

# Skype for Business Server 2015

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# Agenda

- Intro
- Features and Architecture
- On-prem vs. Cloud
- Installation, Configuration and Administration
- Conferencing
- External Access and Federation
- Voice on-prem and in the Cloud

Intro

# Intro

## Skype for Business Server 2015 Evolution:



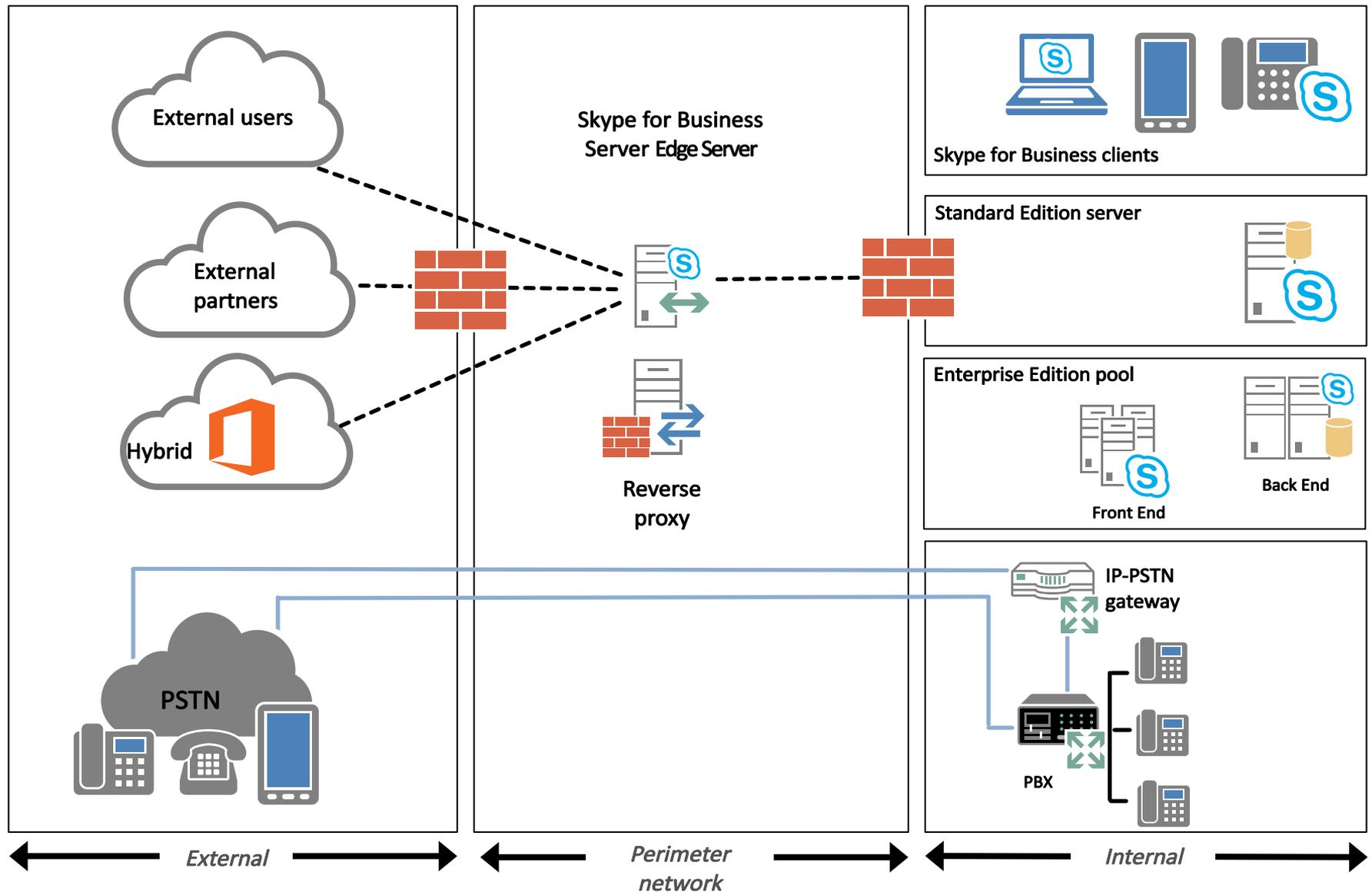
# Features and Architecture

# Skype for Business Server Features

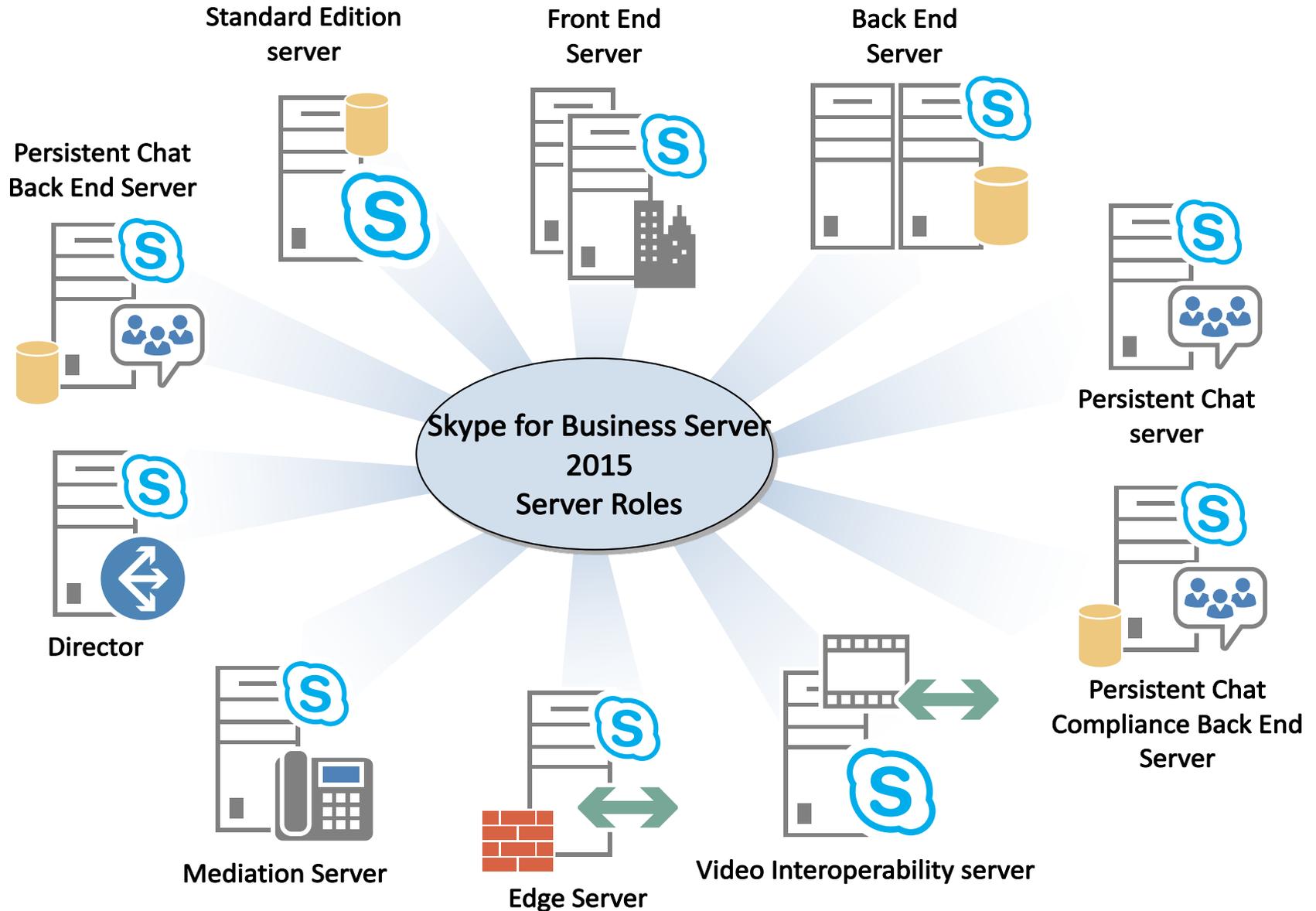
Skype for Business Server 2015 provides:

