IP Office
IP Office Resilience Overview

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Contents

Chapter 1: IP Office Resilience

Resilience in document refers to a set of features supported in an IP Office network using Linux-based primary and secondary servers. These features are supported in IP Office Server Edition , IP Office Select and IP Office Subscription networks.

Resiliency refers to a failure of normal operation. It indicates an issue in the network such as the loss of a service, server or network connection. The cause may be a temporary event due to maintenance activity or it may indicate a more serious failure. During resilience, the priority must always be to resolve the cause of why resilient mode was invoked.

- **Resilience**: The ability of a system to return to its normal state following a disturbance. It can also refer to the ability of the system to maintain some operation during the disturbance.
- **Failover**: The process whereby, if a server or service fails or is no longer accessible, another one takes over its operation.
- **Failback**: The process whereby, when an original server or service recovers or becomes accessible again, it resumes operation from any failover servers or services.

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When Does Failover Occur

Resiliency Feature	When does failover occur
User Resilience	If the home system is not visible to its failover system for at least 3 minutes. The failover delay ensures that resilience is not invoked when it is not required, for example when the home system is simply being rebooted to complete configuration changes.
Hunt Group Resilience	Hunt group failover occurs at the same time as IP phone failover.

Table continues…

Resiliency Feature	When does failover occur
IP Phone Resilience	If the home system is no longer visible to the failover system for at least 3 minutes, that failover system begins allowing the IP phones to re-register with it. Phones with existing calls using media connection preservation which do not failover until that call ends.
Voicemail Resilience	Voicemail failover is automatically triggered by IP Phone failover coming into operation. It can also be manually triggered through System Status Application using the **Activate Backup Server** button.
DECT Resilience	The master base station regularly polls its normal IP Office server, by default every 30 seconds. If that IP Office is not visible for some reason, then by default, after 2 minutes the master base station switches to using its failover IP Office system. These timings can be adjusted, see Configuring DECT Resilience
DECT Master Resilience	The standby master regularly polls the active master. If the active master becomes invisible for some reason, the standby master automatically becomes the active master.
one-X Portal Resilience	The failover portal becomes active immediately the primary portal is stopped or not visible.

Related links

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When Does Failback Occur

Resiliency Feature	When does failback occur
User Resilience	Once the home system has been visible again for more than 10 minutes. The failback delay allows certainty that the home system has recovered and is stable if it was the cause of failover.
Hunt Group Resilience	Hunt group failback occurs at the same time as IP phone failback.
IP Phone Resilience	Once the home system has been visible again for more than 10 minutes, any idle phones begin to re-register with the home system. If for some reason, a phone is unable to connect to the home system, there is a 5 minute grace period, where the phone can be logged in to either the home or failover system. This is referred to as "homeless prevention". Automatic failback to the home system is the default mode. For H323 IP phones, manual failback can be selected. In manual mode, the phone does not failback until either logged out or rebooted.

Table continues…

Resiliency Feature	When does failback occur
Voicemail Resilience	Once the server is available again, failback occurs once all active voicemail calls have ended and server SMTP synchronization is complete. However, manual failback or failback after a set time can be configured. Manual failback in control using System Status Application.
DECT Resilience	When the original IP Office system returns to normal operation, by default DECT control is automatically returned to it. The operation can be set to manual control if necessary, see Configuring DECT Resilience . In that case, control of failback is through System Status Application
DECT Master Resilience	When the active master is available again, it resumes control and the other base station returns to being the standby master.
one-X Portal Resilience	The secondary portal returns control to the primary portal once it is available or visible again.

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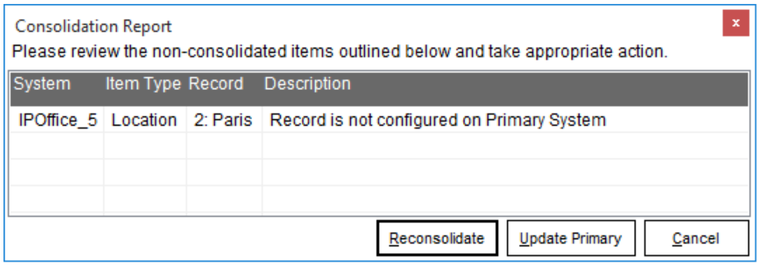
System Configuration During Failover

The following configuration limitations are applied during failover:

- User telephony changes: Any telephony setting changes (forward number, DND, etc.) made during failover are lost following failback.
- one-X Portal for IP Office Configuration: Any portal configuration changes a user make whilst logged into the secondary portal during resilience are lost following failback.
- DECT Configuration: No changes to the DECT configuration or additional handset subscriptions are allowed during failover.
- IP Office Configuration: During failover of any system, you can still configure the remaining servers in the network. If the primary is in failover, this can be done via the secondary server. Following failover, when the configurations are next loaded, IP Office Manager highlights unsynchronized configuration changes. Guest users and extensions supported by a system during failover are not visible in the configuration of their failover host.
- Reconsolidate: Update the configuration of all servers in the network.
- Update Primary: Update the configuration of just the primary server.



Consolidation Report

Please review the non-consolidated items outlined below and take appropriate action.

System	Item Type	Record	Description
IPOffice_5	Location	2: Paris	Record is not configured on Primary System

Related links

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Chapter 2: Resilience Features

The following are the main resiliency features discussed in this document.

Resiliency Feature	**Summary**
Call Resilience	Phones and trunks using direct media may be able to continue existing calls when resilience first occurs. Additional settings can be configured to ensure that the start of resilient mode operation does not interrupt those calls.
User Resilience	Information about the users on each system is distributed within the network. This allows users to resume activity when their normal home system is not visible for some reason.
Hunt Group Resilience	For hunt groups containing members from other systems in the network or members who have hot desked to other systems, hunt group resilience allows those members to still receive group calls even when the group's host system is not available for some reason.
IP Phone Resilience (Basic)	Avaya IP phones registered with one system can automatically reregister with another system when resilience is required.
IP Phone Resilience (Select)	In addition to standard IP phone resilience , in IP Office Select and IP Office Subscription mode, IP Phone resilience can be to another expansion system based on location settings. Supported on IP Office Select only.
Voicemail Resilience	The IP Office Server Edition network can include two voicemail servers, one on the primary server and one on the secondary server. The two servers automatically synchronize during normal operation and can provide voicemail support for the other users during resilience.
DECT Resilience	DECT R4 uses an IP DECT trunk between the host IP Office server and the DECT master base station. DECT resilience allows the DECT system to be configured with an additional trunk to another IP Office server in the network. If the host server becomes unavailable for some reason, the failover trunk and server become active, allowing continued DECT operation.
DECT Master Resilience	Each DECT R4 system includes one base station configured as the master base station. Base station mirroring allows two base stations to be configured as the master. Whilst only one is active at any time, the other becomes active if the existing master is not available for some reason.

Table continues…

Resiliency Feature	Summary
one-X portal Resilience	Both the primary and secondary server host copies of portal service with the service on the primary normally being the active one. However, in failback scenarios the secondary's service can become active until the systems recover. Supported on IP Office Select only.
WebRTC Resilience	On systems with Avaya one-X® Portal for IP Office resilience configured, resilience is also supported for user's using an Avaya WebRTC client to make and answer calls. Supported on IP Office Select only.
Virtualized Server Resilience	Virtual servers can use all of the standard IP Office resilience features. In addition, in IP Office Select mode they can alternatively use VMware's High Availability option.
Hardware Resilience	Servers hosted on PC platforms can use the PC manufacturer's supported options such as redundant power supplies, RAID drive configurations, etc. In addition, equipment and phones can use UPS support to continue operation.
External Trunk Resilience	Through individual system configuration, systems can fallback to using alternative routes for outgoing external calls.

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User Resilience

Information about the users on each system is distributed within the network. This allows users to resume activity when their normal home system is not visible for some reason.

- The system on which the user record was created holds their full user setting. That includes their telephony settings, personal directory and call log. This is that users' home system.

- All other systems in the network receive basic details of the users on other systems; essentially the user's name, extension number, login code, home system and current (if hot desked) system. This is sufficient for other systems to correctly route calls to other users when required.
- When a user logs in at another system, that system requests their full user settings for their home system.
- User resilience is configured by the Backs up my IP Phones settings, even if the system doesn't host any IP phones.

How does resilience affect this

- When the line from a system to a remote system is set to support IP phone resilience, then during normal operation that remote switch also receives a backup copy of all the system's user settings. That is regardless of the user's currently associated phone type.
- If for some reason, the user's home system is no longer visible on the network, after 3 minutes the failover system begins supporting any requests for the other system's user records.
  - For IP phone users, this allows them to continue using their phone once it has re-registered with the failover system.
  - For all users, it allows them to hot desk onto any phone on the failover system with their full settings. It also allows them to hot desk with their full settings onto phones on any other systems that are still in the network with the failover server.

When does user failover occur?

If the home system is not visible to its failover system for at least 3 minutes.

The failover delay ensures that resilience is not invoked when it is not required, for example when the home system is simply being rebooted to complete configuration changes.

When does user failback occur?

Once the home system has been visible again for more than 10 minutes.

The failback delay allows certainty that the home system has recovered and is stable if it was the cause of failover.

Limitations

- Resilience fails if the failover server is restarted during failover. The backup user settings received by the failover server during normal operation are held in its non-permanent memory. If during failover operation the server is rebooted, those records are lost.
- Internal twinning is not supported during resilience failover.
- Fallback twinning is supported during failover. However, only after the phone has registered with the failover server.

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Call Resilience (Media Preservation)

Phones and trunks using direct media may be able to continue existing calls when resilience first occurs. Additional settings can be configured to ensure that the start of resilient mode operation does not interrupt those calls.

When using direct media, the audio part of the call is no longer routed via the telephone system. The telephone system is only involved when any of the parties in the call requires call signaling. This means that the call audio can continue without requiring the telephone system. So long as the call data routing remains in place, the call may continue even if the telephone system is no longer visible for some reason. However, this is not guaranteed.

On calls involving links between systems, the invoking of resilience mode can potentially interrupt existing calls as re-registration occurs. Media connection preservation can help prevent this if required. This feature is supported for the following telephones on IP Office Release 9.1 or higher. It can be applied to calls between systems and via SIP trunks:

- IP Office Release 9.1+ : 9608, 9611, 9621, 9641
- IP Office Release 11.0+ : J139, J159, J169, J179, J189, Avaya Workplace Client

On those phones, if a call experiences end-to-end signaling loss or refresh failures but still has an active media path, call preservation allows the call to continue. While preserving a call, the phone does not attempt to re-register with its call server or attempt to failover to a standby call server until the preserved call has ended. The maximum duration of a preserved call is two hours after which it is automatically ended.

Calls on hold and calls to hunt groups are not preserved. Only the following call types are preserved:

- Connected active calls.
- Two-party calls where the other end is a phone, trunk or voicemail.
- Conference calls.

During a preserved call the only permitted action is to continue speaking and then end the call. The phone's softkey actions and feature menus do not work. Call preservation can be enabled at the system level and for individual trunks. The system level setting control use of call preservation on the system's IP Office lines and H.323 IP phones. All systems in the network must be configured for call preservation to ensure end to end connection support. By default, the system setting is also automatically applied to all SIP trunks. However, the trunk setting for each trunk can be individually altered.

When does media connection preservation occur?

This is an immediate feature applied to all qualifying calls currently in progress. It ends when the call ends.

Related links

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Fallback Twinning

This feature is not linked to system resiliency. When enabled, fallback twinning redirects calls to the user's mobile twinning number when their host system cannot connect to their normal registered extension.

In system resiliency scenarios, fallback twinning is still supported for users failing over to another system but only after their extension has registered with the failover system.

Related links

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IP Phone Resilience

Avaya IP phones registered with one system can automatically reregister with another system when resilience is required.

Avaya IP phones registered with one system can automatically reregister with another system when resilience is required.

IP Phone failover to an alternate gatekeeper is a native feature of many IP phones. However, it only works if the alternate gatekeeper allows registration. During normal operation, registration to the alternate gatekeeper is blocked. During failover it is allowed.

Important:

- User and phone resilience requires at least 1 physical phone (H323 or SIP) included in the configuration for resilience. User resilience will not operate using just softphone clients.
- User changes to their settings during failover are lost after failback. In addition, the call history for calls during failover is also lost after failback.
- Calls through the system are disconnected by failover. Direct media calls may continue but this is not guaranteed. See Call Resilience.
- Resilience fails if the failover server is restarted during failover. The backup user and registered phone settings received by the failover server during normal operation are held in its non-permanent memory. If during failover operation the server is rebooted, those records are lost.
- Failover features require that the phones local to each system are still able to route data to the failover system.
- When an IP phone fails over, the failover system allows it to operate as a "guest". The guest phones do not consume any licenses.
- The features for user resilience are applied to the phone user.

- Hot desked users are automatically logged out. When their base extension fails back to the home system, the hot desked user is automatically logged in on that extension.
- For secure communication using TLS/SRTP, all IP Office systems must have an identity certificate that has been signed by the same trusted root CA.

Supported Telephones

H.323	SIP	SIP Softphones	Others
1600 Series 9600	1120 B179[1] 1140 B199[1] 1220 H175 1230 J100 Series E129 K100 Series	Avaya Communicator for Windows one-X Mobile Preferred for Android one-X Mobile Preferred for iOS Avaya Workplace Clients	All supported Avaya DECT R4 handsets. IP Office Select only IP Office Web Client[3] IP Office WebRTC SDK Clients[3]

1. These Avaya SIP Phones require some manual configuration for resilience operation: B179 , B199.
2. SIP softphone clients also require Avaya one-X® Portal for IP Office resilience to be configured.
3. Requires Avaya one-X® Portal for IP Office resilience to be configured.

When Does IP Phone Failover Occur?

If the home system is no longer visible to the failover system for at least 3 minutes, that failover system begins allowing the IP phones to re-register with it. Phones with existing calls using media connection preservation which do not failover until that call ends.

The failover delay ensures that resilience is not invoked when it is not required, for example when the home system is simply being rebooted to complete configuration changes.

When Does IP Phone Failback Occur?

Once the home system has been visible again for more than 10 minutes, any idle phones begin to re-register with the home system. If for some reason, a phone is unable to connect to the home system, there is a 5 minute grace period, where the phone can be logged in to either the home or failover system. This is referred to as "homeless prevention".

Automatic failback to the home system is the default mode. For H323 IP phones, manual failback can be selected. In manual mode, the phone does not failback until either logged out or rebooted.

