



Brilliantly simple™

**Conferencing and Instant Messaging  
Planning and Installation Guide  
ShoreTel 14.2**

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January 2014

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# Preface

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This Preface provides an overview of the *Conferencing and Instant Messaging Planning and Installation Guide*.

## About This Book

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This document provides planning, installation, and administration information for ShoreTel service appliances (including the SA-100 and SA-400), as well as the following services:

- Audio conferencing
- Web conferencing
- Instant messaging

## Audience

This guide is for installers and administrators of the ShoreTel system. To use this guide effectively, you must be knowledgeable about data networking and telephony.

## Organization

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This document is divided into the following chapters:

- Chapter 1, [Conferencing & Instant Messaging Overview](#), describes the features of ShoreTel service appliances, ShoreTel conferencing, and ShoreTel instant messaging.
- Chapter 2, [Planning and System Design](#), provides recommendations for planning ShoreTel conferencing and explains how to determine your conferencing needs.
- Chapter 3, [Network Requirements and Preparation](#), provides specific network requirements for deploying ShoreTel service appliances and setting up ShoreTel conferencing.
- Chapter 4, [Site Requirements and Preparation](#), provides information about preparing your site for service appliance installation, including physical space, environmental requirements, and cabling.

- Chapter 5, [Installing Service Appliances](#), provides information about physically installing service appliances, assigning the units an IP address, and connecting them to the network.
- Chapter 6, [Configuring the Service Appliance](#), provides instructions for configuring service appliances using ShoreTel Director.
- Chapter 8, [Going Live and Training](#), provides information about introducing ShoreTel Conferencing services to your organization.
- Chapter 9, [Backup and Restore](#), provides backup and restore procedures for ShoreTel service appliances.



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**Note**

For maintenance information that applies to both ShoreTel service appliances and the ShoreTel system, see Chapter 19, Maintenance, in the *System Administration Guide*.

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## Related Documentation

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Refer to the following documents for additional information about the ShoreTel system and ShoreTel products:

- *ShoreTel Planning and Installation Guide*
- *ShoreTel System Administration Guide*
- *ShoreTel Maintenance Guide*
- *ShoreTel Server Software Release Notes*
- Telephone User Interface Guides
- Telephone Quick Install Guides
- ShoreTel Quick Reference Guides

## Technical Knowledge Base

For additional information, refer to the ShoreTel Technical Knowledge Base, which you can access from the ShoreTel Support website at <http://support.shoretel.com>.

# Conventions

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The following typographical conventions are used in this document:

Convention	Meaning
<b>Bold</b>	Names of interface objects, such as buttons and menus.
Courier Font	Code examples.
<i>Courier Italic</i>	Variables in code examples.
<a href="#">Blue</a>	Cross references with hyperlinks. Click the blue text to go to the indicated section. All chapters have a list of section links on the first page.



# CHAPTER

# 1

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## Conferencing & Instant Messaging Overview

This document is designed for planners and system administrators looking to deploy ShoreTel Service Appliances in their ShoreTel system to perform conferencing and instant message services.

The Service Appliance installs on your network and augments the ShoreTel system with conferencing and instant messaging services. These services give ShoreTel system users the ability to create and participate in scheduled and impromptu media-rich conferences and to send and receive instant messages. Service Appliances support audio and web conferences and allow Microsoft® Outlook® to schedule conferences.

This chapter presents an overview of the ShoreTel Service Appliance, including a description of the integrated applications and capacities to guide you in planning your installation. Topics discussed in this chapter include:

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## About the ShoreTel Service Appliance 100 and 400

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The ShoreTel Service Appliance is a 1U, dedicated, plug-and-play appliance designed to integrate seamlessly into the ShoreTel system and to install where you need it on your network to provide cost-effective conferencing and instant messaging (IM) services for ShoreTel system users.

The 1U footprint means the unit is suitable for 19-inch equipment racks. It is shipped with a versatile rack-mounting kit that easily accommodates different rack styles and a locking ShoreTel front bezel.

The Service Appliance is a node that installs on a ShoreTel server site and performs processing functions for conference calls and IM sessions. In conference calls, the Service Appliance serves as a hub that receives audio and data streams from the participants, bundles the streams, and broadcasts the bundles to the other conference participants. The Service Appliance also maintains conference web pages and manages IM sessions for users.

ShoreTel Telephony Management Service (TMS) and other ShoreTel software installed on the Service Appliance ensure the integration of the unit into the ShoreTel system. This allows the system to use a universal conference number while directing conference requests to the appropriate appliance in environments where two or more Service Appliances are installed. The software also allows the system to collect and store call data from the Service Appliance where it can be retrieved and viewed as Call Detail Records (CDR) in ShoreTel Director.

The conferencing and instant messaging services the Service Appliance provide seamlessly integrate with user desktop applications such as ShoreTel Communicator and Microsoft Outlook.

## Distributed Conferencing Capabilities

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The ShoreTel Conferencing and Instant Messaging services are scalable. For the number of simultaneous audio and video conference ports that Service Appliances can support, refer to the [Specifications](#) on page 36.

Service Appliances may be assigned to physical or logical ShoreTel sites. One Service Appliance must be assigned to the ShoreTel Headquarters site or the service appliance conference backup site, which may be located anywhere on the network. For more information about creating ShoreTel server sites, see the *ShoreTel System Administration Guide*.

When multiple Service Appliances are deployed, the ShoreTel system automatically assigns a conference request to the appropriate appliance based on the conference information. Multiple deployment also allows automatic failover to be implemented whereby the ShoreTel server can reroute conference requests to other appliances, should a Service Appliance experience a connectivity or hardware problem.

# Single System Management

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After the Service Appliance is installed on the network, you must register and configure the Service Appliance with ShoreTel Director.

For more information about using ShoreTel Director to configure Service Appliances, see [Chapter 6](#). For information about using ShoreTel Director, refer to the *ShoreTel System Administration Guide*.



## Note

The ShoreTel system provides automated software distribution for all components on the system, including Service Appliances. When you add a new Service Appliance to the system, it is automatically upgraded to the current software release by the ShoreTel server. When you upgrade the ShoreTel system, Service Appliances will automatically upgrade as required when the device restarts.

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## Integrated Services

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ShoreTel Conferencing allows the ShoreTel system to provide conferencing to ShoreTel users. The ShoreTel system supports the following types of conferencing:

- Audio conferences
- Web-only conferences
- Web and audio conferences
- Instant messaging

This section provides a brief description about the types of conferences that Service Appliances support.

## Audio Conferences

An audio conference is a virtual meeting of people in different locations using communication tools to hear and talk with each other. For the number of simultaneous audio conference ports that Service Appliances can support, refer to the [Specifications](#) on page 36.

Ports are not reserved but allocated on a first-come-first-serve basis. When all of the audio ports on an Service Appliance are in use, calls that initiate new conferences are routed to an available Service Appliance. New calls to an existing conference are routed to an auto attendant and informed that there are no available ports. When all of the ports available to the system are in use, all callers that access the conference receive a message that the call cannot be completed.

Similarly, when the number of conference participants exceeds the number of audio conference licenses you have, the extra participants receive an unavailable message.

**Note**

If you are installing web licenses on a system that has been running with only audio licenses, your users must restart Microsoft Outlook and Microsoft Office Communicator for this change to take effect.

## Instant Messaging Service

This service provides the Instant Messaging server to be used with ShoreTel Communicator for Windows and with the Apple iChat client. For the number of IM clients that Service Appliances can support, refer to the [Specifications](#) on page 36.

For detailed explanations and usage of available features for each application, consult the *ShoreTel Conferencing User Guide*.

## Single Dial-in Number and Web Address

Multiple Service Appliances on the network can function with a single dial-in number and single Fully Qualified Domain Name (FQDN).

You specify the single dial-in number as a system-wide ShoreTel conference extension (For more information, see the [Configuring a Conference Extension](#) on page 58.) When the conference host dials this number, the call gets automatically routed to the preferred Service Appliance, if this Service Appliance is available or not overloaded. For Service Appliance capacities, see the [Specifications](#) on page 36.

The administrator can also set up a system-wide conference URL by designating the first SA installed in the system by an FQDN. When you browse to that FQDN, you will be redirected to your preferred Service Appliance.

**Note**

A preferred Service Appliance is the Service Appliance that a ShoreTel user is manually assigned to by the administrator. The system does not assign a Service Appliance automatically to a user.

For example, if you assign an FQDN, such as “conference.acme.com” to the first Service Appliance you install, your users will only need to remember one URL. When the conference hosts enter the system-wide URL, conference.acme.com, they get connected to their preferred Service Appliance.

The preferred SA-specific URL is also included in the conference invitations created by the conference portal and Microsoft Outlook.

# Service Appliance Failover

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The Service Appliance is designed to provide high availability. The system is set up so that you can assign each Service Appliance a primary and backup ShoreTel server to manage the unit. If the primary ShoreTel server fails or is otherwise unavailable, the backup server takes over call management without interrupting conferencing services. The SA also uses a dual-port Ethernet card. The ports are designated as primary and secondary, and use the same IP address. You must connect both ports on the SA to the same network to protect against a port or cable failure.

## Complete Failure Scenario

In a single Service Appliance deployment configuration, the system will not have any fail-over capabilities.

In a system with multiple Service Appliance, the system can ensure that a conference starts even if the preferred SA is not available.

When the conference is scheduled to start, the system checks to see if the user's preferred SA is available and not overloaded. If the preferred SA is unavailable or overloaded, the new conference will be hosted on a different Service Appliance. A conference started on a non-preferred Service Appliance offers the same functionality as a conference started on the preferred Service Appliance.

Because the system uses floating licenses, you do not need to deploy fail-over licenses. The system tracks the number of ports in use at the system level and not at the appliance level.

When IM users are assigned to a Service Appliance that goes down, only the users assigned to that particular Service Appliance are affected. Other users can continue to use IM.

## Conferencing and Instant Messaging Resiliency

Each Service Appliance must be able to reach the Headquarters server in order to provide full functionality.

If connectivity to the Headquarters server is down, users can still perform the following tasks:

- Hear other users.
- Use all the audio controls.
- Join and attend started conferences. The user can use the direct conference URL or enter the access code in the Join Access field.
- Share previously uploaded library content from the Meeting Viewer.
- Start and stop desktop sharing.

- Use the Instant Messaging Service (as long as the user has logged in during the previous three days).

**Note**

If connectivity to the Headquarters server or DVS assigned to the IM user is down, the user cannot log in to the ShoreTel IM service.

However, if connectivity to the Headquarters server is down, users cannot perform the following tasks:

- Access the conference portal
- Start and stop a recording, or access meeting recordings
- Upload files to the library
- Access web pages that may be linked from the meeting user interface
- Create meetings
- Access comments
- Start and stop meetings
- Configure conferencing by using Director

## Service Appliance Logs and Records

The ShoreTel Service Appliance provides audio and web conference data to the ShoreTel system that is collected in the call detail record (CDR) database. The ShoreTel system can collate the data and issue various types of reports about Service Appliance activity. The Service Appliance also maintains data log files that can be used for troubleshooting.

## Upgrading Service Appliance Data in System CDR Database

If the ShoreTel system is upgraded from ShoreTel 12 to ShoreTel 13 or 14, a separate script must be run to upgrade the Service Appliance data in the ShoreTel system CDR database. To run the script, perform the following steps:

1. Navigate to the following directory:

```
\Program Files\Shoreline Communications\ShoreWare Server\MySQL\MySQL  
Server\Examples\
```

2. Double-click/run the following script:

```
cdr_upgrade_for_upgrade_from_ST12_to_ST13_or_later.wsf
```

3. Wait for the script to finish running.

Note that running this script will impact database performance.

# Integration with ShoreTel Communicator and Microsoft Outlook

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ShoreTel Conferencing integrates with Microsoft Outlook to provide integrated one-click conference scheduling in conjunction with user calendar appointments.

See the *ShoreTel Conferencing User Guide* for details about the use of this features.

## Host and Participant Desktop Requirements

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Participants in web conferences will need to meet minimum software and browser requirements.

Participant desktop and laptop systems are not required to meet any minimum hardware requirements except for an acceptable broadband internet connection.

## Internet Browsers

Web Conference users require one of the following internet browsers and browser plug-in:

- Microsoft Internet Explorer 8.0 and Microsoft Internet Explorer 9.0.
- Apple Safari 5.0 - Mac OS.
- Mozilla Firefox 12.0 - Windows and Mac OS.
- Adobe Flash 9 or Adobe Flash 10.2.
- Java JRE 1.6.0.15 or later.



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### Note

If you use Java 7 with Safari on a Mac, you may experience the following behavior when using the Conference Viewer and Presenter:

- If you display the Conference Viewer in full-screen mode, the bottom, red border may not be visible.
  - When you launch Presenter, a brief error message may display in the Conference Viewer status bar stating, "Event loading failed, Reloading." Safari will quickly reload Presenter.
  - On a Mac, while the Presenter is in focus, you may need to click twice to trigger a button on the Conference Viewer. After the Conference Viewer has focus, then it works normally and only requires a single click to trigger a button.
-

## Microsoft Outlook Integration

The following are required when the Microsoft Outlook integration feature is used:

- Microsoft Outlook 2007 SP1
- Microsoft Outlook 2010

To enable one-click conference scheduling from Microsoft Outlook, the Outlook calendar integration must be installed from ShoreTel Communicator.

## Microsoft PowerPoint Support

ShoreTel Web Conferencing supports the following PowerPoint versions:

- Microsoft PowerPoint 2003
- Microsoft PowerPoint 2007
- Microsoft PowerPoint 2010

# CHAPTER

# 2

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## Planning and System Design

This chapter guides you through the planning process for deploying ShoreTel Service Appliances on your network. Topics discussed in the chapter include:

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## Recommendations

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The following recommendations will assist you in designing your ShoreTel system to use ShoreTel conferencing capabilities.

- Make sure you determine the need for audio conferencing, web conferencing and Instant Messaging services.
- Make sure you determine licensing requirements
- Make sure you determine the placement of Service Appliances within the ShoreTel system topology, including external web access and security considerations.
- Make sure you determine WAN considerations, quality and bandwidth.

## Determining Your Conferencing Needs

---

The ShoreTel single management system makes it easy for you to effectively and cost-efficiently provide conference and IM services for your users. The ShoreTel conferencing solution is flexible, which allows you to install a single Service Appliance unit to provide services company-wide or multiple units deployed regionally to handle services for local users. This can save on long-distance costs when your regions are in remote locations.

In determining how best to deploy Service Appliances in your environment, consider the following:

- The number of simultaneous conferences you want to support.
- The types of conferences you expect to support.
- The number of IM sessions you expect to support.
- The typology of your network.
- Load balancing
- Failover (redundancy)

## Determining the Number of Service Appliances to Deploy

Among the factors to consider in determining how many Service Appliances to deploy are the capabilities of the SA-100, SA-400, and the Virtual Service Appliance. [Table 1](#) provides information about the maximum number of participants Service Appliances can support by conference type. For additional information, see Chapter 3, [Network Requirements and Preparation](#).

**Table 1: Maximum Number of Participants Supported Per Conference Type**

Conference Type	SA-100 Maximum Conference Ports	SA-400 Maximum Conference Ports	Small Virtual Service Appliance	Medium Virtual Service Appliance
G.711	50	200	50	200
G.722 (High Definition)	15	15	15	60
G.729	50	50	50	200
Secure Web Conference Sessions	30	100	50	200
IM	500 (Sessions)	2,000 (Sessions)	500	2,000

The examples below show how you can use the information in the table to determine your deployment needs:

- **Example 1.** In your planning you determine that you require the capacity for 125 concurrent, standard audio (G.711) audio sessions. To determine how many SA-100 devices your system requires, divide the number of audio sessions you determine that you require by the maximum number of conferences the SA-100 supports; for example,  $125 \div 50 = 2.5$ . To satisfy the requirement for your network, you would install three SA-100s.
- **Example 2.** You determine that you require 20 high definition individual audio (G.722) sessions and 90 standard audio sessions. An SA-100 can support no more than 15 HD sessions, with up to 35 standard sessions simultaneously. To determine how many SA-100s you need, assign the first 15 HD conference sessions and the first 35 standard conference sessions to one SA-100. That leaves 5 HD conference sessions and 55 standard conference sessions to be supported. You can combine the remaining 5HD conference sessions with 45 standard conference sessions to achieve the capacity for a second SA-100. That leaves 10 standard conference sessions, which can be supported by a third SA-100. Consequently, you will need three SA-100 to satisfy this scenario.
- **Example 3.** You determine that you require the capacity for 150 concurrent HTTPS web conference sessions. The SA-100 supports up to 30 HTTPS web conference sessions simultaneously. To determine how many SA-100s you need, divide the total number of required HTTPS conference sessions by the maximum number of HTTPS conferences the SA-100 supports; for example,  $150 \div 30 = 5$ . You need five SA-100s to satisfy the requirement in this scenario.
- **Example 4.** You determine that you require 600 configured IM sessions. The SA-100 supports up to 500 IM sessions simultaneously. To determine how many SA-100 devices you need to satisfy this requirement, divide the total number of IM sessions by the number of simultaneous IM sessions the SA-100 supports; for example,  $600 \div 500 = 1.2$ . You need two SA-100s to satisfy this requirement.