- Instant messaging
- Presence information
- Web conferencing
- Audio and video conferencing
- Integration with Microsoft Office 2013 or later apps
- Unified Contact Store
- Voice over Internet Protocol (VoIP) telephony
- Support for remote users
- Support for federation
- Server-side conversation history

# Skype for Business Server Architecture

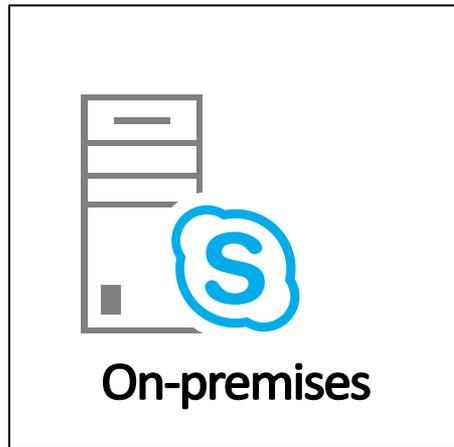


# Server Roles in Skype for Business Server



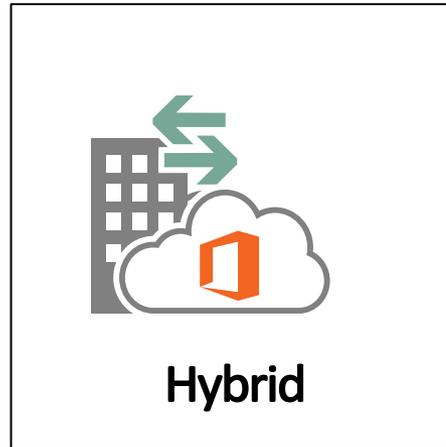
# On-prem vs. Cloud

# Skype for Business Deployment Options



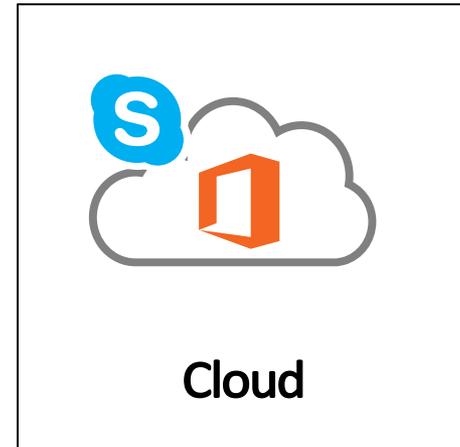
**On-premises**

Skype for Business  
Server 2015



**Hybrid**

Split-domain  
with shared  
SIP address space



**Cloud**

Skype for Business Online  
in Microsoft Office 365

Enabling gradual migration and coexistence between Skype for Business Server 2015 private and public cloud

# Overview of Skype for Business Online

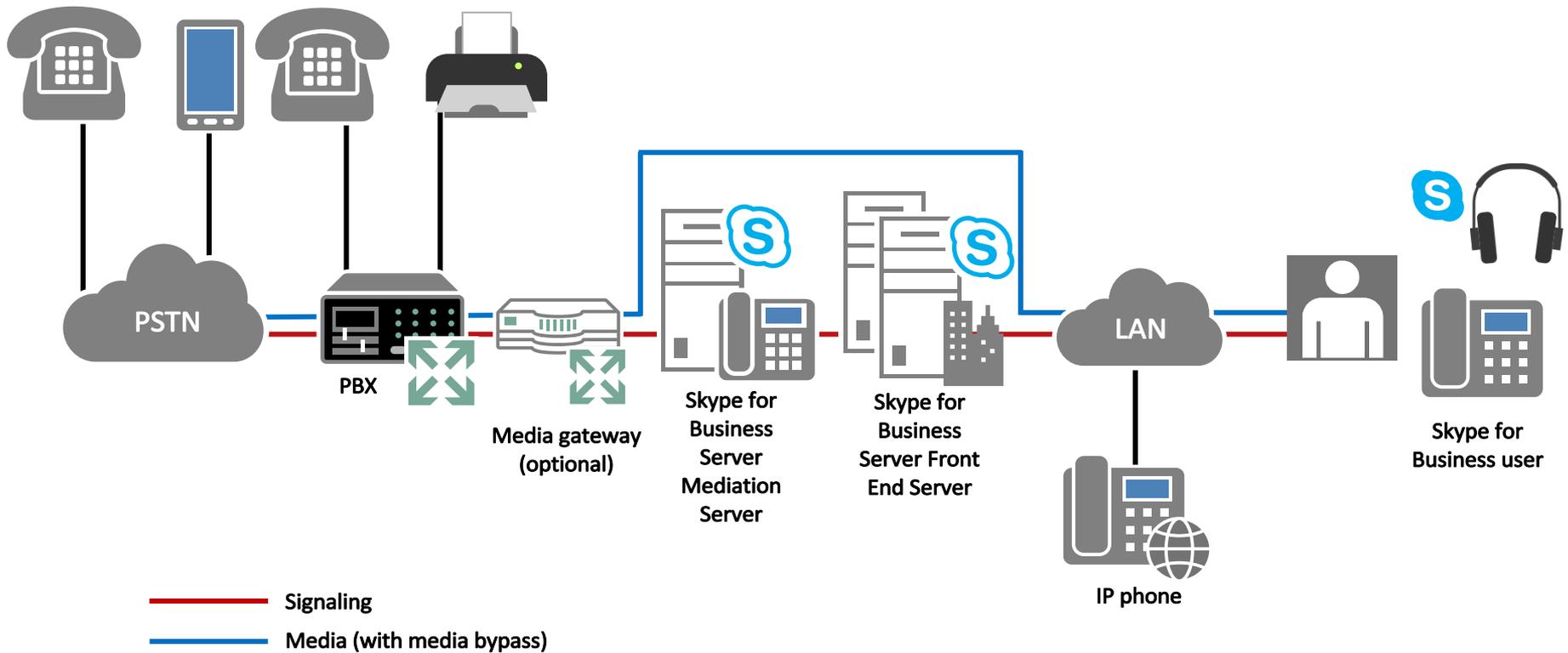
## Advantages:

- Cloud-based; Microsoft deploys and maintains the required server infrastructure
- Cost-effective and agile

## Disadvantages:

- The only admin tools available are Skype for Business admin center and the Windows PowerShell command-line interface
- Some features that are available in an on-premises deployment are not available online

# Overview of Enterprise Voice



# Skype for Business Server Protocols and Media

- SIP is an application-layer control or signaling protocol for creating, modifying, and terminating sessions among one or more participants
- Sessions include Internet-based phone calls, multimedia distribution, and multimedia conferences
- SIP-related RFCs and over 200 IETF Internet drafts and proposed standards form the basis of the Microsoft unified communications design

# Installation, Configuration and Administration

# Skype for Business Server Deployment Wizard

**Skype for Business Server 2015**  
Welcome to Skype for Business Server deployment.

**Deploy**

**Prepare Active Directory**  
Prepares the Active Directory schema, forest, and domain for Skype for Business Server.  
[Help](#)

**Install or Update Skype for Business Server System**  
Install or update a Skype for Business Server Server deployment member system.  
This option installs Skype for Business Server core components, and a local replica configuration store.  
Note: Before installing a server, you need to have a valid topology created and published.  
[Help](#)

**Prepare first Standard Edition server**  
Prepares a single Standard Edition server to host Central Management Service.  
Note: This task requires local administrator rights. This task does not apply to Standard Edition Servers that are not planned to host the Central Management Service, or for deployments that include Enterprise Edition.