DHCP Resilience

When an IP Office provides extension data to the system that will back up the extensions it also provides DHCP data. The failover IP Office will provide DHCP service to the failover IP Phones - even if that system's DHCP is disabled. This operation relies on DHCP forwarding be allowed between networks or on the two servers being on the same subnet. A likely requirement is to have different SSONs for the two sets of phones.

Simultaneous Clients

If a user is in simultaneous mode on their home server when failover occurs, both their phones failover.

Limitations

- Resilience fails if the failover server is restarted during failover. The backup user settings received by the failover server during normal operation are held in its non-permanent memory. If during failover operation the server is rebooted, those records are lost.
- Internal twinning is not supported during resilience failover.
- Fallback twinning is supported during failover. However, only after the phone has registered with the failover server.

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Advanced IP Phone Resilience

Avaya IP phones registered with one system can automatically reregister with another system when resilience is required.

In addition to standard IP phone resilience , in IP Office Select and IP Office Subscription mode, IP Phone resilience can be to another expansion system based on location settings.

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DECT Resilience

DECT R4 uses an IP DECT trunk between the host IP Office server and the DECT master base station. DECT resilience allows the DECT system to be configured with an additional trunk to another IP Office server in the network. If the host server becomes unavailable for some reason, the failover trunk and server become active, allowing continued DECT operation.

Resilience operation occurs when the master base station cannot detect its normal host IP Office system, that is then IP Office system configured with an IP DECT line to it. During resilience, the failover IP Office system takes control and hosts the DECT extensions and users that were previously on its normal host system. However, no changes to the DECT configuration or additional handset subscriptions are allowed.

The failover IP Office system can host its own DECT R4 system using its own IP DECT line and master base station. When that is the case, it can only support failover from another system up to its maximum capacity of DECT users including its own DECT users (maximum 384 on an IP500 V2, 400 on a Linux based system).

DECT trunk resilience and base station mirroring can be combined.

For a provisioned installation

- The centralized phone book is still supported after failover. However, this does not apply to the phone book if being provided by an AIWS.
- An R is displayed on the 3700 Series DECT phones when they are in failover.
- By default DECT control and extensions automatically return to the primary IP Office system when it is available again.

For a non-provisioned installation

- The centralized phonebook is not supported during failover.
- The handsets do not display any indication that the system is in failover.

When Does DECT Failover Occur?

The master base station regularly polls its normal IP Office server, by default every 30 seconds. If that IP Office is not visible for some reason, then by default, after 2 minutes the master base station switches to using its failover IP Office system. These timings can be adjusted, see Configuring DECT Resilience

When Does DECT Failback Occur?

When the original IP Office system returns to normal operation, by default DECT control is automatically returned to it. The operation can be set to manual control if necessary, see Configuring DECT Resilience . In that case, control of failback is through System Status Application

Related links

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DECT Master Resilience

Each DECT R4 system includes one base station configured as the master base station. Base station mirroring allows two base stations to be configured as the master. Whilst only one is active at any time, the other becomes active if the existing master is not available for some reason.

For base station resiliency, two base stations are configured to act as 'mirrored' master base stations. One becomes the active master base station whilst the other becomes a standby master base station. If, for any reason, the active master base station becomes unavailable, the standby master base station becomes the active master and continues DECT operation.

- The standby master base station is still able to handle call connections in the same way as normal nonmaster base stations.
- Mirroring is not supported between compact and non-compact base stations. However, it is supported between a DECT Gateway and non-compact base station.

- Base station mirroring and DECT trunk resilience can be combined.

When Does DECT Master Failover Occur?

The standby master regularly polls the active master. If the active master becomes invisible for some reason, the standby master automatically becomes the active master.

When Does DECT Master Failback Occur?

When the active master is available again, it resumes control and the other base station returns to being the standby master.

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Hardware Resilience

Servers hosted on PC platforms can use the PC manufacturer's supported options such as redundant power supplies, RAID drive configurations, etc. In addition, equipment and phones can use UPS support to continue operation.

Refer to the PC manufacturer's documentation for details of supported resilience option and their configuration.

In addition, the use of uninterruptible power supplies (UPS) can be considered. However, if doing so ensure that the UPS support also includes the data network and any PoE supplies.

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Hunt Group Resilience

For hunt groups containing members from other systems in the network or members who have hot desked to other systems, hunt group resilience allows those members to still receive group calls even when the group's host system is not available for some reason.

The trigger for hunt group failover is IP phone failover. Therefore, IP phone resilience must be configured for the system, regardless of whether the system has any registered IP phones.

When Does Hunt Group Failover Occur?

Hunt group failover occurs at the same time as IP phone failover.

When Does Hunt Group Failback Occur?

Hunt group failback occurs at the same time as IP phone failback.

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one-X Portal for IP Office Resilience

Both the primary and secondary server host copies of portal service with the service on the primary normally being the active one. However, in failback scenarios the secondary's service can become active until the systems recover.

The portal service is also installed by default on the IP Office Server Edition secondary server. This allows that secondary server to act as the portal server for users when, for some reason, the primary server is not available.

- Portal resilience is supported in IP Office Select and IP Office Subscription modes. That includes an IP Office Application Server in place of the primary or secondary server's portal service.
- Portal resilience is supported by the following client applications:
    - Avaya one-X® Portal for IP Office browser access.
    - one-X Communicator clients.
    - one-X Mobile Preferred clients.
    - Avaya one-X® Portal for IP Office call assistant.
    - IP Office SoftConsole presence indication.
- Whilst resilience may appear to work between servers running different levels of portal software this is not supported. Resilience is only supported between primary and secondary servers running the same version of portal software.
- During normal operation (both servers running and connected), user and administrator changes made on the primary server are automatically synchronized to the secondary server. However, during resilience, changes made on either server are not synchronized and may be lost when the servers return to normal operation.
    - Scheduled conferences are currently an exception to the above. Conferences scheduled on the primary do not occur when running in failover. Conferences scheduled on the secondary are lost when failback occurs.

When Does Portal Failover Occur?

- On primary server portal failure: If the primary server's portal service stops for some reason, the portal service on the secondary server automatically becomes available.
- Users who were logged into the portal on the primary are able to login again on the secondary server.
    - If the primary IP Office service is still running, those portal users are automatically redirected.
    - If the user has not previously accessed the secondary portal server, they may need to accept the security certificate or create an exception which will interrupt automatic re-connection.
- The same applies for users who were logged into one of the portal clients such as the Outlook Plug-in

- New users wanting to login will have to use the address of the secondary server.
- On primary server IP Office failure: If the primary server's IP Office service stops for some reason, portal services are automatically transferred to the secondary server as above. Users belonging to that IP Office cannot update or delete personal contacts from the portal directory gadget.
- On network failure: If the network connection between the primary and secondary server fails for some reason, both portal servers become active and can be logged into. Again user and admin changes on secondary portal server are not copied to primary when the network connection recovers. This is referred as "Standalone Mode".

When Does Portal Failback Occur?

- On primary server portal recovery:

  When the primary server's portal service is available again, the portal service on the secondary server stops supporting login.

  - Users who were logged into the portal on the secondary are automatically re-directed to login again on the primary server.
  - Users who were logged into one of the portal clients such as the Outlook Plug-in are automatically connected to the primary server.
  - New users wanting to log in are redirected to the primary.
- On primary server IP Office recovery: When the primary server's IP Office service is available again, portal service support also returns to the primary server as above.

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Trunk Resilience

It is difficult to provide trunk guidance for resilience as the configuration of the external trunk routing and usage of every network varies greatly. We can only discuss general principles and factors that need to be considered, and show examples of the different methods that can be used.

- Special consideration must always be given to ensure the correct routing of emergency calls, especially in regard to identifying caller location.
- Outgoing caller ID must be assessed. Rerouted calls may be blocked if the ID used to call out on an alternate trunk or site is not accepted by the line provider.

Default Call Routing

In an IP Office Server Edition deployment with no other changes than the addition of SIP trunks to the primary server:

- The default short code/ARS configuration on the primary server routes all external calls to any trunk/channel in outgoing line group 0.
- If a secondary server is present, its default short code/ARS configuration route all external calls to outgoing line group 99999 (to the primary).

- For any expansion server's present, their default short code/ARS configuration routes all external calls to outgoing line group 99999 (to the primary) if available, else to outgoing line group 99998 (to the secondary).

The above provides only minimal resilience. Expansion systems unable to see the primary but able to see the secondary can still make external calls if the secondary can still access the primary. In the case above, the simplest method of adding some further resilience would be to also add SIP trunks to the secondary server. The secondary server's ARS would be reconfigured to use the outgoing line group of its own SIP trunks. Expansion systems unable to see the primary can then still make external calls using the secondary's SIP trunks.

Obviously, further resilience can be achieved by providing each location with its own trunks. This also simplifies the configuration of emergency call routing.

Using ARS Short Codes

By default, the short codes in an ARS form are used in the order entered in order to seize an available external trunk. Adding an additional short code however does not allow any further control, that route is automatically and immediately used if the preceding short code route is not available.

Using ARS Fallback

ARS forms can include an alternate route which redirects calls to another ARS form. See ARS Alternate Route Overflow on page 70.

Using ARS Out of Service

The out of service features of ARS allows calls to be redirected when it is known in advance that the trunks used by that ARS will not be available, for example for maintenance. See ARS Out of Service Routing on page 70

Using Breakout

The Breakout action is potentially useful during failover scenarios. It allows a telephone user to make a call as if dialing the digits on another system on the network and thus have their dialing routed by that system. The action can be assigned to short codes and to programmable buttons.

Related links

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Virtual Server Resilience

Virtual servers can use all of the standard IP Office resilience features. In addition, in IP Office Select mode they can alternatively use VMware's High Availability option.

VMware High Availability (HA) allows a virtual machine to be automatically re-established on another host machine if its normal host fails or detects a potential failure. For example:

- Host failures include power failure and ESXi kernel panic.
- A Linux operating system crash on the host server.

Backup is started up after a failure has been detected and takes approximately 10 minutes to complete. During the switch any unsaved data and active calls are lost.

Use of this feature is only supported for IP Office Select mode systems. It requires the customer data center to include multiple host servers and for those hosts to have access to the same separate datastore.

HA cannot be combined with the general IP Office resiliency features as they conflict. For example, if HA is enabled for a Server Edition primary server, no primary resources (phones, hunt groups, voicemail server) can be supported using IP Office resilience failover to a Server Edition secondary.

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Voicemail Resilience

The IP Office Server Edition network can include two voicemail servers, one on the primary server and one on the secondary server. The two servers automatically synchronize during normal operation and can provide voicemail support for the other users during resilience.

By default, the primary and secondary servers each include the voicemail service. The method by which these are used depends on the type of network:

- **IP Office Server Edition:** In this mode, the voicemail server on the primary is active and provides voicemail services for the whole network during normal operation. The voicemail server on the secondary remains in standby mode. However, during resilience, the voicemail server on the secondary can become active and provide voicemail services. When the primary voicemail is available again, by default the secondary voicemail returns to standby mode.
- **IP Office Select:** For IP Office Select the voicemail services on the primary and secondary severs can be used in two ways as follows:
    - **Single active server/standby server:** The voicemail services are configured to operate in the same way as for IP Office Server Edition above. The secondary acts as the failover server for the primary.
    - **Dual active voicemail servers:** The voicemail services on both servers can be configured to be active at the same time during normal operation (this requires the secondary server to be configured with the appropriate voicemail licenses, etc.). In this mode, each server provides voicemail services for its own extensions and trunks. Each expansion system is configured to use either the primary or secondary voicemail server. Each voicemail server can act as the failover server for the others voicemail.

During resilience, the IP Office system informs Avaya one-X® Portal for IP Office and other applications which voicemail server to use. The same information is also applied to all user voicemail access.

Both voicemail servers are constantly synchronizing settings, callflow configurations and mailboxes during normal operation. This is done using SMTP connections between the two voicemail severs. Following resilience, the same connections are used to re-synch the servers. Following any voicemail resilience, normal operation is not resumed until SMTP synchronization has restarted.

When does voicemail failover occur?

Voicemail failover is automatically triggered by IP Phone failover coming into operation. It can also be manually triggered through System Status Application using the **Activate Backup Server** button.

When does voicemail failback occur?

Once the server is available again, failback occurs once all active voicemail calls have ended and server SMTP synchronization is complete. However, manual failback or failback after a set time can be configured. Manual failback in control using System Status Application.

How is resilient voicemail operation configured?

1. The settings of the IP Office lines between the primary and secondary are used to indicate whether resilience is required. See Configuring General Resilience on page 28 .
2. The SMTP settings of the voicemail servers are configured to ensure synchronization of settings between the servers during normal operation.
3. The method by which a server providing active resilience returns to non-resilient mode operation (manual, graceful or automatic) is configurable through the voicemail server settings.

Related links

Resilience Features on page 9

Chapter 3: Design Considerations

The following factors should be kept in mind when planning the resilience operation of a network.

Related links

System Capacities on page 23
Certificates and Domains on page 24
Network Considerations on page 25
Emergency Call Routing on page 26
Licensing on page 26

System Capacities

When using a server as the failover destination, you must ensure that it has sufficient supported capacity for that role. That includes not just capacity to support the additional users and extensions when providing resilience but also the additional calls, hunt groups, etc. This is all in addition to its existing normal capacity requirements.

For system capacity details, refer to the *Avaya IP Office Platform Capacity Planning Guidelines* document.

Failover Server Total IP Phone Capacity

When added to the remote server's extensions and users during resilience, the total numbers must be within the remote server's total supported capacity (and any other specific limit for the extension type). That also includes any other systems in resilience to that remote server at the same time. Extensions and users beyond the supported capacity do not receive resilience support.

Failover Server Total IP DECT Capacity

When added to the remote server's local extensions and users during resilience, the total numbers must be within the remote server's IP DECT and total supported capacities. That also includes any other systems in resilience to that remote server at the same time. Extensions and users beyond the supported capacity do not receive resilience support.

Related links

Design Considerations on page 23

Certificates and Domains

For resilience to work, all servers within the network must be part of the same domain.

For secure communication using TLS/SRTP, all IP Office systems must have an identity certificate that has been signed by the same trusted root Certificate Authority (CA).

Note:

It is important that the certificate created by a root CA has entries for DNS:<mySIPDomain>,DNS:<myFQDN.com>,IP:<IP address>, URI:sip:<IP address>, DNS:<IP address>.

You can also install Avaya root certificates on the secondary server and client computers to establish Avaya Inc. as a trusted CA.