## System Topology

The topology in which your ShoreTel system is installed can be a factor in determining how you deploy Service Appliances. For ShoreTel systems installed over multiple sites (a site is an area managed by a ShoreTel server), whether those sites are in the same building or spread across diverse geographical regions, it may be more effective and efficient to install Service Appliances at specific sites. For example, if your experience includes inconsistent WAN connections, limited WAN bandwidth or known WAN quality issues, installing Service Appliances at regional sites and implementing load balancing can minimize the effect the WAN has on conference calls.

Similarly, if your ShoreTel system is servicing users in different cities or countries and many of the conferences are held at local sites, you can save on long distance charges by installing Service Appliances at the local sites to handle local conferences. Other advantages of installing Service Appliances at local sites include:

- Savings on inter-site bandwidth
- Better quality audio and web sessions



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### Note

ShoreTel recommends that you do not install Service Appliances in a network where latency exceeds 100 ms. To operate Service Appliances optimally, network latency and jitter must be minimized. ShoreTel also recommends that the ping lag time between Service Appliances and the ShoreTel headquarters server does not exceed 200 ms. This lag time affects how quickly web pages refresh.

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For more information about setting up a remote service appliance, see [Setting Up a Service Appliance to Remote Service Appliances](#) on page 64

## Load Balancing

ShoreTel Conferencing supports load balancing. The ShoreTel system manages all calls in the system including conference calls from a single source. That means that when a conference is initiated, ShoreTel Conferencing can assess conference resources and shift the conference to an available Service Appliance if the local unit does not have sufficient resources.

## Redundancy

The ShoreTel Service Appliance supports failover in cases where a unit loses connectivity or fails. In the event of a loss of network connectivity or unit failure, the ShoreTel system will redirect new conference calls to another Service Appliance unit if resources are available.

## Licensing Requirements

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Audio conferencing and web conferencing services are enabled through keyed licenses for Audio Conference ports and web conference ports. Licenses enable concurrent access to the services, rather than per user or per appliance. Instant Messaging is enabled in all communicator access levels.

For example, you have a single SA-100 which supports 50 G711 audio conference streams and 30 secure web sessions. To run a concurrent audio/secure web conference for 30 participants would require 30 Audio Conference and 30 web conference licenses.

In order to be a conference host on the system, you must be added as a user, which requires at least a mailbox license.



# CHAPTER

# 3

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## Network Requirements and Preparation

Use the information in this chapter to determine specific network requirements for the ShoreTel Service Appliance 100 and the Service Appliance 400. After determining the network requirements, you will be ready to configure your network appropriately. The topics discussed in this chapter include:

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## Network Requirements for the SA-100 and SA-400

ShoreTel Conferencing services require that the underlying network meet all ShoreTel recommendations. Refer to the *Planning and Installation Guide* for more information for recommendations about deploying a ShoreTel telephony system on your network. Consider the following items when planning your system for audio and web conferences:

- Audio conference streams
  - Delivers adequate bandwidth for toll-quality calls.
  - Meets the latency and jitter requirements for toll-quality calls.
  - Meets the packet loss requirements for toll-quality voice.
  - Bandwidth management to prioritize your voice traffic over your data traffic.
  - Proper configuration of the ShoreTel Admission Control feature for each site.
- Web conference streams
  - Delivers adequate bandwidth for the typical application you expect users to share.
  - Maintains a ping lag of not more that 100 ms between Service Appliances and the ShoreTel Headquarters server.

## Supported Codecs and Bandwidth

[Table 2](#) shows the codecs that the ShoreTel SA-100 supports.

**Table 2: SA-100 Codecs and Concurrent Audio Streams**

Codec	Bandwidth	Sampling Rate	Max Audio Streams	Max SRTP Streams
G711 (both a-law and $\mu$ -law)	64 kbps	8 kHz	50	50
DV14/ADPCM	32 kbps	8 kHz	50	50
Linear (L16/8000)	128 kbps	8 kHz	50	No Support
Wideband Linear (L16/16000)	256 kbps	16 kHz	50	No Support
G722	64 kbps	16 kHz	15	15

[Table 3](#) shows the codecs that the SA-400 supports.

Table 3: SA-400 Codecs and Concurrent Audio Streams

Codec	Bandwidth	Sampling Rate	Max Audio Streams	Max SRTP Streams
G.711 (both a-law and u-law)	64 kbps	8 kHz	200	200
DV14/ADPCM	32 kbps	8 kHz	200	200
Linear (L16/8000)	128 kbps	8 kHz	200	200
Wideband Linear (L16/16000)	256 kbps	16 kHz	200	200
G.722	64 kbps	16 kHz	15	15

## Network Bandwidth Requirements for Web Conference Sessions

Audio and web data are handled separately by the Service Appliance. Content for web sessions is generated from the computer that is sharing and sent to the Service Appliance managing the conference for distribution to conference participants. For most content, the Service Appliance broadcasts the data to the other web participants. (Content sharers can also send a file to the Service Appliance that the Service Appliance makes available to conference participants to download and open on their devices.) All content that is shared directly with participants appears through the conference Web Viewer. Direct content is provided using the Presenter, the whiteboard, or files downloaded to the sharing device. The bandwidth of this content forms the basis of the network bandwidth requirement for conferencing discussed in this section.



### Note

A presenter is someone who has permission to present data to others in a conference. The conference host can give the presenter permissions to a participant. The host has all presenter permissions by default. Only the conference host controls the audio conference.

The network bandwidth a conference consumes is the product of the content bandwidth (plus overhead) times the number of participants receiving the content and can be expressed as follows:

$$Conf_{BW} = Content\ Mbps \times P$$

where  $Conf_{BW}$  is the total bandwidth the conference uses,  $Content\ Mbps$  is the content bandwidth expressed as a rate, and  $P$  is the number of participants receiving web content.

For example, in standard operating mode, the Presenter supports bandwidths of up to 250Kbps. An SA-100 operating at full capacity (30 HTTPS web ports) would generate the following bandwidth on the network:

$$Conf_{BW} = 250\ Kbps \times 30$$

$$Conf_{BW} = 7.5\ Mbps$$

## IP Addressing

---

The Service Appliance requires an IP address with a permanent lease or a static IP address. Either of the following methods may be used to assign network parameters:

- DHCP from a network server (default out-of-the-box option)
- A static IP configured through the maintenance port on the back of the Service Appliance.

The Service Appliance also requires a fully qualified domain name (FQDN) during configuration in ShoreTel Director. When configuring the service appliance, you must plan to use the following FQDNs:

- You must have an FQDN for each deployed service appliance.
- You must configure your internal and external DNS server to point to the service appliance.
- The FQDNs must map correctly, both internally and externally, to the IP address of the service appliances.

See Chapter 5, [Installing Service Appliances](#) on page 45 for more information about configuring the IP address.

## Time Services

---

The Service Appliance requires a connection to time services in order to support ShoreTel Conferencing services.

The address of the NTP server can be provided to the Service Appliance through DHCP option 004 (if DHCP is used) or configured statically.

See the *Planning and Installation Guide* for detailed instructions on selecting an NTP public server if you do not run an NTP server within your organization.

## Network Security

---

This section discusses network security concerns that can come up when you deploy Service Appliances.

### Internal Firewall

Service Appliances can be deployed in the DMZ, allowing external participants to access web conferences. Positioning in the DMZ places the Service Appliance in a privileged security position within the customer's network infrastructure. Therefore, the Service Appliance features an embedded, customer-administered firewall to control access between unsecure external environments and internal networks. Proactive security policies and strict management of evolving internet security risks are essential to maintain network security.

## Security Considerations

As security threats evolve new vulnerabilities may be discovered that require immediate resolution. ShoreTel provides upgrades to the appliance software and updates for critical security patches. If required, these upgrades are distributed independently from the standard release cycle for software upgrades.

Should critical security patches be required to the appliance operation or file systems, a mini-installer is used to implement immediate fixes to the platform images. This allows customer IT departments to quickly protect their networks without having to complete an entire release upgrade.

Hotfixes and patches for the appliance are incorporated into the next build or release.

Procedures to apply security patches to the appliance operating system and applications are described in the *ShoreTel Maintenance Guide* and are also distributed via e-mail or other customer notification pathways such as the ShoreTel support website.

## Deployment Scenarios

The ShoreTel Service Appliance 100 and Service Appliance 400 may be deployed both internal to the LAN or externally in a company DMZ.

Deployment scenarios may include multiple installations of appliances in a ShoreTel system.

However, in any multi-appliance deployment scenario, if one appliance is accessible for external access then all appliances must be accessible for external access.

## Deploying a Service Appliance in the LAN

In the scenario where a Service Appliance is deployed on the trusted internal network, the following requirements apply:

- The network requires port-forwarding through the firewall which is restricted to web ports (80-unsecure & 443-HTTPS). Alternatively, a reverse-proxy server can be used instead of port-forwarding but this requires the provision of an additional server.
- The network requires DNS configuration both internally to resolve internal addresses and externally to resolve to external addresses.
- Alternatively, a network can be configured with DNS configured for external addressing only and a host file configured to handle traffic internally.

The following figure shows deploying a service appliance in the LAN.

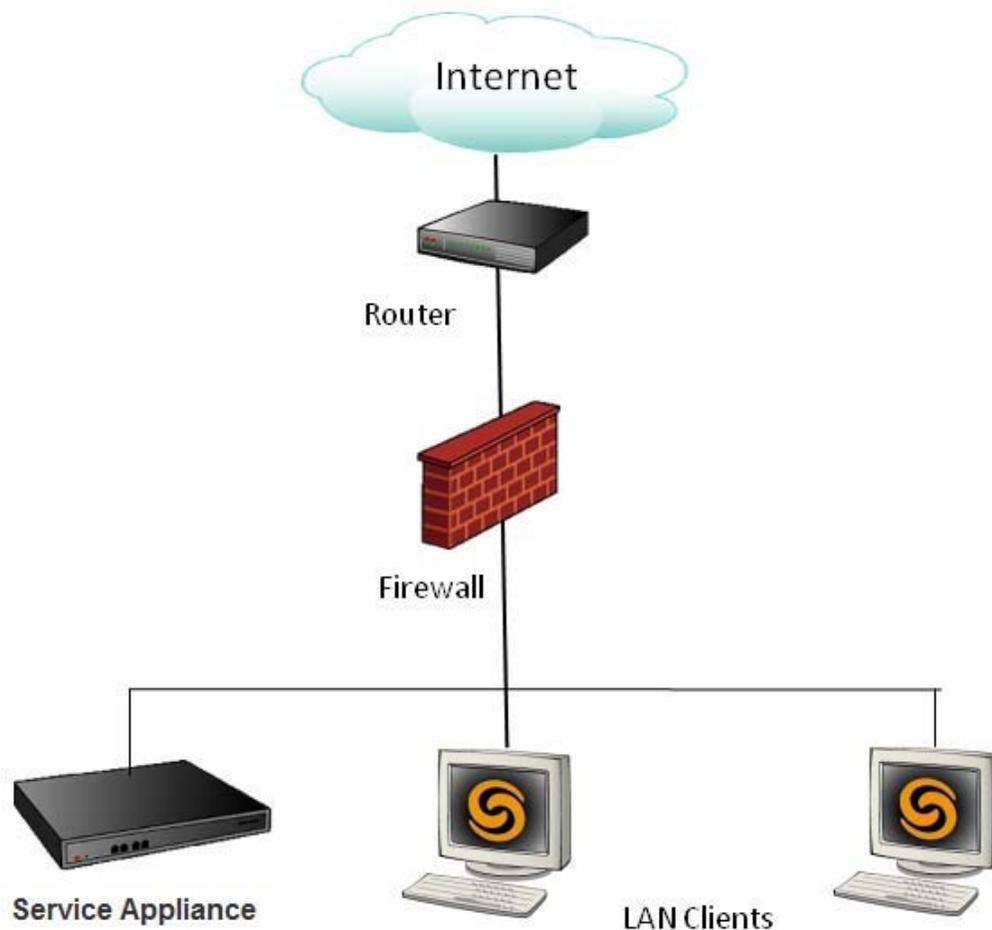


Figure 1: Deploying a Service Appliance in a LAN

## Deploying a Service Appliance In the DMZ

Deploying the ShoreTel Service Appliance in the demilitarized zone (DMZ) is the preferred method to facilitate external traffic. This requires the firewall between the DMZ and the LAN to be properly configured for ShoreTel Voice Switch ports as shown in [Figure 2](#).



### Note

The Service Appliance will not function if it is positioned in the DMZ and network traffic initiated from the trusted zone to the Service Appliance goes through NAT (Network Address Translation). The Service Appliance will display a “Lost Communication” status in ShoreTel Director.

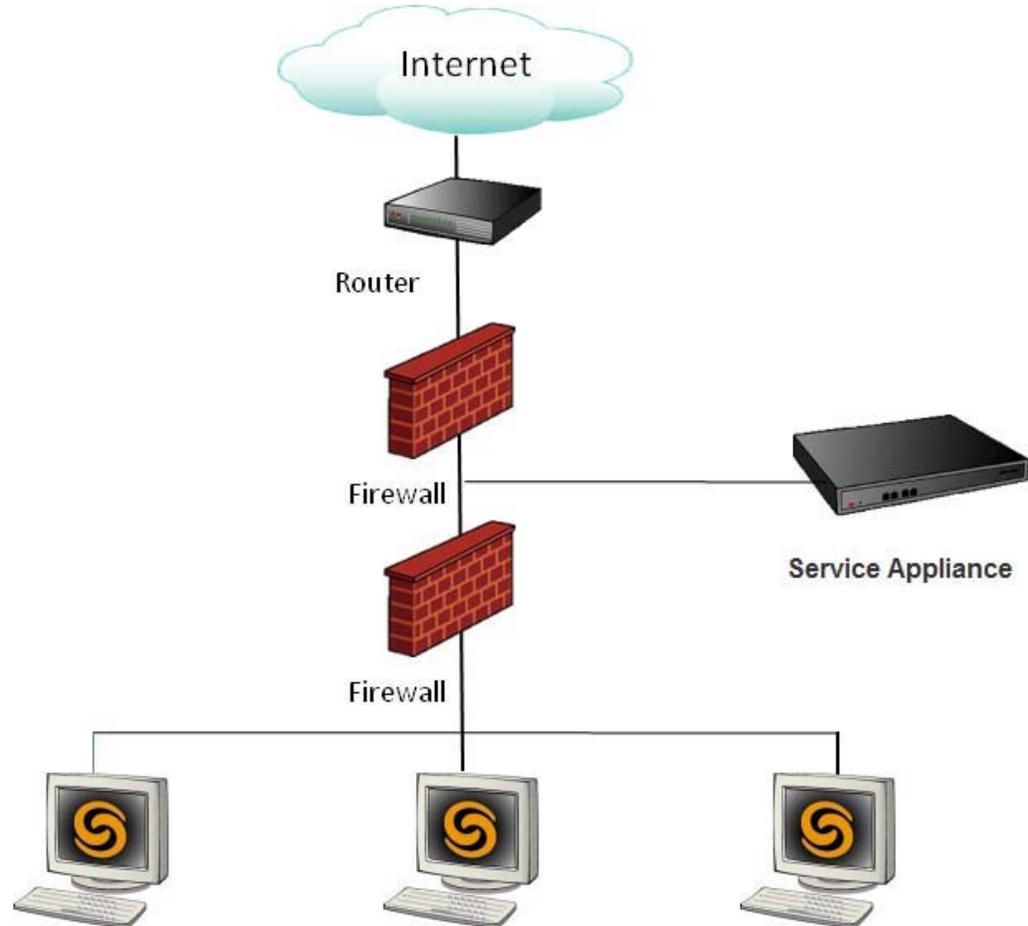


Figure 2: Deploying a Service Appliance in the DMZ

## Requirements

In the scenario where a service appliance is deployed in the DMZ, the following requirements apply:

- Enable routable traffic between the DMZ and LAN. Network Address Translation (NAT) can not be used for network traffic between these points.
- Adequate bandwidth between DMZ and LAN with a minimum of voice latency and jitter.
- DNS (Domain Name System) configuration to resolve both internal and external addresses. A DNS configured to external addressing only, with a host file configured to handle traffic internally, may be used as an alternative.
- If a Service Appliance is made available from the Internet, all other Service Appliances need to be accessible and addressable from the Internet.
- The network requires port-forwarding through the firewall which is restricted to web ports (80-unsecure HTTP and 443-secure HTTPS).

