
# Infinity Connect
# Guide for Administrators

## Introduction

### About Pexip Infinity and Infinity Connect

Pexip Infinity is a virtualized and distributed multipoint conferencing platform. It enables scaling of video, voice and data collaboration across organizations, enabling everyone to engage in high definition video, web, and audio conferencing. It can be deployed in an organization's datacenter, or in a private or public cloud such as Microsoft Azure or Amazon Web Services, as well as in any hybrid combination.

It provides any number of users with their own personal Virtual Meeting Rooms, as well as Virtual Auditoriums, which they can use to hold conferences, share presentations, and chat. Participants can join over audio or video from any location using virtually any type of communications tool (such as Microsoft Lync / Skype for Business, a traditional conferencing endpoint, a mobile telephone, or a Pexip Infinity Connect client) for a seamless meeting experience.

Virtual Meeting Rooms and Virtual Auditoriums can also be accessed through a Virtual Reception IVR service, which allows all participants to dial a single number to access Pexip Infinity, and then use the DTMF tones on their endpoint to select the conference they want to join. The platform also includes the Pexip Distributed Gateway service, allowing end users to place calls to other endpoints that use different protocols and media formats.

### Infinity Connect clients

The Infinity Connect suite of clients allows conference participants to access any Virtual Meeting Room or Virtual Auditorium within the Pexip Infinity deployment. Infinity Connect users can also control the conference, view presentations, share content, and chat with other conference participants. Infinity Connect can also be used to make person-to-person calls when used in conjunction with the Pexip Distributed Gateway.

All Infinity Connect clients can make outbound calls; the Infinity Connect desktop client and Infinity Connect Mobile client for Android can also register to Pexip Infinity in order to receive incoming calls.

Infinity Connect Mobile clients require deployments with HTTPS and valid, trusted certificates. For more information, see Managing TLS and trusted CA certificates.

Infinity Connect clients are available for almost any device:

- The Infinity Connect Web App is included as part of all Pexip Infinity deployments. It is used to access Pexip Infinity services from all of the major web browsers and provides voice, video, content sharing and viewing, chat, and conference control.
- The Infinity Connect desktop client is an installable client, supported on Windows, OS X, and Linux. It provides voice, video, content sharing and viewing, chat, and conference control.
- The Infinity Connect Mobile client for Android provides voice, video, content sharing and viewing, chat, and conference control.
- The Infinity Connect Mobile client for iOS provides voice, video, content viewing, image sharing, chat, and conference control.

All Infinity Connect clients are available for free with the Pexip Infinity platform (although, as with any other endpoint, you must still have a license with sufficient call capacity before you can place calls).

When using Infinity Connect for audio or video on an iOS device, you must use the Infinity Connect Mobile client for iOS. Browser-based versions of Infinity Connect do not support audio or video when used on iOS.

## Infinity Connect guides for end users

We publish a series of quick guides aimed at users of the Infinity Connect desktop client, the Infinity Connect Web App when used in different browsers, and the Infinity Connect Mobile client for iOS and for Android. These guides are available in PDF format from http://docs.pexip.com/admin/download_pdf.htm.

## Customization and branding guides for administrators

You can customize the Infinity Connect desktop client and Infinity Connect Web App,. We publish the following guides covering each of these topics:

- Infinity Connect Web App Customization Guide
- Infinity Connect desktop client Customization Guide

## About this guide

This guide covers topics not included in the quick guides, including those that are only relevant to an administrator.

# What's new in Infinity Connect?

This section lists the new features, changes in functionality, and fixed issues between the previous and current releases of each of the Infinity Connect clients:

- Infinity Connect Web App
- Infinity Connect desktop client
- Infinity Connect Mobile client for Android
- Infinity Connect Mobile client for iOS

## Infinity Connect Web App

The Infinity Connect Web App is embedded in the Infinity Connect software, so its features are updated with each release of Infinity Connect.

### Version 15

Following are the changes to the Infinity Connect Web App in Pexip Infinity version 15:

| Feature | Description | More information |
|---|---|---|
| Changing camera/mic during a call | Chrome and Opera users can now change their camera and microphone while a call is in progress. | Change your camera and mic during a call |
| Screen sharing support in Firefox | You can share your screen when using the Infinity Connect Web App via Firefox (requires Firefox version 52 or later). | |

### Version 14

Following are the changes to the Infinity Connect Web App in Pexip Infinity version 14:

| Feature | Description | More information |
|---|---|---|
| Screensharing quality setting | Prior to joining a conference, you can set the frame rate to use when sharing your screen (supported in Chrome only). A lower frame rate will result in ***sharper*** images and is best for static presentations; a higher frame rate will be less sharp and is best for content where there is more ***motion***. | |
| Screensharing tabs | When sharing your screen (supported in Chrome only), the available desktops and apps now appear in separate tabs. | Sharing your screen |

### Version 13

Following are the changes to the Infinity Connect Web App in Pexip Infinity version 13:

| Feature | Description | More information |
|---|---|---|
| DTMF controls in floating window | The DTMF keypad (used to send DTMF tones to another participant in the conference) now opens in a draggable, semi-transparent window. | Send DTMF tones |
| Transfer participant | Hosts can now transfer participants to another conference. | Transfer a participant to another VMR |
| New default background image | The default background image is a picture of clouds. | |

# Infinity Connect desktop client

## Version 2.6

The Infinity Connect desktop client version 2.6 was released in April 2017. The previous version was 2.5. Following are the changes between 2.5 and 2.6.

### New and updated features

| Feature | Description | More information |
|---|---|---|
| Changing camera/mic during a call | Infinity Connect desktop client users can now change their camera and microphone while a call is in progress. | Change your camera and mic during a call |

## Version 2.5

The Infinity Connect desktop client version 2.5 was released in February 2017. The previous version was 2.4. Following are the changes between 2.4 and 2.5.

### New and updated features

| Feature | Description | More information |
|---|---|---|
| Screensharing quality setting | You can set the frame rate to use when sharing your screen. A lower frame rate will result in ***sharper*** images and is best for static presentations; a higher frame rate will be less sharp and is best for content where there is more ***motion***. You can set the framerate before joining the conference or while in the conference. | |
| Improvements to handling missing devices | If a previously selected device e.g. an external camera, is not found, the settings will now fall back to the "Default" device instead of reverting to "None". | |

## Version 2.4

The Infinity Connect desktop client version 2.4 was released in October 2016. The previous version was 2.3. Following are the changes between 2.3 and 2.4.

### New and updated features

| Feature | Description | More information |
|---|---|---|
| New default background image | The default background image is a picture of clouds. | |
| Provisioning support | The administrator can provision individual users by automatically configuring their client with registration details. | Provisioning the Infinity Connect desktop and Android clients with registration details |
| Transfer participant | Hosts can now transfer participants to another conference. | Transfer a participant to another VMR |
| Support for camera and microphone selection in preconfigured URL links | When configuring a URL to automatically launch a conference via the Infinity Connect desktop client, you can now specify **media**, **escalate** and **audioonly** parameters to control camera and microphone selection and use. | Links to the desktop and mobile clients |
| Screensharing | When sharing your screen, the available desktops and apps now appear in separate tabs. | Sharing your screen |

## Version 2.3

Infinity Connect desktop client version 2.3 was released in July 2016. The previous version was 2.1. Following are the changes between 2.1 and 2.3.

### New and updated features

| Feature | Description | More information |
|---|---|---|
| Directory lookup of devices and VMRs | When an Infinity Connect client is registered, as well as being able to receive calls, the user can filter and lookup the contact details (phone book / directory) of other devices or VMRs that are set up on the Pexip Infinity platform, making it easier to call those devices or VMRs. To use the directory service you must be registered to a Pexip Infinity system running version 13 or later. | Registering your Infinity Connect client to receive calls |
| Change to the install directory on Windows | Version 2.3 is installed in the user's apps directory (C:\\Users\<user>\AppData\Local\Apps) whereas version 2.1 was installed in C:\\Program Files.<br><br>For this reason, when upgrading from (or downgrading to) 2.1 on Windows you need to uninstall the existing client first. If you don't you will end up with the two versions of the client installed. | |
| Admin rights not required | Users do not require admin rights in order to install the software on Windows. | |
| 64-bit Windows version now available | We have made available a 64-bit version of the Infinity Connect desktop client for Windows, in addition to the existing 32-bit version. | |
| Logging to file | The log file is named **application.log** and can be found in the following locations:<br>• Linux: ~/.config/Pexip Infinity Connect/Default/application.log<br>• OSX: ~/Library/Application Support/Pexip Infinity Connect/Default/application.log<br>• Windows: %LOCALAPPDATA%\Pexip Infinity Connect\User Data\Default\application.log | |
| New DNS library | This resolves a bug where the SRV records would not be properly resolved when switching networks while the application was running. | |
| Support for conference PINs in URLs | You can now include a PIN in URLs that link to the Infinity Connect desktop client. URLs are in the format:<br>• **pexip://<alias>**<br>• **pexip://<alias>?<pin>**<br>• **pexip://<alias>?pin=none** (for links to conferences with a Host PIN but no Guest PIN, and you want the participant to join as a Guest). | Links to the desktop and mobile clients |
| In-call volume control and audio device selection | Users can now change the level of the audio received from the conference, and change the device being used to receive audio, while they are in a call. | Using Infinity Connect in-call controls |
| DTMF controls in floating window | The DTMF keypad (used to send DTMF tones to another participant in the conference) now opens in a draggable, semi-transparent window. | Send DTMF tones |
| Additional option when adding a participant | When adding a participant to a conference, users have an additional protocol option of ***Automatic***. In order for this to take effect, the administrator must have configured appropriate Call Routing Rules that apply to **Outgoing calls from a conference**. Alternatively, you may wish to remove the ***Automatic*** option from the drop-down menu by editing the settings.js file (for more information, see Customizing the Infinity Connect desktop client). | |

# Infinity Connect Mobile client for Android

## Version 3.0.12

Infinity Connect Mobile client for Android version 3.0.12 was released in December 2016. The previous version was 3.0.11. Following are the changes between v3.0.11 and v3.0.12.

### New and updated features

| Feature | Description | More information |
|---|---|---|
| Provisioning support | Provisioning URLs for Android clients are now Base64-encoded. | Provisioning the Infinity Connect desktop and Android clients with registration details |

### Issues fixed

| Ref # | Revision* | Resolution |
|---|---|---|
| - | 5 | Added correct version string. |
| - | 4 | High-resolution devices are now supported. |
| 8049 | 3 | More reliable acquisition of media and permissions. |
| 8083 | 2 | **pexip://** links now work properly again. |
| 7922 | 2 | When an Android user updates a participant's role, the correct role is now shown in the Android's roster. |
| 7846 | | Keyboard issues with autocomplete on Samsung phones have been resolved. |
| 7820 | | PINs starting with 0 are now supported. |
| 7799 | | More information is provided in the case of connection failures. |
| 7798 | | Better authentication support for services running behind a Reverse Proxy. |
| 7787 | | Provisioning URLs are now Base64-encoded. |
| 7723 | | Chat window interaction has been improved. |
| 7530 / 7766 | | Chat options are hidden when chat is disabled on the Management Node. |
| 7472 | | Incoming and outgoing calls in the call history are now labeled correctly. |
| 7470 | | Improved feedback when a registration fails. |

* The revision of v3.0.12 in which the issue was resolved.