**Install Administrative Tools**  
Installs the Administrative Tools to the current system.  
Your deployment requires at least one installation of the Topology Builder.

**Deploy Monitoring Reports**  
Deploy Monitoring Reports to selected SQL Server Reporting Services (SSRS) instances.

**Media Quality Dashboard**  
Lync Media Quality Dashboard is a portal that provides OLAP reports to Lync administrators to help troubleshoot Call Quality issues.

**First Run Videos**  
Click to view getting started videos.

**Documentation**  
Click to view the latest Skype for Business

[Back](#) [Exit](#)

# Skype for Business Server Topology Builder

Skype for Business Server 2015, Topology Builder

File Action Help

Skype for Business Server

- Contoso Headquarters
  - Lync Server 2010
  - Lync Server 2013
  - Skype for Business
    - Standard Edition
    - Enterprise Edition
      - pool.contoso.local
      - Director pools
      - Mediation pools
      - Persistent Chat
      - Edge pools
      - Trusted application servers
      - Video Interop Server pools
    - Shared Components
    - Branch sites

contoso.local

Not configured

Meeting URLs:

Active	Simple URL	
✓	https://dialin.contoso.local	

Administrative access URL:

Active	Simple URL	SIP domain
✓	https://meet.contoso.local	contoso.local

Not configured

Central Management Server

Central Management Server:	Active	Front End	Site
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# Skype for Business Server Control Panel

The screenshot displays the Skype for Business Server 2015 Control Panel. The window title is "Skype for Business Server 2015 Control Panel". The top navigation bar includes the Skype logo, the text "Skype for Business Server", and the user role "Administrator | Sign out" along with the version "6.0.9319.0 | Privacy statement".

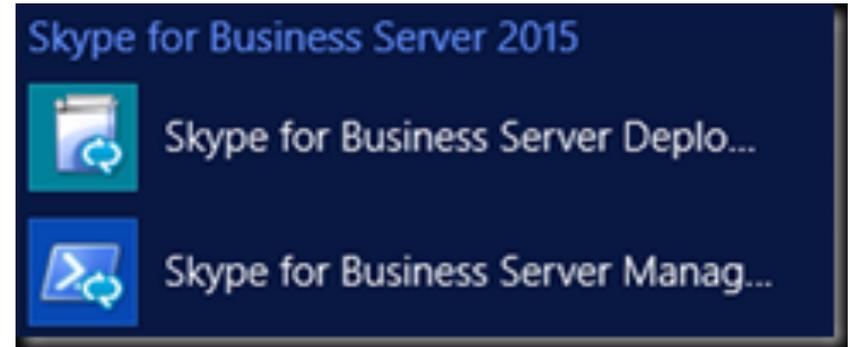
A left-hand navigation menu lists the following sections: Home, Users, Topology, IM and Presence, Persistent Chat, Voice Routing, Voice Features, Response Groups, Conferencing, Clients, Federation and External Access, Monitoring and Archiving, Security, and Network Configuration.

The main content area is divided into several sections:

- Welcome, Administrator**
  - [View your roles](#)
- Top Actions**
  - [Enable users for Skype for Business Server](#)
  - [Edit or move users](#)
  - [View topology status](#)
  - [View Monitoring reports](#)
- Connection to Skype for Business Online**
  - [Check recommendations from Office 365](#)
  - [You have not signed in to Office 365](#)
  - [Sign in to Office 365](#)
  - [Set up hybrid with Skype for Business Online](#)
- Getting Started**
  - [First Run Checklist](#)
  - [Using Control Panel](#)
  - [Skype for Business Server 2015](#)
  - [Using Office 365](#)
- Getting Help**
  - [Online Documentation on TechNet Library](#)
  - [Skype for Business Server Management Shell](#)
  - [Skype for Business Server Management Shell Script Library](#)
  - [Skype for Business Server Resource Kit Tools](#)
- Community**
  - [Forums](#)
  - [Blogs](#)

# Skype for Business Server Management Shell

Built on Windows PowerShell.  
Includes a comprehensive set of cmdlets for Skype for Business Server 2015.



Topology Builder and Skype for Business Server 2015 Control Panel implement subsets of these cmdlets



# Role of AD DS for Skype for Business Server

AD DS stores the following objects:

- User object schema extensions
- Schema extensions to maintain backward compatibility with previous supported versions
- User SIP URI, phone number, and other user settings
- Contact objects for applications (for example, the Response Group and Conferencing Attendant application)
- Security groups for RBAC
- Data published for backward compatibility
- A service control point for the Central Management store
- Kerberos Authentication Account