To deploy a Service Appliance in the DMZ, follow these steps:

1. Configure your firewall to allow traffic from the IP address assigned to the Service Appliance to go through.
2. Make sure that the ports the Service Appliance supports are open. [Table 4](#) lists the communication ports the Service Appliance supports for devices and applications on the inside of the firewall.

**Table 4: Communication Ports Used Inside Firewall**

Function	Switch	IP Phone	Communicator	Service Appliance	Softphone	HQ Server and DVS	Other
Location Service	UDP 5440			UDP 5440		Softswitch UDP 5440	
Call Control	UDP 5441			UDP 5441		Softswitch UDP 5441  TMS RPC: TCP 5457 NCC Event Port UDP 5458 SUNRPC Broadcast TCP/UDP 5500-5600 MSRPC	
Bandwidth Manager	UDP 5443			UDP 5443		Softswitch UDP 5443	
Admission Control	UDP 5445			UDP 5445		Softswitch UDP 5445	
Media Stream	UDP 5004  RTP (dynamic) 10000- 10550	UDP 5004  RTP (dynamic) 10000- 10550		UDP 5004  RTP (dynamic) 10000- 10550  CMCA (Web Share TCP/UDP 5450 Ping Sync	UDP 5004  RTP (dynamic) 10000- 10550		UDP 1024- 65535 RTP for SIP endpoints
Instant Messaging			TCP 5222- XMPP				
Conference Bridge Integration			TCP 80-HTTP Configuration Control  Presenter TCP 443 TCP 80				

Table 4: Communication Ports Used Inside Firewall(Continued)

Function	Switch	IP Phone	Communicator	Service Appliance	Softphone	HQ Server and DVS	Other
DRS						Softswitch UDP 5442	
NTP							UDP 123
DHCP Server							UDP 67
SNMP TRAP							UDP 162
SMTP							TCP 25
DNS							TCP/UDP 53

3. Set parameters for the range of ports for audio packets and the range of trusted IP address you want the ShoreTel system to recognize as valid from Service Appliances deployed in the DMZ.
4. Make sure that ports 80 and 443 are enabled from the WAN to the DMZ to ensure that users can access the Service Appliance.
5. Make sure that the Service Appliance can communicate with the LAN by pinging the Service Appliance.
6. Make sure that the Quick Look status for the Service Appliance in ShoreTel Director is green. For information about using ShoreTel Director, refer to the *System Administration Guide*.

## Best Practice Tests

You can use the following tests to verify the operation of the ShoreTel service appliance:

1. Configure a user for ShoreTel Conferencing.
2. Create a test conference and verify that audio users can join from both the LAN and WAN.
3. Verify users can join a web conference from both the LAN and WAN.
4. Once the service appliance status is green on ShoreTel Director, go to any ShoreTel Phone and press the **Conference** button. The call should be routed to ShoreTel Conferencing, and you should be able to hear the conferencing prompts.



# CHAPTER

# 4

---

## Site Requirements and Preparation

This chapter provides information about preparing your site for Service Appliance installation, including concerns such as physical space, environment, and cabling. This chapter includes the following topics:

Recommendations .....	36
Specifications .....	36
SA-100 Specifications.....	37
SA-400 Specifications.....	40
Virtual Service Appliance Specifications.....	42
Environmental Requirements.....	43

## Recommendations

The following recommendations will assist you in planning and preparing your site for the ShoreTel system.

- Hire a cabling contractor to install your racks, patch panels, and cabling.
- Have two RJ-48C cables ready for each Service Appliance.
- Use surge protector or UPS.
- For remote deployment, your network should have 384 kbps bandwidth or better available between the FTP server and the remote Service Appliance for downloading upgrade software.

## Specifications

Table 5 provides the specifications for the SA-100 and the SA-400:



### Note

For Virtual Service Appliance specifications, see [Virtual Service Appliance Specifications](#) on page 42.

**Table 5: SA-100 and SA-400 Specifications**

Specifications	SA-100	SA-400
<b>Application capacity</b>		
Audio conferencing	Up to 50 simultaneous audio conferencing ports (including 15 HD calls)	Up to 200 simultaneous audio conferencing ports (including 15 HD calls)
Web conferencing	Up to 30 simultaneous secure Web conferencing ports (HTTPS)	Up to 100 simultaneous secure Web conferencing ports (HTTPS)
Instant Messaging	Up to 500 IM clients	Up to 2,000 IM clients
Number of conferences	Up to 16 conferences	Up to 64 conferences
Hours of conference data	Up to 1000 hours of conference data	Up to 1000 hours of conference data
<b>Networking/storage</b>		
Hard Disk	2 x 500 GB	2 x 500 GB
RAID level	Level 1 (Mirror)	Level 1 (Mirror)
Auto-sensing, 10/100/1000 Ethernet interfaces	2	2
Ethernet fail-over	Yes	Yes

**Table 5: SA-100 and SA-400 Specifications(Continued)**

<b>Maintenance</b>		
Serial connector (DB9)	Yes	Yes
Power-on indicator	Yes	Yes
Hard drive activity indicator	Yes	Yes
Diagnostic indicators	Yes	Yes
System status indicator	Yes	Yes
Fan status indicator	Yes	Yes
System identification button	Yes	Yes
USB connectors	2	2
Slide-out system Identification panel	Yes	
Retention clip	Yes	Yes
<b>Mechanical</b>		
19" rack mount	Yes	Yes
Dimensions (HxWxD)	1.67 in (4.3 cm) x 17.09 in (43.4cm) x 15.5 in (39.4 cm)	1.7 in (4.3 cm) x 17.2 in (43.7 cm) x 23.5 in (59.7 cm)
Weight	17.8 lb (8.06 kg)	37 lb. (17 kg)
MTBF	53,200 hours	60,500 hours
<b>Power/ Consumption Rates</b>		
Power	250 Watts	650 Watts
Redundant power supplies		Yes
Input power	108 Watts @368.5 BTU per hour	280 watts@956 BTU per hr
AC input voltage	100-240 VAC	100-240 VAC
Rated Input Current	3A (115 V) to 1.5A (230 V)	8A (115 V) to 4A (230 V)
Rated Input Frequency	50-60 Hz	50-60 Hz
Consumption/dissipation	1039 BTU per hour maximum	2218 BTU per hour maximum
<b>Environmental</b>		
Operating temperature	10° to 35° C (50° to 95° F)	10° to 35° C (50° to 95° F)
Operating humidity	8% to 90% (non-condensing)	8% to 90% (non-condensing)
Storage temperature	-40° to 65° C	-40° to 70° degrees C

## SA-100 Specifications

The specifications in this section apply to the SA-100.

## Front Panel

This section provides information about the SA-100 front panel. [Figure 3](#) and [Table 6](#) provide information about the SA-100 front panel. In addition, a bezel is shipped with the unit that you can attach to the front panel and lock. The bezel blocks access to jacks on the front panel.

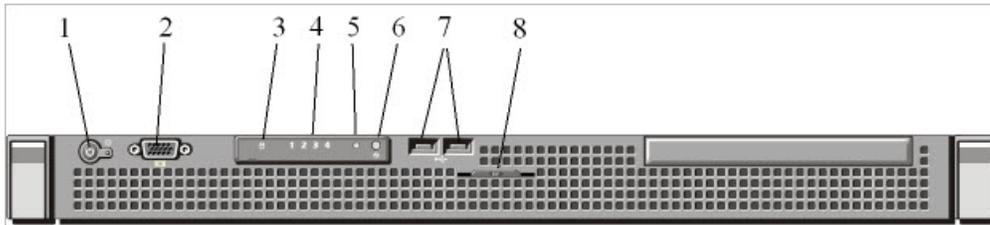


Figure 3: SA-100 Front Panel Indicators and Connectors

Table 6: SA-100 Front Panel Indicators and Connectors

Item	Indicator, Button, or Connector	Description
1	Power-on indicator/power button 	The power-on indicator lights when the system power is on.  The power button controls the internal power supply output to the system. When the system bezel is installed, the power button is not accessible.
2	VGA Connector	Not used.
3	Hard drive activity indicator	Lights up when the hard drive is in use.
4	Diagnostic indicator lights	The four diagnostic lights display error codes during system startup. See “Diagnostic Lights” in the ShoreTel Maintenance Guide.
5	System status indicator	Lights blue during normal system operation. Lights amber when the system needs attention due to a problem.
6	System identification button 	These front and back panel buttons can be used to locate a particular system within a rack containing multiple appliances. When a button is pushed, both front and back indicators light until the button is pushed again, allowing the specific appliance to be easily located.
7	USB Connectors (2)	Allows you to connect USB devices to the unit for system recovery. The ports are USB 2.0-compliant.
8	Slide-out system Identification panel	The top contains the ShoreTel product ID, part number and serial number. The bottom contains two MAC addresses for the two internal NICs.

## Back Panel

This section provides information about the SA-100 back pane. [Figure 4](#) and [Table 7](#) provide information about the SA-100 back panel.

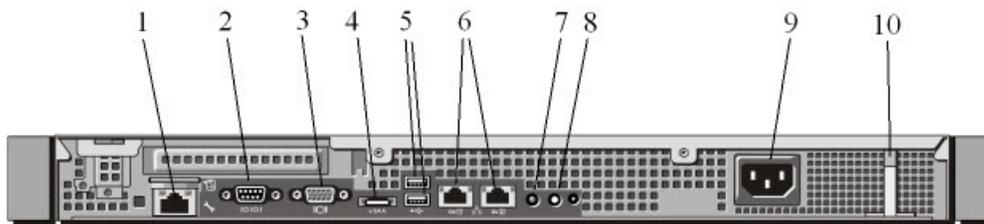


Figure 4: SA-100 Rear Panel indicators and Connectors

Table 7: SA-100 Back Panel Indicators and Connectors

Item	Indicator, Button, or Connector	Description
1	iDRAC6 Enterprise port	Not used.
2	Serial connector (DB9) 	Connects a serial device to the system. Used to configure static IP address.
3	VGA Connector	Not used.
4	eSATA	Not used.
5	(2) USB Connectors 	Allows you to connect USB devices to the unit for system recovery. The ports are USB 2.0-compliant.
6	(2) Ethernet Connectors 	Supports 10base-T, 100base-T and 1000base-T connections.
7, 8	System identification button and indicator light 	These front and back panel buttons can be used to locate a particular system within a rack containing multiple appliances. When a button is pushed, both front and back indicators light until the button is pushed again, allowing the specific appliance to be easily located.
9	Power supply connector	Allows you connect power to the unit.
10	Retention clip	Secures the power cable.

## Power Cable

Each SA-100 ships with a power cable. If you do not receive the correct power cable for your environment, contact your ShoreTel partner or ShoreTel technical support.



### Note

ShoreTel recommends that you connect the SA-100 to a reputable surge protector or uninterruptible power supply (UPS).

## Ethernet Ports

The SA-100 uses an auto-sensing, 10/100/1000 Ethernet interface. Two RJ-48C Ethernet connections (GB1 and GB2) are provided to provide fault-tolerant deployment. The ports use the same MAC Ethernet address and IP address but are independent of each other and can be used in any sequence. However, when both ports are connected, only one will be active at a time. Should the active interface lose the link, the other interface is made active. You must use Category 5 or higher cabling.

The SA-100 provides two methods of fault tolerance. To protect against Ethernet switch failure, connect Ethernet ports GB1 and GB2 to separate Ethernet switches. To protect against port or cable failure, connect LAN1 and LAN2 to separate ports on the same Ethernet switch.

## Maintenance Cable

The ShoreTel SA-100 provides a maintenance port that you can connect a terminal to using a DB-9, female-to-female, null-modem connector. You can use the maintenance port to assign the unit IP address parameters when DHCP is not used.

## SA-400 Specifications

The SA-400 has the following characteristics:

- Sealed appliance.
- Optimized for resiliency and security.
- Designed to run ShoreTel services such as integrated Audio Conferencing, Web Conferencing, and Instant Messaging.
- Can store up to 2,000 hours of conference data—including reports, recordings, and library files—without backup (up to 1,000 hours with backup active).
- Can be deployed anywhere, including in corporate DMZ.
- Tested with well-known security tools for potential application and network vulnerabilities.
- Managed entirely through ShoreTel Director
- Offers approximately 4x the capacity of the SA-100.
- Can be used with SA-100(s) in the same system.
- Licenses for the SA-100 can also be used for the SA-400 (audio and web conference licenses are unchanged).

## SA-400 Key Features

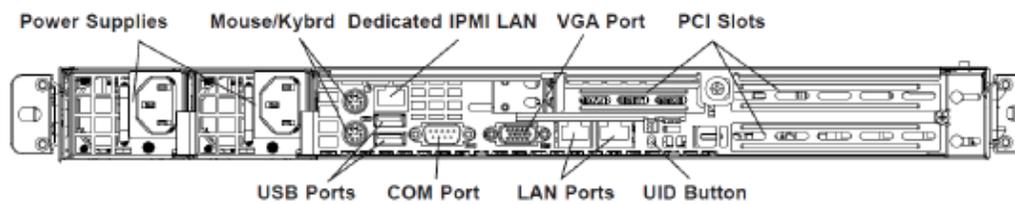
The SA-400 provides the following key features:

- Processors: 2 Intel Hex-core CPUs, Series 5600/5500 series, with QPI up to 6.4 GT/s
- Memory: up to 192-GB DDR3 1333/1066/800 MHz ECC registered DIMM/48-GB unbuffered DIMM. By default, the unit is shipped with 6 GB RAM.

- RAM: 6 GB
- Hard drives: two Seagate Constellation.2 500-GB SATA 6.0 7200 64-MB 2.5-inch mirrored drives
- Left slot (full-height/full-length): one (x16) PCI-E 2.0 + 1 UIO
- Right slot (low-profile): 2-GB LAN optional (AOC-PG-i2+)
- Ethernet controller: Intel 82576 dual-port gigabit processor
- Hard drive bays: eight 2.5-inch bays (for customized storage). By default, the unit is shipped with two mirrored drives.
- Power supply: two 650-Watt, high-efficiency, redundant supplies

## Front and Back Panels

The SA-400 is one rack-unit (RU) high and can be installed in a standard 19-inch (48.26-cm) rack. [Figure 3](#) show the rear view of the SA-400.



*Figure 5: Rear View of SA-400*

[Figure 6](#) shows the front view of the SA-400.



*Figure 6: Front View of the SA-400 with Bezel Attached*

The front panel of the SA-400 includes the following light indicators (left to right):

- Overheating/fan failure: Flashing = Fan failure. On continuously = Appliance overheated.
- Network activity on LAN2: Flashing = Network activity on LAN2.

- Network activity on LAN1: Flashing = Network activity on LAN1.
- DVD-ROM/hard drive activity: Flashing green = Hard drive activity. Flashing amber = Hard drive rebuilding. Solid red = Hard drive failure.
- Power to internal power supply units: Illuminated = System operating. Not illuminated = No power to internal power supply units.