### Version 3.0.11

Infinity Connect Mobile client for Android version 3.0.11 was released in October 2016. The previous version was 2.0. Following are the changes between v2.0 and v3.0.11:

#### New and updated features

| Feature | Description | More information |
|---|---|---|
| Mandatory certificates | HTTPS and valid certificates are now mandatory for Infinity Connect Mobile clients. If your deployment does not have a valid certificate, you won't be able to join using these clients. | Managing TLS and trusted CA certificates |
| Directory lookup of devices and VMRs | When an Infinity Connect client is registered, as well as being able to receive calls, the user can filter and lookup the contact details (phone book / directory) of other devices or VMRs that are set up on the Pexip Infinity platform, making it easier to call those devices or VMRs. To use the directory service you must be registered to a Pexip Infinity system running version 13 or later. | Registering your Infinity Connect client to receive calls |
| Additional option when adding a participant | When adding a participant to a conference, users have an additional protocol option of ***Automatic***. In order for this to take effect, the administrator must have configured appropriate Call Routing Rules that apply to **Outgoing calls from a conference**. | |
| Support for NFC | The Infinity Connect Mobile client for Android can be used to program NFC tags associated with video endpoints. This allows Android users to add the endpoint to a conference by tapping on the NFC tag. | |
| Support for preconfigured URLs to automatically launch conferences | Infinity Connect URLs are now supported in the Android client. The URLs will open a pre-installed instance of the Infinity Connect client when opened on a device with that client installed. URLs are in the format:<br>• **pexip://<alias>**<br>• **pexip://<alias>?<pin>**<br>• **pexip://<alias>?pin=none** (for links to conferences with a Host PIN but no Guest PIN, and you want the participant to join as a Guest). | Links to the desktop and mobile clients |
| Provisioning support | The administrator can provision individual users by automatically configuring their client with registration details. | Provisioning the Infinity Connect desktop and Android clients with registration details |

## Infinity Connect Mobile client for iOS

### Version 5.6.6

Infinity Connect Mobile client for iOS version 5.6.6 was released in December 2016. The previous version was 5.5. Following are the changes between v5.5 and v5.6.6.

#### New and updated features

| Feature | Description | More information |
|---|---|---|
| Exit button and confirmation prompt | The **Back** button at the top left of the screen is now labeled **Exit**, and users are asked to confirm that they wish to leave the conference. | |
| Landscape presentation controls | Presentation controls are now available when in landscape mode. | |

### Issues fixed

| Ref # | Resolution |
|---|---|
| 7851 | Static images of video are now cleared on audio escalation. |
| 7794 | Participants using iOS clients can now be transferred between conferences. |
| 7530 / 7767 | Chat options are hidden when chat is disabled on the Management Node. |
| 427 | Improved warning to users when they cannot join a conference because it has reached its participant limit. |

## Version 5.5

Infinity Connect Mobile client for iOS version 5.5 was released in October 2016. The previous version was 5.0. Following are the changes between v5.0 and v5.5.

### New and updated features

| Feature | Description | More information |
|---|---|---|
| Mandatory certificates | HTTPS and valid certificates are now mandatory for Infinity Connect Mobile clients. If your deployment does not have a valid certificate, you won't be able to join using these clients. | Managing TLS and trusted CA certificates |
| Additional languages | Text in the UI will automatically be translated into Norwegian, French, Japanese or Simplified Chinese for devices that are using those languages. | |
| Additional option when adding a participant | When adding a participant to a conference, users have an additional protocol option of ***Automatic***. In order for this to take effect, the administrator must have configured appropriate Call Routing Rules that apply to **Outgoing calls from a conference**. | |
| Headset / speaker toggle | Users can now use a button to switch between using their headset and their device's speakers. | |
| More information in notifications | Notifications now contain more details. For example, when a user attempts to join a conference that has reached its participant limit, they are told why rather than having their call rejected. | |
| Security enhancements | • All passwords and sensitive data are now stored in the keychain.<br>• There is an option to remember passwords or not.<br>• The screen is blurred when switching tasks to hide potentially sensitive information. | |
| Support for preconfigured URLs to automatically launch conferences | Infinity Connect URLs are now supported in the iOS client. The URLs will open a pre-installed instance of the Infinity Connect client when opened on a device with that client installed. URLs are in the format:<br>• **pexip://<alias>**<br>• **pexip://<alias>?<pin>**<br>• **pexip://<alias>?pin=none** (for links to conferences with a Host PIN but no Guest PIN, and you want the participant to join as a Guest). | Links to the desktop and mobile clients |

# Comparison of Infinity Connect clients

Pexip Infinity Connect is available in three main formats:

- directly from one of the following web browsers (the Infinity Connect Web App):
  - Google Chrome version 43 and later
  - Mozilla Firefox version 39 and later
  - Opera version 23 and later
  - Microsoft Internet Explorer version 10 and later (requires Flash Player 11 and later ActiveX® plug-in, and must not be in Compatibility View) — note that support for Internet Explorer on Windows 10 systems has been deprecated
  - Microsoft Edge version 20.10532 or later for WebRTC support (earlier versions will connect over RTMP and use Flash video)
  - Apple Safari version 6 and later (Mac OS X only) (requires Flash Player 11 and later plug-in)
- as an installable desktop application (the Infinity Connect desktop client)
- as an installable application for iOS or Android devices (the Infinity Connect Mobile client).

There are some differences in features available between the different clients and browsers, as shown in the table below:

| | **Video, chat, audio-only, presentation and conference control** | **PDF sharing** (more info) | **Image sharing** (more info) | **Screen sharing** (more info) | **View presentations in full motion** (more info) | **Send DTMF to individual participants** | **Register to receive calls** (more info) |
|---|---|---|---|---|---|---|---|
| Desktop client | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Web App via Chrome | ✓ | ✓ | ✓ | ✓* | ✓ | ✓ | |
| Web App via Internet Explorer | ✓ | ✓ | ✓ | | | ✓ | |
| Web App via Edge | ✓ | ✓ | ✓ | | | ✓ | |
| Web App via Firefox | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Web App via Safari | ✓ | ✓ | ✓ | | | ✓ | |
| Web App via Opera | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| Mobile client for Android | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Mobile client for iOS | ✓ | | ✓ | | | | |

* Requires installation of a Chrome extension

# Comparison of Infinity Connect and other video endpoints

Infinity Connect is an integrated part of the Pexip Infinity platform. This direct integration means that there are some differences in the experience of joining and participating in a Pexip Infinity conference using an Infinity Connect client, when compared with users of Lync / Skype for Business clients, and other types of software and hardware endpoints.

The table below summarizes these differences.

| Feature | Infinity Connect client | Lync / Skype for Business clients | Other video clients |
|---|---|---|---|
| Appearing in the Infinity Connect participant list | Participants will appear in the roster after they have successfully joined the conference. | Participants will appear in the roster while they are waiting to join the conference, for example while they are being held at the PIN entry screen or waiting for a Host* to join. At this point, they will not have a role assigned.<br>A Host using an Infinity Connect client (including Hosts who have joined in control-only mode) can let these participants into the conference without them having to enter a PIN. For instructions, see Changing a participant's role from Guest to Host (and vice versa). | |
| Joining a Host+Guest conference with a Host PIN but no Guest PIN | Whether or not a Host has already joined, participants will be asked to select whether they wish to join as a Host or Guest. If they chose to join as a Host, they will be asked for the PIN.<br>If they chose to join as Guest:<br>• if a Host has not yet joined, they will be taken to the "Waiting for Host" screen.<br>• if a Host has already joined, they will be taken straight into the conference. | • If a Host has not already joined*, participants will be taken to the "Waiting for Host" screen, where they will have the opportunity to enter the Host PIN.<br>• If a Host has already joined*, participants will automatically join as a Guest, unless they have included the Host PIN as part of the dial string. | |
| Joining a Host+Guest conference with a Host PIN and Guest PIN | Participants will be asked to enter the conference PIN.<br>If they enter the Host PIN, they will join the conference.<br>If they enter the Guest PIN:<br>• if a Host has not yet joined, they will be taken to the "Waiting for Host" screen.<br>• if a Host has already joined, they will be taken straight into the conference. | | |
| Conference PINs with a trailing # | When entering PINs, any trailing # is optional. | Participants will hear the "please enter the # key" prompts, and must enter the # after the PIN. | |
| Joining a VMR via a Virtual Reception | Participants must dial into the Virtual Reception first, and then at the prompt enter the numeric alias of the target Virtual Meeting Room. However, if your dial plan allows, participants can simply enter the alias of the target VMR and not have to use the Virtual Reception at all. | Participants using SIP and H.323 endpoints and Lync / Skype for Business clients can dial a VMR via a Virtual Reception in a single step. They do this by dialing **<reception_alias>**<destination_alias>@<domain>**.<br>H.323 devices can also use the dial format **<reception_alias>#<destination_alias>@<domain>**.<br>For more information, see Including the numeric alias of the VMR in the dial string. | |
| Viewing roster | Participants can view the roster. | The roster will not be available. | |

| Feature | Infinity Connect client | Lync / Skype for Business clients | Other video clients |
|---|---|---|---|
| Conference control | Host participants can control the conference (add, mute, and disconnect participants; change a participant's role; lock and unlock the conference). | Participants will not have access to conference control. | |
| Chat | Participants can send and receive chat messages. | | Participants will not have access to chat. |

* Infinity Connect users can join as a Host in control-only mode. These Hosts will have access to conference control, but will not act as a trigger for unlocking the conference for Guests. At least one Host must join with media (video and/or audio) in order for Guests to be able to join.

# Installing and using Infinity Connect

## About the Infinity Connect Web App

The Infinity Connect Web App is available as part of all Pexip Infinity deployments. It provides a WebRTC or Flash-based interface to Pexip Infinity services.

The Web App is supported in the following browsers, although we recommend using the latest publicly released version:

- Google Chrome version 43 and later
- Mozilla Firefox version 39 and later
- Opera version 23 and later
- Microsoft Internet Explorer version 10 and later (requires Flash Player 11 and later ActiveX® plug-in, and must not be in Compatibility View) — note that support for Internet Explorer on Windows 10 systems has been deprecated
- Microsoft Edge version 20.10532 or later for WebRTC support (earlier versions will connect over RTMP and use Flash video)
- Apple Safari version 6 and later (Mac OS X only) (requires Flash Player 11 and later plug-in)

When using Infinity Connect for audio or video on an iOS device, you must use the Infinity Connect Mobile client for iOS. Browser-based versions of Infinity Connect do not support audio or video when used on iOS.

Infinity Connect users can share images and PDFs from any browser. Additionally, users on Chrome and Firefox can share their screen (Chrome requires that users first install a chrome extension).

### Accessing a conference

To access a conference using the Infinity Connect Web App, users enter into the address bar the IP address or domain name of their nearest Conferencing Node or reverse proxy, followed by **/webapp/** (for example, **rp.example.com/webapp/**). Users are then presented with a screen from where they can then enter the alias of the conference or person they want to call.

System administrators and conference organizers can also provide a preconfigured link to a conference alias.

Flash-based browsers use the RTMP protocol and have limited capabilities when connecting via a reverse proxy:

- Internet Explorer and Safari browsers use the RTMP protocol and can connect via a reverse proxy, but they cannot establish audio/video paths to Pexip Infinity via a TURN server. To establish audio/video media connectivity, RTMP clients need a direct TCP connection to a Conferencing Node. The Web App will attempt an encrypted RTMPS connection first. For a secure RTMP connection to be established, the **SIP TLS FQDN** must be configured on the Conferencing Node (via **Platform Configuration > Conferencing Nodes**) and it must match the Common Name of its TLS server certificate. If RTMPS fails, it will use an unencrypted connection for media.
- Chrome, Firefox and Opera browsers use the WebRTC protocol and can connect to privately-addressed "on-premises" nodes via a reverse proxy and route their media through a TURN server.
- Note that Microsoft Edge browsers (which are WebRTC-compatible) cannot currently use STUN and thus cannot send media to Pexip Infinity via a TURN server.

### Hardware requirements

The performance of the Infinity Connect Web App typically depends upon a combination of the choice of browser and which other applications are currently running on the client system.

However, as a minimum we recommend that your client system has:

- 4 GB of RAM
- Intel Core i5 processor or equivalent

# Installing and managing Chrome extensions

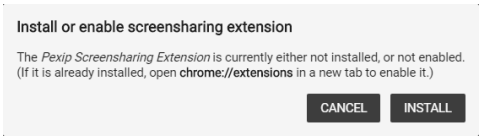
## Enabling screen sharing in Chrome

Before you can use Infinity Connect via Google Chrome to share your computer screen with other conference participants, you must install the Pexip Screensharing Extension (screensharing is not currently available from any other browser).