Related links

Design Considerations on page 23

Installing Avaya root certificates on secondary servers and clients on page 24

Installing Avaya root certificates on secondary servers and clients

Procedure

1. Using a web browser, log in to your primary IP Office server's web control menus (browse to **Platform View** within web management).
2. Click **Settings**.
3. Under **Certificates**, select the **Create certificate for another machine** check box and provide the following information:
    a. In **Subject Name** enter the IP Office's fully qualified domain name (FQDN).

    b. In **Subject Alternative Names** provide the following information, separated by a comma: DNS: <FQDN>, IP: <IP address of IP Office LAN1>, IP: <IP address of IP Office LAN2 or public IP address if remote clients are involved>.

    For example: DNS:abc.avaya.com, IP:123.123.1.1, IP:321.321.2.2

    c. In **Password** export password for the identity certificate.

    This password is required later when uploading the certificate to the designated server.
4. Click **Generate** to create the certificate.

    A pop-up message appears.
5. Click the link in the message to download and save the certificate in the `.p12` format.

6. You need to upload the saved certificate file to the IP Office secondary server.
    a. In IP Office Manager, go to the security settings of the secondary and then navigate to **System** > **Certificates**.
    b. Click **Set** and then, in the **Certificate Source** dialog box select **Import** certificate from file and click **OK**.
    c. Select the saved `.p12` certificate, click **OK**, and then click **Save**.
7. Log in to the primary server's web control menus and download the root certificate.
8. Install this root certificate in the systems where required.

Related links

Certificates and Domains on page 24

Network Considerations

The default arrangement of IP Office lines in an IP Office Server Edition and IP Office Select network is for each server to have a line to the primary server and, if present, a line to the secondary server. In return, the primary and secondary servers have lines to each expansion system. This is referred to as a 'double-star' configuration.

Data Routing vs IP Office Routing

The IP Office Server EditionIP Office Select network relies on the customer's own data network over which the traffic of the IP Office lines is routed. However, the routes between sites within that data network may not necessarily match the configured IP Office lines. This can cause scenarios where failover occurs but the resilience features are not accessible to some users, or users attempt to use resilience features when they are not invoked.

- Unable to access failover servers:

  The use of resilience features assumes that there is still a data network between sites even if the server at that site is in failover. If the cause of failover at a user's home server site also affects the data network, resilience features at the failover server are still invoked. However, users at the home site are isolated from the failover server and so receive no support.

- Example: Data Network Failure:

  The expansion server at site B host Avaya IP phones and is configured to failover to the primary server at site A. Suppose the data connection between the two sites fails for some reason.

  - Site A cannot see the server a site B and so starts failover support for site B.
  - At site B, the result depend on whether the data network failure is affect traffic with the site and or traffic to other sites.
    - If the IP phones can still see the server at site B, they continue operating with it. However, the users will not be able to access services provided from site A such as voicemail and Avaya one-X® Portal for IP Office.

    - If the IP phones cannot see the server at site B, they try to failover to site A. However, the lack of data network between sites prohibits that.

- Network Blocked:

  There are scenarios where users can become network blocked. For example, if an IP phone is not able to see its home server it will attempt to reregister with its failover server. However, if the failover server is able to see the home server, it will not support failover of the phone.

Data Network Resilience

Resilience of the data network should be considered in conjunction with IP Office resilience. For example:

- Ensuring that the data network routes between sites are such that traffic has alternate routes.
- Ensuring that the data network equipment is supported by UPS and similar backup power supply options.

Related links

Design Considerations on page 23

Emergency Call Routing

- Special consideration must always be given to ensure the correct routing of emergency calls, especially in regard to identifying caller location.
- Outgoing caller ID must be assessed. Rerouted calls may be blocked if the ID used to call out on an alternate trunk or site is not accepted by the line provider.

Related links

Design Considerations on page 23

Licensing

If the license or subscription server being used by the network becomes unavailable for some reason, the individual systems within the network enter a 30-day grace period.

This operation is automatic and does not require any configuration. The server acting as host to guest users and extensions during failover does not require any additional licenses or subscriptions.

- Voicemail Licenses: The primary server’s voicemail license and subscription rights are honored by the secondary server’s voicemail.
- IP Office Media Manager is not accessible during failover of the primary server. However, if running, the secondary will continue supporting VRL recording. Those recordings are collected from the secondary server by the primary following restoration of normal operation.

- For IP Office Select systems, during normal operation, the primary and secondary voicemail servers are assigned voicemail port licenses from the total pool available.
- Extension and User Profile Licenses: During failover, users and extensions maintain their previously licensed or subscribed rights.
- Other Licenses and Subscriptions: Other licenses and subscriptions are specific to the system to which they have been issued. They do not migrate during failover.
- License Grace Period: If the primary server has failed, the license on all other servers enter the 30-day grace period state.

Related links

Design Considerations on page 23

Chapter 4: Configuring General Resilience

This section covers the application of general resiliency settings between systems.

Important:

User and phone resilience requires at least 1 physical phone (H323 or SIP) included in the configuration for resilience. User resilience will not operate using just softphone clients.

Related links

Using the Resilience Administration Wizard on page 28
Adding Expansion to Expansion Lines on page 31
Using the Individual System Line Settings on page 32
Configuration Update Scenarios on page 34

Using the Resilience Administration Wizard

The solution wizard allows quick selection of the general resilience settings for all servers in the network.

- **Failover Server Total IP Phone Capacity:** When added to the remote server's extensions and users during resilience, the total numbers must be within the remote server's total supported capacity (and any other specific limit for the extension type). That also includes any other systems in resilience to that remote server at the same time. Extensions and users beyond the supported capacity do not receive resilience support. See System Capacities on page 23
- **Reboot Required:** For 1600 and 9600 Series phones and Avaya SIP softphone clients, changing the failover server for IP phones requires the phone to be restarted in order to pick up changes to its failover server address.
- **Manual Phone Configuration Required:** For 1100 and 1200 Series phones, B179 and H175 telephones; the telephone must be manually configured with the address details of its failover server.
- **IP DECT Phone Resilience:** The solution wizard does not include the configuration of IP DECT resilience. To configure that configure resilience using the individual line settings

Important:

- WARNING: Using the resiliency administration wizard overrides any lines configured for location based administration

Related links

Configuring General Resilience on page 28
Configuring resilience using the IP Office Manager wizard on page 29
IP Office Server Edition Options on page 29
IP Office Select Options on page 30

Configuring resilience using the IP Office Manager wizard

Procedure

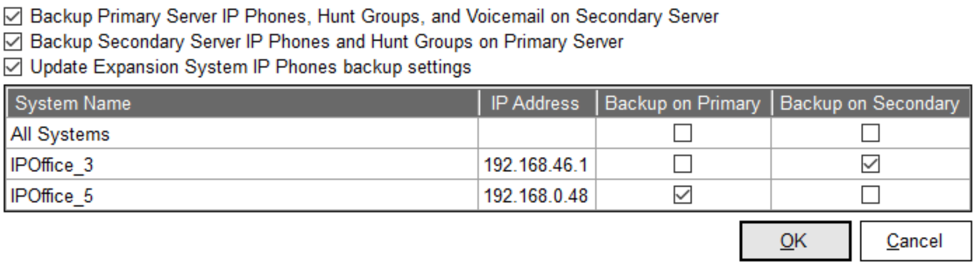
1. Using IP Office Manager, receive the configuration from the primary server.
2. If already in the configuration, click on **Solution** in the navigation tree on the left.
3. Check that all the expected servers are listed as having there configuration present at the bottom of the screen and that each has a **Bothway** link to the primary and, if present, secondary server.
4. Click the **Resiliency Administration** link on the right. The options shown vary depending on the types of servers within the network, for example whether IP Office Select or not, and whether there are expansion servers.
5. Select the general resilience options that you want applied between systems in the network. See IP Office Server Edition Options on page 29 or IP Office Select Options on page 30.
6. Click **OK**.
7. Save the changes.

Related links

Using the Resilience Administration Wizard on page 28

IP Office Server Edition Options

A menu similar to the following is displayed for an IP Office Server Edition network.



☑ Backup Primary Server IP Phones, Hunt Groups, and Voicemail on Secondary Server
☑ Backup Secondary Server IP Phones and Hunt Groups on Primary Server
☑ Update Expansion System IP Phones backup settings

System Name	IP Address	Backup on Primary	Backup on Secondary
All Systems		□	□
IPOffice_3	192.168.46.1	□	☑
IPOffice_5	192.168.0.48	☑	□

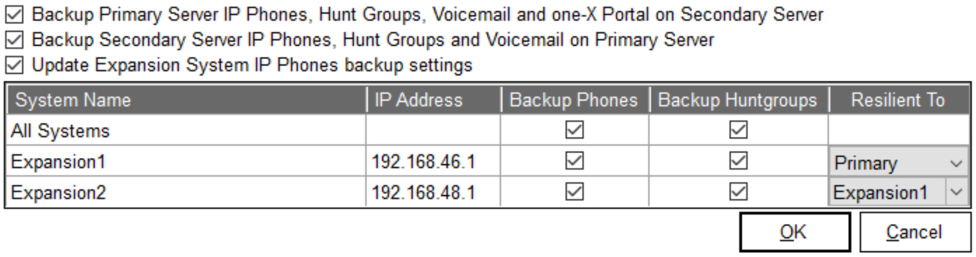
- **Backup Primary Server IP Phones, Hunt Groups and Voicemail on Secondary Server:** If selected, this enables IP phone, hunt group and voicemail resilience from the primary server to the secondary. Note that IP DECT support also requires configuring DECT trunk resilience . If not selected, all server resilience settings are disabled.
- **Backup Secondary Server IP Phones and Hunt Groups on Primary Server:** If selected, this enable IP phone and hunt group resilience from the secondary server to the primary. Note that IP DECT support also requires configuring DECT trunk resilience . If not selected, all server resilience settings are disabled.
- **Update Expansion System IP Phones backup settings:** When selected, the resilience settings of the existing expansion systems can also be seen and adjusted. This allows the selection of either the primary or secondary server as the remote server for each expansion's resilience. Selecting a server enables IP Phone (standard and IP DECT) and hunt group resilience. Not selecting an option disables all resilience settings for the expansion system.

Related links

Using the Resilience Administration Wizard on page 28

IP Office Select Options

A menu similar to the following is displayed for an IP Office Select network.



☑ Backup Primary Server IP Phones, Hunt Groups, Voicemail and one-X Portal on Secondary Server
☑ Backup Secondary Server IP Phones, Hunt Groups and Voicemail on Primary Server
☑ Update Expansion System IP Phones backup settings

System Name	IP Address	Backup Phones	Backup Huntgroups	Resilient To
All Systems		☑	☑	
Expansion1	192.168.46.1	☑	☑	Primary
Expansion2	192.168.48.1	☑	☑	Expansion1

- **Backup Primary Server IP Phones, Hunt Groups, Voicemail and one-X Portal on Secondary Server:** If selected, this enables IP phone, hunt group, voicemail and portal resilience from the primary server to the secondary. Note that IP DECT support also requires configuring DECT trunk resilience , portal support also requires configuring one-X Portal for IP Office resilience . If not selected, all resilience settings for the expansion are disabled.
- **Backup Secondary Sever IP Phones, Hunt Groups and Voicemail on Primary Server:** If selected, this enables IP phone, hunt group, voicemail and portal resilience from the secondary server to the primary. Note that IP DECT support also requires configuring DECT

trunk resilience , portal support also requires configuring one-X Portal for IP Office resilience . If not selected, all resilience settings for the expansion are disabled.

- **Update Expansion System IP Phones backup settings:** When selected, the resilience settings of the existing expansion systems can also be seen and adjusted. This allows the selection of the primary or secondary server as the remote server for each expansion's resilience. If additional lines have been added between the expansion systems , then selection of another expansion is also possible. Not selecting an option disables those resilience settings for the expansion system.

Related links

Using the Resilience Administration Wizard on page 28

Adding Expansion to Expansion Lines

About this task

For IP Office Select, you can link expansion systems and enable resiliency between those systems. Note that this assumes that the customer also has data routing between the sites.

You must still ensure that the failover system has sufficient capacity to host the additional extensions and users during failover.

This process creates reciprocal IP Office lines between the selected expansion systems.

Procedure

1. Open Manager and log in to the primary server.
2. On the **Solution** page, on the left under **Link** click **Expansion System**.
3. Select the expansion systems to link.
4. Under **Line Type**, select the type of IP Office line:
    - **SCN-Websocket (Secure):** Recommended for security and NAT traversal.
    - **SCN-Websocket:** Supports NAT traversal with limited security.
    - **SCN:** Legacy SCN line. Not recommended for new deployment.
5. If the **Link Type** is set to one of the web socket options, enter a web socket password.
6. Click **OK**.
7. The lines created in the configuration of each system are defaulted to medium security. If this needs to be changed, edit the individual line settings.
8. Save the configuration.
9. Use System Monitor to confirm the operation of the new lines between the two expansion systems.

Result

You can now use the resilience wizard or individual line settings to configure resilience between expansion systems.

Related links

Configuring General Resilience on page 28

Using the Individual System Line Settings

The solution wizard automatically applies the selected options to the appropriate IP Office lines within the configurations of each individual system. The configuration of those lines can also be checked and configured directly using the process below.

Related links

Configuring General Resilience on page 28
Configuring resilience using the IP Office Manager line settings on page 32
Using IP Office Web Manager on page 33
SCN Resiliency Options on page 33

Configuring resilience using the IP Office Manager line settings

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. Select the systems whose resilience settings you want to check or adjust.
3. Select Line.
4. Select the line to the system which you want to provide resilience support for the currently selected system.

   Only one line providing resilience is supported on each system, ie. you cannot select to have some resilience features provided by different remote servers.
5. Select the resilience options required. See SCN Resiliency Options on page 33.
6. Clik **OK**.
7. Repeat the process for any other systems in the network.
8. Save the configuration changes.

Related links

Using the Individual System Line Settings on page 32

Using IP Office Web Manager

The solution wizard automatically applies the selected options to the appropriate IP Office lines within the configurations of each individual system. The configuration of those lines can also be checked and configured directly using the process below.