## Connection Specifications

The following table provides the connection specifications for the SA-400.

Port	Connection
Ethernet	ETH0 ETH1
Console	Serial

## Power Input Specifications

The SA-400 includes dual power supplies. To operate properly, you must plug both power supplies into an AC power source.



### Note

If only one power supply is plugged in, a loud audio warning tone sounds when you turn on the SA-400. The audio warning tone persists until you plug in both power supplies.

The power supplies have the following ratings:

- Rated Output Power: 650W
- Rated Output Voltages: +5 V (25 A), +3.3 V (12 A), +12 V (54 A), +5 VSB (3 A)

## Virtual Service Appliance Specifications

The capacity of a Virtual Service Appliance is determined at initial run-time, based on the configuration of the virtual device.

For more information about the virtual device itself, see Chapter 13, *Installing ShoreTel Voice Switches*, in the *ShoreTel Planning and Installation Guide*.

ShoreTel recommends that you configure the Virtual Service Appliance with one of the following capacity levels:

- Small capacity: 50 audio conference ports, 50 web conference ports, and 500 IM users
- Medium capacity: 200 audio conference ports, 200 web conference ports, and 2,000 IM users
- Licenses: Existing licenses for the SA-100 and SA-400 can also be used for a Virtual Service Appliance.

## Environmental Requirements

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To ensure optimum operating conditions for the ShoreTel Service Appliance, verify that the operating environment is adequately ventilated, free of gas or airborne particles, and isolated from electrical noise.



# CHAPTER

# 5

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## Installing Service Appliances

This chapter provides information about mounting Service Appliances in a rack, assigning the units an IP Address, and connecting it to the network. The topics discussed in this chapter include:

Preparing for Installation .....	46
Verifying the Contents of the Box .....	46
Location Guidelines.....	47
Installation .....	47
Mounting the ShoreTel Service Appliance .....	47
Connecting AC Power to the SA-100 .....	47
Connecting AC Power to the SA-400 .....	48
Setting the IP Address Manually .....	49
Using DHCP to Set the IP Address.....	51
Connecting the Service Appliance to the Network.....	51
Installing the Bezel .....	52
Configuring the Unit for Operation .....	53



### Note

Unless otherwise specified, the instructions in this chapter apply to both the SA-100 and the SA-400.

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## Preparing for Installation

---

The section lists things that are recommended and required to install a ShoreTel Service Appliance.

- Computer mounting rack capable of supporting 1U equipment.
- Adequate clearance in the front and back of the rack to allow adequate ventilation.
- Surge protector or UPS.
- IP address to assign to Service Appliance.
- ShoreTel recommends that you assign a static IP address to all Service Appliances.
- IP address of the gateway that you want the Service Appliances to use.
- Subnet address that you want the Service Appliances to use.
- Computer with a terminal emulation program installed.
- DB-9 female-to-female, null-modem, serial cable.
- The IP network between the main and remote sites meets the bandwidth, latency, jitter, and packet loss requirements for a multisite installation.
- The IP network between the main and remote site has quality of service in place such that voice is prioritized ahead of data.
- You have appropriate firewall provisions in place, including VPN if applicable.
- All power and environmental requirements are met.

## Verifying the Contents of the Box

---

This section lists the items you should receive in your ShoreTel Service Appliance package. Inspect the package carefully before you open it and contact the shipper if it is damaged. If items are missing from the package, contact your ShoreTel partner or ShoreTel technical support. The items in the box include the following:

- ShoreTel Service Appliance
- Either one power cord for the SA-100 or two power cords for the SA-400
- Rack mounting kit
- ShoreTel front bezel kit
- ShoreTel Quick Install Guide.
- Product Information Guide

## Location Guidelines

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Except when they are specified separately, these guidelines apply to both the SA-100 and the SA-400:

- Operating temperature: 10° to 35° C (50° to 95° F)
- Operating humidity: 8% to 90% noncondensing
- Adequate ventilation after the Service Appliances are installed

## Installation

---

Follow the procedures in this section to install the Service Appliance.

### Mounting the ShoreTel Service Appliance

The Service Appliance is shipped with a rack mounting kit that includes mounting instructions. The kit is designed to accommodate different types of equipment racks. Use the kit instructions to attach the rails to the Service Appliance and mount the unit in the rack.



**WARNING!**

Make sure there is ample space between the front panel and back panel of the Service Appliance and any other surface to allow ample ventilation for the unit.

---

### Connecting AC Power to the SA-100

Service Appliances are shipped with a power cable that are appropriate for the location to which they are shipped. If you receive the wrong cable with the unit, contact your ShoreTel partner or ShoreTel technical support.



**WARNING!**

Electrical surges in the AC line can damage unprotected equipment. ShoreTel recommends that you use an AC surge protector or a UPS to connect a Service Appliance to the AC line.

---

Press the power button on the front panel (see [SA-100 Specifications](#) on page 37) to turn the unit on. The LED in the power button comes on and the SA-100 performs its start-up process. The fan spins up and a sequence of numbers flash on the LED block on the front panel. The fan will quiet down and a solid LED appear when the process is complete. The process takes about 30 seconds. If the fan does not come on or the numbers do not flash, ensure that the power cord is plugged into the power source and the power source is working. If the appliance still fails to power on, contact your ShoreTel partner or ShoreTel technical support.

## Connecting AC Power to the SA-400

There are two power connections on the rear panel of the SA-400 to ensure failover functionality.

To connect AC power, follow these steps:

1. Insert the female end of the power cord into one of the two power connections on the rear panel of the SA-400. See [Figure 7](#).
2. Insert the other end of the power cord into an AC power source.
3. Repeat Steps 1 and 2 to connect the other power connector with an appropriate, separate AC power source for full failover functionality.
4. The SA-400 automatically powers on.
5. As the SA-400 starts up, messages display in the terminal emulation software window, if connected.



*Figure 7: Connecting Power*

## Setting the IP Address Manually

---

This section describes how to set the IP address on the Service Appliance manually. ShoreTel recommends that you use a static IP address for Service Appliance. You can also use DHCP to assign the unit an IP address. If you choose to use DHCP, you must configure the DHCP server with address information for the Service Appliance prior to turning on the unit. You can use the instruction provided in this section to obtain the Ethernet address of the unit.



---

**Note**

The Service Appliance is shipped from the factory configured to use DHCP to set IP address. That means that unless otherwise set, the first time the unit is turned on with an Ethernet cable connecting it to the network the unit will seek an IP address from the DHCP server on the network.

---

To configure the IP address manually, you need the following:

- Valid IP address for the segment in which you want to install the Service Appliance.
  - Computer with terminal emulation software installed.
  - Null modem DB-9 serial cable.
1. Connect the DB-9 serial cable to the serial port on the back panel of the Service Appliance and a computer.
  2. Power on the Service Appliance and the computer.



---

**Note**

The Service Appliance performs a start-up process when it is turned on. A sequence of numbers flash on the LED panel during start up, and a solid LED appears when the process is complete. The process takes about 30 seconds.

---

3. On the computer, start a terminal emulation program and set the following parameters:
  - Baud rate: 19200 bps
  - Data Bits: 8
  - Parity: None
  - Stop Bit: 1
  - Flow control: None
4. At the Login prompt, type the user ID required to enter the CLI interface and press **Enter**. The default login name is **root**. The Password prompt appears.
5. At the Password prompt, type the password required to enter the CLI interface and press **Enter**. The default password is ShoreTel.

- At the Linux prompt, type **stcli** and press **Enter**. The ShoreTel command-line interface as shown in [Figure 8](#) appears.

```

,sssssss,
,ssssssssssss,
 ssss~      ~sss,
 ssss  ssssssss ss
=sss  ssssssssss
sssss ssss----sssss
'ssss ~  s, ~sss
sssssss,sssss ]sss
~sssssssss! ]sss'
ss ~sssss.. ssss
'sss,  ssss
~ssssssssssss^
~~sssss~^

Commands for ShoreGear Appliance 100:
(0) -- Exit
(1) -- Show version
(2) -- Show system configuration
(3) -- Change system configuration
(4) -- Reboot
(5) -- Shutdown
(6) -- Archive logs
(7) -- Restore factory default
? -- Help

ShoreTel>

```

Figure 8: ShoreTel Command Line Interface



### Note

You can change the default CLI user name and password for the Service Appliance in ShoreTel Director. Refer to the ShoreTel System Administration Guide for more information.

- Type **3** and press **Enter** to change the system configuration. The Change System Configuration menu appears as shown in [Figure 9](#).

```

root@ShoreTelConference:~
Change system configuration:
(0) -- Return to previous menu
(1) -- Change IP address
(2) -- Change IP subnet mask
(3) -- Change gateway IP address
(4) -- Change server IP address
(6) -- Enable/disable DHCP
(7) -- Change network speed and duplex mode
(D) -- Set/change domain name
(F) -- Set/change optional FTP server IP address
(P) -- Set/change primary DNS IP address
(S) -- Set/change secondary DNS IP address
(*) -- Display current configuration
? -- Help

ShoreTel Config>

```

Figure 9: Change System Configuration Menu

- Type **6** and press **Enter**. The DHCP prompt appears.
- To disable DHCP, type **n** and press **Enter**.

10. Type **1** and press **Enter**. The Change IP address prompt appears.
11. Enter the IP address that you want to assign to the Service Appliance and press **Enter**.
12. Type **2** and press **Enter**. The Change IP subnet mask prompt appears.
13. Type the IP address of the subnet you want to use for the Service Appliance.
14. Type **3** and press **Enter**. The Change gateway IP address prompt appears.
15. Type the IP address of the gateway that you want the Service Appliance to use.
16. Type **0** and **Enter** to return to the Change System Configuration menu.
17. Type **4** and press **Enter** to reboot. The prompt **Are you sure you want to reboot?** appears.
18. Type **y**. The prompt **Save your changes?** appears.
19. Type **y**. The Service Appliance saves the static IP settings and reboots.

## Using DHCP to Set the IP Address

---

You can use DHCP to assign IP address information to the Service Appliance. If you want to use DHCP to configure the Service Appliance, be sure to configure the DHCP server with information for the Service Appliance before you connect the unit to the network and turn it on. Doing so makes it easier to locate the unit on the network after the IP address is assigned.

To set DHCP to assign IP address information to a Service Appliance, follow these steps:

1. Specify a permanent lease for the Service Appliance.
2. Provide the Ethernet address of the Service Appliance to the DHCP server
3. You can use a terminal emulator as described in [Setting the IP Address Manually](#) on page 49 to obtain the Ethernet address from the Service Appliance.
4. Make sure that the NTP server IP address is passed to the Service Appliance.

Refer to the documentation for the DHCP server for instructions on how to configure the DHCP server to set parameters on a network device.

## Connecting the Service Appliance to the Network

Service Appliances are equipped with two Ethernet ports. The second port provides fault-tolerant protection by providing a second circuit for the unit to communicate with the network should a failure occur within the first circuit. You can connect both ports to the same network or connect the second port to a remote network. The first method provides protection in case cable or port fails. The second method provides protection in case the Service Appliance cannot communicate with the gateway to which it is assigned.

Connect Service Appliances to a device in your network, such as a switch, using the straight-through Ethernet cable provided with the Service Appliance.

**Note**

If you are using the Secure Remote Voice feature (a way to remotely generate a control signal prompted by an audible voice command), connect the second Ethernet port (ETH1) to an external network.

To connect the Ethernet ports, follow these steps:

1. Insert one end of the Ethernet cable to the network device.
2. Insert the other end of the Ethernet cable to the left Ethernet port (ETH0) on the rear of the Service Appliance. For the location of the ETH0 port on the rear of the SA-400, see [Figure 10](#).
3. To implement failover with the unit, plug another Ethernet cable into the ETH1 port on the back of the Service Appliance and the other end into a different LAN segment.



*Figure 10: Connecting the Ethernet Cable to the SA-400*

## Installing the Bezel

A locking front bezel and key are included with the Service Appliance. The bezel fits over the front panel, blocking access to all items on the panel. Refer to the Quick Install Guide shipped with the unit for bezel installation instructions.

## Configuring the Unit for Operation

---

After you have mounted the Service Appliance in a rack and connected it to the network, you must configure the ShoreTel system to use the unit. ShoreTel Director is used to configure the ShoreTel system to use the Service Appliance. For information about using ShoreTel Director to add a new Service Appliance, see the [Adding a Service Appliance to the ShoreTel Site](#) on page 61.

For information about using ShoreTel Director, refer to the *ShoreTel System Administration Guide*.



---

## Configuring the Service Appliance

You must register the Service Appliance with the ShoreTel system and configure the system to use the appliance.

Topics discussed in this chapter include:

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Service Appliance Configuration Process .....	56
Configuring the Network Time Protocol (NTP) Server .....	57
Installing Licenses.....	57
Obtaining Conference Licenses.....	58
Installing the Licenses .....	58
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## Upgrading the Firmware

---

During the ShoreTel Director configuration, the appliance may require a firmware upgrade to the latest version.

Upgrading the firmware of a Service Appliance located at a remote site requires a minimum bandwidth of 384 kbps between the appliance and the ShoreTel headquarters server providing the upgrade firmware.

A remote upgrade may not be possible if the minimum required bandwidth is not available.

The firmware upgrade requires 45 minutes at the minimum bandwidth; higher bandwidth reduces the upgrade time.

For more information on ShoreTel Director, see the *System Administration Guide*.

## Service Appliance Configuration Process

---

To configure the service appliance, follow the process described in the following sections:

- [Configuring the Network Time Protocol \(NTP\) Server](#) on page 57
- [Installing Licenses](#) on page 57
- [Configuring a Conference Extension](#) on page 58
- [Turning Off Port 5004](#) on page 60
- [Setting up the ShoreTel System](#) on page 61
- [Configuring the Conference Viewer Page](#) on page 65
- [Configuring the Client Interface](#) on page 68
- [Configuring HTTPS](#) on page 69

- [Creating Users](#) on page 73
- [Connecting with the Microsoft Exchange Server](#) on page 74

## Configuring the Network Time Protocol (NTP) Server

---

The NTP server is used to synchronize the clock on the Service Appliance. The NTP server must be configured for every Service Appliance in a site.



### Note

This procedure is required only for static IP addresses or DHCP configurations that do not already have a configured NTP server.

---

1. In Director, click **Sites**.
2. Under Sites, click the name of the site that includes a Service Appliance.
3. The **Edit Site** window is opened.
4. Scroll down to **Network Time Protocol Server**.
5. Enter the IP address of your NTP.
6. Click **Save**.
7. Exit Director.
8. Reboot the Service Appliance.

The date and time on the Service Appliance are synchronized with the date and time on the NTP server.

## Installing Licenses

---

You must install an audio conference license and a web conference license for each audio and web conference participant you want the ShoreTel system to support.

Each SA-100 can support up to 50 simultaneous audio conference ports, 30 simultaneous web conference ports, and 500 IM clients.

Each SA-400 can support up to 200 simultaneous audio conference ports, 100 simultaneous web conference ports, 2000 IM clients.

Each Virtual Service Appliance can support up to 500 simultaneous audio conference ports, 250 simultaneous web conference ports, 5000 IM clients. The actual capacity of a Virtual Service Appliance is determined at initial run-time, based on the configuration of the virtual device.

The ShoreTel system can support up to 1,000 audio conference ports, 500 web ports, 10,000 IM users, and up to 5 service appliances.

## Obtaining Conference Licenses

1. Contact your ShoreTel partner or reseller and purchase the number and type of licenses you need. The partner or reseller will give you a purchase order number.
2. Launch ShoreTel Director.
3. Click **Administrator > System Parameters > Licenses > Keys**. The License Keys page appears.
4. Click the **Register and Request System Key** button at the top of the page. The Contact Information page appears.
5. Enter the information requested in the Register and request system key section. Be sure to include the Sales order number from your purchase and your primary contact information.
6. Click the **Now** button above the information fields.

Your request is sent to ShoreTel for processing. Your license key will be sent presently.