# How Skype for Business Server Uses DNS

## Skype for Business Server uses DNS to:

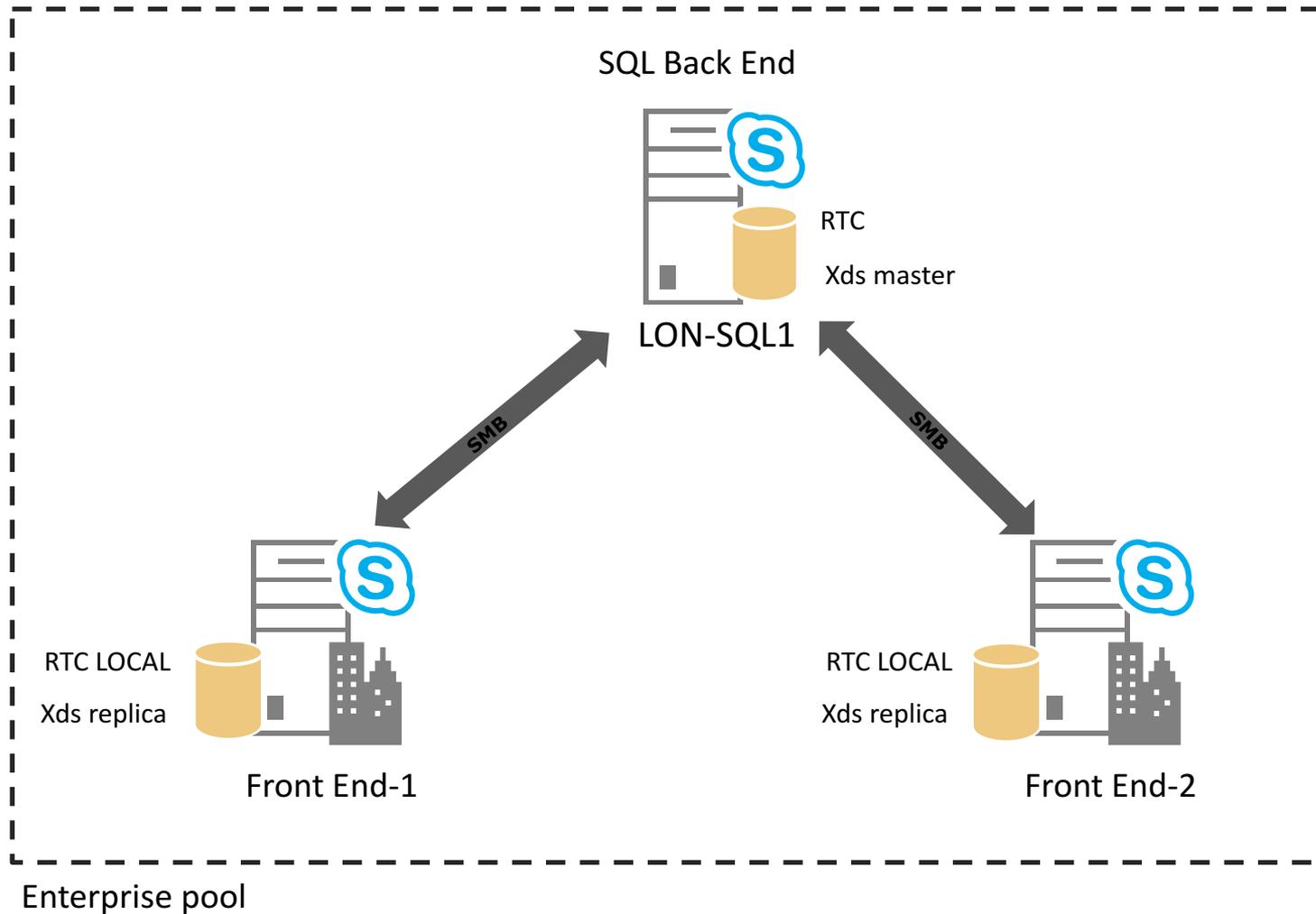
- Discover internal servers or pools for server-to-server communication
- Enable clients to discover the Front End pool
- Associate simple URLs for conferences
- Enable external servers and clients to connect to Edge Servers or reverse proxy for IM and conferencing
- Enable UC devices to obtain updates and to send logs
- Enable external UC devices to obtain updates
- Provide DNS load balancing

# How Skype for Business Server Uses Certificates

Skype for Business Server uses certificates for:

- TLS connections between client and server
- Mutual TLS connections between servers
- Federation that uses automatic DNS discovery of partners
- Remote user access for IM
- External user access to audio/video sessions, application sharing, and conferencing
- Communicating with web applications and Outlook Web App
- Mobile requests that use automatic discovery of web service
- Persistent Chat web services for file upload/download

# SQL Server Databases in Skype for Business Server



# Planning SIP Domains and Simple URLs

- You can use a SIP domain:
  - As a namespace for creating user IDs
  - For federation with other systems
- The three simple URLs that Skype for Business Server communications software supports:
  - meet. Used as the base URL for all conferences in the site or organization
  - dial-in. Enables access to the Dial-in Conferencing Settings webpage
  - admin. Enables quick access to the Skype for Business Server Control Panel

# Support for Multiple SIP Domains

- Three naming options for SIP URLs:
  - Option 1. A SIP domain for each simple URL  
<https://meet.contoso.com>, <https://meet.fabrikam.com>
  - Option 2. Simple URLs are based on a common name  
<https://lync.contoso.com/Meet>
  - Option 3. Separate meet URLs, but minimal DNS records  
<https://lync.contoso.com/contosoSIPdomain/Meet>  
<https://lync.contoso.com/fabrikamSIPdomain/Meet>
- The complexity for certificates increases with multiple SIP domains:
  - The web conference service only needs one reference in SAN
  - Dial-in URL needs only one reference in SAN
  - All other URLs require a SAN entry per SIP domain

# The Need for a Single SIP URI

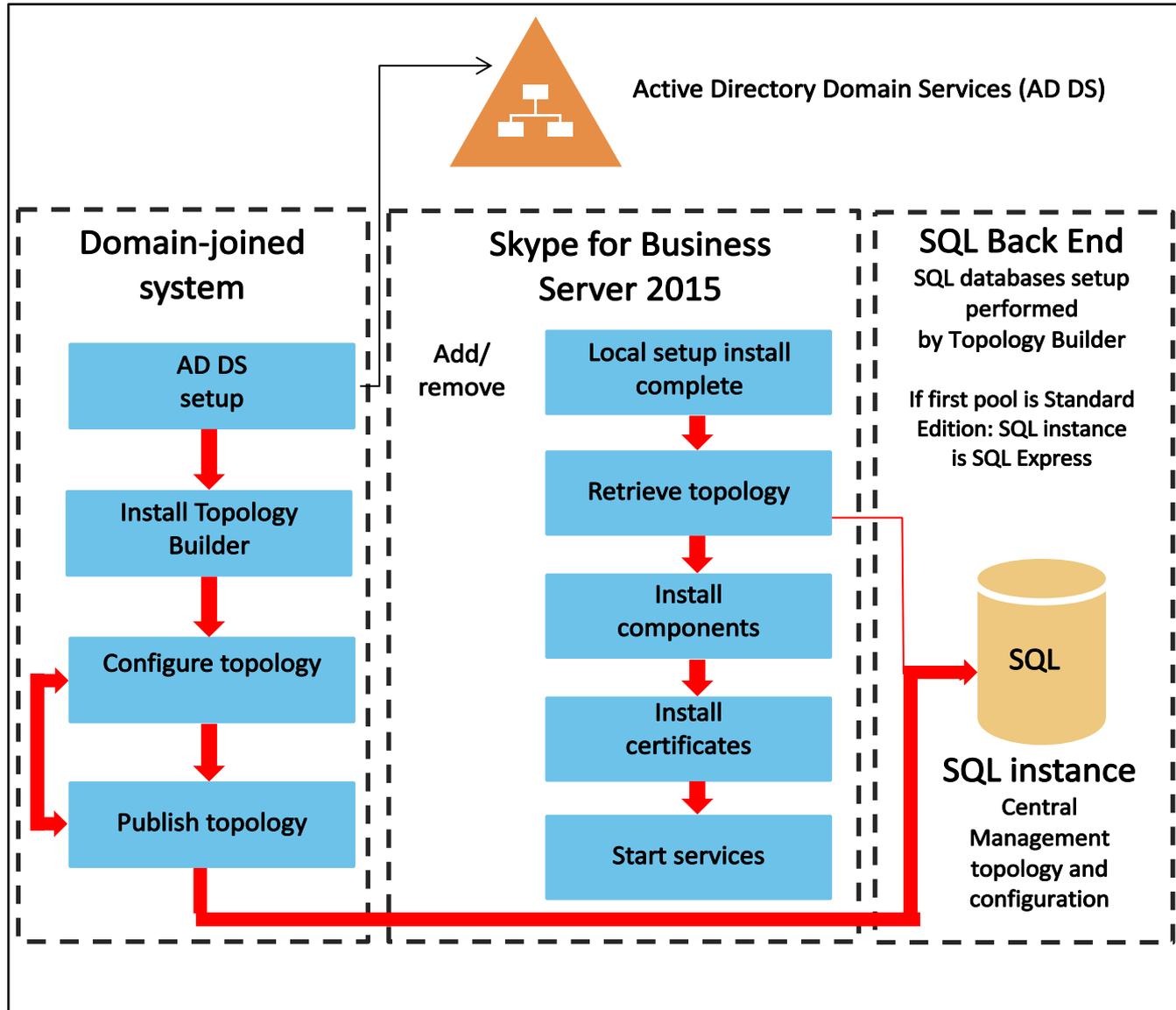
When planning your SIP domain names based on existing SMTP domain names, you should:

- Use only one or a few SIP domains
- Use one SIP domain for every SMTP domain
- Determine how to choose the SIP address for users who have different email addresses, for example:
  - [claus.hansen@contoso.com](mailto:claus.hansen@contoso.com)
  - [clauth@contoso.com](mailto:clauth@contoso.com)
  - [claus@contososales.com](mailto:claus@contososales.com)

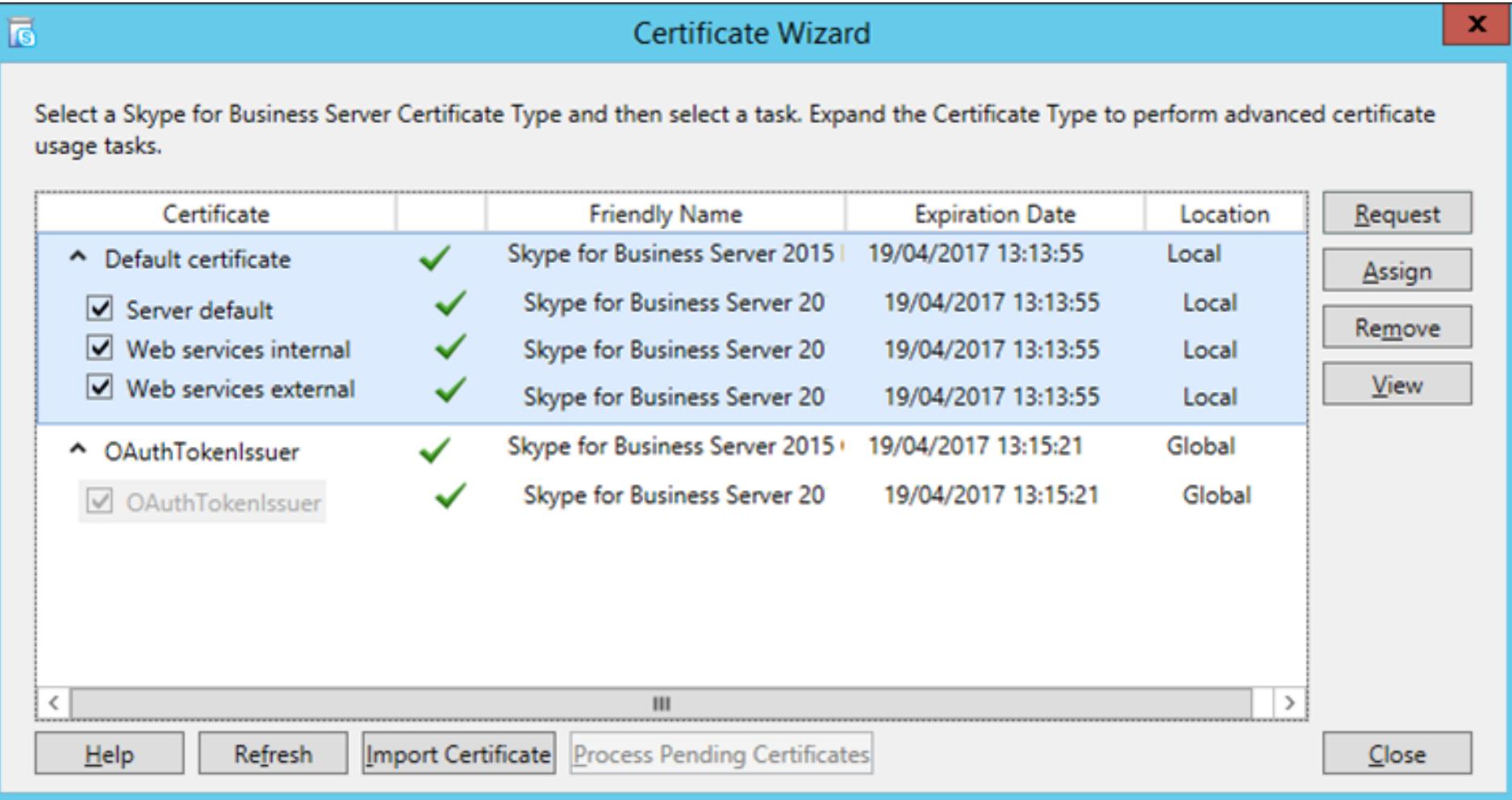
# Simple URL Certificate Impact

- Dial-in and meet URLs required on the subject alternative name list:
  - dialin.adatum.com
  - meet.adatum.com
  - meet.contoso.com
- Same listener on reverse proxy:
  - Lyncdiscover
  - Skype external web service
  - Office Online
- Wildcard certificate support

# GUI-Based Installation of Skype for Business Server 2015



# Requesting and Assigning Certificates



Select a Skype for Business Server Certificate Type and then select a task. Expand the Certificate Type to perform advanced certificate usage tasks.

Certificate		Friendly Name	Expiration Date	Location	
^ Default certificate	✓	Skype for Business Server 2015	19/04/2017 13:13:55	Local	<u>R</u> quest
<input checked="" type="checkbox"/> Server default	✓	Skype for Business Server 20	19/04/2017 13:13:55	Local	<u>A</u> ssign
<input checked="" type="checkbox"/> Web services internal	✓	Skype for Business Server 20	19/04/2017 13:13:55	Local	<u>R</u> emove
<input checked="" type="checkbox"/> Web services external	✓	Skype for Business Server 20	19/04/2017 13:13:55	Local	<u>V</u> iew
^ OAuthTokenIssuer	✓	Skype for Business Server 2015	19/04/2017 13:15:21	Global	
<input checked="" type="checkbox"/> OAuthTokenIssuer	✓	Skype for Business Server 20	19/04/2017 13:15:21	Global	

< ||| >

Help   Refresh   Import Certificate   Process Pending Certificates   Close

Skype for Business Server 2015 supports the following SQL Server high-availability options:

- Database mirroring
- AlwaysOn Availability Groups
- AlwaysOn failover cluster instances
- SQL failover clustering

# Conferencing

# Conferencing Modes in Skype for Business Server

- **A/V conferencing:**
  - Schedule real-time audio and video conferences without the need for external services
- **Web conferencing:**
  - Share and collaborate on documents, such as PowerPoint presentations, during online conferences
- **Dial-in conferencing:**
  - Join the audio portion of a conference through a phone that uses PSTN
- **Broadcast meetings:**
  - Meet with up to 10,000 participants by using the Microsoft Office 365 infrastructure

# Conferencing Features in Skype for Business Server

- **Client features:**

- Meeting Invite Customization
- Join Launcher
- Video enhancements
- VDI plug-in