To do this:

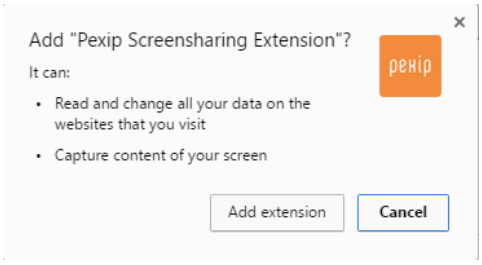
1. From within a Virtual Meeting Room or Virtual Auditorium, select **Share screen** .

   If the extension is not already installed, you will see the following message:

2. Select **Install**. This will take you to the Pexip Screensharing Extension on the Chrome web store.

   Install the extension by clicking on the 
   
   button at the top right of the page.
   The following confirmation will appear:

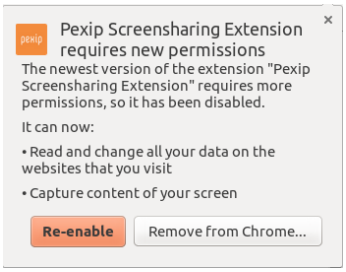
   
   

3. 
4. Select **Add extension**.

You are now ready to share your screen.

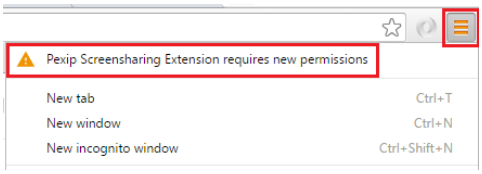
## Re-enabling the Pexip Screensharing Extension

A minor update was made to the Pexip Screensharing Extension in May 2016 which requires existing users to re-enable the extension. If you already have the extension installed, you will get the following message the next time you use Infinity Connect via Chrome:




Select **Re-enable**.

If you do not re-enable the extension at this point, you can do so later by clicking on the orange menu button at the top right of the screen and then selecting **Pexip Screensharing Extension requires new permissions**:




### Managing the Pexip Screensharing Extension

The Pexip Screensharing Extension maintains a list of all of the domains (or websites) that you have allowed to use the extension.

To remove domains from this list:

1. Go to **chrome://extensions** (type this in to your Chrome browser's address bar).
2. Select **Options** under the **Pexip Screensharing Extension**.
3. Select **X** by any domain you want to remove.

If you subsequently attempt to share your computer screen while participating in a conference hosted at a domain that you have removed, you will once again be asked to allow the **Pexip Screensharing Extension** to share your screen.

## About the Infinity Connect desktop client

The Infinity Connect desktop client is released separately to Pexip Infinity, and may have been updated since this Administrator Guide was released. For the most up-to-date Infinity Connect desktop client user documentation, see Introduction to Pexip Infinity.

The Pexip Infinity Connect desktop client is a stand-alone video client that provides access to Pexip Infinity services. It is currently supported on:

- Microsoft Windows 7 and later
- Mac OS X 10.11 and later
- Ubuntu Linux

The Infinity Connect desktop client does not verify TLS certifications and therefore should not be used on untrusted networks.

### Hardware requirements

The performance of the Infinity Connect desktop client can depend upon which other applications are currently running on the client system.

However, as a minimum we recommend that your client system has:

- 4 GB of RAM
- Intel Core i5 processor or equivalent

### Installing the Infinity Connect desktop client

No special privileges are required to install the Infinity Connect desktop client, as it is installed in a per-user context.

To install the Infinity Connect desktop client, go to www.pexip.com/software-download and download and install the appropriate file for your operating system as described below.

### Windows

(Supported on Windows 7 and later.)

You can download either a 32-bit (**pexip-infinity-connect_win-ia32_<release>.msi**) or 64-bit (**pexip-infinity-connect_win-x64_<release>.msi**) version of the Infinity Connect desktop client for Windows.

Double-click on the **.msi** file to install the Infinity Connect desktop client and then follow the instructions in the installation wizard. During the installation process the Infinity Connect icon is added to the desktop, and entries are added to the Windows registry to allow links prefixed with **pexip:** and **pexip-provision:** to open automatically in the Infinity Connect desktop client.

### OS X

(Supported on Mac OS X 10.11 and later.)

You can download the **pexip-infinity-connect_osx-x64_<release>.dmg** file for OS X.

To install the OS X client, open this file and drag the **Pexip Infinity Connect.app** into the **Applications** folder.

### Linux

You can download either a 32-bit (**pexip-infinity-connect_linux-ia32_<release>.tar.gz**) or 64-bit (**pexip-infinity-connect_linux-x64_<release>.tar.gz**) version of the Infinity Connect desktop client for Linux.

To install the Linux client:

1. Create a new directory. For example, to install the client for a single user "alice":
   ```
   mkdir /home/alice/pexapp
   cd /home/alice/pexapp
   ```
2. Download the Infinity Connect desktop client tar file to that directory and extract the archive. For example, for the v2.6 64-bit client:
   ```
   tar -xzf pexip-infinity-connect_linux-x64_2.6.0-35658.0.0.tar.gz
   ```
3. Copy the **.desktop** file to the appropriate location for making the application available for this user as per freedesktop.org-compliant desktop guidelines (see https://developer.gnome.org/integration-guide/stable/desktop-files.html.en for more information). For example:
   ```
   cp pexip-infinity-connect_linux-x64/pexip-infinity-connect.desktop
   /home/alice/.local/share/applications/pexip-infinity-connect.desktop
   ```
4. Using your preferred text editor, modify the `Exec` line to point to the location of the pexip-infinity-connect binary on your system. For example:
   ```
   emacs /home/alice/.local/share/applications/pexip-infinity-connect.desktop
   ```
   and make it look something like this:
   ```
   [Desktop Entry]
   Name=Pexip Infinity Connect
   Exec=/home/alice/pexapp/pexip-infinity-connect_linux-x64/pexip-infinity-connect
   Terminal=false
   Type=Application
   Icon=application-x-executable
   ```

Note that if you want to install the application for all users (rather than just a single user), follow the same instructions but instead copy the **.desktop** file into the **/usr/share/applications** directory (you may need root privileges to do this).

## Registering the Infinity Connect desktop client

After the Infinity Connect desktop client has been installed, it can be registered to a Conferencing Node. The administrator can also provision individual users with their registration details and automatically apply those registration settings to their Infinity Connect desktop client.

See Registering your Infinity Connect client to receive calls for more information.

## Accessing a conference

When users open the desktop client, they are asked to enter the alias of the conference or person they want to call (for example **meet.alice@example.com**).

System administrators and conference organizers can also provide a preconfigured link to a conference alias.

# About the Infinity Connect Mobile client for Android

The Infinity Connect Mobile clients are released separately to Pexip Infinity, and may have been updated since this Guide was released. For the most up-to-date Infinity Connect Mobile client user documentation, see **Introduction to Infinity Connect**.

The Infinity Connect Mobile client for Android can be used by conference participants to control the conference and view presentations from their own personal device, even when they are using a separate video endpoint to participate in the conference.

Users also have the ability to join a conference over audio-only, or as a full audio and video participant, allowing them to participate in a conference from anywhere they have an internet connection. Android clients can also register to Pexip Infinity allowing them to receive calls and use enhanced directory features.

Most standard Infinity Connect features are available to Infinity Connect Mobile client users, along with these additional features:

- View the presentation on their personal device.
  - **Video participants** can elect to use their video endpoint just for viewing other participants, while viewing the presentation on their device - essentially providing them with a dual-screen video system.
  - **Audio-only participants** will be able to view the presentation on their personal device, enhancing their conference experience.
- Decide where they want to view the presentation: on their mobile device, on the video endpoint, or both.

## Prerequisites

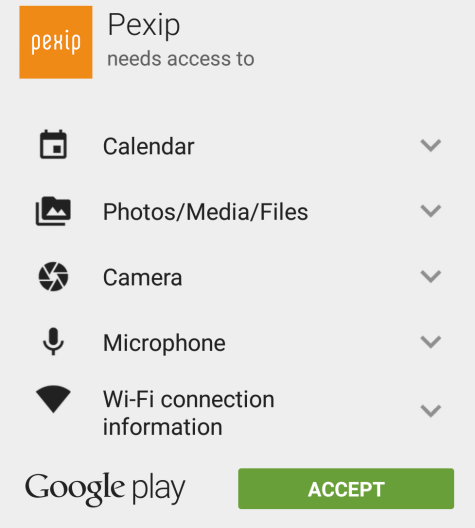
Infinity Connect Mobile clients require deployments with HTTPS and valid, trusted certificates. For more information, see Managing TLS and trusted CA certificates.

## Installing the Infinity Connect Mobile client for Android

The Infinity Connect Mobile client for Android is available for free from the Google Play store at https://play.google.com/store/apps/details?id=com.pexip.android. Follow the instructions to download and install the Infinity Connect Mobile client on your device.

- Version 3.0 or later of the Infinity Connect Mobile client requires Android 5.0 or later.
- Version 2.0 of the Infinity Connect Mobile client requires Android 4.1 or later.

When installing the Infinity Connect Mobile client for Android, it will request permission to access the contacts/calendar on your device:




You must **accept** this request to continue with the installation.

# About the Infinity Connect Mobile client for iOS

The Infinity Connect Mobile clients are released separately to Pexip Infinity, and may have been updated since this Guide was released. For the most up-to-date Infinity Connect Mobile client user documentation, see **Introduction to Infinity Connect**.

The Infinity Connect Mobile client for iOS can be used by conference participants to control the conference and view presentations from their own personal device, even when they are using a separate video endpoint to participate in the conference.

Users also have the ability to join a conference over audio-only, or as a full audio and video participant, allowing them to participate in a conference from anywhere they have an internet connection.

Most standard Infinity Connect features are available to Infinity Connect Mobile client users, along with these additional features:

- View the presentation on their personal device.
  - **Video participants** can elect to use their video endpoint just for viewing other participants, while viewing the presentation on their device - essentially providing them with a dual-screen video system.
  - **Audio-only participants** will be able to view the presentation on their personal device, enhancing their conference experience.
- Decide where they want to view the presentation: on their mobile device, on the video endpoint, or both.
- Zoom in on the presentation on their device, allowing them to see details that would otherwise not be visible from a distance on the screen.

## Bandwidth selection

The Infinity Connect Mobile client for iOS will automatically select an appropriate bandwidth, as follows:

- wide-CIF for cellular (3G and 4G) connections
- 448p for Wi-Fi connections.

## Prerequisites

Infinity Connect Mobile clients require deployments with HTTPS and valid, trusted certificates. For more information, see Managing TLS and trusted CA certificates.

## Installing the Infinity Connect Mobile client for iOS

The Infinity Connect Mobile client for iOS is available for free from the Apple Store at https://itunes.apple.com/us/app/pexip/id667867771. Follow the instructions to download and install the client on your device.

**Versions 5.0 and later** of the Infinity Connect Mobile client for iOS are compatible with any iOS device running iOS 8.x or later, and Pexip Infinity version 7 or later.

# Registering your Infinity Connect client to receive calls

To receive calls on an Infinity Connect desktop client or Infinity Connect Mobile client for Android, it must be registered to a Pexip Infinity Conferencing Node.

Devices can only register to Pexip Infinity with a permitted alias and by supplying valid credentials (if authentication is required). Allowed aliases and their associated credentials can be configured manually, or they can be bulk provisioned from directory information contained in a Windows Active Directory LDAP server, or any other LDAP-accessible database.

When an Infinity Connect client is registered, as well as being able to receive calls, the user can filter and lookup the contact details (phone book / directory) of other devices or VMRs that are set up on the Pexip Infinity platform, making it easier to call those devices or VMRs. For more information, see Registering devices to Pexip Infinity.

Registration is optional. You do not need to register your device in order to make calls, just to receive them.

## How to manually register your client

To register your Infinity Connect desktop client or Infinity Connect Mobile client for Android to receive calls (if this is supported in your deployment):

1. Go to the **Settings** screen (from the top right of the Infinity Connect home screen, select **Settings** ).
2. In the **Registration** section of the **Settings** screen, enter the **Alias** and **Password** provided to you by your administrator. Be aware that these fields are case-sensitive, and some devices will default to uppercase for the first character of the user name.
3. Select **Remember password**.
4. Select **Register**.