Related links

Using the Individual System Line Settings on page 32

SCN Resiliency Options

Options	Description
Supports Resiliency	Enables support for failover to the remote system on this line. The remote system maintains a backup copy of this system's user records (see User Resilience). It begins monitoring the availability of this system in order to determine when to enable failover. Note that this control enables or disables all the available resilience options when clicked. Selecting just this option and none of the below is used when configuring additional lines to support location based resilience
Backs up my IP Phones	Use the remote system to support this system's Avaya IP telephones during resiliency. Users of SIP softphone client's may also require Avaya one-X® Portal for IP Office resilience for this to work for them.
Failover Server Total IP Phone Capacity	When added to the remote server's extensions and users during resilience, the total numbers must be within the remote server's total supported capacity (and any other specific limit for the extension type). That also includes any other systems in resilience to that remote server at the same time. Extensions and users beyond the supported capacity do not receive resilience support. See System Capacities on page 23.
Reboot Required	For 1600 and 9600 Series phones and Avaya SIP softphone clients, changing the failover server for IP phones requires the phone to be restarted in order to pick up changes to its failover server address.
Manual Phone Configuration Required	For 1100 and 1200 Series phones, B179 and H175 telephones; the telephone must be manually configured with the address details of its failover server.
Backs up my Hunt Groups	Use the remote system to support this system's hunt groups during resiliency. This setting requires Backs up my IP Phones to also be enabled.
Backs up my Voicemail	Use the remote system to support this system's voicemail during resiliency. This option is only available on lines to the primary and secondary servers.
Backs up my IP DECT Phones	Use the remote system to support this system's DECT R4 telephones during resiliency. This option also requires the DECT R4 system to be configured for DECT Trunk Resilience . Use of this setting is subject to the same capacity limits as IP Phone resilience plus the separate total IP DECT extension support limits of the remote server.

Table continues…

Options	Description
Failover Server Total IP DECT Capacity	When added to the remote server's local extensions and users during resilience, the total numbers must be within the remote server's IP DECT and total supported capacities. That also includes any other systems in resilience to that remote server at the same time. Extensions and users beyond the supported capacity do not receive resilience support. See System Capacities on page 23.
Backs up my one-X Portal	Use the remote system to support this system's Avaya one-X® Portal for IP Office users during resiliency.

Related links

Using the Individual System Line Settings on page 32

Configuration Update Scenarios

The following processes outline the steps that may be necessary when adding additional servers to an existing network.

Related links

Configuring General Resilience on page 28
Adding an Expansion Server on page 34
Adding a Secondary Server on page 35

Adding an Expansion Server

About this task

Add the new server as per the IP Office Server Edition deployment documentation and confirm normal operation. You can then proceed with configuring resilience.

Procedure

1. Run the general resilience configuration wizard.
2. Select **Update Expansion System IP Phones** backup settings (IP Office Server Edition) or **Update Expansion System IP Phones** backup settings (IP Office Select) to display the resilience settings of the expansion servers.
3. Select the resilience settings for the new expansion system.
4. Click **OK**.
5. Save the changes.

Related links

Configuration Update Scenarios on page 34

Adding a Secondary Server

About this task

Add the new server as per the IP Office Server Edition deployment documentation and confirm normal operation. You can then proceed with configuring resilience.

Procedure

1. Check the voicemail server settings. Adding a secondary server allows voicemail resilience to be deployed. This requires the two voicemail servers to be synchronized using SMTP connections.
2. For IP Office Select only:
    a. Configure DECT resilience if required.
    b. Adding a secondary server allows portal resilience to be deployed. This requires the portal servers to be configured with resilience settings.
3. Run the general resilience configuration wizard:
    a. Select the resilience options required between the primary and secondary servers.
    b. Select **Update Expansion System IP Phones backup settings** (IP Office Server Edition) or **Update Expansion System IP Phones backup settings** (IP Office Select) to display the resilience settings of the expansion servers.
    c. Update the expansion server settings to use either the primary or secondary servers.
    d. Click **OK**.
    e. Save the changes.

Related links

Configuration Update Scenarios on page 34

Chapter 5: Configuring IP Phone Resilience

Avaya IP phones registered with one system can automatically reregister with another system when resilience is required.

Avaya IP phones registered with one system can automatically reregister with another system when resilience is required.

IP Phone failover to an alternate gatekeeper is a native feature of many IP phones. However, it only works if the alternate gatekeeper allows registration. During normal operation, registration to the alternate gatekeeper is blocked. During failover it is allowed.

Important:

- User and phone resilience requires at least 1 physical phone (H323 or SIP) included in the configuration for resilience. User resilience will not operate using just softphone clients.
- User changes to their settings during failover are lost after failback. In addition, the call history for calls during failover is also lost after failback.
- Calls through the system are disconnected by failover. Direct media calls may continue but this is not guaranteed. See Call Resilience.
- Resilience fails if the failover server is restarted during failover. The backup user and registered phone settings received by the failover server during normal operation are held in its non-permanent memory. If during failover operation the server is rebooted, those records are lost.
- Failover features require that the phones local to each system are still able to route data to the failover system.
- When an IP phone fails over, the failover system allows it to operate as a "guest". The guest phones do not consume any licenses.
- The features for user resilience are applied to the phone user.
- Hot desked users are automatically logged out. When their base extension fails back to the home system, the hot desked user is automatically logged in on that extension.
- For secure communication using TLS/SRTP, all IP Office systems must have an identity certificate that has been signed by the same trusted root CA.

Supported Telephones

H.323	SIP	SIP Softphones	Others
1600 Series 9600	1120 B179[1] 1140 B199[1] 1220 H175 1230 J100 Series E129 K100 Series	Avaya Communicator for Windows one-X Mobile Preferred for Android one-X Mobile Preferred for iOS Avaya Workplace Clients	All supported Avaya DECT R4 handsets. IP Office Select only IP Office Web Client[3] IP Office WebRTC SDK Clients[3]

1. These Avaya SIP Phones require some manual configuration for resilience operation: B179 , B199.
2. SIP softphone clients also require Avaya one-X® Portal for IP Office resilience to be configured.
3. Requires Avaya one-X® Portal for IP Office resilience to be configured.

When Does IP Phone Failover Occur?

If the home system is no longer visible to the failover system for at least 3 minutes, that failover system begins allowing the IP phones to re-register with it. Phones with existing calls using media connection preservation which do not failover until that call ends.

The failover delay ensures that resilience is not invoked when it is not required, for example when the home system is simply being rebooted to complete configuration changes.

When Does IP Phone Failback Occur?

Once the home system has been visible again for more than 10 minutes, any idle phones begin to re-register with the home system. If for some reason, a phone is unable to connect to the home system, there is a 5 minute grace period, where the phone can be logged in to either the home or failover system. This is referred to as "homeless prevention".

Automatic failback to the home system is the default mode. For H323 IP phones, manual failback can be selected. In manual mode, the phone does not failback until either logged out or rebooted.

DHCP Resilience

When an IP Office provides extension data to the system that will back up the extensions it also provides DHCP data. The failover IP Office will provide DHCP service to the failover IP Phones - even if that system's DHCP is disabled. This operation relies on DHCP forwarding be allowed between networks or on the two servers being on the same subnet. A likely requirement is to have different SSONs for the two sets of phones.

Simultaneous Clients

If a user is in simultaneous mode on their home server when failover occurs, both their phones failover.

Limitations

- Resilience fails if the failover server is restarted during failover. The backup user settings received by the failover server during normal operation are held in its non-permanent memory. If during failover operation the server is rebooted, those records are lost.
- Internal twinning is not supported during resilience failover.
- Fallback twinning is supported during failover. However, only after the phone has registered with the failover server.

Related links

Configuring the H323 Failback Mode on page 38
H323 Remote Worker Configuration on page 39
Vantage/Avaya Workplace Resilience on page 39
B179 Phone Configuration on page 40
B199 Phone Configuration on page 40
SIP Remote Extension Resilience on page 41
Configuring Expansion to Expansion Resilience on page 41

Configuring the H323 Failback Mode

About this task

By default, all systems are set to use automatic failback for their IP phones when they recover from resilient operation. However, if necessary, manual failback can be configured for the system's H323 IP phones.

Manual failback requires the telephones to be unregistered or rebooted.

Procedure

1. Using Manager, log in to the home system for the resilient phones.
2. In the navigation pane on the left, select **System**.
3. In the details pane, click the **Telephony** tab.
4. In the **Phone Fallback** field, select the required mode:
    - Automatic: Failback when system failback has occurred and the phone has no call in progress.
    - Manual: Failback when the phone is restarted.
5. Click **OK**.
6. Save the configuration.

Related links

Configuring IP Phone Resilience on page 36

H323 Remote Worker Configuration

About this task

For H323 remote worker extensions, the failback server address provided by setting the general resilience settings may not be valid for them to access that server. In that case, the extension needs to use an alternate address.

Procedure

1. Using Manager, receive the configuration.
2. In the navigation pane on the left, select **Extension**.
3. Select the remote worker extension.
4. In the **Fallback As Remote Worker** field, select the required mode:
    - **Auto** - Use the failover address configured on the IP Office Line providing the service.
    - **No** - Use the alternate gateway private address.
    - **Yes** - Use the alternate gateway public address.
5. Click **OK**.
6. Save the configuration.

Related links

Configuring IP Phone Resilience on page 36

Vantage/Avaya Workplace Resilience

For all Avaya Vantage™ and Avaya Workplace Client, the address supplied for the failover server will either be the failover system's FQDN or it's IP address.

- If the failover server FQDN address **System** > **LAN** > **VoIP** is set, that address is provided to the clients as the failover address. This requires that the failover server's FQDN is resolvable through the customer's network back to the IP address of the system in order for resiliency to work.
- If the failover FQDN is not set, then the system's IP address is provided to the clients as their failover server address.

Related links

Configuring IP Phone Resilience on page 36

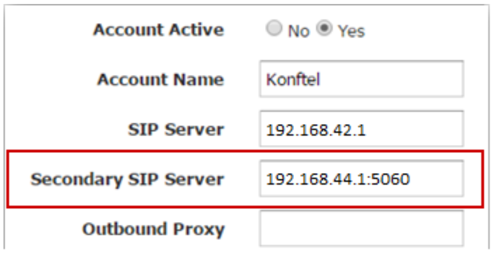
B179 Phone Configuration

About this task

The B179 phone cannot obtain details of the failover system directly from its home system. Instead, it must be configured manually through the phone's web interface.

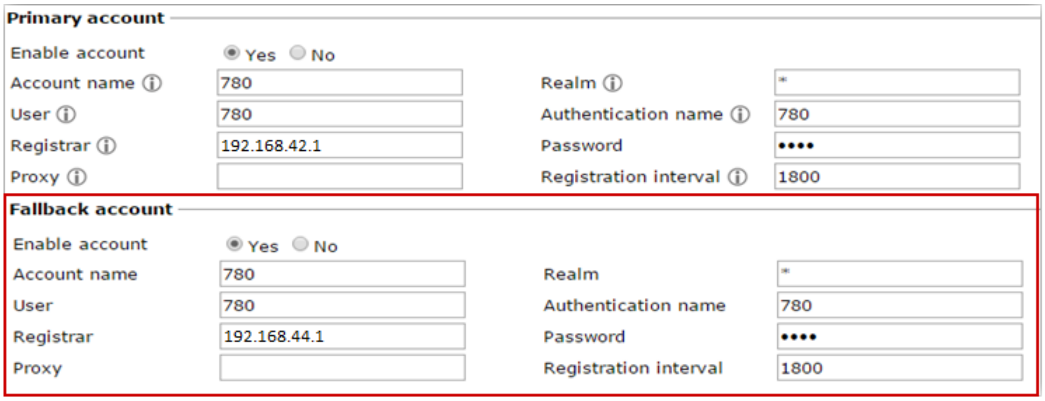
Procedure

1. Configure the address of the failback system as the **Secondary SIP Server** setting:



Account Active	○ No ● Yes
Account Name	Konftel
SIP Server	192.168.42.1
Secondary SIP Server	192.168.44.1:5060
Outbound Proxy	

2. Enter details of the **Fallback Account** settings. These match the primary account except for the Registrar address which should be the failover server address.



Primary account

Enable account	● Yes ○ No		
Account name ⓘ	780	Realm ⓘ	*
User ⓘ	780	Authentication name ⓘ	780
Registrar ⓘ	192.168.42.1	Password	••••
Proxy ⓘ		Registration interval ⓘ	1800

Fallback account

Enable account	● Yes ○ No		
Account name	780	Realm	*
User	780	Authentication name	780
Registrar	192.168.44.1	Password	••••
Proxy		Registration interval	1800

Related links

Configuring IP Phone Resilience on page 36

B199 Phone Configuration

About this task

For R11.1 and higher, using B199 1.0.1.0.9 firmware or higher, the B199 can automatically obtain many of its settings by requesting a avayab199.xml file from the IP Office. However, the following additional manual configuration steps are required to enable resilience support by the phone.

Before you begin

Procedure

1. Using a web browser, connect to the B199 phone's web menus and login using the phone's admin password.
2. Select the SIP tab.
3. In the Fallback Account section, set the follow values. These should match the same values as used for the Primary Account shown on the same menu.
    a. Check that the **Registrar** and **Proxy** show the correct address for the failover IP Office system. These values are obtained automatically by the phone from the IP Office when the phone is started.
    b. Enter the phone's extension number in the **User** and **Authentication Name** fields.
    c. Enter the phone's extension password in the **Password** field.
4. Click **Save**.

Result

The phone is rebooted.

Related links

Configuring IP Phone Resilience on page 36

SIP Remote Extension Resilience

Remote SIP phones and softphones can support resilience. Refer to the "*IP Office SIP Phones with ASBCE*" manual.

Related links

Configuring IP Phone Resilience on page 36

Configuring Expansion to Expansion Resilience

About this task

For IP Office Select, you can link expansion systems and enable resiliency between those systems. Note that this assumes that the customer also has data routing between the sites.

This process creates reciprocal IP Office lines between the selected expansion systems.

Procedure

1. Open Manager and log in to the primary server.
2. On the **Solution** page, on the left under **Link** click **Expansion System**.

3. Select the expansion systems to link.
4. Under **Line Type**, select the type of IP Office line:
    - SCN-Websocket (Secure): Recommended for security and NAT traversal.
    - SCN-Websocket: Supports NAT traversal with limited security.
    - SCN: Legacy SCN line. Not recommended for new deployment.
5. If the **Link Type** is set to one of the web socket options, enter a web socket password.
6. Click **OK**.

    The lines created in the configuration of each system are defaulted to medium security.
7. Edit the individual line settings if required.
8. Save the configuration.
9. Use System Monitor to confirm the operation of the new lines between the two expansion systems.

Result

You can now use the resilience wizard or individual line settings to configure resilience between expansion systems.

Related links

Configuring IP Phone Resilience on page 36

Chapter 6: Configuring the Location Based Resilience

Locations can be used in the configuration of IP Office systems to group extensions and systems by their physical location. This then allows the application of location specific settings.

For IP Office Select mode networks, the location settings can also be used to configure IP phone failover:

- The location entry in each system's configuration can specify a failover system. When set, extensions with the same location use that system for failover rather than the system line configured for **Backs up my IP Phones**.
- The failover system can be an expansion system. Expansion failover requires the addition of an IP Office line between the expansion systems.
- Location based resilience is supported on Avaya 1600 and 9600 series phones and all Avaya SIP endpoints.
- The location of an extension can be specifically set or can be determined from its IP address (unless routed through an ASBCE).