- **Administrative features:**

- Meeting Invite Customization (Outlook scheduling add-in)
- Dial-out conferencing for users who are not Enterprise Voice-enabled
- Integration with Microsoft Office setup



# Conferencing Features in Skype for Business Server

- **Participant features:**
  - Presence while sharing
  - Merge This Call Into
  - View or show participants
- **Presenter features:**
  - Manage presentable content
  - Share content and lead meeting activities
  - Presence while sharing
  - Presentation mode



# Conferencing Clients

- Microsoft Lync 2010
- Microsoft Lync 2013
- Skype for Business 2015
- Skype for Business 2016
- Microsoft Lync Windows Store app
- Microsoft Lync for Mac 2011
- Mobile clients:
  - Windows
  - iOS
  - Android
- Tablets
- Skype for Business Web App



## Skype for Business Web App

Guest, type your name below

Remember me

Join the meeting

Sign in if you are from the organizer's company

# Outlook Integration



New Skype Meeting

Skype Meeting



Join Skype Meeting Options

Skype Meeting

Skype Meeting Options

Permissions  
Phone  
About

**Where do you want to meet online?** [Help me decide](#)

A new meeting space (I control permissions)  
Each meeting I create is held in a new space with unique entry info. I choose who gets in and what they can do in the meeting.

My dedicated meeting space (less secure)  
All meetings I create are held in the same space with the same entry info. People from my company can get into the meeting at any time as presenters.

**These people don't have to wait in the lobby:** [Why do I use this?](#)

Only me, the meeting organizer

Announce when people enter or leave

**Who's a presenter?**

Anyone (no restrictions)

Presenters can share content and let people into the meeting.

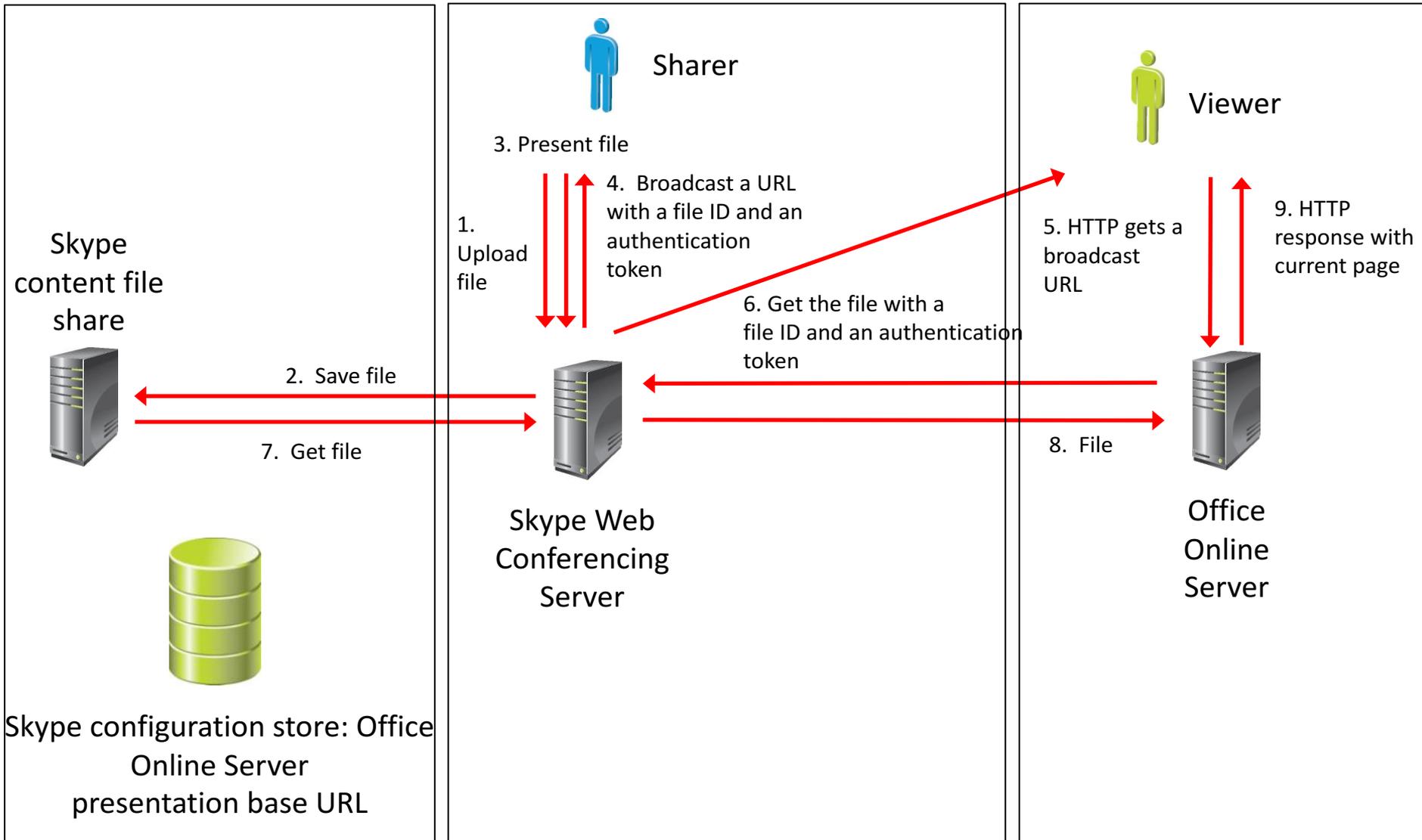
**Do you want to limit participation?**

Disable IM  
 Mute all attendees  
 Block attendees' video  
Presenters can share audio and video.

# Overview of Office Online Server

- Streams PowerPoint files in meetings
- Allows local playback
- Allows embedded video (H.264 and .mp4)
- Reduces bandwidth requirement compared to app sharing
- Used in read-only mode
- Can be shared with Microsoft SharePoint and Microsoft Exchange

# Office Online Server Integration



# Meeting Invitation Customization

The screenshot shows the Skype for Business Server administration console. The left sidebar lists navigation options: Home, Users, Topology, IM and Presence, Persistent Chat, Voice Routing, Voice Features, Response Groups, **Conferencing**, Clients, Federation and External Access, Monitoring and Archiving, Security, Network, and Configuration. The main area is titled 'Edit Meeting Configuration - Global' and includes a 'Commit' button and a 'Cancel' button. Below these are several configuration fields: 'Scope' (Global), 'Name' (Global), a checkbox for 'PSTN callers bypass lobby', 'Designate as presenter' (Company), checkboxes for 'Assigned conference type by default' and 'Admit anonymous users by default', 'Logo URL' (http://www...), 'Help URL', 'Legal text URL', and 'Custom footer text' (Custom text goes here).

Overlaid on the right is a preview of a meeting invitation. It features a blue header with a right-pointing arrow and the text 'Join Skype Meeting'. Below this is a paragraph: 'This is an online meeting for Skype for Business, the professional meetings and communications app formerly known as Lync.' The invitation includes a 'Join by phone' section with a blue link '+45 6996 [redacted] (Denmark)' and the text 'Danish (Denmark)'. A blue link 'Find a local number' is also present. The 'Conference ID: 36616' is displayed, followed by blue links 'Forgot your dial-in PIN?' and 'Help'. A large, bold, greyed-out text 'Custom Logo' is shown, with 'Custom text goes here' below it. A dotted line is at the bottom of the preview.