## Installing the Licenses

1. View the license packet that you received from ShoreTel.
2. Launch ShoreTel Director and in the ShoreTel Director menu click **Administration > System Parameters > Licenses > Keys**. The License Key Info dialog box appears.
3. Click the **New** button at the top of the page. The Contact Information page appears.
4. In the Key field, enter the license key that you received from ShoreTel.
5. In the Comment field, enter a description of the license.
6. Click **Save**.

## Configuring a Conference Extension

The ShoreTel system automatically creates a system-wide conference number that it assigns an internal ShoreTel extension. This is a number that all ShoreTel users can use to initiate or join a ShoreTel conference. You can change extension manually and even use an external phone number for the conference extension.

Each Service Appliance that you install is also automatically assigned a ShoreTel extension. This number can be used by local users to access the unit to initiate conference calls. You can also change the extension number assigned to the unit.

This section describes how to change the extension and assign an external number.

**Note**

To configure a conference extension, you must have a properly mapped phone number in ShoreTel Director.

---

To change the internal extension and assign an external number, follow this procedure:

1. Launch ShoreTel Director.
  2. Click **Administration > System Parameters > System Extensions**. The Systems Parameters page as shown in [Figure 11](#) appears.
  3. In the Extension field, enter the available extension number that you want to use for ShoreTel Conference to change the internal extension assigned to ShoreTel Conference.
  4. In the External Number field, enter the valid phone number that you want to use for ShoreTel Conference.
- 

**Note**

Make sure that the number that you use is properly mapped to a telephony trunk. Refer to the *ShoreTel System Administration Guide* for information about setting up trunks.

---

5. In the Additional Calling Information field, enter any additional information that you want to use with the extension. The text will be included in all conference invites including Outlook invite as well as in the dial in window in the ShoreTel Viewer.

**System Parameters**  
Edit System Extensions

Save Reset Help

Edit this record Refresh this page \* modified

**Voice Mail:**  
Voice Mail Extension: 2101  
Voice Mail Login Extension: 2102  
Voice Mail Broadcast Mailbox: 2600

**Account Codes:**  
Account Code Extension: 2107

**Auto-Attendant:**  
Auto-Attendant Extension: 2100  
Backup Auto-Attendant Extension: 2103

**Make Me Conference:**  
Make Me Conference Extension: 2108

**ShoreTel Conference:**  
Extension: 2113  
External Number: (e.g. +1 (800) 765-4321 x1234)

**Additional Calling Information:**

Figure 11: Systems Parameters Page

## Turning Off Port 5004

The Service Appliance does not support using port 5004 for RTP audio transmissions. Make sure that the option to use port 5004 for RTP is turned off:

1. Launch ShoreTel Director.
2. Click **Administration > Call Control > Options**. The Call Control Options page appears.
3. Uncheck the **Always Use Port 5004 for RTP** check box.
4. Click **Save**.

# Setting up the ShoreTel System

---

This section describes how to set up the ShoreTel system to use the Service Appliance.

## Adding a Service Appliance to the ShoreTel Site

After you have installed the Service Appliance on the network, you must associate the unit with a ShoreTel site. A ShoreTel site is defined as a region managed by a ShoreTel server. You will need the following information to associate the unit with a site:



---

**Note**

To obtain the following information, you can use the terminal emulation procedure described in [Setting the IP Address Manually](#) on page 49.

---

- IP address
- Ethernet address



---

**Note**

If the service appliance is installed inside the DMZ, be sure that routable traffic between the DMZ and LAN is enabled and NAT is disabled.

---

To associate a service appliance with a ShoreTel site, follow these steps:

1. Launch and login to ShoreTel Director with system administrator privileges.
2. In the ShoreTel Director pane, click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliance pane appears.
3. In the **Add new switch/appliance at site:** field, select the ShoreTel server site where the Service Appliance is physically installed.
4. In the **of type:** field, select **Appliance 100 Collaboration**, **Appliance 400 Collaboration**, or **Virtual Appliance Collaboration**.
5. Click **Go**. The Service Appliance page appears.
6. Enter the appropriate information to register the Service Appliance with the ShoreTel system. [Table 8](#) provides information about the registration fields.
7. Click **Save**.

**Table 8: Registration Fields for the Service Appliance**

Field	Description
Name (required)	Enter the name that you want to use to identify the Service Appliance.
Site (required)	Verify that the site listed is the site you want this Service Appliance to use.
Description	A short description of the switch. This optional entry typically describes where the switch is located or how it is used. For example, the switch description might indicate the wiring closet where the switch is located.
IP Address (required)	Enter the IP Address assigned to the Service Appliance.  You can use the Find Switch feature to select Service Appliances that are on the same network segment as the headquarters server.
Ethernet Address (required)	Enter the Ethernet address (MAC address) found on the ShoreTel Inc. label on the back of the unit.
Fully Qualified Domain Name (required)	Enter the complete domain name or IP address assigned to the Service Appliance. (You can click Ping to verify that the unit can be found on the network.)
Server to Manage Switch (required)	Select the ShoreTel server that you want to use to manage the Service Appliance.
Is Remote Service Appliance	For a remote Service Appliance, check this check box.
Local Call Info Number	Enter the local call information number.
<b>Conference Section</b>	
Extension (required)	Enter the ShoreTel extension that you want to assign to the Service Appliance.
Assign User Group (required)	Select the user group that you to associate with the Service Appliance. Audio Conference is the default value.
Built-in Audio Conference Ports	For a virtual Service Appliance, displays the number of audio conference ports the virtual Service Appliance supports.
Built-in Web Conference Ports	For a virtual Service Appliance, displays the number of web conference ports the virtual Service Appliance supports.
<b>Backup Section</b>	
Enable Daily Backup	Check to have the Service Appliance perform a backup daily.
IP Address	Enter the IP address of the device to which you want the Service Appliance to back up files.
FTP Port	Enter the port number that you want the Service Appliance to use for backup. This field is required.

**Table 8: Registration Fields for the Service Appliance(Continued)**

Field	Description
Directory	Enter the URL for the directory to which you want the Service Appliance to back files up.
User ID	Enter the user name that you want the Service Appliance to use to access the backup directory.
Password	Enter the password the Service Appliance is to use to access the backup directory in both fields.

## Verifying Date and Time Synchronization

1. On your service appliance, open a Windows secure shell (SSH) window.
2. Run the **date** command.
3. Verify that the date and time on your service appliance are synchronized with the date and time on your NTP server.

## Configuring a Service Appliance in the DMZ

To set up the Service Appliance in the DMZ, you must configure it to be in compliance with the security parameters required for the network.

To configure the Service Appliance for your DMZ, do the following:

1. Launch ShoreTel Director.
2. Choose **Administration > System Parameters > Security > Port Configuration**. The Port Configuration page appears.
3. In the First UDP Port field, enter the first port number of the range that you want the Service Appliance to use. The last port in the range is automatically configured as the first port plus 550. The default first port value is 10000. The default end port value is 10550 (10000 + 550). The following table lists the ports the Service Appliance supports:

**Table 9: Service Appliance Port Address Ranges that Support DMZ Installation**

Start	Stop	Start	Stop	Start	Stop	Start	Stop
20	–	123	–	5269	–	5455	–
21	–	443	–	5432	–	5457	–
22	–	833	–	5440	–	5461	5470
25	–	2427	–	5446	5450	5555	–
80	–	4308	–	5452	–		
111	–	5060	–	5454	–		

4. Choose **Administration > System Parameters > Security > Trusted IP Ranges**. The Trusted IP Range page appears.
5. Select one of the default IP address ranges, or click **New** to enter a new trusted IP address range.

## Configuring a Backup Service Appliance for the Headquarters Server

The Service Appliance provides services for users associated with the ShoreTel site where it is installed and to users of any site in the ShoreTel hierarchy that shares a branch with the installation site. Unless a Service Appliance is installed or configured on the ShoreTel headquarters site, all system users may not have access to Service Appliance services. To ensure that all system users have access to Service Appliance services when there is no unit installed on the headquarters site, you can configure a backup site containing a Service Appliance for the headquarters server. Configuring the backup site with the headquarters server establishes a hierarchical branch that allows all users throughout the system access to Service Appliance services.

To configure a backup Service Appliance site on the headquarters server, follow these steps:

1. Launch ShoreTel Director.
2. Click **Administration > Sites**. The Sites page appears.
3. In the Site column, select headquarters site. The configuration page for the headquarters site appears.
4. In the **Service Appliance Conference Backup Site** field, select a site.
5. The backup site can be a logical site.
6. Click **Save**.

## Setting Up a Service Appliance to Remote Service Appliances

Content for conference web pages is managed by the headquarters server but distributed to endpoints through the local Service Appliances. When updates occur in the conference viewer, the updates are first sent to the Service Appliance, which then distributes them to the endpoints for viewing. Situations where distance or network robustness cause network latency to exceed 100 ms between the headquarters server and the Service Appliance can make rendering objects on the endpoints very slow. One possible remedy is to use a Service Appliance closer to the headquarters server as a web-portal proxy for the distant Service Appliance.

Because the proxy is closer to the source, the latency that occurs between the headquarters server and remote Service Appliances is eliminated allowing web pages are rendered quicker. This section describes how to set up a Service Appliance proxy for web portal rendering.

To set up a web portal proxy for a remote Service Appliance, follow these steps:

1. Install a Service Appliance near the headquarters server, so that the latency between the two is under 100 ms.
2. Identify a Service Appliance for which you want to use a proxy web portal.

3. Launch ShoreTel Director.
4. Click **Administration > Platform Hardware > Voice Switches/Server Appliances > Primary**. The Primary Voice Switches/Server Appliances page appears.
5. Click the Service Appliance for which you want to use the web portal proxy.
6. Check the **Is Remote Service Appliance** check box.
7. Click **Save**.

Requests for the web portal by endpoints using this Service Appliance will be redirected to the proxy portal. If a device is not available to perform the web portal proxy service, the headquarters server will use the remote Service Appliance.

Also, checking the **Is Remote Service Appliance** check box informs the system not to redirect calls to this Service Appliance for failover purposes.

## Configuring the Conference Viewer Page

---

A ShoreTel Director user with administration privileges can customize the conference viewer page that the Service Appliance generates. The administrator can change the logo that appears, place a link behind the logo that redirects the user to another site, and change the name that appears on the page.

If you access the conference viewer from a PC running Windows Server, ensure that your browser allows JavaScript to download. JavaScript is required to render the conference viewer.



---

### Note

You must create an administrator user account in ShoreTel Director to access the page that lets you configure conference web page. You cannot use the default user ID and password (admin and changeme) to access this page.

---

To customize the conference web page for the Service Appliance, follow these steps:

1. Log in to ShoreTel Director as an administrator with privileges to access the **Launch** button for the Service Appliance. You can create this administrator account as follows:
  1. Using Director, create a new user on the headquarters server whose client ID is **admin**.
  2. Assign system administrator privileges to the new user account you created.
  3. Log in to Director using the new administrator account you created.
2. Choose **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/ Service Appliance page appears.
3. Locate the Service Appliance for which you want to modify the conference viewer page and click **Launch** in the Quick Launch column. The Service Appliance Conference Administration page appears.

4. Click **Website**. The Website page appears, as shown in [Figure 12](#).
5. In the Web Site Logo field, enter the path to the logo that you want to appear on web conference pages.
6. To specify the link that you want to associate with the web site logo:
  1. Select the **Link to the Home page** radio button to connect users to the conference home page when they click on the logo.
  2. Select the **Custom link** radio button and enter the path to the destination that you want users to go to when they click on the logo.
7. In the Window Title field, enter the name that you want to use as the identifier for conferences managed by this Service Appliance. The name will appear on the browser tab of active conferences. The default name is ShoreTel Conference.
8. To create footers that appear at the bottom of the conference web page, follow these steps:
  1. In a Footer Label field, enter the name that you want to appear as a footer at the bottom of conference web pages.
  2. Click **Submit** to create the footer. The page refreshes.
  3. Click **Edit** page next to the footer label for which you want to provide text. The “Edit *footer name*” page appears.
  4. Enter the text that you want to appear when a user clicks the footer. You can use HTML text to populate the field.
  5. Click **Submit**. The page refreshes.
  6. The footer will appear on the bar at the bottom of the conference web page. Users can access the message by clicking the footer label.
9. To remove a footer, erase the footer label and click **Submit**.
10. Click **Submit** to save your changes.

The remaining fields are not used.

### Service Appliance Conference Administration

Conferences Reports Website Conference Viewer HTTPS Help

#### Website

**Web Site Logo:**    Reset to default  
Select a file to upload. (jpeg, gif or png)  
Image will be resized if it is larger than 420x80 pixels.

Link to the Home page.  
 Custom link:   
Example: http://www.mysite.com

**Window Title:**

**Web Site Style:**

Public	<b>My Conferences</b>	Personal Library	My Profile	
Conferences	Recordings	System Test	Speed Test	Download

Select a theme:

**Footer Label 1:**  [Edit page](#)

**Footer Label 2:**  [Edit page](#)

**Footer Label 3:**  [Edit page](#)

**Footer Label 4:**  [Edit page](#)

Figure 12: Website Page

## Configuring the Client Interface

---

You can set interface parameters that affect conference participants.

You can insert a logo on the conference viewer web page, activate a tone that signals a user joining a conference, and you can set up a link that directs participants to a web page at the completion of their conference.

You can also specify options for controlling call backs during conferences, specify options for controlling host and participant access to conferences, specify the number of times an IP address can attempt and fail to join a web conference in a specific number of seconds before the IP address is locked out, and specify the number of minutes an IP address is locked out before it can again attempt to join a web conference.

To configure these parameters for the client interface, do the following:

1. Log in to ShoreTel Director as an administrator with privileges to access the **Launch** button for the Service Appliance. For information about creating a user with the required privileges, see [Configuring the Conference Viewer Page](#) on page 65
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/ Service Appliance page appears.
3. Locate the Service Appliance for which you want to modify the conference interface and in the Quick Launch column click **Launch**. The Service Appliance Conference Administration page appears.
4. Click **Conference Viewer**. The Conference Viewer page appears.
5. In the Logo field, enter the path to the logo that you want to appear on the Conference Viewer page.
6. For the Alert Sound parameter, click Yes or No to choose whether a tone sounds by default when a user enters a conference.
7. In the Exit Page field, enter the path to the page that you want to direct participants to when the conference ends.
8. For Call Me Options, select one of the three options for controlling audio call backs during conferences:
  - Enable Call Me: Caller can be called back at any time by the conference host or a conference participant. This option is not restrictive.
  - Enable Call Me for authenticated users or when host is present: Caller can be called back only when an authenticated participant or the host is present in the conference. This option restricts the call back feature at all times under specific circumstances.
  - Disable Call Me. Caller cannot be called back at any time under any circumstances.
9. For Access Code Options, select the options for controlling host and participant access to conferences:

- Enable Custom Host Access Codes: A host can enter a custom access code in order to enter a conference.
- Enable Custom Participant Access Codes: A participant can enter a custom access code in order to enter a conference.

If an Access Code Option is selected, specify the length for the selected code:

- Min = 6
- Max = 8

10. For Access Code Error Detection, specify the following:
  - Number of times an IP address can attempt and fail to join a web conference in a specific number of seconds before the IP address is locked out.
  - Number of minutes an IP address is locked
11. In the Default Conference Type field, specify the default condition that you want to use for starting conferences. Choose one of the following options:
  - Click **Start the conference only when host joins** to allow conferences to start only when the host joins.
  - Click **Start the conference when anyone joins** to allow conferences to start when the first participant joins.
  - Click **Start the conference when anyone joins and make everyone a presenter** to allow conferences to start when the first participant joins and allow any conference participant to be a presenter.
12. Click **Submit**.

## Configuring HTTPS

---

ShoreTel support HTTPS for secure conference calls. Secure ShoreTel web conferencing uses 2048-bit encryption.

To provide HTTPS security to conference users, you must upload Secure Socket Layer (SSL) certificates on each Service Appliance for which you want to provide HTTPS security.

This section describes how to obtain an SSL certificate and how to install the certificate on Service Appliances.