When you have successfully registered, the button will change to **Unregister**.

The notification icon for Infinity Connect will also have a green dot on it: . This dot will change to red if you become unregistered: .

Now, when someone calls your endpoint by dialing the **Alias** you have registered with, you will get an incoming call alert at the bottom right of your screen showing the name and address of the person or meeting room who is calling you:


For the Infinity Connect desktop client, you can disable the sound of the incoming call alert by going to **Settings** and selecting a **Ringtone** of ***None***.

If you are registered, you can filter and lookup the contact details of other devices or VMRs that are set up on your Pexip Infinity platform, by typing in part of the address of the person or the name of the VMR you want to call.

## Provisioning the Infinity Connect desktop and Android clients with registration details

As an administrator, you can provision individual users with their registration details and automatically apply those registration settings to their Infinity Connect desktop client or their Infinity Connect Mobile client for Android.

When the Infinity Connect client installs, it registers itself to the pexip-provision:// URI scheme. This means that you can then generate an individual URI that can be used to configure the client with personalized settings for each user.

The URI takes the following format for both the desktop and Android clients:

**pexip-provision://settings/?data=<Base64 encoded name-value pairs>**

where **data** is set to a string of name-value pairs that has been Base64 encoded (to ensure that the data does not get modified by email clients). Note that the Base64 provisioning data blob is not encrypted.

If you use Pexip Infinity to bulk provision device aliases and generate emails to each user , you can use the provided template variables and custom Pexip filters to obtain the values for each data item and to generate the relevant URIs for each user/client.

The name-value pairs that can be provisioned and the suggested device provisioning template variables that can be used to populate those value are:

| Name | Value | Suggested template variable |
|---|---|---|
| name | The name of the user as it will appear to other conference participants. | device_username |
| registrationHost | The address of the Conferencing Node at which the client should register, for example **confnode.example.com**. | There is no suitable variable for this, as it is not a user specific value. |
| registrationAlias | The alias of the device to register to Pexip Infinity. | device_alias |
| registrationUsername | The username associated with the device alias (registrationAlias). | device_username |
| registrationPassword | The password associated with the device alias (registrationAlias). | device_password |

You do not have to provision every name-value pair. If you supply a subset of the data, the user will be able to manually enter the additional data if required.

**Example device email template content**

The following example content for a device provisioning email template shows how you can build the relevant URI with base64 encoded provisioning data (using device provisioning variables populated from LDAP) and provide a clickable link for the recipient of the email that will provision their client.

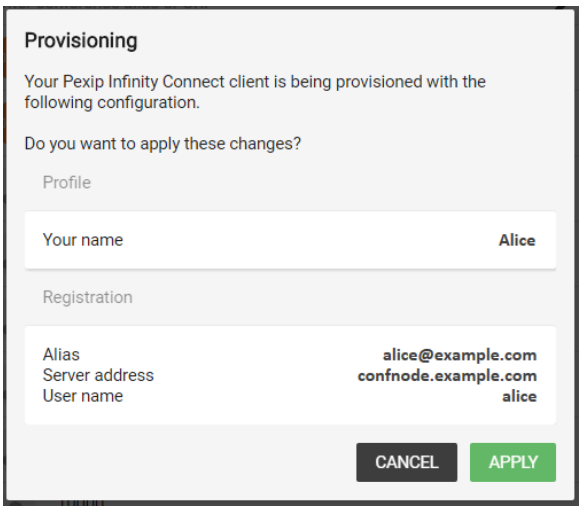
```
{%set provisiondata = "name=" + device_username|capitalize +
"&registrationHost=confnode.example.com&registrationAlias=" + device_alias +
"&registrationUsername=" + device_username + "&registrationPassword=" + device_password
%}

<p>You can open <a href="pexip-provision://settings?data={{provisiondata|pex_base64}}">
this link</a> to automatically configure your client.</p>
```

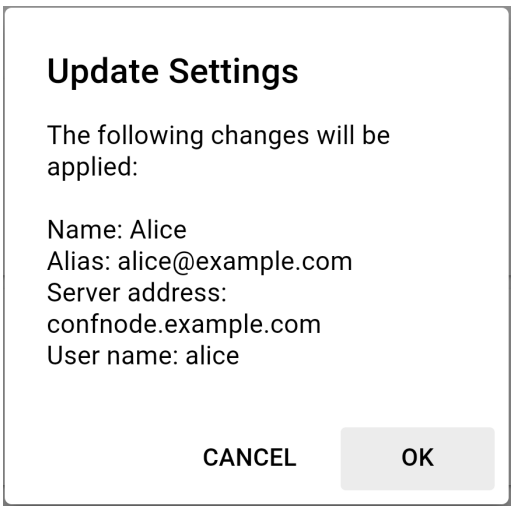
The generated URI for "this link" will take the form **pexip-provision://settings?data=bmFtZT1...etc...HVhcA==**

### User experience

When the end user clicks on the link, they will typically be asked that they want to confirm or authorize the launch of the Infinity Connect application (the exact nature of the request varies according to the platform and the method of launching the link) and then the Infinity Connect client will launch automatically and present the user with a **Provisioning** screen, containing their personalized configuration, for example:




*Infinity Connect desktop client*




*Infinity Connect Mobile client for Android*

Clicking **Apply** or **OK** will accept the settings and attempt to register the client to the specified server address, using the alias and user name / password credentials.

Note that some mail clients (such as gmail) disable embedded links. In these cases, those users will need to either cut and paste the link into their browser's address bar (either Internet Explorer, Microsoft Edge, Firefox or Safari, but not Chrome or Opera), or Windows users can also press [windows]+R and then paste the link into the Open field. Other mail clients (such as Outlook) may present users with a security notice warning that the hyperlink may be unsafe; users must choose to continue in order to launch the application.

## Configuring a default domain

If you frequently use Virtual Meeting Rooms and Virtual Auditoriums that have aliases with the same domain, you can configure the Infinity Connect desktop client and Infinity Connect Mobile client for iOS so that you only need to enter the initial part of the alias. For example, if you often access Virtual Meeting Rooms with the aliases **meet.alice@example.com**, **meet.bob@example.com** and

**meet.sales@example.com**, you could configure Infinity Connect with a **Domain** of **example.com**, so that you only need to enter **meet.alice**, **meet.bob** or **meet.sales** in the URI field in order to join the Virtual Meeting Room.

If you have set up a preconfigured domain, you can still enter Virtual Meeting Room and Virtual Auditorium aliases that use a different domain. Just enter the full URI in the **URI** field - the preconfigured domain will be ignored.

### Infinity Connect desktop client

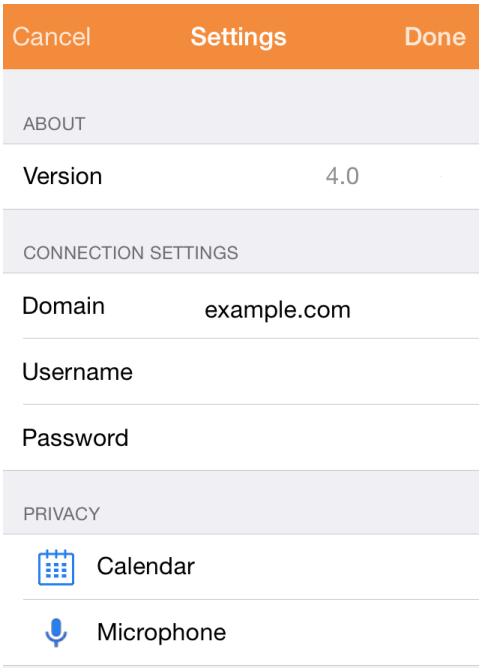
To preconfigure the Infinity Connect desktop client with a domain:

1. Select **Settings** at the top left of the Infinity Connect window.
2. In the **Connections** section, enter the **Default domain**.

### Infinity Connect Mobile client for iOS

To preconfigure the Infinity Connect Mobile client for iOS with a domain:

1. Select **Connection settings**.
2. In the **Domain** field, enter the domain.




3. Select **Done**.

## Using Infinity Connect to share content

You can use Infinity Connect to share content such as images and PDFs, or what's on your screen, with other participants. What you can share depends on which Infinity Connect client you are using.

If you are already in the call using another video endpoint, you can open and use Infinity Connect just to share content - for example, if you have joined the conference from a meeting room with a dedicated endpoint, and you want to show a presentation from your laptop without worrying about finding and connecting the correct cables.

Content will be sent to other participants at up to 5 fps.

## Sharing your screen

Screen sharing is available when using the:

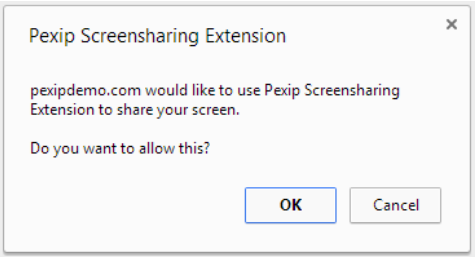
- Infinity Connect Web App via Chrome (requires the installation of a Chrome extension)
- Infinity Connect Web App via Firefox (requires Firefox version 52 or later).
- Infinity Connect desktop client

You can set the frame rate to use when sharing your screen. A lower frame rate will result in ***sharper*** images and is best for static presentations; a higher frame rate will be less sharp and is best for content where there is more ***motion***. When using the Web App, prior to joining a conference you can use the **Screensharing quality** option (**Settings > Advanced**) to set the frame rate. When using the desktop client, you can set the framerate either before joining the conference or while in the conference (although if you are currently presenting you will have to stop and restart presenting for the change to take effect) by going to the **Settings** screen and using the **Screensharing quality** option.

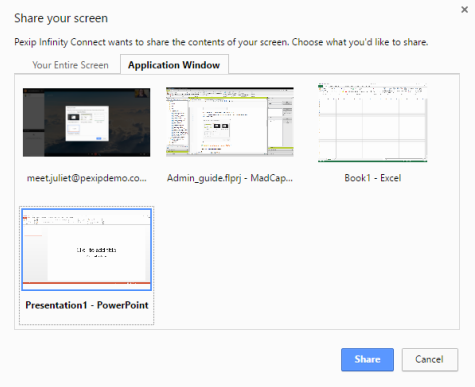
### Infinity Connect Web App via Chrome

You can choose to share the whole screen, or you can select an individual application to share. To share your screen:

1. From the toolbar at the bottom of the screen, select **Share screen** .
2. If this is the first time you have shared your screen, follow the on-screen prompts to enable screen sharing.
3. The first time that you use Infinity Connect via Chrome to share your screen from a conference hosted at a particular domain, a confirmation window will appear:



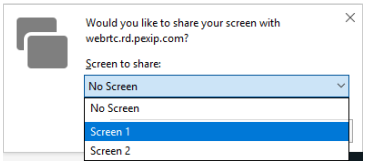

   Select **OK** to confirm that you want to share your screen.
4. From either the **Your Entire Screen** or the **Application Window** options, select what you want to share (any applications that are currently minimized won't appear on the list):




### Infinity Connect Web App via Firefox

Within Firefox, you can only share a screen; you cannot select an individual application to share. To share your screen:

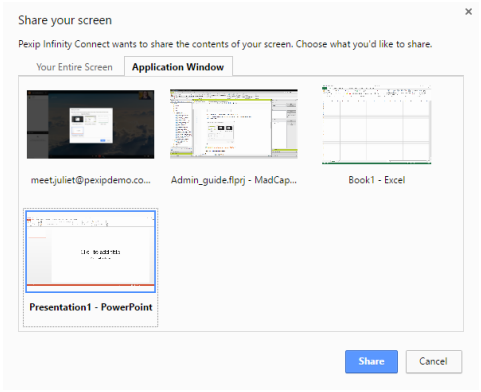
1. From the toolbar at the bottom of the screen, select **Share screen** .
2. Select the screen you want to share:




## Infinity Connect desktop client

You can choose to share the whole screen, or you can select an individual application to share. To share your screen:

1. From the toolbar at the bottom of the screen, select **Share screen**.
2. From either the **Your Entire Screen** or the **Application Window** options, select what you want to share (any applications that are currently minimized won't appear on the list):



# Sharing images and PDFs

## Supported formats and clients

### Images

You can share images from any Infinity Connect client. Infinity Connect supports the following image formats:

- JPEG
- BMP
- PNG
- GIF

### PDFs

You can share PDFs directly from:

- the Infinity Connect desktop client
- the Infinity Connect Web App
- Infinity Connect Mobile client for Android

### PowerPoint presentations

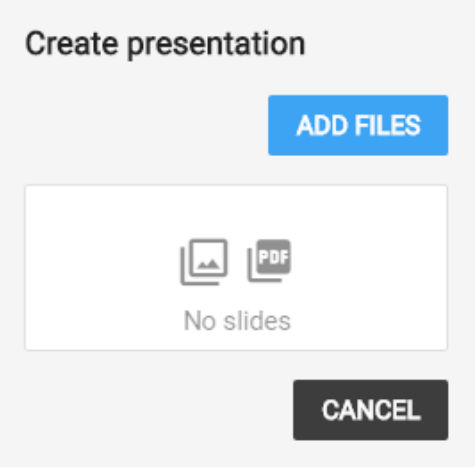
You can't share PowerPoint presentations directly using this method. To share PowerPoint presentations, either

- Save the presentation as a PDF, and share that.
- (If you are using Infinity Connect via the Desktop client, Chrome or Firefox) From PowerPoint, open the presentation as a slide show, and then share your screen.