- Logo URL is for a customer-hosted logo icon
- Help URL is for a customer-hosted help/support page
- Legal disclaimer URL is for a customer-hosted legal information page
- Custom footer text

# Default Conferencing Policy

- Default global policy = Enterprise CAL
- Standard CAL requires reconfiguration:
  - Global conferencing policy = Standard CAL
  - User-level conferencing policy = Enterprise CAL
- Standard CAL limits include:
  - No app or desktop sharing
  - No web conferencing
  - No audio/video conferencing
  - Multiparty instant messaging and file transfer allowed

# Organizer and Participant Policy

Conferencing policy



Organizer policy



Participant policy

CONFERENCEING POLICY MEETING CONFIGURATION DIAL-IN ACCESS N

Edit Conferencing Policy - Global

Commit Cancel

Scope: Global

Name: \*

Global

Description:

▼ Organizer policy

▼ Participant policy

Edit Conferencing Policy - Global

Commit Cancel

Scope: Global

Name: \*

Global

Description:

▼ Organizer policy

^ Participant policy

Enable application and desktop sharing

Enable peer-to-peer file transfer

Enable peer-to-peer recording

Enable participants to join with multiple video streams

# Control Panel vs. Management Shell

- Settings found only in the Skype for Business Server Management Shell:
  - AudioBitRateKb (default 200)
  - VideoBitRateKb (default 50,000)
  - AppSharingBitRateKb (default 50,000)
  - FileSharingBitRateKb (default 50,000)
  - TotalReceiveBitRateKb (default 50,000)
  - MaxVideoConferenceResolution CIF/VGA (default VGA)
- Audio, video, file, and app sharing bit rate also applies to peer-to-peer sessions

# The Dial-In Conferencing Features in Skype for Business Server

- When no PC or other client for audio
- Using PSTN to get audio when:

Connect by using Skype for Business Web App (not installing the plugin):

Connect by dialing directly to the number in the meeting invitation:

## Join Meeting Audio

 Using my computer

 I will dial in to the meeting

Number:  
+45 [REDACTED]

Conference ID: 46716

Find a Local Number  
[https://dialin.\[REDACTED\]](https://dialin.[REDACTED])

## → [Join Skype Meeting](#)

This is an online meeting for Skype for Business, the professional meetings and communications app formerly known as Lync.

### Join by phone

[+45 6996 \[REDACTED\]](#) (Denmark)

Danish (Denmark)

[Find a local number](#)

Conference ID: 36616

[Forgot your dial-in PIN?](#) | [Help](#)

## Custom Logo

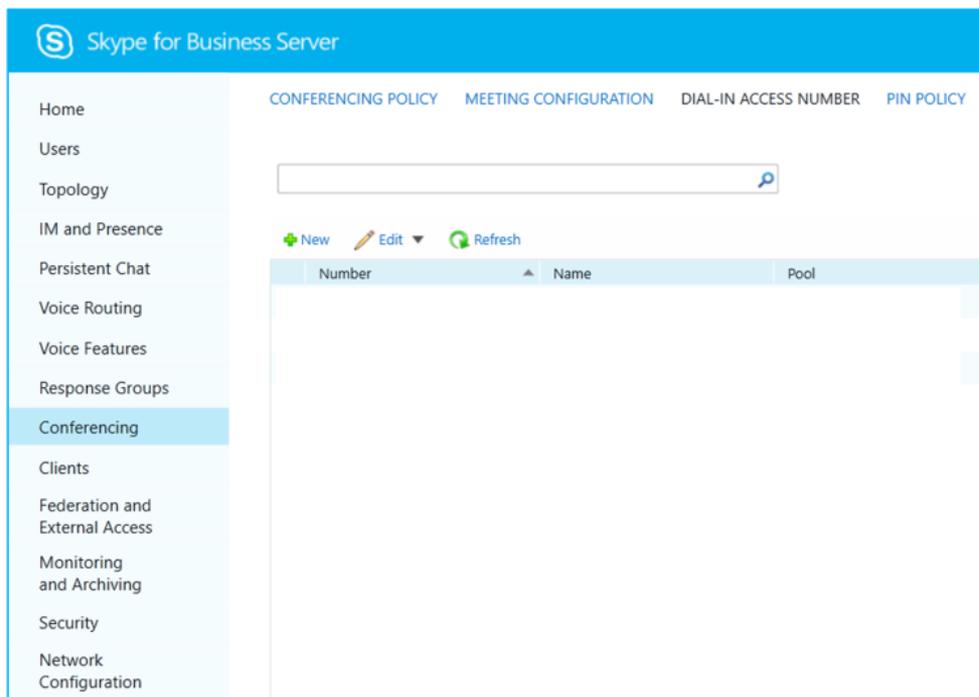
Custom text goes here

# Configuration Options for Dial-In Conferencing

- Dial-in conferencing depends on:
  - Application service
  - Conferencing Attendant service
  - Conferencing Announcement service
- Dial-in conferencing settings webpage:
  - Numbers, languages, and DTMFs
- Skype for Business Server Control Panel
- Skype for Business Server Management Shell

# Dial-In Conferencing Deployment Steps

- Enterprise Voice setup:
  - Gateway, trunk, dial plan, voice policy
- Configure dial-in access numbers:
  - Name, Line URI, SIP URI
  - Pool, languages, regions



The screenshot shows the 'New Dial-in Access Number' configuration form. At the top, there are 'Commit' and 'Cancel' buttons. The form contains several fields:

- Display number:** A text input field.
- Display name:** A text input field.
- Line URI:** A text input field containing 'tel:1234'.
- SIP URI:** A text input field containing 'sip:1234' followed by a dropdown menu.
- Pool:** A dropdown menu.
- Primary language:** A dropdown menu.
- Secondary languages (maximum of four):** A large text area with 'Add...' and 'Remove' buttons.
- Associated Regions:** A section with 'Add...' and 'Remove' buttons, and a table with a 'Region' column.



# Overview of the Lync Room System

- Available through Microsoft Partners
- Microsoft delivers the software and interface
- A full VTC system—  
HD, touch, camera,  
audio, web



- Connects seamlessly to Exchange and Skype for Business Server 2015
- Configured as a resource mailbox in Exchange
- Requires specific integration steps

# LRS Home Screen

11:00<sup>am</sup>      11:30<sup>am</sup>      12:30<sup>pm</sup>      1:00<sup>pm</sup>

Meeting	<p>SCW weekly status meeting</p> <p>Alan Reightman 30 min</p> <p>Join Meeting</p>	<p>Design draft presentation for 3 group session</p> <p>Rebecca Mayor 1 hour</p> <p>Join Meeting</p>	<p>Daily Scrum</p> <p>Jason Jones 30 min</p> <p>Join Meeting</p>	<p>Private Meeting</p> <p>Brian Thomas 1 hour 30 mins</p> <p>Join Meeting</p>
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Lync™