Related links

Creating Locations on page 43
Setting a System's Location on page 44
Configuring a Line for Location Based Resilience on page 45
Adjusting a Location for Resilience on page 45
Setting an Extension's Location on page 46
Example on page 46

Creating Locations

About this task

In order to configure and use location based resilience, a number of locations must first be configured and assigned to each system. Additional locations can also be added for use by sets of extensions that require different behaviour from the location of their host system.

When viewed at the solution level, the location records do not include the Emergency ARS and Fallback System settings. These settings are available when the same location record is viewed at the individual system level as they can be set differently for each system.

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. Click **Location**.
3. Click and select **Location**.
4. Enter an appropriate **Location Name** to identify the location.

   You can use the Subnet settings to have phones registering with IP addresses in the same range automatically associated with to the matching location.
5. Click **OK**.
6. Create other locations for each system as required.
7. Save the configuration changes.

Related links

Configuring the Location Based Resilience on page 43

Setting a System's Location

About this task

This process sets the location of a system. Each extension registered on that system then also uses this location's settings unless it either has a different location set or if its IP address matches another location's **Subnet** settings.

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. In the navigation pane on the left, select **System**.
3. In the **Location** field, select the required location.
4. Click **OK**.
5. Repeat this process for all system's in the network.
6. Save the configuration.

Related links

Configuring the Location Based Resilience on page 43

Configuring a Line for Location Based Resilience

About this task

In a correctly configured network, the primary and secondary servers have are reciprocally linked to each of the expansion systems. Those links can also be used for location based resilience. If you also want to have location based resilience between expansion systems, you must first use the expansion link wizard to create reciprocal lines between those systems.

The process below assumes enables an additional IP Office line for resilience support. This is in addition to the default resilience link configured during general resilience configuration

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. If not already done, use the expansion link wizard to create reciprocal lines between the expansion systems.
3. Select the system for which you want to setup location based resilience.
4. Select the IP Office line from that system to the system which should support extensions for location based resilience.
    a. Set the **Location** field to match the location setting of the system to which it links.
    b. In the **SCN Resiliency Options**, select **Supports Resiliency**. The other settings remain greyed out.
5. Save the changes to the configuration.

Related links

Configuring the Location Based Resilience on page 43

Adjusting a Location for Resilience

About this task

This process adjusts the previously created location records to override that system's resilience settings for any extensions in the same location and registered on that system.

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. Select the system for which you want to setup location based resilience.
3. Click **Location**.
4. Select the location for which you want to configure location based resilience.
5. In the **Fallback System** field, select the IP line that has been configured for resilience to the required system.

6. Click **OK**.
7. Save the configuration changes.

Related links

Configuring the Location Based Resilience on page 43

Setting an Extension's Location

About this task

This process sets the location for a specific extension. This overrides the system location if set.

⊕ **Tip:**

The process below sets the location of a single extension. To rapidly assign extensions to a location, in the group pane, double-click on the location. This displays a menu that allows the addition or deletion of extensions from the location.

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. In the navigation pane on the left, select **Extension**.
3. In the **Location** field, select the required location. **System** matches the system location as set above.
4. Click **OK**.
5. Save the configuration changes.

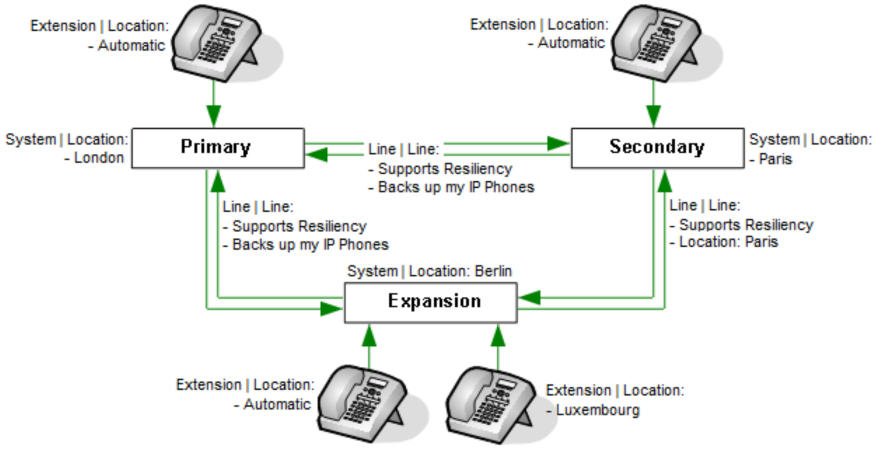
Related links

Configuring the Location Based Resilience on page 43

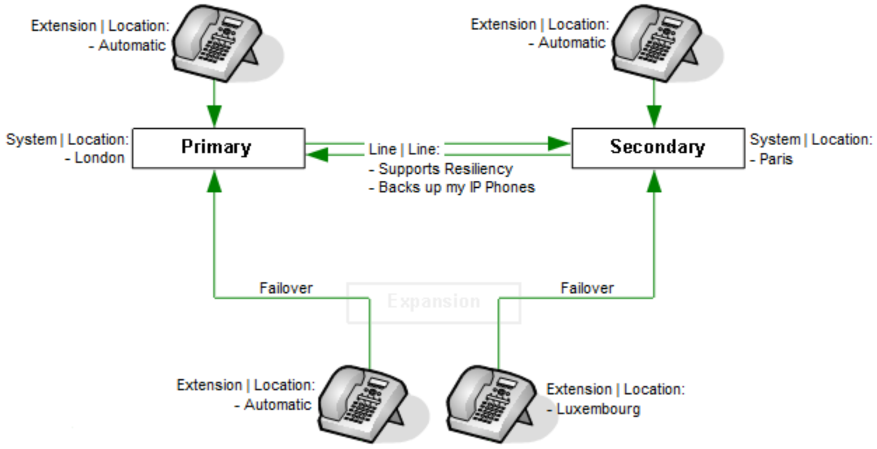
Example

The Example Company has a multi-site IP Office Select network. Their primary server is located in London, the secondary server is located in Paris and they have a third site with an expansion server located in Berlin. The Berlin site also supports a number of physically located in Luxembourg.

The resiliency administration wizard was used to configure resilience between the primary (London) and secondary (Paris) and from the expansion (Berlin) to the primary (London). However, the company wants those extensions located in Luxembourg to failover to the secondary (Paris) server rather than the primary (London). To achieve that:



1. At the solution configuration level, location records were created for London, Berlin, Luxembourg and Paris.
2. The location setting of each system was set as appropriate (London, Berlin and Paris).
3. In the configuration of the expansion system (Berlin) was adjusted as follows:
    a. The location settings of the expansion system's IP Office lines were set to match their destination systems.
    b. On the line to the secondary server (Paris), the **Supports Resilience** option was enabled.
    c. In the system's copy of the Luxembourg location, the **Fallback Server** was set to the line to the secondary server (Paris).
    d. For the extensions in Luxembourg, the **Location** was set to Luxembourg.



Related links

Configuring the Location Based Resilience on page 43

Chapter 7: Configuring Voicemail Resilience

The IP Office Server Edition network can include two voicemail servers, one on the primary server and one on the secondary server. The two servers automatically synchronize during normal operation and can provide voicemail support for the other users during resilience.

By default, the primary and secondary servers each include the voicemail service. The method by which these are used depends on the type of network:

- **IP Office Server Edition:** In this mode, the voicemail server on the primary is active and provides voicemail services for the whole network during normal operation. The voicemail server on the secondary remains in standby mode. However, during resilience, the voicemail server on the secondary can become active and provide voicemail services. When the primary voicemail is available again, by default the secondary voicemail returns to standby mode.
- **IP Office Select:** For IP Office Select the voicemail services on the primary and secondary severs can be used in two ways as follows:
    - **Single active server/standby server:** The voicemail services are configured to operate in the same way as for IP Office Server Edition above. The secondary acts as the failover server for the primary.
    - **Dual active voicemail servers:** The voicemail services on both servers can be configured to be active at the same time during normal operation (this requires the secondary server to be configured with the appropriate voicemail licenses, etc.). In this mode, each server provides voicemail services for its own extensions and trunks. Each expansion system is configured to use either the primary or secondary voicemail server. Each voicemail server can act as the failover server for the others voicemail.

During resilience, the IP Office system informs Avaya one-X® Portal for IP Office and other applications which voicemail server to use. The same information is also applied to all user voicemail access.

Both voicemail servers are constantly synchronizing settings, callflow configurations and mailboxes during normal operation. This is done using SMTP connections between the two voicemail severs. Following resilience, the same connections are used to re-synch the servers. Following any voicemail resilience, normal operation is not resumed until SMTP synchronization has restarted.

When does voicemail failover occur?

Voicemail failover is automatically triggered by IP Phone failover coming into operation. It can also be manually triggered through System Status Application using the **Activate Backup Server** button.

When does voicemail failback occur?

Once the server is available again, failback occurs once all active voicemail calls have ended and server SMTP synchronization is complete. However, manual failback or failback after a set time can be configured. Manual failback in control using System Status Application.

How is resilient voicemail operation configured?

1. The settings of the IP Office lines between the primary and secondary are used to indicate whether resilience is required. See Configuring General Resilience on page 28 .
2. The SMTP settings of the voicemail servers are configured to ensure synchronization of settings between the servers during normal operation.
3. The method by which a server providing active resilience returns to non-resilient mode operation (manual, graceful or automatic) is configurable through the voicemail server settings.

Related links

Checking the System Voicemail Settings on page 49
Viewing and changing the voicemail settings on page 50
Checking the SMTP Settings on page 50
Configuring the Voicemail Failback Method on page 53
Configuring Recording Archiving on page 54

Checking the System Voicemail Settings

The voicemail settings of the server's within the network are largely configured by default:

In an IP Office Server Edition network, the primary server hosts the active voicemail service during normal operation whilst the voicemail service on the secondary is configurable but otherwise inactive. All other servers are configured to redirect their voicemail needs to the primary. The primary server is configured with the address of the secondary server as its failover destination.

In an IP Office Select network, the primary and secondary servers can be configured as above or they can be configured to have both the primary and secondary voicemail services active simultaneously. When the later is the case, each expansion server is configured to redirect its voicemail needs to either the primary or secondary. The primary server is configured with the address of the secondary server as its failover destination and vice versa.

The above appears in the **System** > **Voicemail**configuration settings of each server as follows:

Table 1: IP Office Server Edition Settings/IP Office Select Single Active Server Settings

Voicemail Setting	Primary Server	Secondary Server	Expansion Server
Voicemail Type	Voicemail Lite/Pro	Centralized Voicemail	Centralized Voicemail
Voicemail Destination	Not used	99999 (primary)	99999 (primary)

Table continues…

Voicemail Setting	Primary Server	Secondary Server	Expansion Server
Voicemail IP Address	127.0.0.1	Not used	Not used
Backup Voicemail IP Address	Secondary server IP address	Not used	Not used

Table 2: IP Office Select Dual Active Server Settings

Voicemail Setting	Primary Server	Secondary Server	Expansion Server
Voicemail Type	Voicemail Lite/Pro	Voicemail Lite/Pro	Centralized Voicemail
Voicemail Destination	Not used	Not used	99999 (primary) or 999998 (secondary)
Voicemail IP Address	127.0.0.1	127.0.0.1	Not used
Backup Voicemail IP Address	Secondary server IP address	Primary server IP address	Not used

Related links

Configuring Voicemail Resilience on page 48

Viewing and changing the voicemail settings

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. Select the systems whose resilience settings you want to check or adjust.
3. Select **System**.
4. Select the **Voicemail** tab. Check that the settings match those expected in the tables above.
5. If any changes have been made, click **OK**.
6. Check the settings for the other servers if necessary.
7. Save changes.

Related links

Configuring Voicemail Resilience on page 48

Checking the SMTP Settings

Both voicemail servers are constantly synchronizing settings, callflow configurations and mailboxes during normal operation. This is done using SMTP connections between the two voicemail severs. Following resilience, the same connections are used to re-synch the servers.

Following any voicemail resilience, normal operation is not resumed until SMTP synchronization has restarted.

The SMTP connections are configured through the voicemail server preferences of each server. The first entry in the server's SMTP settings (**System** > **Voicemail** > **Email** > **SMTP Sender**) is its default SMTP server. This is the entry used for inter-voicemail server traffic for features such as resilience. This Domain and Server fields of this entry must be configured with the fully qualified domain name of voicemail server, they should not be set to local host.

Related links

Configuring Voicemail Resilience on page 48
Configuring the SMTP Sender on page 51
Configuring the SMTP Receiver on page 52

Configuring the SMTP Sender

Procedure

1. Connect to the voicemail server using the Voicemail Pro client.
2. Click the **Preferences** icon. Alternatively, from the **Administration** menu select **Preferences**.
3. Select the **Email** tab.
4. Select the **SMTP Sender** sub-tab.
5. The first entry in the list of servers should be as follows:
   - Mail Domain
   - Server
   - Port Number
   - Sender (Identifier)
   - Server Requires Authentication

   See SMTP Sender options on page 52.
6. After making any changes, click **OK**.
7. Click **Save & Make Live**.

Related links

Checking the SMTP Settings on page 50
SMTP Sender options on page 52

SMTP Sender options

SMTP Sender options	Description
Mail Domain	Set this to match the server's fully qualified domain name. The voicemail service also uses the domain set to filter incoming SMTP mails received by the SMTP server. For this to work, the domain entered should be the fully-qualified name of the server on which the voicemail server is running, for example `vmpro1.example.com`. Any incoming messages where the recipient mail domain does not match are ignored.
Server	This specifies the IP address or fully-qualified domain name of the SMTP server to which messages are sent. Set this to the fully qualified domain name of the other voicemail server.
Port Number	Set this to 25.
Sender (Identifier)	Leave this blank. The voicemail server will insert a sender using either the e-mail address set for then voicemail mailbox user if set or otherwise using the best matching name it can resolve from the IP Office.
Server Requires Authentication	Leave these blank.

Related links

Configuring the SMTP Sender on page 51

Configuring the SMTP Receiver

Procedure

1. Connect to the voicemail server using the Voicemail Pro client.
2. Click the **Preferences** icon. Alternatively, from the **Administration** menu select **Preferences**.
3. Select the **Email** tab.
4. Select the **SMTP Receiver** sub-tab.
   a. In **SMTP Receiver** set this to **Internal**.
   b. In **Port** set to **25**.
   c. In **Domain** set this to match the server's fully qualified domain name.
5. After making any changes, click **OK**.
6. Click **Save & Make Live**.