## How to share images or PDFs

To share images or PDFs:

1. From the toolbar at the bottom of the screen, select **Share images or PDFs** .
   The **Create presentation** screen will appear:




2. Select **Add files**, or drag and drop the file(s) you want to share into the Infinity Connect window. You can add multiple files, and they can be a combination of images and PDFs (if supported by your device). Each image will be converted into an individual slide, as will each page of each PDF.

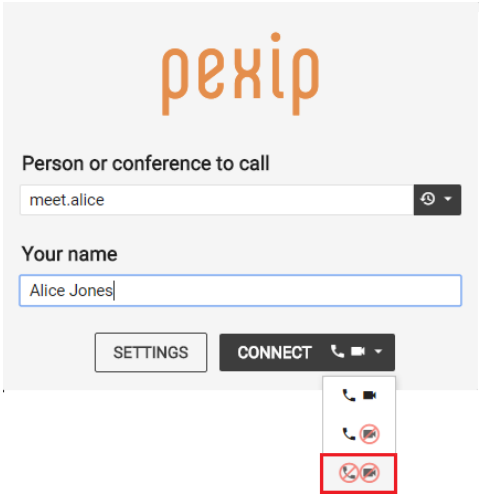
3. Select **Start presenting** and use the left < and right > controls at the top of the screen to scroll through the slides.
4. To stop sharing the slides, from the toolbar select **Stop presenting**.

Any files you share remain yours - they are not available for other participants to download during or after the conference.

## Using Infinity Connect just to share content

If you are in a conference using an endpoint other than Infinity Connect (for example, a dedicated meeting room system) and you want to share content from your computer or mobile device without activating your camera and microphone:

1. Open the Infinity Connect client on your computer or mobile device and enter the details of the Virtual Meeting Room or Virtual Auditorium you are in.
2. From the drop-down options on the **Connect** button, select **Conference control and receive/send presentation only**:

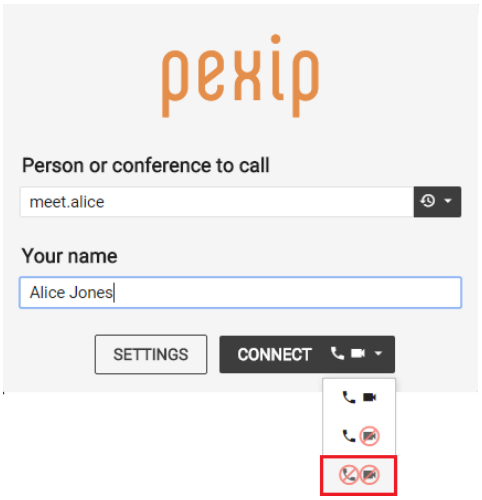



3. From the toolbar, select **Share screen** (Infinity Connect desktop client, and Infinity Connect Web App via Chrome or Firefox only), or **Share images or PDFs**.

## Using Infinity Connect for presentation, chat and conference control only

If you are already in a conference using an endpoint other than Infinity Connect, you can still access the additional features available to Infinity Connect users (such as conference control, chat, content sharing, and viewing the roster of participants) by using Infinity Connect to join the conference without activating your camera and microphone.

To do this, from the drop-down options on the **Connect** button, select **Conference control and receive/send presentation only**:




You can now view and share content, send and receive chat messages, view the participant list, and (if you are a Host) control aspects of the conference such as adding participants, muting participants, disconnecting participants, and locking the conference.

You can also activate your camera and microphone, or just your microphone, at any time after you have joined the conference by selecting either **Join with video** or **Join with audio only**.

## Locking a conference and allowing participants to join a locked conference

If you want to prevent any further participants from joining a conference after it has started, you can lock it by using the Administrator interface, using Infinity Connect, or using DTMF. After a conference has been locked, participants who are attempting to join the conference can be allowed in individually by participants already in the conference.

The impact of locking depends on whether or not the Virtual Meeting Room or Virtual Auditorium being used has a Host PIN.

If the service **does not have a Host PIN**:

- Participants will be able to join the conference until it is locked.
- After the conference has been locked, any further participants who attempt to join the conference (including any Automatically Dialed Participants and manually-invited participants) will be held at the **Waiting for conference host** screen.
- All participants who are already in the conference will be notified of any participants who are attempting to join the locked conference, and will be able to allow the waiting participants to join. Notifications will take the form of an on-screen message (visible to Infinity Connect clients only) and a customizable audio message (audible to all participants already in the conference) for each participant attempting to join.
- When the conference is unlocked, any participants who are still waiting will automatically join the conference.

If the service **has a Host PIN**:

- Host and Guest participants will be able to join the conference until it is locked.
- After the conference has been locked, participants who enter the Host PIN will be able to join the conference immediately - locking does not apply to them.
- After the conference has been locked, Guest participants (including any Automatically Dialed Participants and manually-invited participants who have been given a role of Guest) will be held at the **Waiting for conference host screen**.
- All Host participants who are already in the conference will be notified of any Guest participants who are attempting to join the locked conference, and will be able to allow the waiting Guest participants to join. Notifications will take the form of an on-screen message (visible to Infinity Connect clients only) and a customizable audio message (audible to all participants already in the conference) for each participant attempting to join.
- When the conference is unlocked, any Guest participants who are still waiting will automatically join the conference.

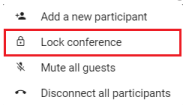
## Locking using the Administrator interface

To lock or unlock a conference from the Administrator interface:

1. Log into the Pexip Infinity Administrator interface.
2. Go to **Status > Conferences**.
3. From the **Service name** column, select the conference you want to lock or unlock.
4. At the bottom left of the page, select **Lock conference** or **Unlock conference** as appropriate.

## Locking using Infinity Connect

Host participants using Infinity Connect can lock and unlock the conference they are in by clicking on the conference control menu and selecting **Lock conference** or **Unlock conference** as appropriate:



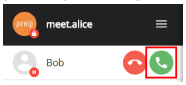

A "locked" icon will appear next to the conference avatar to indicate that the conference is currently locked.

## Locking using DTMF

If DTMF controls have been enabled, Host participants can lock and unlock the conference using DTMF. The default DTMF entry to do this is ***7** but this may have been customized.

## Allowing waiting participants to join a locked conference

When a new participant attempts to join a locked conference, Host participants in the conference who are using Infinity Connect are notified that the participant is waiting to join, and see a red "waiting" icon next to the participant's avatar. To allow the participant to join the locked conference they can click on the green telephone icon next to the participant's name:




In the above example, Bob is waiting to join Alice's locked VMR. Alice is a Host, so can let him join at any time by clicking on the green telephone icon next to Bob's name.

Note that if the Host has joined as control-only (and there are no other Host participants), the Host is not offered the telephone icons. However, they can use the **Start conference** menu option, which will let in all Guest participants.

## Rejecting a request to join a locked conference

If a Host (who is using Infinity Connect) does not want a waiting participant to join the conference immediately, they have two options:

- To reject the request completely, the Host participant must click on the red telephone icon  next to the waiting participant's name. The waiting participant's call will be disconnected.
- To leave the participant at the waiting for Host screen, the Host participant should do nothing. The waiting participant will remain at the waiting screen until:
  - a Host participant chooses to let the waiting participant join the conference, or
  - the conference is unlocked (after which the waiting participant will automatically join the conference), or
  - the conference finishes (after which the waiting participant's call will be disconnected).

## Using Infinity Connect in-call controls

The table below shows the actions that can be performed while a call is in progress. Note that this table includes all features available to the Infinity Connect desktop client, the Mobile client for Android, and the Web App, although not all features are available to all clients.

For the features that are available to the Infinity Connect Mobile client for iOS, see the Infinity Connect Mobile client for iOS Quick Guide.

Select the default microphone, camera and speakers to use prior to joining over video/audio

**Desktop client and Mobile client for Android**

1. From the home screen, select ⚙.
2. In the **Media** section, select the desired **Microphone**, **Camera** and **Audio Output** device from the drop-down menus.

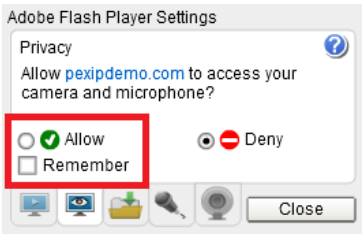
**Web App for Chrome and Opera**

1. From the home page, select **Settings**.
2. In the **Microphone**, **Camera** and **Audio Output** (Chrome 50 and later only) sections, select the desired devices from the drop-down menus.

**Web App for Internet Explorer and Safari**

1. From the home page, select **Settings**.
2. In the **Microphone** and **Camera** sections, select the desired devices from the drop-down menus.

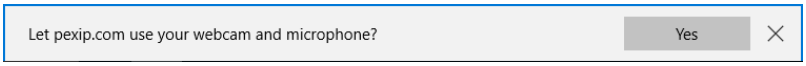
   You may need to first enable Adobe Flash by selecting **Allow**, and checking **Remember**:




**Web App for Microsoft Edge**

1. From the home page, select **Settings**.
2. In the **Microphone** and **Camera** sections, select the desired devices from the drop-down menus.

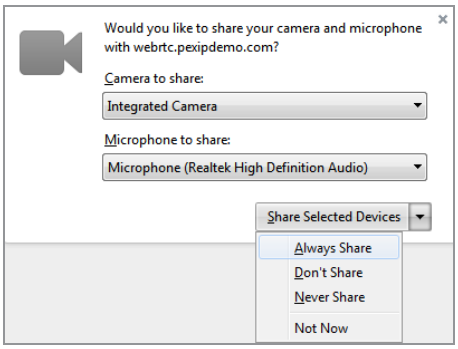
   You may need to first share your camera and microphone:




**Web App for Firefox**

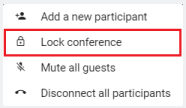
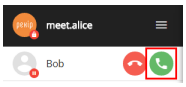
1. From the home page, select **Settings**.
2. In the **Microphone** and **Camera** sections, select the desired devices from the drop-down menus.