## Obtaining an SSL Certificate

If you already have an SSL certificate, you can install it on your Service Appliance. For instructions about installing an SSL certificate, see [Uploading an HTTPS Certificate](#) on page 71. If you do not have an SSL certificate, ShoreTel recommends that you purchase an SSL certificate from a reputable Certificate Authority (CA). To purchase a certificate, you must first create a Certificate Signing Request (CSR) to present to the CA.

To create a CSR in ShoreTel Director, follow these steps:

1. Launch ShoreTel Director as a user with administrator privileges. For information about creating a user with the required privileges, see [Configuring the Conference Viewer Page](#) on page 65.
2. Choose **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears.
3. Select a Service Appliance listing and in the Quick Launch column and click **Launch**. The Service Appliance Conference Administration Conferences page appears.
4. Click the **HTTPS** tab. The HTTPS tab appears.
5. Enter the HTTPS parameters. For a description of the HTTPS fields, see [Table 10](#).



### Note

On the HTTPS tab, an asterisk indicates a required field.

6. Click **Create CSR**. The ShoreTel system creates a CSR and a private key.  
The system generates links that you can use to download the CSR and private key.
7. Download the CSR and private key, if required, and send them to the CA.

**Table 10: HTTPS Fields and Descriptions**

Field	Description
Country	Enter the two-character country code for the country where the system is installed. Refer to ISO 3166 for information about country codes.
State or Province	Enter the name of the state or province where the system is installed.
Locality	Enter the name of the city where the system is installed.
Organization	Enter the legal name of the company or organization or the person that is requesting the certificate.
Organizational Unit	Enter the name of the department that is requesting the certificate.

**Table 10: HTTPS Fields and Descriptions**

Field	Description
Common Name	Enter the Fully Qualified Domain Name (FQDN) for which you want the SSL certificate.  <b>Note:</b> If the CSR is for a wildcard certificate, you must prepend *. to the common name; for example, *.domain.com.
Email Address	Enter the email address of the administrator who will handle the certificate.

## Uploading an HTTPS Certificate

You can upload certificates for a single Service Appliance or for all of the Service Appliances currently installed on your systems depending upon your certificate agreement.

To upload HTTPS certificates, follow these steps:



### Note

Wildcard certificates that you upload get automatically transferred to all Service Appliances, including units that you add to the system later.

1. Launch ShoreTel Director as a user with administrator privileges. For information about creating a user with the required privileges, see [Configuring the Conference Viewer Page](#) on page 65.
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears.
3. Select a Service Appliance listing and in the Quick Launch column and click **Launch**. The Conferences page appears.
4. Click the **HTTPS** tab. The HTTPS tab appears.
5. Scroll to the Upload CA-Authorize SSL Certificate section and follow these steps:
6. Check the **This is a wildcard certificate** check box to use the certificate and private key you are about to upload on all Service Appliances on your ShoreTel system.
  1. In the SSL Certificate field, enter or browse to the path to the file that contains the SSL certificate that you want to use. This field is required.
  2. In the Intermediate CA Certificate field, enter or browse to the path to the file that contains the intermediate SSL certificate that you want to use.
  3. In the Private Key field, enter or browse to the path to the file that contains the Private Key that you want to use.
  4. Click **Upload**.

7. Click **Restart Web Server**. This reboots the Service Appliance and activates all certificates when the unit restarts.

## Enabling HTTPS

You must have a certificate to run HTTPS. For more information, see [Obtaining an SSL Certificate](#) on page 70 and [Uploading an HTTPS Certificate](#) on page 71.

If you do not obtain and upload a certificate, the system will automatically create a self-signing SSL certificate and private key.

A self-signing certificate allows a Service Appliance to create and participate in HTTPS conferences, but as the certificate is not issued by a third party, HTTPS security is not optimized. When a self-signing certificate is used, users trying to access the secure conference site will receive a warning message that states the security provided is not guaranteed.

You can enable HTTPS on selected Service Appliances or on all Service Appliances in your system. ShoreTel recommends that you enable HTTPS on all of your Service Appliances. In conferences where HTTPS is used, Service Appliances that are not configured to use HTTPS cannot communicate with Service Appliances that are using HTTPS and are not allowed to join.

To enable HTTPS on a Service Appliance, follow these steps:

1. Launch ShoreTel Director as a user with administrator privilege. For information about creating a user with the required privileges, see [Configuring the Conference Viewer Page](#) on page 65.
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears.
3. Select a Service Appliance listing and in the Quick Launch column click **Launch**. The Service Appliance Conference Administration Conferences page appears.
4. Click the **HTTPS** tab. The HTTPS tab appears.
5. In the Enable HTTPS section, make sure that HTTPS is enabled. The function is enabled when the first line contains the following message:

HTTPS is currently enabled on this Service Appliance.

6. If the service appliance is disabled, follow these steps:
  1. In the **Enable HTTPS on the following Service Appliance** field, select the option that indicates the device on which you want to enable HTTPS.



### Note

If you select All, only the Service Appliances that are currently online get enabled. When you add new units, you must repeat this process to enable them.

---

2. Click **Go** to enable HTTPS.

## Using the Firefox Browser

Users who access the Conference Web Portal on appliances with HTTPS enabled and who use the Firefox web browser must disable Transport Layer Security (TLS) to properly render web pages.

With a self-signed certificate, uploads to the Personal or Shared Library may fail when using the Firefox web browser.

To disable TLS in Firefox, follow these steps:

1. On the Firefox options panel, click the Advanced tab.
2. Click the Encryption tab.
3. Uncheck the **Use TLS 1.0** check box.
4. Click **OK**.

## Creating Users

Anyone can participate in or initiate ad hoc conference calls. However, the ShoreTel Conferencing users referred to here are ShoreTel system users who are granted accounts that allow them to schedule and host conferences on a Service Appliance. For information about configuring users, refer to the *ShoreTel System Administration Guide*.

To configure ShoreTel Conferencing users, perform the following steps:

1. Launch ShoreTel Director.
2. Click **Administration > Users > Individual Users**. The Individual Users page appears.
3. Select the user for whom you want to enable the service. The Users page containing the profile of the user you select appears.
4. Scroll down to Conference Setting section near the bottom of the page.
5. In the Appliance field, select the Service Appliance that you want the user to use for conference calls.
6. Click **Save**.



### Note

If you are not running proxy services on your network, ShoreTel recommends that you disable the Microsoft Internet Explorer Internet Option setting **Automatically detect settings** on the machines of conference users. This setting can cause the Windows Presenter on user machines using a WiFi connection to take up to 30 seconds to load during conferences.

## Configuring Instant Messaging

---

For information about configuring instant messaging, refer to Chapter 16, Desktop Installation, in the *Planning and Installation Guide*.

## Connecting with the Microsoft Exchange Server

---

ShoreTel provides an add-in that allows users to integrate Microsoft Outlook Calendar with ShoreTel conferencing through ShoreTel Communicator for Windows. To install the add-in, navigate to **Tools > Options > Outlook** in ShoreTel Communicator for Windows and install the desired options.

When the user installs the add-in, the ShoreTel tab appears in the appointment window of the Microsoft Outlook calendar, which allows the user to create meetings that have ShoreTel conferencing parameters. Information about conferences users create is stored in the ShoreTel database for the service appliance and used to update the conference user interface. Users can edit, delete, and make exceptions to the conferences that they create in Outlook. These changes are also uploaded to the database and used to update the conference user interface.

Conferences that you create in Microsoft Outlook can be modified through the ShoreTel Conference Web Portal.



---

### Note

Use of the Outlook add-in is not dependent upon Exchange Server integration.

---

The connector ShoreTel uses to connect Service Appliances with the Microsoft Exchange server is built into the ShoreTel server software and implemented through ShoreTel Director.

The connector is designed to allow one service appliance to serve as intermediary for all of the others. This unit will poll the Exchange server periodically and maintain the connection between the Exchange server and the ShoreTel system, which will update the other appliances as required. Data about the Exchange synchronization polling appears in the Service Appliance Maintenance page for this unit only.

The connector allows the system to poll the Exchange server for updates to existing conferences. Conference data that has changed in Outlook Calendar is updated in the Conference Web Portal. New conferences are not added to the ShoreTel database during polling, but about the time they are created in Outlook Calendar. Polling intervals are based on the number of Outlook Calendar users your system supports. For every 500 users, the system adds 30 minutes to the polling interval. For example, for systems that have 500 users the polling interval is every 30 minutes. For systems that have up to 1000 users the polling interval is 60 minutes. For systems that have 5001 users the polling interval is 720 minutes (12 hours).

## Enabling the ShoreTel Connector to Microsoft Exchange

You can use the ShoreTel connector for Exchange Server with one Exchange Server only. Connections with multiple Exchange Servers are not supported.

If you are upgrading or migrating the Exchange Server and have multiple Exchange Servers, ShoreTel recommends that you disable the Exchange connector before you start the upgrade or migration.

Before you enable the ShoreTel Connector, ensure your system satisfies the following requirements:

- Exchange user for ShoreTel conferencing. This must be a privileged user able to query data for other Exchange users.
- Microsoft Exchange Server 2010 or Exchange Server 2007 SP1.
- Exchange e-mail address for end users.

To enable the ShoreTel Connector for Microsoft Exchange, follow these steps:

1. Launch ShoreTel Director as a user with administrator privilege. For information about creating a user with the required privileges, see [Configuring the Conference Viewer Page](#) on page 65.
2. Click **Administration > System Parameters > Other**. The Edit Other Parameters page appears.
3. In the Service Appliance section, check the Enable Exchange Connector checkbox.
4. In the Exchange Server field, enter the URL of the Exchange Server. (You can also use the IP address.) To verify that the address is correct, click Ping.
5. In the Username field, enter the user name used for the mailbox created on the Microsoft Exchange server for ShoreTel Conferencing.
6. In the Password field, enter the password required for the user to access the ShoreTel conferencing mailbox.
7. Click **Save**.



---

**Note**

The connector uses the Primary SMTP Address of the user to authenticate access to the Exchange Server. If the user or an administrator changes the e-mail address, the connector will not be able to access the account of the user, and the user will not be able to synchronize Outlook with the Service Appliance.

---

8. Click **Administration > User > Individual Users**. The Individual Users page appears.
9. Select a user that you want to allow to synchronize their ShoreTel conference schedule with Outlook. The Edit User page appears.
10. Scroll down to Email Address and enter the Microsoft Exchange Primary SMTP Address assigned to the user.
11. In the Appliance field in the Conference Settings section, select the Service Appliance that you want the user to use.
12. Click **Save**.

Conference sessions are reported in both Microsoft Outlook calendar and the conference page for the user on the ShoreTel Conferencing Website.

## Monitoring the Exchange Connector

ShoreTel conferencing uses only one Service Appliance to monitor the Exchange connector. The system automatically chooses a unit to monitor the connector based on a number of criteria, including whether the unit is associated with the headquarters server. Only headquarters site Service Appliances can perform Exchange Synchronization.

To determine whether the MS Exchange connector is enabled or to determine the last polling update, follow these steps:

1. Launch ShoreTel Director as a user with administrator privilege.
2. Click **Maintenance > Quick Look**. The Quick Look page appears.
3. In the Server/Appliance column, click the name of the Service Appliance for which you want to monitor information about the status of the Exchange connector.
4. In the Service Appliance Status section, locate Exchange Connector and note in the Status column whether the connector is running.
5. In the Service Appliance Status section, locate Last Exchange Sync Time and note in the Status column the entry of the last polling update.

## Conference Administration Interface

The Service Appliance Conference Administration user interface allows ShoreTel Director users with administrator privilege to view information about Service Appliance conferences on the system and to set parameters for web conferences. It gives the administrator the ability to view, establish or modify the following:

- View current conferences
- Generate usage and load reports
- Configure the conference website (see above)
- Establish default conference parameters (see above)
- Enable and configure secure conferencing through HTTPS (see above)

To access the Service Appliance Conference Administration user interface, follow these steps:

1. Launch ShoreTel Director as a user with administrator privileges. For information about creating a user with the required privileges, see [Configuring the Conference Viewer Page](#) on page 65.
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears as shown in [Figure 13](#).

3. Select a Service Appliance and in the Quick Launch column click **Launch**. The Service Appliance Conference Administration page appears as shown in Figure 14.

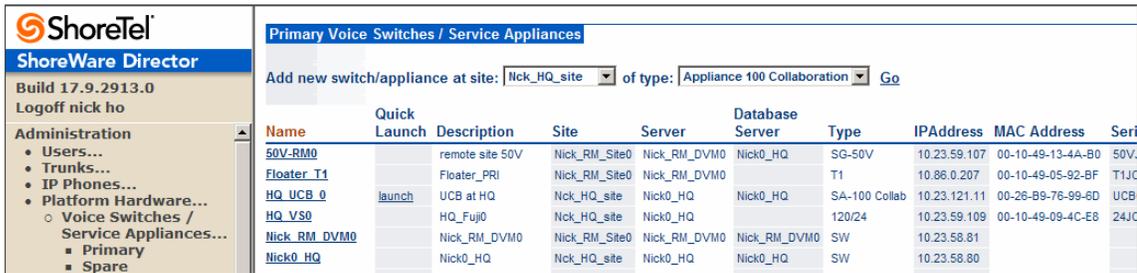


Figure 13: Primary Voice Switches/Service Appliance Page

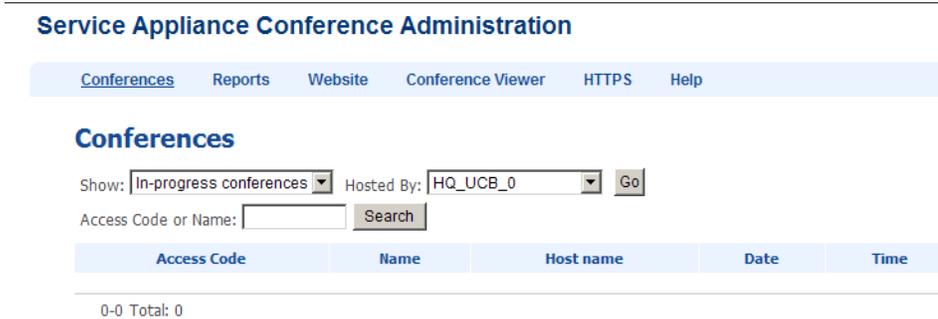


Figure 14: Service Appliance Conference Administration Page

# Conferences

The default view for the administrator when they enter the Conference Administration UI is Conferences. This page allows the administrator to view a list of conferences hosted on the system. This screen allows filters to display the following information:

- Show all conferences, all conferences in progress (including instant conferences initiated through ShoreTel Communicator), or all recordings.
- Show conferences/recordings hosted on all appliances or by a specific appliance.
- Search for specific conferences by access codes or name. Search is not case-sensitive.
- Maximum number of conferences/recordings displayed per page is fixed at 10.
- Shows the dates and times for all scheduled conferences, but no dates for reservationless conferences.

Additionally, the Administrator can delete conferences if required to manage appliance loading. Any in-progress conference that is deleted will result in ending that conference.

## Reports

The Reports page allows the administrator to access and download usage information from any one or all appliances in the system. To access the Reports page, do the following:

1. Launch ShoreTel Director as a user with administrator privilege. (The default administrator, admin, cannot be used.)
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears.
3. Select a Service Appliance and in the Quick Launch column click **Launch**. The Service Appliance Conference Administration Conferences page appears, as shown in [Figure 13](#).
4. Click the **Reports** tab. The Web Conference Reports tab appears as shown in [Figure 15](#).

Figure 15: Web Conference Reports Tab

The following specific information is available through this tab:

- Shows all sessions for the time period selected from most recent to oldest for the last 12 months.
- Reports screen presents the following items for each conference session:
  - Session number
  - Session date, time, duration conference name
  - Access codes, host and number and name of participants



### Note

The links under the Participants column access a detailed list of participant names and other information such as conference entry time, duration, phone number, IP address and type of access (web/audio).