Related links

Checking the SMTP Settings on page 50

Configuring the Voicemail Failback Method

Once the server is available again, by default failback occurs once all active voicemail calls have ended and server SMTP synchronization is complete. This is referred to as graceful failback. However, manual failback or automatic failback after a set time can be configured.

Related links

Configuring Voicemail Resilience on page 48
Setting the voicemail server failback method using the Voicemail Pro client on page 53
Setting the voicemail server failback method using web manager on page 54

Setting the voicemail server failback method using the Voicemail Pro client

Procedure

1. Connect to the voicemail server using the Voicemail Pro client.
2. Click the **Preferences** icon. Alternatively, from the **Administration** menu select **Preferences**.
3. Select the required **General** tab.
4. Select the **Failback Option**.

   This field sets how, when providing resilient support, the servers should return control of voicemail services to the other server. Failback is only considered once the two voicemail servers have started their synchronization operation (SMTP exchange of messages, etc.).

   - Manual: The system administrator has to initiate failback operation from the **Voicemail** tab in System Status Application
   - Graceful (Default): The failover server initiates failback after all the active voicemail calls on the failover server have ended and server SMTP synchronization is complete.
   - Automatic: The failover server initiates failback either after the specified Failback Timeout period (maximum 60 minutes) or after all the active voicemail calls on the failover server come to an end, whichever occurs first. It does not wait for server SMTP synchronization to be completed.
5. After making any changes, click **OK**.
6. Click **Save & Make Live**.

Related links

Configuring the Voicemail Failback Method on page 53

Setting the voicemail server failback method using web manager

Procedure

1. Using a web browser, log into the web management menus.
2. Click **Applications** and select **Voicemail Pro - System Preferences**.
3. Select **General**.
4. Select the **Failback Option**.

   This field sets how, when providing resilient support, the servers should return control of voicemail services to the other server. Failback is only considered once the two voicemail servers have started their synchronization operation (SMTP exchange of messages, etc.).

   - Manual: The system administrator has to initiate failback operation from the **Voicemail** tab in System Status Application.
   - Graceful (Default): The failover server initiates failback after all the active voicemail calls on the failover server have ended and server SMTP synchronization is complete.
   - Automatic:

     The failover server initiates failback either after the specified **Failback Timeout** period (maximum 60 minutes) or after all the active voicemail calls on the failover server come to an end, whichever occurs first. It does not wait for server SMTP synchronization to be completed.
5. After making any changes, click **Update**.
6. When asked to confirm the changes, click **Yes**.

Related links

Configuring the Voicemail Failback Method on page 53

Configuring Recording Archiving

About this task

If a call recording archiving application such as IP Office Media Manager or Call Recorder for IP Office is being used with the primary voicemail server, then during resiliency the backup voicemail server performs the call recording and places any VRL recordings in its VRL folder. Once the primary voicemail server become active again, the secondary needs to transfer the recordings in its VRL folder to the primary server's VRL folder. This is done using the voicemail system preferences of the secondary voicemail server.

Procedure

1. Connect to the secondary voicemail server using the Voicemail Pro client.

2. Click the **Preferences** icon. Alternatively, from the **Administration** menu select **Preferences**.
3. Select the **Voicemail Recording** tab.
4. For the FTP User Name and FTP Password enter the details of an administrator account on the primary voicemail server.
5. For the Remote FTP Location enter either:
    - If using IP Office Media Manager: Enter /opt/vmpro/MM/VRL
    - If using Call Recorder for IP Office: Enter /opt/vmpro/VRL
6. For the **Remote FTP Host** enter the FQDN or IP address of the primary voicemail server.
7. Click **Test Connection** and wait for a response.
8. If the connection is confirmed, click **OK**.

Related links

Configuring Voicemail Resilience on page 48

Chapter 8: Configuring one-X Portal for IP Office Resilience

Both the primary and secondary server host copies of portal service with the service on the primary normally being the active one. However, in failback scenarios the secondary's service can become active until the systems recover.

The portal service is also installed by default on the IP Office Server Edition secondary server. This allows that secondary server to act as the portal server for users when, for some reason, the primary server is not available.

- Portal resilience is supported in IP Office Select and IP Office Subscription modes. That includes an IP Office Application Server in place of the primary or secondary server's portal service.
- Portal resilience is supported by the following client applications:
  - Avaya one-X® Portal for IP Office browser access.
  - one-X Communicator clients.
  - one-X Mobile Preferred clients.
  - Avaya one-X® Portal for IP Office call assistant.
  - IP Office SoftConsole presence indication.
- Whilst resilience may appear to work between servers running different levels of portal software this is not supported. Resilience is only supported between primary and secondary servers running the same version of portal software.
- During normal operation (both servers running and connected), user and administrator changes made on the primary server are automatically synchronized to the secondary server. However, during resilience, changes made on either server are not synchronized and may be lost when the servers return to normal operation.
  - Scheduled conferences are currently an exception to the above. Conferences scheduled on the primary do not occur when running in failover. Conferences scheduled on the secondary are lost when failback occurs.

When Does Portal Failover Occur?

- On primary server portal failure: If the primary server's portal service stops for some reason, the portal service on the secondary server automatically becomes available.

- Users who were logged into the portal on the primary are able to login again on the secondary server.
    - If the primary IP Office service is still running, those portal users are automatically redirected.
    - If the user has not previously accessed the secondary portal server, they may need to accept the security certificate or create an exception which will interrupt automatic re-connection.
- The same applies for users who were logged into one of the portal clients such as the Outlook Plug-in
- New users wanting to login will have to use the address of the secondary server.
- On primary server IP Office failure: If the primary server's IP Office service stops for some reason, portal services are automatically transferred to the secondary server as above. Users belonging to that IP Office cannot update or delete personal contacts from the portal directory gadget.
- On network failure: If the network connection between the primary and secondary server fails for some reason, both portal servers become active and can be logged into. Again user and admin changes on secondary portal server are not copied to primary when the network connection recovers. This is referred as "Standalone Mode".

When Does Portal Failback Occur?

- On primary server portal recovery:

  When the primary server's portal service is available again, the portal service on the secondary server stops supporting login.

    - Users who were logged into the portal on the secondary are automatically re-directed to login again on the primary server.
    - Users who were logged into one of the portal clients such as the Outlook Plug-in are automatically connected to the primary server.
    - New users wanting to log in are redirected to the primary.
- On primary server IP Office recovery: When the primary server's IP Office service is available again, portal service support also returns to the primary server as above.

Related links

Configuring the IP Office Systems on page 57

Enabling Centralized CTI Link Mode on page 58

Configuring the one-X Portal for IP Office Servers on page 59

Configuring the IP Office Systems

About this task

The IP Office lines between the primary and secondary IP Office severs need to have the setting for portal backup enabled. This can be done through the configuring general resilience options.

Procedure

1. Using IP Office Manager, load the configuration from the IP Office Server Edition IP Office systems.
2. In the settings of the primary, locate the IP Office line from the primary to the secondary IP Office system.
3. On the **Line** tab, in the **SCN Resiliency Options**, check that **Supports Resiliency** and **Backs up my one-X Portal** are selected.
4. Repeat the step above for the IP Office line from the secondary to the primary IP Office system.
5. Save the configuration changes.

Related links

Configuring one-X Portal for IP Office Resilience on page 56

Enabling Centralized CTI Link Mode

About this task

Both portal servers must be set to use centralized CTI link mode. That is the default for a new installation but must be manually enabled for existing systems upgraded to IP Office Release 10 or higher.

Configuration is done through the primary portal server. If setup correctly, this synch's its settings to the secondary portal server.

Procedure

1. Login to the primary portal's administrator menus.
2. Select **Configuration**.
3. Select **Central CTI Link**.
   - Systems upgraded from Release 9.1 display their original **Auto Provisioning** setting. Click on **Convert to Central CTI Link**.
   - Check the **Central CTI Link** is enabled.
4. Click **Save**.
5. If any changes have been made, restart the portal service by clicking on the 🔄 icon.
6. Repeat the process for the secondary portal.

Related links

Configuring one-X Portal for IP Office Resilience on page 56

Configuring the one-X Portal for IP Office Servers

About this task

The portal resiliency menu is not visible if the IP Office systems are not set to IP Office Select mode and configured for port resiliency, see Configuring the IP Office Systems on page 57 . If still not visible it may be necessary to restart the portal service.

Procedure

1. Login to the primary portal's administrator menus.
2. Select **Configuration**.
3. Select **Resilience**.
4. Adjust the settings to provide the details of the servers.
    - **Failover:** Select Enabled.
    - **Failover Detection Time:** Set the duration before which the failover process begins. This stops failover being initiated by minor maintenance actions and system restarts.
    - **Failback:** Select **Automatic** or **Manual**. If set to manual, failback is initiated by restarting the primary server.
5. Select **Host Domain Name**. Enter the fully qualified domain names of the primary and secondary portal servers.
6. Click **Save**.
7. If any changes have been made, restart the portal service by clicking on the ⟳ icon.
8. You can now enable support for portal resilience in the IP Office settings. See Configuring the IP Office Systems on page 57.

Related links

Configuring one-X Portal for IP Office Resilience on page 56

Chapter 9: Configuring WebRTC Resiliency

On systems with Avaya one-X® Portal for IP Office resilience configured, resilience is also supported for user's using an Avaya WebRTC client to make and answer calls.

This is supported for IP Office R11.0 and higher.

- Supported Clients: WebRTC resilience is only supported for clients that use the IP Office WebRTC SDK. That currently means:
  - IP Office Web Client
  - IP Office Web Collaboration
  - The WebRTC PhoneService client used for WebRTC configuration testing.

For failure of the Avaya one-X® Portal for IP Office services, auto-login is supported for existing active WebRTC clients. However, for IP Office service failure manual re-login is required.

The primary and secondary server WebRTC Gateway services must use auto-configuration and be configured to use the same domain and certification settings. WebRTC resilience is not supported for external clients when the servers are behind a single ASBCE or NAT.

Chapter 10: Configuring DECT Resilience

DECT R4 uses an IP DECT trunk between the host IP Office server and the DECT master base station. DECT resilience allows the DECT system to be configured with an additional trunk to another IP Office server in the network. If the host server becomes unavailable for some reason, the failover trunk and server become active, allowing continued DECT operation.

Resilience operation occurs when the master base station cannot detect its normal host IP Office system, that is then IP Office system configured with an IP DECT line to it. During resilience, the failover IP Office system takes control and hosts the DECT extensions and users that were previously on its normal host system. However, no changes to the DECT configuration or additional handset subscriptions are allowed.

The failover IP Office system can host its own DECT R4 system using its own IP DECT line and master base station. When that is the case, it can only support failover from another system up to its maximum capacity of DECT users including its own DECT users (maximum 384 on an IP500 V2, 400 on a Linux based system).

DECT trunk resilience and base station mirroring can be combined.

For a provisioned installation

- The centralized phone book is still supported after failover. However, this does not apply to the phone book if being provided by an AIWS.
- An R is displayed on the 3700 Series DECT phones when they are in failover.
- By default DECT control and extensions automatically return to the primary IP Office system when it is available again.

For a non-provisioned installation

- The centralized phonebook is not supported during failover.
- The handsets do not display any indication that the system is in failover.

When Does DECT Failover Occur?

The master base station regularly polls its normal IP Office server, by default every 30 seconds. If that IP Office is not visible for some reason, then by default, after 2 minutes the master base station switches to using its failover IP Office system. These timings can be adjusted, see Configuring DECT Resilience

When Does DECT Failback Occur?

When the original IP Office system returns to normal operation, by default DECT control is automatically returned to it. The operation can be set to manual control if necessary, see Configuring DECT Resilience . In that case, control of failback is through System Status Application

Related links

- Provisioned Base Station Configuration on page 62
- Non-Provisioned Base Station Configuration on page 63
- IP Office Configuration for DECT Resilience on page 64

Provisioned Base Station Configuration

About this task

For a provisioned installation, the master base station needs to be configured to accept a provisioning connection from the failover system.

Procedure

1. Login to the master base station.

   This process requires access to tabs and fields currently only visible when **Show Advanced Options** is selected.

2. Select **Services** and then select the **Provisioning** tab.
3. Set the **Current View** to **Redundant**.
   a. Select the **Enable** option.
   b. The IP Office security settings control whether HTTPS is supported between the master base station (by default it is supported) and the failover IP Office system.
   c. Set the **PBX IP Address** to match the failover IP Office system.
   d. In the **User Name and Password** fields, set the details that match the failoverIP Office system's service user configured for IP DECT.
   e. Ensure that the **Base directory** is set to `/system/backupipdect/ instead of /system/ipdect/`.
   f. Click **OK**.
4. Reset the base station.
   a. Click on **Reset** required if displayed. Otherwise, select **Reset** and then select the **Reset** tab.
   b. Click **OK**.

      Depending on your base station, wait for the lower LED to return to solid blue or solid green.

Related links

- Configuring DECT Resilience on page 61

Non-Provisioned Base Station Configuration

About this task

For non-provisioned systems, the master base station needs to be configured with details of a redundant trunk connection to the failover IP Office and when to use that trunk.

Procedure

1. Login to the master base station.

   This process requires access to tabs and fields currently only visible when **Show Advanced Options** is selected.

2. Select **DECT** and then select the **Master** tab.
3. Enable the **PBX Resiliency** and click **OK**.
4. Select the **Trunks** tab.

   Options for configuring the redundant trunk to the failover IP Office system are now

5. In the **Trunk Settings** section, configure how failover should operate:
   - **Prioritize primary trunk:** If selected, when during failover the master base station detects that normal host system is available, it returns DECT control to that system. If not selected, the failover system retains control until it is manually returned using System Status Application
   - **Status Inquiry Period:** This field set how frequently (in seconds) the master base station should check the status of the host system. This value and the **Status Enquiry Period** set in the host system configuration should match.
   - **Supervision Timeout:** This option is only supported for a provisioned installation.
6. In the **Redundant Trunks** settings, set the port fields to **1720** and the **CS IP Address** to the IP address of the failover IP Office system.
7. Click **OK** and reset the base station.
   a. Click on **Reset** required if displayed. Otherwise, select **Reset** and then select the **Reset** tab.
   b. Click **OK**.

Result

Depending on your base station, wait for the lower LED to return to solid blue or solid green.