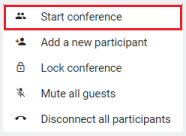
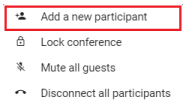
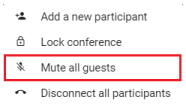
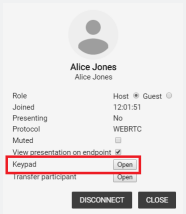
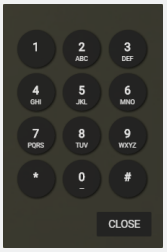
   You may need to first share your camera and microphone:

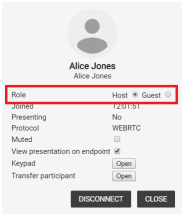
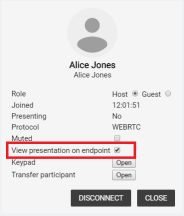
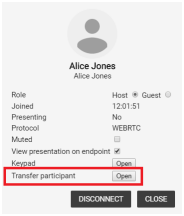
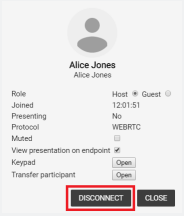
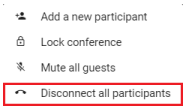



If you always use the same camera and microphone, you may wish to also clear the **Show camera / microphone options when connecting** option in the **Advanced** section of the **Settings** page. Doing so will mean that you won't then have to take the extra step of nominating the camera and microphone to use each time you make a call.

| | | |
|---|---|---|
| Change your camera and mic during a call | 1. From the toolbar at the bottom of the window, select **Change camera and microphone**.<br>2. In the **Microphone** and **Camera** sections, select the desired devices from the drop-down menus.<br>3. Select **Change camera/microphone**. |  |
| Change your speakers during a call | From the bottom right of the screen, select **Volume**. At the top of the volume control, select the settings icon, then from the drop-down menu select the device to use. |  |
| Share your screen with all other participants | (Available to Infinity Connect desktop client and Infinity Connect Web App via Chrome or Firefox users only)<br>1. From the toolbar at the bottom of the window, select **Share screen**.<br>2. For Chrome users, if this is the first time you have shared your screen, enable screen sharing.<br>3. Select the window or screen you want to share.<br>The best way to share a PowerPoint presentation is to start the Slide Show from within PowerPoint first, and then tab to Infinity Connect, share your screen, and select the Slide Show window. |  |
| Share images or PDFs with all other participants | 1. From the toolbar at the bottom of the window, select **Share images or PDFs**.<br>2. Drag and drop the file(s) you want to share into the Infinity Connect window. You can add multiple files, and they can be a combination of images and PDFs. Each image will be converted into an individual slide, as will each page of each PDF.<br>3. Select **Start presenting**. The first slide will appear in a presentation thumbnail at the top left of the screen (or in the main video window if you are presentation-only). Use the left < and right > controls to scroll through the slides. You can make the slides appear in your main video window by clicking on the presentation thumbnail.<br>4. To stop sharing the slides, from the toolbar select **Stop presenting**. |  |
| View a presentation being shown by another participant | When a participant starts a presentation, you will automatically see the content they are sharing as your main image, and the image of the participants will reduce to a small thumbnail at the top left corner.<br>You can toggle between viewing the presentation and viewing the participants by clicking on the thumbnail. | |
| View a presentation in a separate window | Whether you are the presenter or a participant, you can view the current presentation in a separate pop-out window.<br>To do this, from the bottom right of the screen select **Open presentation in new window**. To close the window, from the bottom right of the screen select **Close**. |  |
| View a presentation at a higher (or lower) refresh rate | When a participant is showing a presentation, by default you receive it as a series of still images. This is suitable for documents and screens being shared, but if the presentation contains a lot of movement it may appear jerky. If this is the case, you can elect to receive the presentation in full motion as HD video.<br>To do this, from the bottom right of the screen select **View full motion presentation**. To return to the default view, select **View still image presentation**. |  |
| Start sending and receiving video | (For users who have initially joined without audio and video)<br>From the toolbar at the bottom of the window, select **Connect with audio and video**. Select the camera and microphone you wish to use, and then select **Start**. |  |
| Start sending and receiving audio | (For users who have initially joined without audio and video)<br>From the toolbar at the bottom of the window, select **Connect with audio only**. |  |

| | | |
|---|---|---|
| Stop/start sending your video to other participants | From the toolbar at the bottom of the window, select **Disable my camera** or **Enable my camera**. |  |
| Stop/start sending your audio to other participants | From the toolbar at the bottom of the window, select **Mute my microphone** or **Unmute my microphone**. |  |
| View the video image full screen/exit full screen | From the toolbar at the bottom of the window, select **Go full screen** or **Exit full screen**. |  |
| Stop/start viewing the video of yourself | The video of yourself that is being sent to other participants is shown in a thumbnail at the top right of the screen. To hide this, select the **Hide self view** icon at the top right of the image. It will be replaced by a small **Show self view** icon; select this to view your image again.<br>When using Internet Explorer, self view is not available when viewing a presentation in the main window. |  |
| View a list of other conference participants | When using Infinity Connect, a list of all other conference participants will be shown to the left of or at the bottom of the screen. You can scroll through this list, or use the search box at the top of the list, to view other participants.<br>You can show and hide this participant list by clicking on the **Hide side bar <** and **Show side bar >** icons at the bottom right of the list. | |
| Send and receive chat messages, and share online videos and images | (Available when chat has been enabled by the administrator)<br>At the bottom of the screen there is a **Chat room** area or tab, which shows the messages sent by participants in the conference. To send a message, type it in the text box. Messages are visible to everyone else in the conference with a chat-capable client (such as Lync / Skype for Business or Infinity Connect).<br>You can also share videos and images by pasting their URL into the text box. | |
| Show or hide the roster or chat room | To hide or show the side panel (containing the list of participants and the chat room), select the arrows at the bottom left of the screen.<br>To hide the chat room within the side panel so that only the roster is shown, or to expand it so that only the chat room is shown, select the arrows to the right of the chat room title bar. |  <br>  |
| Prevent/allow others from joining the conference | (Requires Host privileges)<br>From the top left of the screen, select the menu icon and then select **Lock conference** or **Unlock conference**.<br>The impact of locking depends on whether or not the Virtual Meeting Room or Virtual Auditorium being used has a Host PIN. For more information, see Locking a conference and allowing participants to join a locked conference. |  |
| Allow a participant to join a locked conference | (Requires Host privileges)<br>Participants who are waiting to join a locked conference are indicated in the roster by a red "waiting" icon. To allow these participants to join the conference, click on the green telephone icon next to their name. |  |

| | | |
|---|---|---|
| Allow waiting guests to join a new conference without a Host | (Requires Host privileges)<br>Normally, Guests can join a conference only after first Host has joined. However, this does not apply if the Host joins as control-only.<br>If you have joined a conference as a control-only Host and want Guests to join, from the top left of the screen, select the menu ☰ icon and then select **Start conference**. |  |
| Add a participant to the conference | (Requires Host privileges)<br>1. Select the menu ☰ icon and then select **Add a new participant**.<br>2. At the prompt, enter the address of the person you want to dial.<br>3. If you want to use a protocol other than ***SIP*** (the default) select either ***Automatic***, ***H.323***, ***Lync/Skype*** or ***RTMP***.<br>***Automatic*** means that the protocol will be selected according to how your administrator or service provider has configured the system.<br>***RTMP*** is typically used when connecting to a streaming or recording service.<br>To support the use of ***Automatic*** you must configure some appropriate Call Routing Rules that apply to **Outgoing calls from a conference**. If required, you can then also change the default protocol presented to users of the Infinity Connect Web App and desktop clients by configuring the **defaultDialOutProtocol** setting in the **settings.js** file (see Advanced Infinity Connect Web App customization and Customizing the Infinity Connect desktop client for more information).<br>4. Select whether you want the participant to have **Host** or **Guest** privileges.<br>5. Select **OK**. |  |
| Mute/unmute another participant | (Requires Host privileges)<br>From the participant list, to the right of the participant's name select **Mute participant** or **Unmute participant**. |  |
| Muting all Guests | (Requires Host privileges)<br>From the top left of the screen, select the menu ☰ icon and then select **Mute all guests**. |  |
| Send DTMF tones | (Requires Host privileges; you must be joined over audio, or video and audio)<br>From the participant list, select the participant to whom you want to send DTMF tones, and then next to **Keypad** select **Open**.<br>This feature is generally used to communicate with external systems (such as audio bridges, automated switchboards, and recording devices) after they have been added to the conference. |  <br>  |

| | | |
|---|---|---|
| Change the role of a participant | (Requires Host privileges; you cannot change your own role to Guest.)<br>From the participant list, select the participant's name, and then use the radio buttons to select whether their role will be **Host** or **Guest**.<br>Participants who have joined via a Lync / Skype for Business meeting will have a role of **External**; their status cannot be changed. |  |
| Stop sending presentation to a participant | (Requires Host privileges)<br>When a participant is sharing a presentation, other participants receive both the presentation and the main video. However, you may want to receive just the main video on a particular endpoint (for example, if you are using a meeting room system and you are already viewing the presentation on your mobile device).<br>To do this, from the participant list, select the participant's name and then uncheck **View presentation on endpoint**. |  |
| Transfer a participant to another VMR | (Requires Host privileges)<br>From the participant list, select the participant's name and then next to **Transfer participant** select **Open**.<br>Enter the alias of the conference you wish to transfer the participant to, whether they should join as a Host or Guest, and the PIN if applicable, then select **OK**.<br>You can transfer any participant, including yourself. |  |
| Disconnect another participant | (Requires Host privileges)<br>From the participant list, select the participant's name and then select **Disconnect**. |  |
| Disconnect all participants (including yourself) | (Requires Host privileges)<br>From the top left of the screen, select the menu ☰ icon and then select **Disconnect all participants**. |  |
| Disconnect yourself from the conference | From the toolbar at the bottom of the screen, select **Disconnect**. |  |
| Mute or change the volume of the audio coming from the conference | From the bottom right of the screen, select **Volume**. |  |
| View diagnostic information about your call (when connected with audio or video) | From the bottom right of the screen, select **Call statistics**.<br>This brings up an overlay dialog that displays the server version of the host system. Further statistics may also be displayed, if available, such as incoming and outgoing audio and video bitrates, and how many data packets have been lost and received etc. |  |

## Participant icons

The table below shows the different icons or "badges" that can appear on participants' avatars, and their meanings.

| | |
|---|---|
|  | A call is being placed to the participant and they have yet to answer. |
|  | The participant is waiting to join the conference. |
|  | The participant is a streaming or recording device. |
|  | The participant is currently speaking. |
|  | The participant is muted. |
|  | The participant is presenting content. |

# Administering Infinity Connect

## About Infinity Connect client settings

There are various settings available within the Infinity Connect clients. The tables below (one for the Desktop client, Android client and Web App, and a second for the Mobile client for iOS) provide information about each of these settings, and shows which clients use them.

Note that you can change, disable or provide default text for many of these settings by Customizing the Infinity Connect desktop client and Customizing the Infinity Connect Web App.

The administrator can also provision individual Infinity Connect desktop client users with their registration details and automatically apply those registration settings to their client. See Registering your Infinity Connect client to receive calls for more information.

