opens.
6. Choose Local Computer, and then click Finish.

Now that the snap-in is available you should import any intermediate certificate(s).

1. In the Console window under Certificates, right-click Intermediate Certificate Authorities, and then select All Tasks > Import. The Certificate Import Wizard window opens.
2. Click Next. The File to Import window displays.
3. Click Browse
4. Browse for the intermediate certificate file, select the Files of type drop-down list X.509 Certificate (*.cer, *.crt), and select it.
5. Click Next.
6. The Certificate Store dialog box opens.
7. Select Place all certificates in the following store, and then select the Trusted Root Certificate Authorities store click Next.
8. Check the displayed information, and then click Finish.

Finally import the root certificate.

1. In the Console window under Certificates, right-click Intermediate Certificate Authorities, and then select All Tasks > Import. The Certificate Import Wizard window opens.
2. Click Next. The File to Import window displays.
3. Click Browse
4. Browse for the root.cer file, select the Files of type drop-down list X.509 Certificate (*.cer, *.crt), and select it.
5. Click Next.
6. The Certificate Store dialog box opens.
7. Select Place all certificates in the following store, and then select the Trusted Root Certificate Authorities store click Next.
8. Check the displayed information, and then click Finish.

Configure Viewer to use https and a secure port

By default Viewer will not use https or the secure port to connect to the cscm recorder, both these features need to be enabled on Viewer. This is done using the Viewer utility EyrBSConfigurationViewer which is located in the following directory on the Viewer server, note by default Viewer uses http and once https is enabled will default to use port 50150.

C:\Program Files\ComPlus Applications\{A639A196-338F-48E0-B76B-E223C00B5617}

Configure Viewer to use https

1. Navigate to the EyrBSConfigurationViewer application and right-click in explorer, select run as…
2. The Run As dialog appears, select The following user option and specify the account which Viewer is running under.
3. The Configuration Viewer application is launched.
4. Navigate to Central Configuration > Systems >Main Eyretel System > General
5. In the right-hand pane right-click the SSLOnly value and select Modify
6. Change the value from False to True.
7. Select OK.
8. Still using the Configuration Viewer, navigate to Central Configuration > Systems > CapturePlatformName > General, where CapturePlatformName is the capture platform name of the cscm recorder as configured in Viewer.
9. In the right-hand pane right-click and select New > Value a new value is created, set the name to SSLHostPort.
10. Now right-click the new value and select Modify
11. Set the value to the https port in use by the cscm recorder, the recorders default https port is 8443.
12. Select OK.
13. Now close the Configuration Viewer.
14. Now you should launch Component Services and navigate to Com+ Applications, select Application Portal, right-click and select shutdown.
15. Viewer should now use https when communicating with the cscm recorder.

Configure Archive to use https

By default Archive will not use https to connect to the cscm recorder, this is done by editing a file located on the Archive server.

Configure Archive to use https

1. Open the following file in a text editor C:\Program Files\Verint Systems\conf\SecurityConfig.xml
2. Locate the following xml element in the file <SSLOnly>false</SSLOnly>
3. Change the word false to true and save the file.
4. Now use the Archive Management UI to stop and start the archive service.
5. Archive will now use https to contact to the cscm recorder.

As a result of changing this file the archive system will raise two Major alarms indicating that the security configuration file has been tampered and that there is an SSL Configuration Error, both of these can be ignored – examples of these are as follows.

File Tampered, 04/24/2008 8:44 AM, On Archive781, file "C:\Program Files\Verint Systems\conf\securityconfig.xml" may have been tampered with. Please refer to the System Administration Guide for details on how to correct a tampered file.

SSL Configuration Error, 04/24/2008 8:46 AM, SSL is configured for Content Server on host ARCHIVE781, but a required file is missing. The file is C:\Program Files\Verint Systems\conf\security\cert.pem. Please deploy the file or remove SSLConfiguration by modifying RecorderGeneral.xml ssllistenport.

- Note: Archive will use the capture platforms https port as configured using the Viewer Configuration tool as described in the previous section, the error message above is related to a core recorder content server configuration which is not part of the cscm recorder deployment and hence can be ignored. The certificates referred to in the alarm are not necessary for cscm as the public certificates are available via the windows certificate store as described earlier.

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