- Concurrent ports ([Figure 16](#)) presents the number of conference ports used by date and time and appliance (or all appliances). Available date filters include the following items:
  - Last 3 days
  - Last 7 days

- Last 30 days
- By month, up to the last 12 months

[Conferences](#)   [Reports](#)   [Website](#)   [Conference Options](#)   [HTTPS](#)   [Help](#)

## Reports

[Conference sessions](#)   [Concurrent ports](#)

Time zone: (UTC) Greenwich Mean Time (Monrovia)

Show: Last 3 days   All Service Appliances  

 [Download](#)

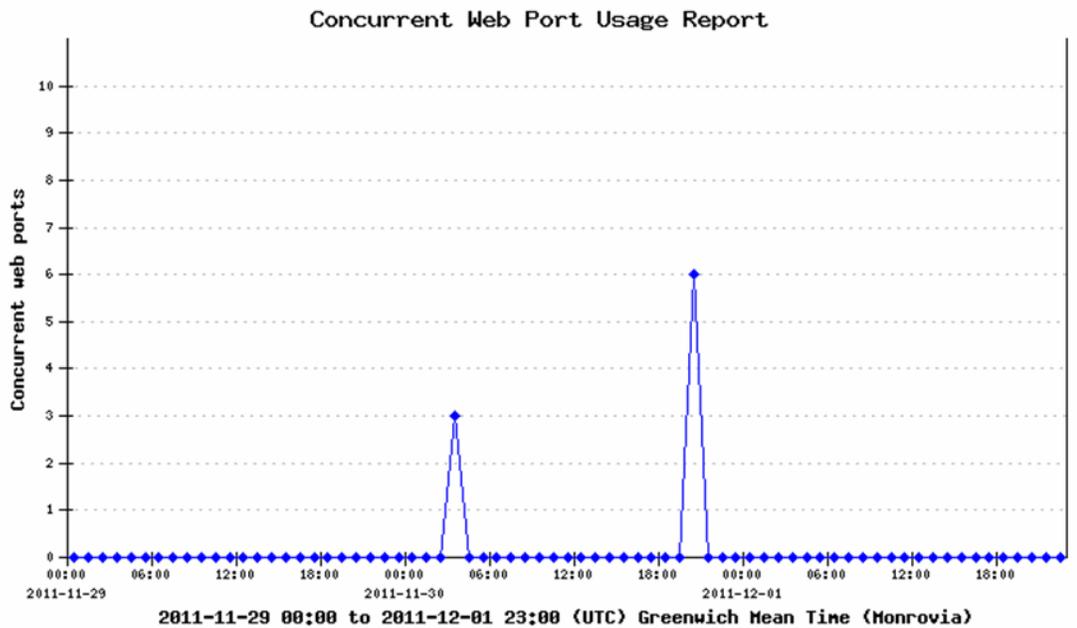


Figure 16: Service Appliance Reports - Concurrent Ports



# CHAPTER

# 7

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## Conference Administration

Topics discussed in this chapter include:

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# Conference Administration Interface

The Conference Administration interface allows ShoreTel Director users with administrator privilege to view information about Service Appliance conferences on the system and to set parameters for web conferences. It gives the administrator the ability to view, establish or modify the following:

- View current conferences
- Generate usage and load reports
- Configure the conference website (see above)
- Establish default conference parameters (see above)
- Enable and configure secure conferencing through HTTPS (see above)

## Accessing the Conference Administration Interface

To access the Conference Administration interface, follow these steps:

1. Launch ShoreTel Director as a user with administrator privileges. For information about creating a user with the required privileges, see [Conference Administration Interface](#) on page 82.
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears as shown in [Figure 17](#).
3. Select a Service Appliance and in the Quick Launch column click **Launch**. The Service Appliance Conference Administration page appears as shown in [Figure 18](#).

Name	Quick Launch	Description	Site	Server	Database Server	Type	IP Address	MAC Address	Serial
50V-RM0		remote site 50V	Nick_RM_Site0	Nick_RM_DVM0	Nick0_HQ	SG-50V	10.23.59.107	00-10-49-13-4A-B0	50V...
Floater_T1		Floater_PRI	Nick_RM_Site0	Nick_RM_DVM0		T1	10.86.0.207	00-10-49-05-92-BF	T1J...
HQ_UCB_0	launch	UCB at HQ	Nick_HQ_site	Nick0_HQ	Nick0_HQ	SA-100 Collab	10.23.121.11	00-26-B9-76-99-6D	UCB...
HQ_VS0		HQ_Fuji0	Nick_HQ_site	Nick0_HQ		120/24	10.23.59.109	00-10-49-09-4C-E8	24C...
Nick_RM_DVM0		Nick_RM_DVM0	Nick_RM_Site0	Nick_RM_DVM0	Nick_RM_DVM0	SW	10.23.58.81		
Nick0_HQ		Nick0_HQ	Nick_HQ_site	Nick0_HQ	Nick0_HQ	SW	10.23.58.80		

Figure 17: Primary Voice Switches/Service Appliance Page

### Service Appliance Conference Administration

Conferences   Reports   Website   Conference Viewer   HTTPS   Help

Show:  Hosted By:

Access Code or Name:

Access Code	Name	Host name	Date	Time
0-0 Total: 0				

Figure 18: Service Appliance Conference Administration Page

## Conferences

The default view for the administrator when they enter the Conference Administration UI is Conferences. This page allows the administrator to view a list of conferences hosted on the system. This screen allows filters to display the following information:

- Show all conferences, all conferences in progress (including instant conferences initiated through ShoreTel Communicator), or all recordings.
- Show conferences/recordings hosted on all appliances or by a specific appliance.
- Search for specific conferences by access codes or name. Search is not case-sensitive.
- Maximum number of conferences/recordings displayed per page is fixed at 10.
- Shows the dates and times for all scheduled conferences, but no dates for reservationless conferences.

Additionally, the Administrator can delete conferences if required to manage appliance loading. Any in-progress conference that is deleted will result in ending that conference.

## Reports

The Reports page allows the administrator to access and download usage information from any one or all appliances in the system. To access the Reports page, do the following:

1. Launch ShoreTel Director as a user with administrator privilege. (The default administrator, admin, cannot be used.)
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears.
3. Select a Service Appliance and in the Quick Launch column click **Launch**. The Service Appliance Conference Administration Conferences page appears, as shown in [Figure 17](#).
4. Click the **Reports** tab. The Web Conference Reports tab appears as shown in [Figure 19](#).

### Web Conference Reports

Conferences Reports Website Conference Viewer HTTPS Help

**Reports**

[Conference sessions](#) [Concurrent ports](#)

Time zone: (UTC -08:00) Pacific (US & Canada) [Download](#)

Show conference sessions for: Today HQ\_UCB\_0 Go Access Code: Search

Session	Date	Time	Duration	Name	Access Codes	Hosted by	Participants
0-0 Total: 0							

Figure 19: Web Conference Reports Tab

The following specific information is available through this tab:

- Shows all sessions for the time period selected from most recent to oldest for the last 12 months.
- Reports screen presents the following items for each conference session:
  - Session number
  - Session date, time, duration conference name
  - Access codes, host and number and name of participants



**Note**

The links under the Participants column access a detailed list of participant names and other information such as conference entry time, duration, phone number, IP address and type of access (web/audio).

---

- Concurrent ports ([Figure 20](#)) presents the number of conference ports used by date and time and appliance (or all appliances). Available date filters include the following items:
  - Last 3 days
  - Last 7 days
  - Last 30 days
  - By month, up to the last 12 months

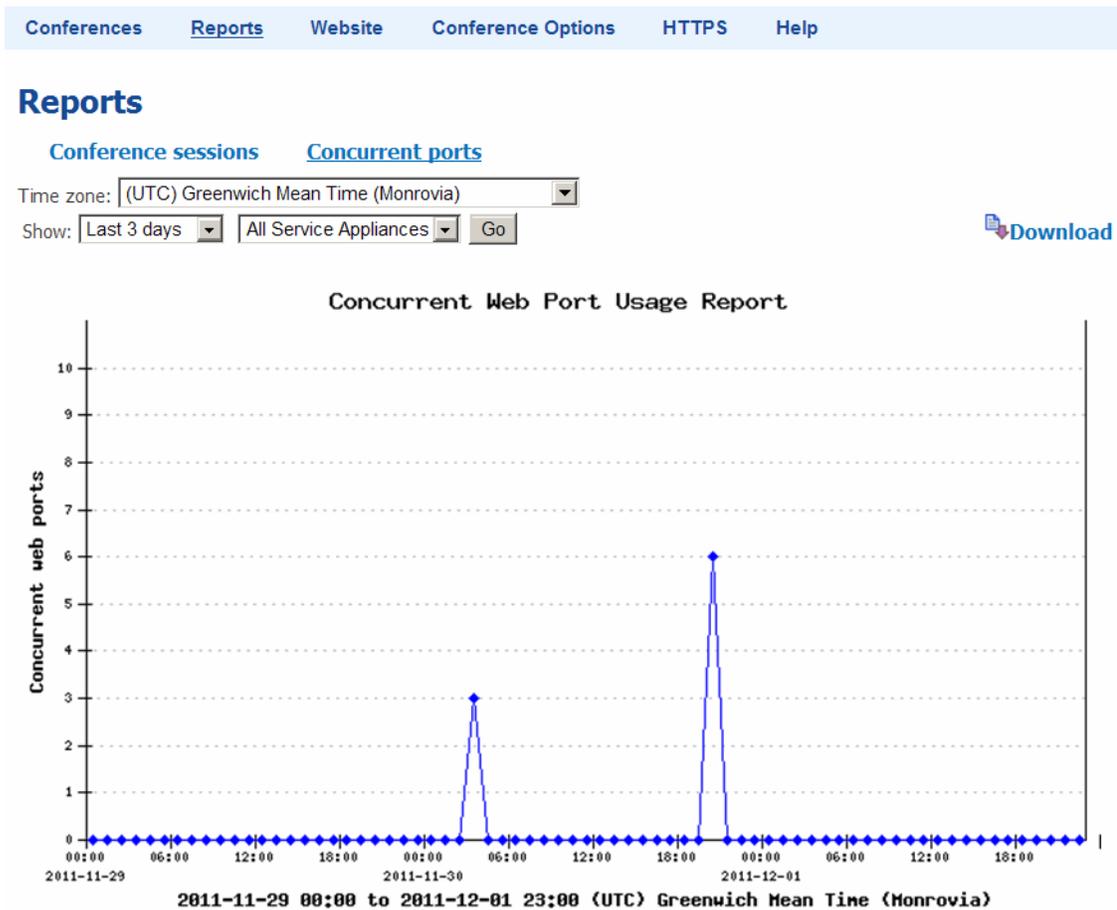


Figure 20: Service Appliance Reports - Concurrent Ports

## Configuring the Conference Viewer Page

A ShoreTel Director user with administration privileges can customize the conference viewer page that the Service Appliance generates. The administrator can change the logo that appears, place a link behind the logo that redirects the user to another site, and change the name that appears on the page.

If you access the conference viewer from a PC running Windows Server, ensure that your browser allows JavaScript to download. JavaScript is required to render the conference viewer.



**Note**

You must create an administrator user account in ShoreTel Director to access the page that lets you configure conference web page. You cannot use the default user ID and password (admin and changeme) to access this page.

To customize the conference web page for the Service Appliance, follow these steps:

1. Log in to ShoreTel Director as an administrator with privileges to access the **Launch** button for the Service Appliance. You can create this administrator account as follows:
  - a. Using Director, create a new user on the headquarters server whose client ID is **admin**.
  - b. Assign system administrator privileges to the new user account you created.
  - c. Log in to Director using the new administrator account you created.
2. Choose **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/ Service Appliance page appears.
3. Locate the Service Appliance for which you want to modify the conference viewer page and click **Launch** in the Quick Launch column. The Service Appliance Conference Administration page appears.
4. Click **Website**. The Website page appears, as shown in [Figure 21](#).
5. In the Web Site Logo field, enter the path to the logo that you want to appear on web conference pages.
6. To specify the link that you want to associate with the web site logo:
  - a. Select the **Link to the Home page** radio button to connect users to the conference home page when they click on the logo.
  - b. Select the **Custom link** radio button and enter the path to the destination that you want users to go to when they click on the logo.
7. In the Window Title field, enter the name that you want to use as the identifier for conferences managed by this Service Appliance. The name will appear on the browser tab of active conferences. The default name is ShoreTel Conference.
8. To create footers that appear at the bottom of the conference web page, follow these steps:
  - a. In a Footer Label field, enter the name that you want to appear as a footer at the bottom of conference web pages.
  - b. Click **Submit** to create the footer. The page refreshes.
  - c. Click **Edit** page next to the footer label for which you want to provide text. The "Edit *footer name*" page appears.
  - d. Enter the text that you want to appear when a user clicks the footer. You can use HTML text to populate the field.
  - e. Click **Submit**. The page refreshes.
  - f. The footer will appear on the bar at the bottom of the conference web page. Users can access the message by clicking the footer label.
9. To remove a footer, erase the footer label and click **Submit**.
10. Click **Submit** to save your changes.

The remaining fields are not used.

### Service Appliance Conference Administration

Conferences Reports Website Conference Viewer HTTPS Help

#### Website

Web Site Logo:    Reset to default

Select a file to upload. (jpeg, gif or png)  
Image will be resized if it is larger than 420x80 pixels.

Link to the Home page.

Custom link:

Example: http://www.mysite.com

Window Title:

Web Site Style:

Select a theme:

Footer Label 1:

Footer Label 2:

Footer Label 3:

Footer Label 4:

Figure 21: Website Page

## Configuring the Client Interface

---

You can set interface parameters that affect conference participants.

You can insert a logo on the conference viewer web page, activate a tone that signals a user joining a conference, and you can set up a link that directs participants to a web page at the completion of their conference.

You can also specify options for controlling call backs during conferences, specify options for controlling host and participant access to conferences, specify the number of times an IP address can attempt and fail to join a web conference in a specific number of seconds before the IP address is locked out, and specify the number of minutes an IP address is locked out before it can again attempt to join a web conference.

To configure these parameters for the client interface, do the following:

1. Log in to ShoreTel Director as an administrator with privileges to access the **Launch** button for the Service Appliance. For information about creating a user with the required privileges, see [Conference Administration Interface](#) on page 82
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/ Service Appliance page appears.
3. Locate the Service Appliance for which you want to modify the conference interface and in the Quick Launch column click **Launch**. The Service Appliance Conference Administration page appears.
4. Click **Conference Viewer**. The Conference Viewer page appears.
5. In the Logo field, enter the path to the logo that you want to appear on the Conference Viewer page.
6. For the Alert Sound parameter, click Yes or No to choose whether a tone sounds by default when a user enters a conference.
7. In the Exit Page field, enter the path to the page that you want to direct participants to when the conference ends.
8. For Call Me Options, select one of the three options for controlling audio call backs during conferences:
  - Enable Call Me: Caller can be called back at any time by the conference host or a conference participant. This option is not restrictive.
  - Enable Call Me for authenticated users or when host is present: Caller can be called back only when an authenticated participant or the host is present in the conference. This option restricts the call back feature at all times under specific circumstances.
  - Disable Call Me. Caller cannot be called back at any time under any circumstances.
9. For Access Code Options, select the options for controlling host and participant access to conferences:

- Enable Custom Host Access Codes: A host can enter a custom access code in order to enter a conference.
- Enable Custom Participant Access Codes: A participant can enter a custom access code in order to enter a conference.

If an Access Code Option is selected, specify the length for the selected code:

- Min = 6
- Max = 8

10. For Access Code Error Detection, specify the following:

- Number of times an IP address can attempt and fail to join a web conference in a specific number of seconds before the IP address is locked out.
- Number of minutes an IP address is locked

11. In the Default Conference Type field, specify the default condition that you want to use for starting conferences. Choose one of the following options:

- Click **Start the conference only when host joins** to allow conferences to start only when the host joins.
- Click **Start the conference when anyone joins** to allow conferences to start when the first participant joins.
- Click **Start the conference when anyone joins and make everyone a presenter** to allow conferences to start when the first participant joins and allow any conference participant to be a presenter.

12. Click **Submit**.

## Configuring HTTPS

---

ShoreTel support HTTPS for secure conference calls. Secure ShoreTel web conferencing uses 2048-bit encryption.

To provide HTTPS security to conference users, you must upload Secure Socket Layer (SSL) certificates on each Service Appliance for which you want to provide HTTPS security.

This section describes how to obtain an SSL certificate and how to install the certificate on Service Appliances.