### Desktop client, Android client and Web App

| Setting | Description | Desktop client | Android client | Web App |
|---|---|---|---|---|
| **Profile** | | | | |
| Your name | The name for this user, which will appear to other conference participants.<br>For Desktop client users, this field is automatically pre-filled with the user name of the account used to log in to the device, but it can be overwritten. | ✓ | ✓ | ✓ |
| **Media** | | | | |
| Camera | Allows users to select the camera they wish to use from the drop-down list, and see how their video will appear to other participants. | ✓ | ✓ | ✓ |
| Microphone | Allows users to select the microphone they wish to use from the drop-down list, and check that it is working properly. | ✓ | ✓ | ✓ |
| Mute microphone when first connecting * | Many videoconference participants mute their microphones unless they are actually speaking, to reduce the level of background noise. This option allows users to join with their microphone muted by default. | ✓ | ✓ | ✓ |
| Audio Output | Allows users to select the speakers or headset they wish to use from the drop-down list. | ✓ | | ✓ ** |
| Always preview audio and video settings before connecting * | When this option is selected, users will always be given the opportunity to check and change their microphone, camera and speakers** prior to joining a call with media. To speed up the joining process, you may wish to clear this option if you always use the same camera and microphone on your device.<br>Selecting the **Don't show me these options again checkbox** when joining a call will automatically clear the **Show camera / microphone options when connecting** checkbox. | ✓ | | ✓ |
| Bandwidth | The maximum bandwidth for the call, and the bandwidth at which the initial call attempt will be made. Note that calls may be temporarily downspeeded due to network conditions. | ✓ | ✓ | ✓ |
| **Registration** | | | | |
| Alias | The alias that this client will register with. This is the alias that other users will dial when they want to call this client.<br>This alias must match one of the entries on the Management Node under **Service Configuration > Device Aliases**. | ✓ | ✓ | |

| Setting | Description | Desktop client | Android client | Web App |
|---|---|---|---|---|
| Server address * | The address of the server to which the registration request will be sent. This must be the IP address or FQDN of a local Conferencing Node, or the IP address or FQDN of the reverse proxy.<br>This field is initially hidden from desktop client users unless they expand the section by selecting ⌄. If no server address is entered, Infinity Connect will attempt to register by using the domain returned by an SRV lookup of the domain part of the registration alias as the server address (for more information, see Setting up DNS records for Infinity Connect Mobile client and Infinity Connect desktop client use). If there is no SRV record, it will use the domain part of the registration alias itself as the server address. If this fails, users will be presented with the expanded section where they can enter a different server address. | ✓ | ✓ | |
| User name / Password | The username and password to be used by this device when it is registering to Pexip Infinity.<br>The username and password must match those configured for this alias on the Management Node under **Service Configuration > Device Aliases**.<br>The registration user name is initially hidden from desktop client users unless they expand the section by selecting ⌄. If no user name is entered, Infinity Connect will attempt to register using the local part of the registration alias as the user name. If this fails, users will be presented with the expanded section where they can enter a different user name. | ✓ | ✓ | |
| Remember password | Tick this box to avoid re-typing your password the next time you register. | ✓ | ✓ | |
| **Advanced** | | | | |
| Screensharing quality | This setting determines the frame rate used when you share your screen. A lower frame rate will result in ***sharper*** images and is best for static presentations; a higher frame rate will be less sharp and is best for content where there is more ***motion***. | | | ✓ |
| Start application in the background | When this option is selected, the client will start automatically when you start your computer. If you have previously entered your registration details and selected **Remember password**, the client will also register on startup, meaning you can receive calls as soon as you log in to your computer. | ✓ | | |
| Show confirmation when disconnecting * | When this option is selected, users must confirm each time they wish to disconnect from a conference. This prevents users from accidentally disconnecting themselves. | ✓ | ✓ | ✓ |

| Setting | Description | Desktop client | Android client | Web App |
|---|---|---|---|---|
| View full motion presentation * | This setting determines how presentations from other participants are initially received by this user.<br>Presentations can be received in two formats:<br>• A lower-bandwidth series of **still images** (suitable for documents and screens being shared). With this option, Pexip Infinity periodically takes a snapshot of the presentation and converts it to .JPG format, and sends that to the Connect client at between 0.5 to 1 fps. For this reason, presentations that contain a lot of movement may appear jerky to clients using this option.<br>• A higher-bandwidth **full motion** stream (suitable for presentations with a lot of movement). With this option, Pexip Infinity sends the presentation to the Connect client as a video stream at up to 30 fps, so movement will appear smooth. (Connect clients can send presentation at up to 5 fps, but other clients may send at a higher frame rate.)<br>By default, presentations are initially received as still images, and users can subsequently elect to view them in full motion by selecting the **HD** button. However, when **View full motion presentation by default** is selected, presentations received by this user will always be shown in full motion by default, and the user can then elect to view it as still images. | ✓ | ✓ | ✓ † |
| Send anonymous usage statistics to Pexip * | When this option is selected, anonymous information about how the client is being used is sent to Pexip. | ✓ | ✓ | ✓ |
| Play ringtone on incoming calls | If users do not want to hear the default ringtone when they are receiving an incoming call, they can clear this checkbox. | ✓ | | |
| Language * | (Only applies if additional languages have been configured via customization.)<br>Allows users to select from a drop-down menu the language to be used in their Infinity Connect client. | ✓ | | ✓ |
| My Personal Meeting Room | The alias of the VMR to be dialed when you tap an endpoint's NFC tag. | | ✓ | |
| Reverse Proxy username and password | The username and password that will be sent by the Connect client in response to an HTTP authentication request. Some connections, such as those to a reverse proxy, may require HTTP authentication. | | ✓ | |
| Create NFC dial tag | Allows users to program NFC tags so that when an Infinity Connect for Android user taps the tag, the endpoint associated with the tag is automatically dialed in to the same meeting as the Android client. | | ✓ | |
| **Connection** | | | | |
| Default domain * | The domain that will be appended to any URIs that are dialed from this client that do not already include a domain. | ✓ | | |

| Setting | Description | Desktop client | Android client | Web App |
|---|---|---|---|---|
| Server address * | The address of the server to which calls may be sent (see Setting up DNS records for Infinity Connect Mobile client and Infinity Connect desktop client use for a full description of how the client determines and locates the host server).<br>If configured, this must be the IP address or FQDN of a local Conferencing Node, or the IP address or FQDN of the reverse proxy. | ✓ | | |

* You can provide a first-time default for this option by Customizing the Infinity Connect desktop client and Customizing the Infinity Connect Web App.

** Chrome (version 50 and later) only

† Not available in Internet Explorer, Edge, or Safari.

### Mobile client for iOS

The following settings are available from the Infinity Connect home screen by selecting **Connection Settings**:

| Setting | Description |
|---|---|
| Domain | The domain that will be appended to any URIs that are dialed from this client that do not already include a domain. |
| Username / Password | The username and password that will be sent by the Connect client in response to an HTTP authentication request. Some connections, such as those to a reverse proxy, may require HTTP authentication. |
| Display Name | The name for this user, which will appear to other conference participants.<br>If you don't set a name here, your device's name will be used. |
| Open Device Privacy Settings | Allows you to control the client's access to your device's:<br>• location<br>• calendars<br>• photos<br>• microphone<br>• camera<br>• mobile data.<br>For information on why this access is required, see Allowing Infinity Connect to access your device. |
| Remember Passwords? | Remember the **Password** used in the **Connection Settings** section above. |

## Obtaining diagnostic information from Infinity Connect

Users of Infinity Connect clients can obtain information about their client's incoming and outgoing audio and video streams, which may be helpful in diagnosing issues with call quality.

To obtain this information, from the bottom right of the Infinity Connect screen, select **Call statistics** .

## Creating preconfigured links to launch conferences via Infinity Connect

### Links to the Infinity Connect Web App

You can provide conference participants with a URL that, when clicked, will open an instance of Infinity Connect in their default browser. You can format the URL with query string parameters so that it pre-fills some or all of the required fields and allows the participant to review these before joining, or you can format the URL so the participant is taken straight into the conference.

The URL is in the format:

https://**<address>**/webapp/?conference=**<alias>**&name=**<name>**&bw=**<bandwidth>**&pin=**<PIN>**&join=**<join>**&role=**<role>**&media=**<media>**&audioonly=**<audioonly>**&escalate=**<escalate>**&extension=**<extension>**

where:

- **<address>** is the IP address or domain name of the Conferencing Node or reverse proxy
- **<alias>** is one of the aliases for the Virtual Meeting Room or Virtual Auditorium the user will join
- **<name>** is the name of the user who is joining the conference.
- **<bandwidth>** is the bandwidth in kbps, and can be any number between 256 and 1864.
- **<PIN>** is either the Host PIN or Guest PIN, if required.
- **<join>** is **1** if you want the participant to automatically join the conference. If **join=1** but a media option has not been specified in the URL (using **audioonly=1** for an audio-only call or **media=** for a control-only call), the participant will join using the media option that was used the last time they joined that conference; if this is the first time they have joined, the default media option will be used.
- **<role>** is **guest** if you want to allow Guests to automatically join a conference that has no Guest PIN. If the URL already specifies a **<PIN>**, the PIN will determine the participant's role and the **<role>** will be ignored. Note that if **role=host**, participants will still be prompted to enter the Host PIN in order to join the conference.
- **<media>** is **1** if you want to join with audio and video, or is left empty (**media=**) if you want to join in presentation and control mode. (If this parameter is not specified, the media option that was used the last time the participant joined that conference will be used again; if this is the first time they have joined, the default media option will be used.)
- **<audioonly>** is **1** if you want to join with audio but no video.
- **<escalate>** is **1** if you want users who have joined control-only to be offered the camera and microphone selection options immediately after joining.
- **<extension>** is the Virtual Reception extension, or the Lync / Skype for Business Conference ID.
- **<forceguest>** is **1** if you want to withhold Host-level controls (such as muting all guests) even if the participant joins as a Host.

The URL must always include **https://<address>/webapp/?**; the remainder of the fields are optional, as follows:

- If a field is not specified in the URL but is required when joining (i.e. **alias**, **name**, **PIN** if the conference uses PINs, or **extension** if one is requested), the participant will be required to provide the information themselves before they can join the conference.
- If the **bandwidth** is not specified in the URL and the participant has not previously selected a different value, the default of 576 will be used.

## Examples

- If the domain name of your reverse proxy is **conference.example.com**, and there is a Virtual Meeting Room with the alias **meet.alice**, which has no PIN, the URL for Bob to join it directly would be:
  **https://conference.example.com/webapp/?conference=meet.alice&name=Bob&join=1**
- If we then gave the same Virtual Meeting Room a Host PIN of **1234** but no Guest PIN, the URL for Bob to join it directly as a **Host** would be:
  **https://conference.example.com/webapp/?conference=meet.alice&name=Bob&pin=1234&join=1**
  and the URL for Bob to join it directly as a **guest** would be:
  **https://conference.example.com/webapp/?conference=meet.alice&name=Bob&join=1&role=guest**
  and the URL for Bob to join it directly as an audio-only guest would be:
  **https://conference.example.com/webapp/?conference=meet.alice&name=Bob&join=1&role=guest&audioonly=1**

## Links to the desktop and mobile clients

You can create a URL that, when clicked, will open the pre-installed Infinity Connect client on that device, with the conference name pre-filled. The same URL can be used for the desktop client and mobile clients for Android and iOS.

This URL can be included in web pages, instant messages or emails (but note that some email clients such as Gmail will strip them out for security reasons).

### Android and iOS clients

For Android and iOS clients, the URL is in the format:

**pexip://<alias>?pin=<pin>**

### Desktop client

For the desktop client, the URL supports some additional parameters, and is in the format:

**pexip://<alias>?pin=<pin>&media=<media>&escalate=<escalate>&audioonly=<audioonly>**

where:

- **<alias>** is one of the aliases for the Virtual Meeting Room or Virtual Auditorium the user will join
- **pin=<pin>** is optional and **<pin>** is the conference PIN (Host or Guest, depending on the role you want to assign to the participant). For conferences with a Host PIN but no Guest PIN, set this to **pin=none** to join as a Guest.
- **<media>** is **1** if you want to join with audio and video, or is left empty (**media=**) if you want to join in presentation and control mode. (Note that this parameter is ignored if **escalate** is specified, or if the user has selected the setting to **Show media options when connecting**.)
- **<escalate>** is **1** if you want users to join in control only mode and be offered the camera and microphone selection options immediately upon joining, or left blank (**escalate=**) to join in presentation and control mode only.
- **<audioonly>** is **1** if you want users to join with audio but no video, or is left blank (**audioonly=**) to join with audio and video.

### Example - email footer

For example, Alice's personal meeting room has the alias **meet.alice@example.com** so she includes the following text in her email footer:

- Video: <a href="pexip://meet.alice@example.com">meet.alice@example.com</a>

which displays as:

- Video: meet.alice@example.com

Now, when someone who has an Infinity Connect client installed on their device clicks on the link in her email, the client will open automatically with **meet.alice@example.com** already entered, and all they need to do is select **Connect**.

### Example - guest PIN

Alice's personal meeting room has a guest PIN of **1234**. When Alice is chatting with a colleague using an instant messaging client and she wants to move the conversation to video, she sends them the message **pexip://meet.alice@example.com?pin=1234**, which automatically appears as a hyperlink. Her colleague clicks on the link and instantly joins Alice's personal meeting room as a guest.