Related links

Configuring DECT Resilience on page 61

IP Office Configuration for DECT Resilience

About this task

For DECT switch resilience, the IP Office is configured as shown below. Only the host system needs this configuration. However, for provisioned systems, the security service user on the failover system must be enabled and configured to match the settings entered for the redundant provisioning connection

Procedure

1. Using IP Office Manager, retrieve the configuration from the IP Office system.
2. Click on **Line**. The list of existing lines is shown.
3. Click on the icon and select IP DECT Line. The settings for an IP DECT line are displayed.
4. Select the **Gateway** tab.
5. Find the **Enable Resiliency** section.
6. Select **Enable Resiliency**.
7. Only change the other values if necessary:
   - **Status Enquiry Period:** This field set how frequently (in seconds) the master base station should check the status of the primary IP Office. For a non-provisioned installation, this value should match the Status Inquiry Period set in the master base station.
   - **Prioritize Primary:** If selected, when during failover the primary IP Office returns to normal operation, DECT control is automatically returned to it. If not selected, the failover IP Office retains control until it is manually returned using System Status Application
   - **Supervision Timeout:** This field sets how long after contact is lost (in seconds) before the master base station should failover to the failover IP Office system. This option is only accessible here for a provisioned installation. For a nonprovisioned installation the value is set through the master base station.
8. Click **OK**.
9. Save the settings back to the IP Office system.

Related links

Configuring DECT Resilience on page 61

Chapter 11: Configuring DECT Master Resilience

Each DECT R4 system includes one base station configured as the master base station. Base station mirroring allows two base stations to be configured as the master. Whilst only one is active at any time, the other becomes active if the existing master is not available for some reason.

For base station resiliency, two base stations are configured to act as 'mirrored' master base stations. One becomes the active master base station whilst the other becomes a standby master base station. If, for any reason, the active master base station becomes unavailable, the standby master base station becomes the active master and continues DECT operation.

- The standby master base station is still able to handle call connections in the same way as normal nonmaster base stations.
- Mirroring is not supported between compact and non-compact base stations. However, it is supported between a DECT Gateway and non-compact base station.
- Base station mirroring and DECT trunk resilience can be combined.

When Does DECT Master Failover Occur?

The standby master regularly polls the active master. If the active master becomes invisible for some reason, the standby master automatically becomes the active master.

When Does DECT Master Failback Occur?

When the active master is available again, it resumes control and the other base station returns to being the standby master.

Related links

Configuring the IP Office on page 65
Configuring the Mirrored Base Stations on page 66
Activating the Master Base Station on page 67

Configuring the IP Office

About this task

In the IP Office system, the IP DECT line needs to be configured with the IP addresses of both of the mirrored basestations.

Procedure

1. Using IP Office Manager, retrieve the configuration from the IP Office system.
2. Click on **Line**. The list of existing lines is shown.
3. Click on the icon and select **IP DECT Line**. The settings for an IP DECT line are displayed.
4. Select the IP DECT line and select the **VoIP** tab.

   In the **Gateway IP Address** and the **Standby IP Address** fields, enter the IP addresses of the two base stations that will be mirrored.
5. Save the changes.

Related links

Configuring DECT Master Resilience on page 65

Configuring the Mirrored Base Stations

About this task

Use the following process to configure the master base station and its mirror.

This process requires access to tabs and fields currently only visible when **Show Advanced Options** is selected.

Procedure

1. Login to the first master base station.
2. Select **DECT** and then select the **Master** tab.
   a. Set the **Mode** to **Mirror**.
   b. Set the **Mirror Master IP** address field to the IP address of the other based station.
   c. Click **OK**.
3. Select the **DECT** > **Radio** tab.
   a. In the **Master IP Address** field, enter the base station's own IP address.
   b. In the **Alt. Master IP Address** field, enter the IP address of the other master base station.
   c. Click **OK**.
4. Reset the base station.
   a. Click on **Reset required** if displayed. Otherwise, select **Reset** and then select the **Reset** tab.
   b. Click **OK**.

Result

Depending on your base station, wait for the lower LED to return to solid blue or solid green.

Next steps

Repeat this process for the other mirrored base station.

Related links

Configuring DECT Master Resilience on page 65

Activating the Master Base Station

About this task

Only one base station in the mirrored pair acts as the master base station at any time. The initial selection is done through the base station menus of the selected member of the mirrored pair.

This process requires access to tabs and fields currently only visible when **Show Advanced Options** is selected.

Procedure

1. Login to one of the mirrored master base stations.
2. Select **DECT** and then select the **Master** tab.
3. Click **Activate** mirror.

Result

That base station is made the currently active master base station in the mirrored pair.

Related links

Configuring DECT Master Resilience on page 65

Chapter 12: Configuring External Trunk Resilience

It is difficult to provide trunk guidance for resilience as the configuration of the external trunk routing and usage of every network varies greatly. We can only discuss general principles and factors that need to be considered, and show examples of the different methods that can be used.

- Special consideration must always be given to ensure the correct routing of emergency calls, especially in regard to identifying caller location.
- Outgoing caller ID must be assessed. Rerouted calls may be blocked if the ID used to call out on an alternate trunk or site is not accepted by the line provider.

Related links

Configuring Breakout Controls on page 68
Primary ARS Fallback to Secondary Trunks on page 69

Configuring Breakout Controls

About this task

The **Breakout** action is potentially useful during failover scenarios. It allows a telephone user to make a call as if dialing the digits on another system on the network and thus have their dialing routed by that system. The action can be assigned to short codes and to programmable buttons.

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. Select the user or user rights to which you want to add a break out button and select the **Button Programming** tab.
3. Edit a button as follows:
    a. Select the **Action** as **Select the Action as Advanced** > **Dial** > **Break Out**.
    b. In the **Action Data** enter the system name or IP address of the remote server. Alternatively, if this field is left blank, display phones list the systems from which the use can select when the button is pressed.
4. Click **OK**.

5. Click **OK** again.
6. Save the configuration changes.

Related links

Configuring External Trunk Resilience on page 68
Adding a break out short code on page 69

Adding a break out short code

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. Select the type of short code you want to add, ie. a common system short code, specific system short code, user short code, user rights short code.
3. Click 📁 and select Short Code.
4. Enter the short code details:
   - Code: Enter the dialing digits and short code characters that will trigger the short codes use.
   - Feature: Select **Break Out**.
   - Telephone Number: The IP address or the IP Office System name of the remote server. In IP addresses, use * characters in place of characters.
5. Click **OK**.
6. Save the configuration changes.

Related links

Configuring Breakout Controls on page 68

Primary ARS Fallback to Secondary Trunks

In these examples, we assume that SIP trunks have been added to the secondary server. We want outgoing calls on the primary to be able to use those trunks on the secondary when necessary.

Note that these examples are useable in both normal and failover operation. They are not using specific resilience failover features.

The simplest method is to add a ?/./Dial/99998 short code to the primary system's existing ARS form. However, that method provides very little control or flexibility. Using an alternate ARS form allows a number of other features to be employed. For example, setting some users to a lower priority will apply a delay to them using a secondary trunk when the primary trunks are not available.

Related links

[Configuring External Trunk Resilience](#) on page 68
[ARS Alternate Route Overflow](#) on page 70
[ARS Out of Service Routing](#) on page 70

ARS Alternate Route Overflow

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. Expand the configuration of the primary server and select ARS.
3. Click on the icon to add a new ARS record.
    a. Set the **Route Name** to something suitably descriptive such as **Fallback**.
    b. Add a short code that will route calls from this ARS record to the secondary server: **?/Dial/./99998**
    c. Click **OK**.
4. In the ARS record **50:Main** on the primary, we need to set the record to failover to using the fallback ARS when a route to the primary cannot be seized within the required time.
    a. In the **Alternate Route** drop down select the fallback ARS created above.
    b. Set the **Alternate Route Priority Level** to **5**.

        This is the highest level of priority. It means that users with a lower priority need to wait for the Alternate Route Wait Time before calls overflow to the secondary when there are no available primary trunks. The default user priority is 5.

    c. Click **OK**.
5. Save the configuration.

Related links

[Primary ARS Fallback to Secondary Trunks](#) on page 69

ARS Out of Service Routing

About this task

The use of alternate routing allows automatic overflow of calls when no primary trunks are available. The same alternate ARS can also be used to allow manual control of when the alternate ARS is used. This can be useful in scenarios where it is known that the primary trunks will be unavailable; for example for maintenance.

Once configured, the use of an out of service route can be enabled/disabled through IP Office Manager or using short codes with the **Disable ARS Form** and **Enable ARS Form** features.

Procedure

1. Using IP Office Manager, receive the configuration from the primary server.
2. Expand the configuration of the primary server and select ARS.
3. Click on the icon to add a new ARS record.
    a. Set the **Route Name** to something suitably descriptive such as **Fallback**.
    b. Add a short code that will route calls from this ARS record to the secondary server: **?/Dial/./99998**
    c. Click **OK**.
4. In the ARS record 50:Main on the primary, we need to set the record to failover to using the fallback ARS when a route to the primary cannot be seized within the required time.
5. In the **Alternate Route** drop down select the fallback ARS created above.
6. Set the **Alternate Route Priority Level** to **5**.

    This is the highest level of priority. It means that users with a lower priority need to wait for the **Alternate Route Wait Time** before calls overflow to the secondary when there are no available primary trunks. The default user priority is 5.
7. Click **OK**.
8. Save the configuration.

Related links

Primary ARS Fallback to Secondary Trunks on page 69

Chapter 13: Configuring Media Preservation

On calls involving links between systems, the invoking of resilience mode can potentially interrupt existing calls as re-registration occurs. Media connection preservation can help prevent this if required. This feature is supported for the following telephones on IP Office Release 9.1 or higher. It can be applied to calls between systems and via SIP trunks:

- IP Office Release 9.1+ : 9608, 9611, 9621, 9641
- IP Office Release 11.0+ : J139, J159, J169, J179, J189, Avaya Workplace Client

On those phones, if a call experiences end-to-end signaling loss or refresh failures but still has an active media path, call preservation allows the call to continue. While preserving a call, the phone does not attempt to re-register with its call server or attempt to failover to a standby call server until the preserved call has ended. The maximum duration of a preserved call is two hours after which it is automatically ended.

Calls on hold and calls to hunt groups are not preserved. Only the following call types are preserved:

- Connected active calls.
- Two-party calls where the other end is a phone, trunk or voicemail.
- Conference calls.

During a preserved call the only permitted action is to continue speaking and then end the call. The phone's softkey actions and feature menus do not work. Call preservation can be enabled at the system level and for individual trunks. The system level setting control use of call preservation on the system's IP Office lines and H.323 IP phones. All systems in the network must be configured for call preservation to ensure end to end connection support. By default, the system setting is also automatically applied to all SIP trunks. However, the trunk setting for each trunk can be individually altered.

When does media connection preservation occur?

This is an immediate feature applied to all qualifying calls currently in progress. It ends when the call ends.

Related links

Configuring the System Setting on page 73
Configuring the SIP Line Setting on page 73

Configuring the System Setting

About this task

Note that the default setting for SIP lines is to match the system setting set below. Therefore, if different operation of SIP trunks or a SIP trunk is required, the trunk must be configured separately.

Procedure

1. Using IP Office Manager, retrieve the configuration from the IP Office system.
2. Select **Configuration**.
3. Select the system from the navigation tree and click on **System**.
4. Select Telephony and then select the **Telephony** sub-tab.
5. Change the **Media Connection Preservation** setting as required.
    - Disabled: If selected, call preservation is not attempted for any calls.
    - Enabled: If selected, call preservation is attempted for supported telephones and for IP Office lines.
6. Click **OK**.
7. Save the configuration.

Related links

Configuring Media Preservation on page 72

Configuring the SIP Line Setting

About this task

By default, all SIP trunks use the same setting applied to the system . However, each trunk can be configured separately to use its own setting.

Procedure

1. Using IP Office Manager, retrieve the configuration from the IP Office system.
2. Select **Configuration**.
3. Select the system from the navigation tree.
4. Click on **Line**. The list of existing lines is shown.
5. Select the SIP line that needs to be adjusted.
6. Select the **SIP Advanced** tab.
7. Change the **Media Connection Preservation** setting as required.
    - **System:** Apply the setting set for the system

- **Disabled:** If selected, call preservation is not attempted for any calls.
- **Enabled:** If selected, call preservation is attempted for calls.

8. Click **OK**.
9. Save the configuration.

Related links

Configuring Media Preservation on page 72

Chapter 14: Monitoring Resilience

There are a number of methods by which the different resilience features can be monitored.

Related links

Resiliency Alarms on page 75
Resilience Indication on Phones on page 75
IP Office Line Status on page 76
one-X Portal for IP Office Status on page 77
DECT Trunk Resilience on page 77

Resiliency Alarms

From Release 11.0 onwards, IP Office systems providing resiliency support can output an alarm when a failover scenario occurs, ie. when they are actively providing resilient services for another system.

The alarm is output as a standard IP Office system alarm configured through the **System** > **System Events** menu. Therefore the alarm can be directed to System Status Application, email, Syslog and/or SNMP.

Related links

Monitoring Resilience on page 75

Resilience Indication on Phones

The following indicators may appear on phones during failover scenarios:

- **R - IP Phone Resilience Indication:** An **R** is displayed on phones when they are operating in resilient mode. This is supported by 1600 and 9600 Series phones and on 3720, 3725, 3740, 3745 and 3749 DECT phones (if provisioned).
- **! - User Settings Retrieval Failure:** If, when a user hots desk onto a phone on another system, it is not able to obtain their full settings from either their home or failover system, the phone displays **!**. They can still continue to use the phone to make and answer calls but will not have access to all their normal settings. This is supported by 1600 and 9600 Series phones.