## Obtaining an SSL Certificate

If you already have an SSL certificate, you can install it on your Service Appliance. For instructions about installing an SSL certificate, see [Uploading an HTTPS Certificate](#) on page 91. If you do not have an SSL certificate, ShoreTel recommends that you purchase an SSL certificate from a reputable Certificate Authority (CA). To purchase a certificate, you must first create a Certificate Signing Request (CSR) to present to the CA.

To create a CSR in ShoreTel Director, follow these steps:

1. Launch ShoreTel Director as a user with administrator privileges. For information about creating a user with the required privileges, see [Conference Administration Interface](#) on page 82.
2. Choose **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears.
3. Select a Service Appliance listing and in the Quick Launch column and click **Launch**. The Service Appliance Conference Administration Conferences page appears.
4. Click the **HTTPS** tab. The HTTPS tab appears.
5. Enter the HTTPS parameters. For a description of the HTTPS fields, see [Table 11](#).



### Note

On the HTTPS tab, an asterisk indicates a required field.

6. Click **Create CSR**. The ShoreTel system creates a CSR and a private key.  
The system generates links that you can use to download the CSR and private key.
7. Download the CSR and private key, if required, and send them to the CA.

**Table 11: HTTPS Fields and Descriptions**

Field	Description
Country	Enter the two-character country code for the country where the system is installed. Refer to ISO 3166 for information about country codes.
State or Province	Enter the name of the state or province where the system is installed.
Locality	Enter the name of the city where the system is installed.
Organization	Enter the legal name of the company or organization or the person that is requesting the certificate.
Organizational Unit	Enter the name of the department that is requesting the certificate.

**Table 11: HTTPS Fields and Descriptions**

Field	Description
Common Name	Enter the Fully Qualified Domain Name (FQDN) for which you want the SSL certificate.  <b>Note:</b> If the CSR is for a wildcard certificate, you must prepend *. to the common name; for example, *.domain.com.
Email Address	Enter the email address of the administrator who will handle the certificate.

## Uploading an HTTPS Certificate

You can upload certificates for a single Service Appliance or for all of the Service Appliances currently installed on your systems depending upon your certificate agreement.

To upload HTTPS certificates, follow these steps:



### Note

Wildcard certificates that you upload get automatically transferred to all Service Appliances, including units that you add to the system later.

1. Launch ShoreTel Director as a user with administrator privileges. For information about creating a user with the required privileges, see [Conference Administration Interface](#) on page 82.
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears.
3. Select a Service Appliance listing and in the Quick Launch column and click **Launch**. The Conferences page appears.
4. Click the **HTTPS** tab. The HTTPS tab appears.
5. Scroll to the Upload CA-Authorize SSL Certificate section and follow these steps:
6. Check the **This is a wildcard certificate** check box to use the certificate and private key you are about to upload on all Service Appliances on your ShoreTel system.
  - a. In the SSL Certificate field, enter or browse to the path to the file that contains the SSL certificate that you want to use. This field is required.
  - b. In the Intermediate CA Certificate field, enter or browse to the path to the file that contains the intermediate SSL certificate that you want to use.
  - c. In the Private Key field, enter or browse to the path to the file that contains the Private Key that you want to use.
  - d. Click **Upload**.

7. Click **Restart Web Server**. This reboots the Service Appliance and activates all certificates when the unit restarts.

## Enabling HTTPS

You must have a certificate to run HTTPS. For more information, see [Obtaining an SSL Certificate](#) on page 90 and [Uploading an HTTPS Certificate](#) on page 91.

If you do not obtain and upload a certificate, the system will automatically create a self-signing SSL certificate and private key.

A self-signing certificate allows a Service Appliance to create and participate in HTTPS conferences, but as the certificate is not issued by a third party, HTTPS security is not optimized. When a self-signing certificate is used, users trying to access the secure conference site will receive a warning message that states the security provided is not guaranteed.

You can enable HTTPS on selected Service Appliances or on all Service Appliances in your system. ShoreTel recommends that you enable HTTPS on all of your Service Appliances. In conferences where HTTPS is used, Service Appliances that are not configured to use HTTPS cannot communicate with Service Appliances that are using HTTPS and are not allowed to join.

To enable HTTPS on a Service Appliance, follow these steps:

1. Launch ShoreTel Director as a user with administrator privilege. For information about creating a user with the required privileges, see [Conference Administration Interface](#) on page 82.
2. Click **Administration > Platform Hardware > Voice Switches/Service Appliances > Primary**. The Primary Voice Switches/Service Appliances page appears.
3. Select a Service Appliance listing and in the Quick Launch column click **Launch**. The Service Appliance Conference Administration Conferences page appears.
4. Click the **HTTPS** tab. The HTTPS tab appears.
5. In the Enable HTTPS section, make sure that HTTPS is enabled. The function is enabled when the first line contains the following message:  
  
HTTPS is currently enabled on this Service Appliance.
6. If the service appliance is disabled, follow these steps:
  - a. In the **Enable HTTPS on the following Service Appliance** field, select the option that indicates the device on which you want to enable HTTPS.



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### Note

If you select All, only the Service Appliances that are currently online get enabled. When you add new units, you must repeat this process to enable them.

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- b. Click **Go** to enable HTTPS.

## Using the Firefox Browser

Users who access the Conference Web Portal on appliances with HTTPS enabled and who use the Firefox web browser must disable Transport Layer Security (TLS) to properly render web pages.

With a self-signed certificate, uploads to the Personal or Shared Library may fail when using the Firefox web browser.

To disable TLS in Firefox, follow these steps:

1. On the Firefox options panel, click the Advanced tab.
2. Click the Encryption tab.
3. Uncheck the **Use TLS 1.0** check box.
4. Click **OK**.



# CHAPTER

# 8

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## Going Live and Training

This chapter provides the requirements and other information for introducing the Service Appliance 100/SA-400 and ShoreTel Conferencing services to your organization. The topics discussed include:

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## Complete Operational Testing of Service Appliances

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After you have installed the Service Appliance, you should test the system to make sure that conferencing and IM services are working properly before making them available to the community. Testing should include the following tasks for both single appliance and multi-appliance installations:

- Verify the ShoreTel Audio Conference service can be accessed on each appliance by dialing the audio conference extension and then by pressing the conference button on a user's IP telephone.
- Verify a user's conference is hosted on their assigned Service Appliance.
- Verify the Global ShoreTel Audio Conference extension routes users to the closest appliance relative to the caller. Verify that once the User enters the conference access code, the call is routed to the appliance that is hosting the conference.
- Verify external callers can access audio conferences through the external numbers established for audio conferencing access.
- Verify default music on hold (MOH) is broadcast from each appliance to a caller using that appliance.
- Verify both internal and external Web participants can access the conference website and enter and participate in Web conferences.
- Verify the ShoreTel Conferencing service can successfully out-dial to selected participants during conferences, both during participant login as well as when directed by the conference host.
- Verify Outlook integration is functioning properly by scheduling and accessing ShoreTel meetings with Outlook appointments.
- Verify ShoreTel Communicator integration is functioning properly through the ability to access Web meetings (both scheduled and Instant) from Communicator.
- Verify Instant Messaging Presence, Privacy and IM chat capabilities function correctly.

For multi-appliance installations, the following additional tasks should be accomplished:

- Simulate overloaded conditions to verify a user's conference is distributed to other, less loaded appliances.
- Verify conferencing failover capabilities function correctly by scheduling conferences, disconnecting a user's assigned appliance and then starting the conference.
- Verify IM users assigned to one Service Appliance can successfully initiate IM sessions and exchange presence information with user assigned to other Service Appliances.

## Assign Users to Each Service Appliance

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Make sure that the ShoreTel users you want to be able to create and host conferences or use instant messaging services are assigned to a Service Appliance. For information about assigning ShoreTel users to a Service Appliance, see the [Creating Users](#) on page 73.

## Verify Licensing

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To enable ShoreTel Conferencing for all required users and to avoid a potential access lockout, the following should be performed:

- Ensure adequate audio conference and Web conference licenses are purchased to allow all authorized users concurrent access to ShoreTel Conferencing services.
- Ensure each user with IM access has been configured with ShoreTel Communicator Professional access level, and that a keyed license is entered into the system for each of those access levels. This will ensure the ShoreTel system does not lock out Administrator access due to inadvertent license violations.

## Distribute User Guides

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The following end-user information is available:

- The *ShoreTel Conferencing User Guide*: This guide contains detailed information on all features available with ShoreTel Conferencing services and also detailed instructions on each feature's use. This guide is available for download from the ShoreTel Partner support site and from within ShoreTel Director, under the Documentation Menus.
- The *ShoreTel Conferencing Quick Reference Guide*: This short guide contains helpful references to quickly enable a user to gain comfort using the most frequently accessed features. This guide is available for download from the ShoreTel Partner support site and from within ShoreTel Director, under the Documentation Menus.

## Training

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ShoreTel is committed to ensuring our customers have the tools and knowledge base they need to take full advantage of the capabilities offered with the installation of a Service Appliance and ShoreTel Conferencing features, as well as the entire ShoreTel system.

It is critical that all users be familiar with ShoreTel Conferencing services before the system is placed into production.

Be sure to consider training needs as personnel staffing changes over time.

Online training for Service Appliance and ShoreTel Conferencing services includes the following:

- Installing, Administering and Using the Service Appliance 100 and Service Appliance 400, an online, virtual live-training class administered by ShoreTel.
- Using ShoreTel Conferencing, an online self-paced training course designed to familiarize users and administrators with the capabilities and use of all ShoreTel Conferencing features.

For more information, please contact your ShoreTel-authorized partner or visit the ShoreTel Website <http://www.shoretel.com/training>.

# CHAPTER

# 9

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## Backup and Restore

This chapter describes the process for enabling automatic backup of Service Appliance files and data. Should an appliance experience a catastrophic failure or a data corruption, the availability of regular backup files can simplify recovery and minimize the cost of such a failure. The topics discussed include:

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# Service Appliance Backup

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ShoreTel recommends that you back up your Service Appliances daily to protect critical data. This feature is not meant as a method of archiving or as a method for retrieving accidentally deleted files.

The files containing user library data, conference recordings and user images, collectively referred to as content files should be backed up on a daily basis.

Backup can occur while conferences are in progress including the files of any conference currently in progress. However, only files that are not being modified will be backed up to protect data integrity.

When the back up process starts, library content upload will be disabled. Library content currently in the process of uploading will be allowed to complete before the back up starts. Once back up is complete, upload of library content is re-enabled. If the user attempts to upload content while the upload is disabled, they will see a message indicating that upload is temporarily unavailable.

Any machine capable of supporting an FTP server can be the target of a backup. The FTP server must be RFC 959 compliant and additionally support the commands MDTM and SIZE. The FTP servers on most versions of Microsoft Windows meet these requirements, including Windows Server 2003 and Windows Server 2008.

If multiple appliances are backing up to the same FTP server, the target directory should be configured differently for each appliance.

An on-demand backup can be performed on demand by establishing an SSH or serial connection to the appliance and then using CMCA ServicesMgr command line interface (svcli) commands.

The backup will only execute if backup is enabled. See the *ShoreTel Maintenance Guide* for detailed instructions for executing an on-demand backup.

To avoid bandwidth issues, be aware that ShoreTel recommends the you install Service Appliances on the same network as the FTP backup server.



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## Note

The Service Appliance can generate more than 1 GB of data files per day and easily have more than 100 GB stored internally.

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Before you begin, ensure your system meets the following requirements:

- Make sure that the FTP server is configured to allow the Service Appliance to access and write to it.
- Make sure that port 21 is open and available on the FTP server for the Service Appliance to use. (Port 21 is often blocked.)

For more information about configuring automatic backup for ShoreTel services and devices, refer to the Voicemail Model Switches section in the *ShoreTel System Administration Guide*.

To configure the Service Appliance to perform automatic backups using an FTP server, follow these steps:

1. Launch ShoreTel Director.

2. Select **Administration > Platform Hardware > Voice Switches / Service Appliances > Primary**. The Primary Voice Switches/ Service Appliance page appears.
3. In the Name column, select the Service Appliance that you want to configure for backup. The Edit Service Appliance page appears, as shown in [Figure 22](#).

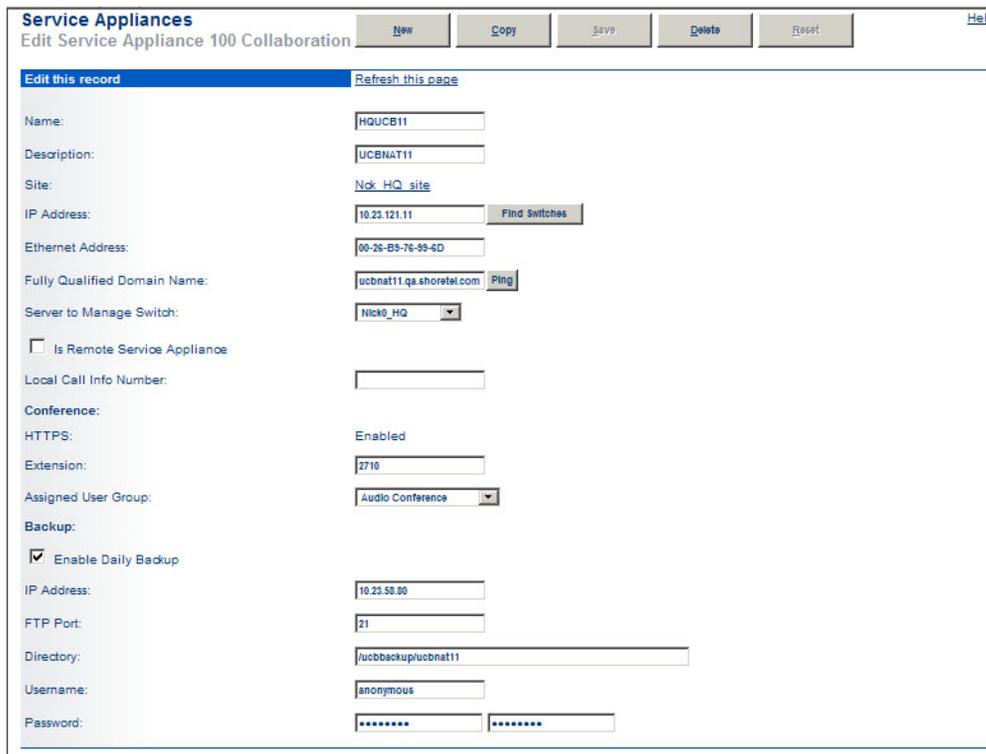


Figure 22: Edit Service Appliance 100 Page

4. Scroll down to the Backup section and do the following:
  1. Check the **Enable Daily Backup** check box.
  2. In the IP Address field, enter the IP address of the FTP server that you want the unit to use for backup.
  3. In the FTP Port field, enter port number that you want the Service Appliance to use to connect to the FTP server. The default value is 21.



#### Note

The FTP port must be set to 21. The Service Appliance can only perform backup and restore against a FTP server running on port 21.

4. In the Directory field, enter the name of the directory to which you want the Service Appliance to back up files on the FTP server. This file will be create the first time a back up is run.
5. In the User ID field, enter the user name that you want the Service Appliance to use to login to the FTP server account for backup.

6. In the Password fields, enter the password the Service Appliance needs to use to login to the FTP.

## Service Appliance Restore

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There is not a ShoreTel Director utility for the purpose of restoring Service Appliance content.

Restore is performed on demand through establishing an SSH or serial connection to the appliance and then using CMCA ServicesMgr command line interface (svccli) commands.

Restoring will copy the content files from the previous backup into the appliance. During restore all appliance services will be stopped.

The restore can occur on non-empty directories, but will not delete files that are in the file system but not part of the last back up. Files that are created after the previous back up remain intact. However, files that have been modified since the previous backup will be replaced by the backup version.

Files that have been deleted since the previous backup will be restored into the appliance but will not be accessible as the database links to deleted files are not maintained. If these files are required, they can be retrieved by establishing an SSH or serial connection to the appliance and retrieving them manually.

Restore procedures are considered non-routine and are not detailed in this guide. For detailed instructions, see the *ShoreTel Maintenance Guide*.