### Example - always check camera and mic (desktop client only)

If you want the participant to join a meeting with a PIN of 1234, and you want them to select and check their camera and microphone prior to joining, the URL would be: **pexip://meet.alice@example.com?pin=1234&escalate=1**

## Using Infinity Connect from outside your network

In most cases, your Pexip Infinity deployment will be located inside a private network. If this is the case and you wish to allow Infinity Connect users who are located outside your network (for example on another organization's network, from their home network, or the public internet) to connect to your deployment, note that:

- Internet Explorer and Safari browsers use the RTMP protocol and can connect via a reverse proxy, but they cannot establish audio/video paths to Pexip Infinity via a TURN server. To establish audio/video media connectivity, RTMP clients need a direct TCP connection to a Conferencing Node. The Web App will attempt an encrypted RTMPS connection first. For a secure RTMP connection to be established, the **SIP TLS FQDN** must be configured on the Conferencing Node (via **Platform Configuration > Conferencing Nodes**) and it must match the Common Name of its TLS server certificate. If RTMPS fails, it will use an unencrypted connection for media.
- Chrome, Firefox and Opera browsers use the WebRTC protocol and can connect to privately-addressed "on-premises" nodes via a reverse proxy and route their media through a TURN server.
- Note that Microsoft Edge browsers (which are WebRTC-compatible) cannot currently use STUN and thus cannot send media to Pexip Infinity via a TURN server.

This means that Internet Explorer, Edge and Safari users connecting from outside your network will not be able to send or receive media. These users should connect over a VPN, or use another browser.

For more information, see Pexip Reverse Proxy and TURN Server Deployment Guide.

## Enabling and disabling Infinity Connect clients

If you do not wish to allow participants to use Infinity Connect clients (Infinity Connect desktop client, Infinity Connect Mobile client, and Infinity Connect Web App) to access conferences within your deployment, you can disable this feature.

This feature is enabled by default. To disable or re-enable this feature:

1. Go to **Platform Configuration > Global Settings**.
2. From within the **Connectivity** section, deselect or select **Enable support for Pexip Infinity Connect and Mobile App**.

When access has been disabled, users attempting to use Infinity Connect clients to access a conference or make a call will be presented with the message **Call Failed: Disabled**.

## Setting up DNS records for Infinity Connect Mobile client and Infinity Connect desktop client use

To enable participants to connect to conferences within your deployment using the Infinity Connect desktop client or Infinity Connect Mobile client, you must provide a DNS lookup so that these clients know which host to contact. The host will typically be a reverse proxy (for deployments where Conferencing Nodes are located within a private network), but it can also be a public-facing Conferencing Node.

To enable access from these desktop and mobile clients, each domain used in aliases in your deployment must either have an SRV record for **_pexapp._tcp.<domain>**, or resolve directly to the IP address of a reverse proxy or a public-facing Conferencing Node.

The SRV records for **_pexapp._tcp.<domain>** should always:

- point to an FQDN which **must** be valid for the TLS certificate on the target Conferencing Nodes or reverse proxy
- reference port 443 on the host.

More information on the lookup process for the desktop client and mobile client is described below, along with an example.

(Note that the DNS SRV lookup does not apply to participants using the Infinity Connect Web App, because they connect to Conferencing Nodes or the reverse proxy directly, so no lookup is required.)

Ultimately it is the responsibility of your network administrator to set up SRV records correctly so that the Infinity Connect desktop client and Infinity Connect Mobile client know which system to connect to.

You can use the tool at http://dns.pexip.com to lookup and check SRV records for a domain.

## Infinity Connect desktop client

The Infinity Connect desktop client (as of version 2.1 and later) may attempt several DNS lookups for different domains — based on the dialed alias and the client's configuration — until it is able to connect to a reverse proxy or Conferencing Node.

The domains on which the client will perform DNS lookups, and the order in which it will perform those lookups, is as follows:

1. The domain portion, if specified, of the dialed **Conference alias or URI**.
2. The **serverAddress**, if specified, in the client's application settings file (**settings.js**). This address is not configured in the default desktop client provided by Pexip, but an address could have been configured by using the Infinity Connect desktop client toolkit files to customize the client prior to installation.
3. The **Connection server address**, if specified by the user, in the client **Settings** page.
4. The **Registration server address**, if specified by the user, in the client **Settings** page. This address can either have been explicitly specified, or it may have been derived from the domain portion of the user name to be registered.

Note that in many environments, some of these addresses, when used, will often refer to the same domain.

For each domain, the client will first perform an SRV lookup on **_pexapp._tcp.<domain>**. If the SRV lookup fails, or the client fails to contact any of the hosts in the returned SRV records, it will then perform a DNS A-record lookup for that same domain. If that A-record lookup is successful, it will attempt to connect to port 443 on the IP address returned from the lookup. If the client still fails to connect, it will move on to the next domain as specified in the list above. (The only exception is option 1, the dialed **Conference alias or URI**, where the client will perform an SRV lookup only.)

If multiple records are returned by an SRV lookup on **_pexapp._tcp.<domain>**, the client will attempt to contact each host in turn according to the priority of each returned record.

## Infinity Connect Mobile client

The Infinity Connect Mobile client will perform a single SRV lookup on **_pexapp._tcp.<domain>**, where **<domain>** is determined as follows:

- **Android client**: uses the **Connection server address** if specified, otherwise it uses the domain portion of the dialed conference address.
- **iOS client**: uses the domain portion of the dialed conference address.

The client currently supports a single SRV record per domain. If multiple SRV records are returned by the SRV lookup on **_pexapp._tcp.<domain>**, the client will attempt to contact the first host in the list, which may or may not be the preferred host. If this attempt fails, no further attempts will be made to contact other hosts on the list.

If the Infinity Connect Mobile client cannot locate the host (i.e. reverse proxy or Conferencing Node) through DNS SRV discovery because either:

- the SRV lookup on **_pexapp._tcp.<domain>** does not return any records, or
- the client cannot contact the first host on the list that is returned in the SRV lookup

it will fall back to performing a DNS A-record lookup for the domain in question. If successful, it will attempt to connect to port 443 on the IP address returned from this A-record lookup.

## Example

Assume that the following **_pexapp._tcp.example.com** DNS SRV records have been created:

```
_pexapp._tcp.example.com. 86400 IN SRV 10 100 443 proxy1.example.com.
_pexapp._tcp.example.com. 86400 IN SRV 20 100 443 proxy2.example.com.
```

These point to the DNS A-records **proxy1.example.com**, port 443 (HTTPS), with a priority of 10 and a weight of 100, and **proxy2.example.com**, port 443, with a relatively lower priority of 20 and a weight of 100.

- This tells the Infinity Connect desktop client to initially send its HTTP requests to host **proxy1.example.com** (our primary reverse proxy server) on TCP port 443. The desktop client will also try to use host **proxy2.example.com** (our fallback server) if it cannot contact proxy1.

- The Infinity Connect Mobile client will send its HTTP requests either to **proxy1.example.com** or to **proxy2.example.com**, depending on the order of the returned SRV records. If it fails to contact the first host, it will not attempt to contact the second host address.

The connection logic in this example is explained in more detail below for each client. (Note that this section describes the operation of version 2.1 and later of the Infinity Connect desktop client; earlier versions of the desktop client operate in the same way as the Infinity Connect Mobile client.)

### Infinity Connect desktop client

In this example, when a user attempts to access meet.alice@example.com, the Infinity Connect desktop client will attempt an SRV lookup on **_pexapp._tcp.example.com**:

- If the SRV lookup succeeds, it will return the records shown above, and the Infinity Connect desktop client will attempt to contact **proxy1.example.com** (the record with the highest priority) on TCP port 443.

  If it cannot contact **proxy1.example.com** it will next try to contact **proxy2.example.com**.
- If it fails to contact either host, or the SRV lookup fails, and neither a **serverAddress**, **Connection server address** nor a **Registration server address** have been specified, the desktop client will report that it has failed to contact a server.
- If any of the **serverAddress**, **Connection server address** or a **Registration server address** have been specified, and are for a different domain to that of the dialed alias (example.com in this case) the Infinity Connect desktop client will perform SRV lookups on those other domains, and attempt to contact the hosts returned in those lookups. For example, if the **Connection server address** is **localserver.example.com** then it will perform an SRV lookup on **_pexapp._tcp.localserver.example.com**.
- If each subsequent SRV lookup fails, or the returned hosts in those lookups cannot be contacted, the Infinity Connect desktop client will also attempt to connect directly to that domain, for example to **http://localserver.example.com:443** (via DNS A-records for localserver.example.com).

### Infinity Connect Mobile client

In this example, when a user attempts to access meet.alice@example.com, the Infinity Connect Mobile client will attempt an SRV lookup on **_pexapp._tcp.example.com**:

- If the SRV lookup succeeds, it will return the records shown above, and the Infinity Connect Mobile client will attempt to contact the first host in the returned list on TCP port 443. Note that the addresses are returned in an arbitrary order and thus the first host may be either **proxy1.example.com** or **proxy2.example.com**.
- If the SRV lookup fails, or it fails to contact the first host on the returned list, the Infinity Connect Mobile client will attempt to connect to **http://example.com:443** (via DNS A-records for example.com).

(Note that for the Android client, this example assumes that a **Connection server address** is not configured on the client. If a connection server address is specified, it would be used instead of the domain portion of the dialed conference address i.e. example.com in this case.)

## Using a reverse proxy and TURN server with Infinity Connect

In Pexip Infinity deployments, all Pexip Infinity Connect clients use HTTPS for the call signaling connections towards Conferencing Nodes.

However, with some Pexip deployments, these clients are not able to communicate directly with Pexip Conferencing Nodes, for example in on-prem deployments where the Pexip platform is located on an internal, enterprise LAN network while the clients are located in public networks on the Internet. In these cases it is common to deploy a reverse proxy application in the environment. This is an application which can proxy HTTP and HTTPS traffic from an externally-located client to a web service application located on the internal network — in our case a Pexip Conferencing Node. A reverse proxy can also be referred to as a load balancer.

In addition to providing HTTP/HTTPS connectivity between external Pexip clients and internal Conferencing Nodes, a reverse proxy can also be used:

- for hosting customized Infinity Connect Web App content
- by Pexip's VMR Scheduling for Exchange service, when it acts as a load balancer when proxying requests from Outlook clients to Conferencing Nodes.

In deployments such as the ones described above, the reverse proxy provides for HTTPS call signaling connectivity between Infinity Connect clients and Conferencing Nodes. However, as the reverse proxy does not handle media, a TURN server is also required to ensure audio/video connectivity between the clients and the Conferencing Nodes.

A TURN server is a media relay/proxy which allows peers to exchange UDP or TCP media traffic whenever one or both parties are behind NAT. When Conferencing Nodes are deployed behind NAT, these nodes will instruct the WebRTC client to send its media packets to the TURN server, which will forward (relay) the packets to the Conferencing Nodes. Since this TURN server is normally located outside of the enterprise firewall, the Conferencing Node will constantly send media packets to this TURN server to "punch holes" in the firewall, allowing this TURN server to relay media packets back to the Conferencing Node, as the firewall will classify this as return traffic.

Pexip's Infinity Connect WebRTC clients (the desktop client; Web App for Chrome, Firefox and Opera; and mobile clients for iOS and Android) use ICE (Interactive Connectivity Establishment) to negotiate optimal media paths with Conferencing Nodes. Microsoft Lync and Skype for Business clients use a similar ICE mechanism, which means that Pexip can use TURN for all of these client types.

Infinity Connect clients on Internet Explorer and Safari browsers use the RTMP protocol, rather than WebRTC. While RTMP clients can connect to Conferencing Nodes via the reverse proxy, they cannot establish audio/video paths to Pexip Infinity via a TURN server. To establish audio/video media connectivity, RTMP clients need a direct TCP connection to a Conferencing Node.

Note that Microsoft Edge browsers (which are WebRTC-compatible) cannot currently use STUN and thus cannot send media to Pexip Infinity via a TURN server.

Depending on the network topology, the reverse proxy can be deployed with one or two network interfaces in various configurations:

- Single NIC, public address
- Dual NIC, private and public addresses

In deployments with more than one Conferencing Node, the reverse proxy can load-balance HTTPS traffic between all Conferencing Nodes using a round-robin algorithm.

For more information about using a reverse proxy, see **Pexip Reverse Proxy and TURN Server Deployment Guide**.