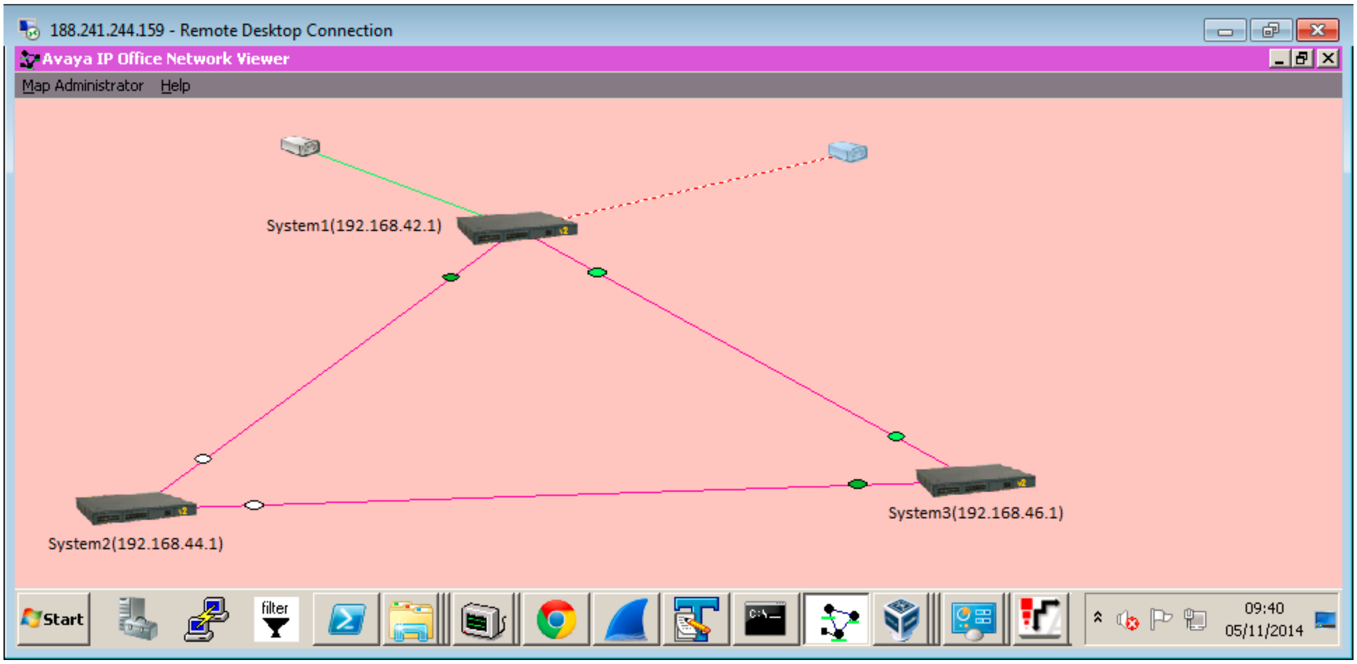
Related links

Monitoring Resilience on page 75

IP Office Line Status

The Network Viewer within System Monitor shows the IP Office lines between systems in a visual format. It also indicates the status of the lines.

Network view is currently not supported when using TCP, HTTP or HTTPS to connect System Monitor to the system.



The viewer indicates the status of each link by changing the color of the status dot next to the system hosting the line.

- Red = Link Down (non-resilient link)
- Light Green = Link Up (non-resilient link)
- White = Link Up (Resilient slave - "I provide Backup and I do not request Backup")
- Yellow = Link down (Resilient slave - "I am actively providing Backup")
- Dark Green = Link up (Resilient master)
- Orange = Link down - pending (Resilient slave)

Related links

Monitoring Resilience on page 75

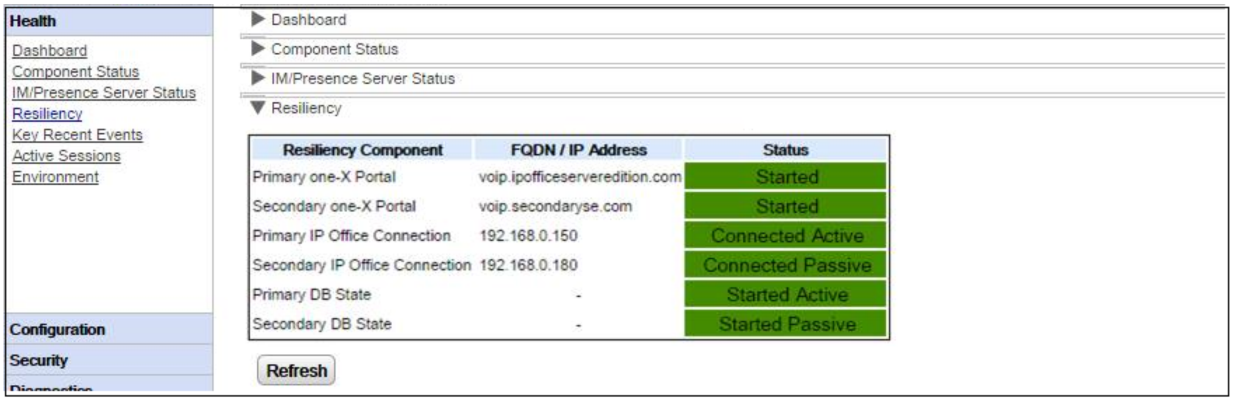
one-X Portal for IP Office Status

About this task

This menu is shown on IP Office Select network portal server. It shows the current status of the portals server connections.

Procedure

1. Login to the portal administrator menus.
2. Select **Health** and then **Resiliency**.



Resiliency Component	FQDN / IP Address	Status
Primary one-X Portal	voip.ipofficeserveredition.com	Started
Secondary one-X Portal	voip.secondaryse.com	Started
Primary IP Office Connection	192.168.0.150	Connected Active
Secondary IP Office Connection	192.168.0.180	Connected Passive
Primary DB State	-	Started Active
Secondary DB State	-	Started Passive

- **Started:** Indicates that the server or service is running.
- **Stopped:** Indicates that the server or service is not running.
- **Connected:** Indicates that a connected to the server is available.
- **Active:** Indicates that the server or connection is running and is currently being used to support portal users.
- **Passive:** Indicates that the server or connection is running but is not currently being used to support portal users.

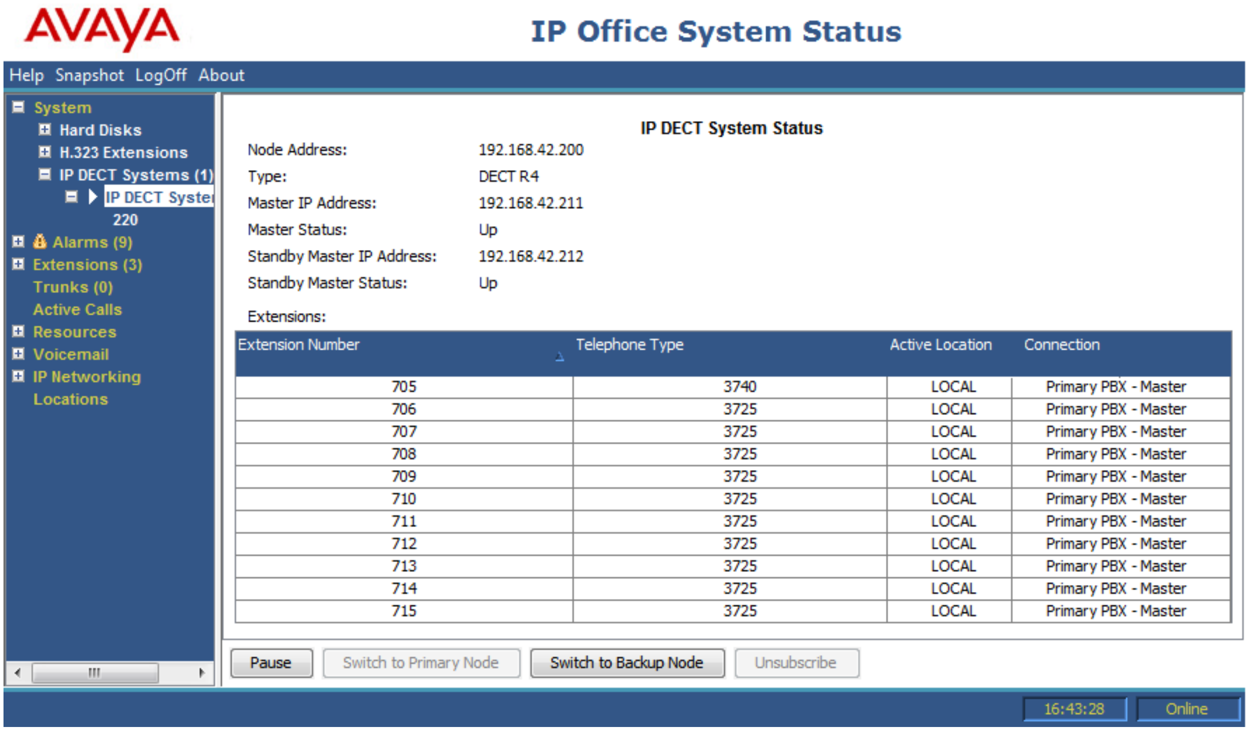
Related links

Monitoring Resilience on page 75

DECT Trunk Resilience

Using System Status Application you can view the status of both an IP Office system and also any DECT systems to which it is connected. This is done by selecting **System** > **IP DECT Systems**. Selecting the IP DECT System then displays details of the particular system and extensions being supported by that system.

The addresses and status of the mirrored master base stations is indicated. For the extensions, the connection being used is also indicated.



IP DECT System Status

Node Address:	192.168.42.200
Type:	DECT R4
Master IP Address:	192.168.42.211
Master Status:	Up
Standby Master IP Address:	192.168.42.212
Standby Master Status:	Up

Extensions:

Extension Number	Telephone Type	Active Location	Connection
705	3740	LOCAL	Primary PBX - Master
706	3725	LOCAL	Primary PBX - Master
707	3725	LOCAL	Primary PBX - Master
708	3725	LOCAL	Primary PBX - Master
709	3725	LOCAL	Primary PBX - Master
710	3725	LOCAL	Primary PBX - Master
711	3725	LOCAL	Primary PBX - Master
712	3725	LOCAL	Primary PBX - Master
713	3725	LOCAL	Primary PBX - Master
714	3725	LOCAL	Primary PBX - Master
715	3725	LOCAL	Primary PBX - Master

The menu provides a number of controls:

- **Unsubscribe:** Force the selected extension to unsubscribe.
- **Switch to Backup Node:** Force the DECT connection to switch to the failover IP Office.
- **Switch to Primary Node:** Force the DECT connection to switch from the failover IP Office to the home IP Office. This option is required if the setting **Prioritize Primary** is not selected, see Configuring DECT Resilience on page 61.

Related links

Monitoring Resilience on page 75

Chapter 15: Related resources

Documentation

Training

Avaya training and credentials are designed to ensure our Business Partners have the capabilities and skills to successfully sell, implement, and support Avaya solutions and exceed customer expectations. The following credentials are available:

- Avaya Certified Sales Specialist (APSS)
- Avaya Implementation Professional Specialist (AIPS)
- Avaya Certified Support Specialist (ACSS)

Credential maps are available on the Avaya Learning website at http://avaya-learning.com/.

The following courses are also available on the Avaya Learning website. After logging in to the website, enter the course code or the course title in the **Search** field.

Course code	Course title
2S00012W	APSS – Small and MidMarket Communications – IP Office™ Platform and Select Overview
4601W	Avaya IP Office™ Platform — Components
4602W	Avaya IP Office™ Platform — Editions
2S00015O	Small and Midmarket Communications — IP Office — Endpoints
10S00005E	Knowledge Access: Avaya IP Office™ Platform Implementation
5S00004E	Knowledge Access: Avaya IP Office™ Platform Support

Included in all Knowledge Collection Access offers above is a separate area called IP Office Supplemental Knowledge. This floor in the Virtual Campus contains self-directed learning objects, which cover IP Office delta information. This material can be consumed by technicians experienced in IP Office.

Finding documents on the Avaya Support website

Procedure

1. Go to https://support.avaya.com.
2. At the top of the screen, type your username and password and click **Login**.
3. Click **Support by Product** > **Documents**.
4. In **Enter your Product Here**, type the product name and then select the product from the list.
5. In **Choose Release**, select the appropriate release number.

   The **Choose Release** field is not available if there is only one release for the product.
6. In the **Content Type** filter, click a document type, or click **Select All** to see a list of all available documents.

   For example, for user guides, click **User Guides** in the **Content Type** filter. The list only displays the documents for the selected category.
7. Click **Enter**.

Viewing Avaya Mentor videos

Avaya Mentor videos provide technical content on how to install, configure, and troubleshoot Avaya products.

About this task

Videos are available on the Avaya Support website, listed under the video document type, and on the Avaya-run channel on YouTube.

- To find videos on the Avaya Support website, go to https://support.avaya.com/ and do one of the following:
  - In **Search**, type `Avaya Mentor Videos`, click **Clear All** and select **Video** in the **Content Type**.
  - In **Search**, type the product name. On the Search Results page, click **Clear All** and select **Video** in the **Content Type**.

    The **Video** content type is displayed only when videos are available for that product.

  In the right pane, the page displays a list of available videos.
- To find the Avaya Mentor videos on YouTube, go to www.youtube.com/AvayaMentor and do one of the following:
  - Enter a key word or key words in the **Search Channel** to search for a specific product or topic.

- Scroll down Playlists, and click a topic name to see the list of videos available for the topic. For example, Contact Centers.

Note:

Videos are not available for all products.

Support

Go to the Avaya Support website at https://support.avaya.com for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service request. Chat with live agents to get answers to questions, or request an agent to connect you to a support team if an issue requires additional expertise.

Related links

Using the Avaya InSite Knowledge Base on page 81

Additional IP Office resources on page 82

Using the Avaya InSite Knowledge Base

The Avaya InSite Knowledge Base is a web-based search engine that provides:

- Up-to-date troubleshooting procedures and technical tips
- Information about service packs
- Access to customer and technical documentation
- Information about training and certification programs
- Links to other pertinent information

If you are an authorized Avaya Partner or a current Avaya customer with a support contract, you can access the Knowledge Base without extra cost. You must have a login account and a valid Sold-To number.

Use the Avaya InSite Knowledge Base for any potential solutions to problems.

1. Go to http://www.avaya.com/support.
2. Log on to the Avaya website with a valid Avaya user ID and password.

   The system displays the Avaya Support page.
3. Click **Support by Product** > **Product-specific Support**.
4. In **Enter Product Name**, enter the product, and press `Enter`.
5. Select the product from the list, and select a release.
6. Click the **Technical Solutions** tab to see articles.

7. Select relevant articles.

Related links

Support on page 81

Additional IP Office resources

You can find information at the following additional resource websites.

Avaya

https://www.avaya.com is the official Avaya website. The front page also provides access to individual Avaya websites for different countries.

Avaya Sales & Partner Portal

https://sales.avaya.com is the official website for all Avaya Business Partners. The site requires registration for a user name and password. Once accessed, the portal can be customized for specific products and information types that you wish to see and be notified about by email.

Avaya IP Office Knowledge Base

https://ipofficekb.avaya.com provides access to an online, regularly updated version of the IP Office Knowledge Base.

Avaya maintenance, lifecycle and warranty information

Avaya support services complement standard Avaya maintenance, lifecycle and warranty policies that are posted on https://support.avaya.com. For more information, send email to support@avaya.com.

International Avaya User Group

https://www.iaug.org is the official discussion forum for Avaya product users.

Related links

Support on page 81

Chapter 15: Document History

Date	Issue	Change Summary
August 2020	1	Initial conversion to DITA authoring source.
September 2020	2	Restructure.
November 2020	3	Update for IP Office R11.1 FP1: • Addition of J189 support.

Index