11:35 AM

Thursday, August 01, 2014 | ■ Conf Room Venus

 Meet Now     Start Whiteboard     Dial Pad     Room PC View     Options

# LRS Administrative Web Portal

Access through <https://webint.adatum.com/LRS>

Lync Room System Admin Portal								
Room Name	Tag	Health	Status	Next Meeting	LRS Version	Manufacturer	Model	Last Refresh
sip:cf123456@contoso.com		○	Offline		15.2	Fabrikam, Inc.		
sip:lrsmeet2@contoso.com		○	Offline		15.2	Fabrikam, Inc.		
LRS Meeting Room Four	0	●	Away		15.3			Aug 3, 2013 1:06
sip:cf234567@contoso.com		○	Offline					
Lab 1121	CR 1121	●	Away		15.2	Contoso	Lync Room System	Aug 3, 2013 1:06
LRS Meeting Room Three	0	●	Away		15.2			Aug 3, 2013 1:05
sip:cf34567@contoso.com		○	Offline					
Conf Room 2231 (10) AV LRS	CR 2231	●	Away		15.2	A. Datum Corp		Aug 3, 2013 1:06
sip:cf456789@contoso.com		○	Offline		15.2	Trey Research		
Conf Room 1143 (10) AV LRS	CR 1143	●	Away		15.3	Contoso		Aug 3, 2013 1:06
Conf Room 1341 (10) AV LRS	CR 1341	●	Away		15.2	A. Datum Corp		Aug 3, 2013 1:06
sip:cf567890@contoso.com		○	Offline		15.2	A. Datum Corp		
sip:cf678901@contoso.com		○	Offline		15.2			
sip:cf789012@contoso.com		○	Offline		15.2	A. Datum Corp		

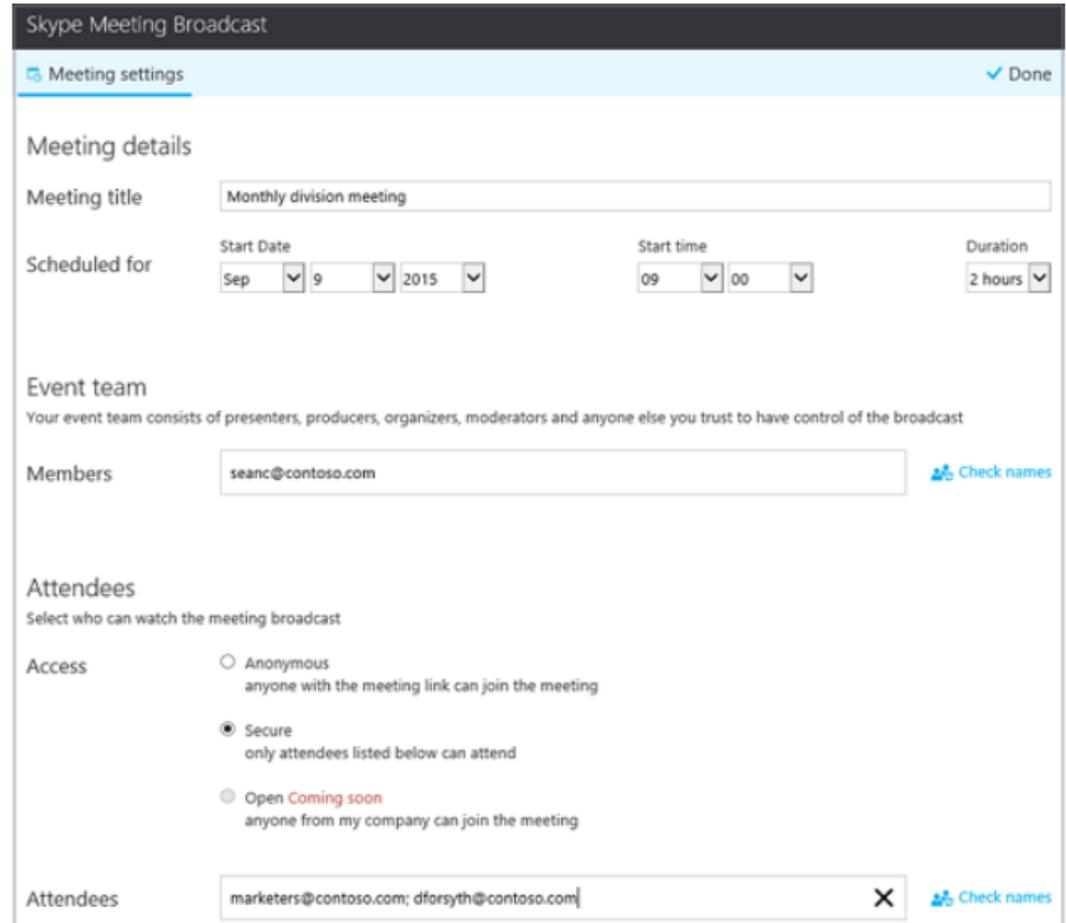
# Skype for Business for Large Meetings

- Skype for Business large meetings support:
  - More than 250 participants
  - Up to 1,000 participants (not a hard limit)
- Large meetings require:
  - No users on reserved pool, only the scheduling account
  - Scheduling account is for setting up large meetings
  - All meetings occur on the organizer's pool
  - Scheduling account should not have any contacts in Skype for Business; others should not add the scheduling account to their own list

# Overview of Skype Meeting Broadcast

## Setting up a hybrid solution to work with Skype Meeting Broadcast:

- Configure access to LyncOnlineResources (hybrid configuration)
- Add allowed domains to avoid throttling on incoming messages
- Schedule by using the <https://broadcast.skype.com> web service

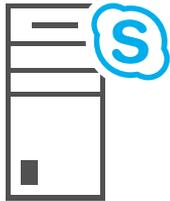


The screenshot displays the 'Skype Meeting Broadcast' settings page. At the top, there is a 'Meeting settings' tab and a 'Done' button. The 'Meeting details' section includes a text field for 'Meeting title' containing 'Monthly division meeting'. Below this, the 'Scheduled for' section has three dropdown menus: 'Start Date' (Sep 9, 2015), 'Start time' (09:00), and 'Duration' (2 hours). The 'Event team' section contains a text field for 'Members' with 'seanc@contoso.com' and a 'Check names' link. The 'Attendees' section is titled 'Attendees' and includes the instruction 'Select who can watch the meeting broadcast'. Under 'Access', there are three radio button options: 'Anonymous' (unselected), 'Secure' (selected), and 'Open Coming soon' (unselected). At the bottom, there is a text field for 'Attendees' containing 'marketers@contoso.com; dforsyth@contoso.com' and another 'Check names' link.

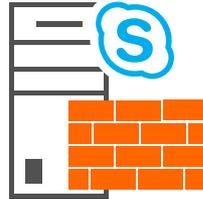
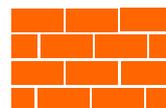
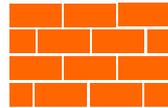
# External Access and Federation

# Edge Server and Reverse Proxy

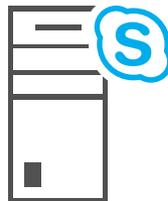
Internet



Perimeter network

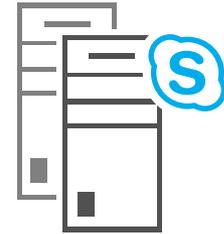


Reverse proxy

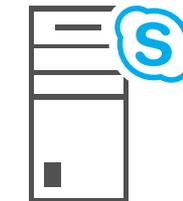


Edge Server

Internal network



Front End



Director

- Remote users
- Federated users
- PIC (Skype)
- XMPP
- Anonymous/guest users

- External access policies
- Access Edge configuration

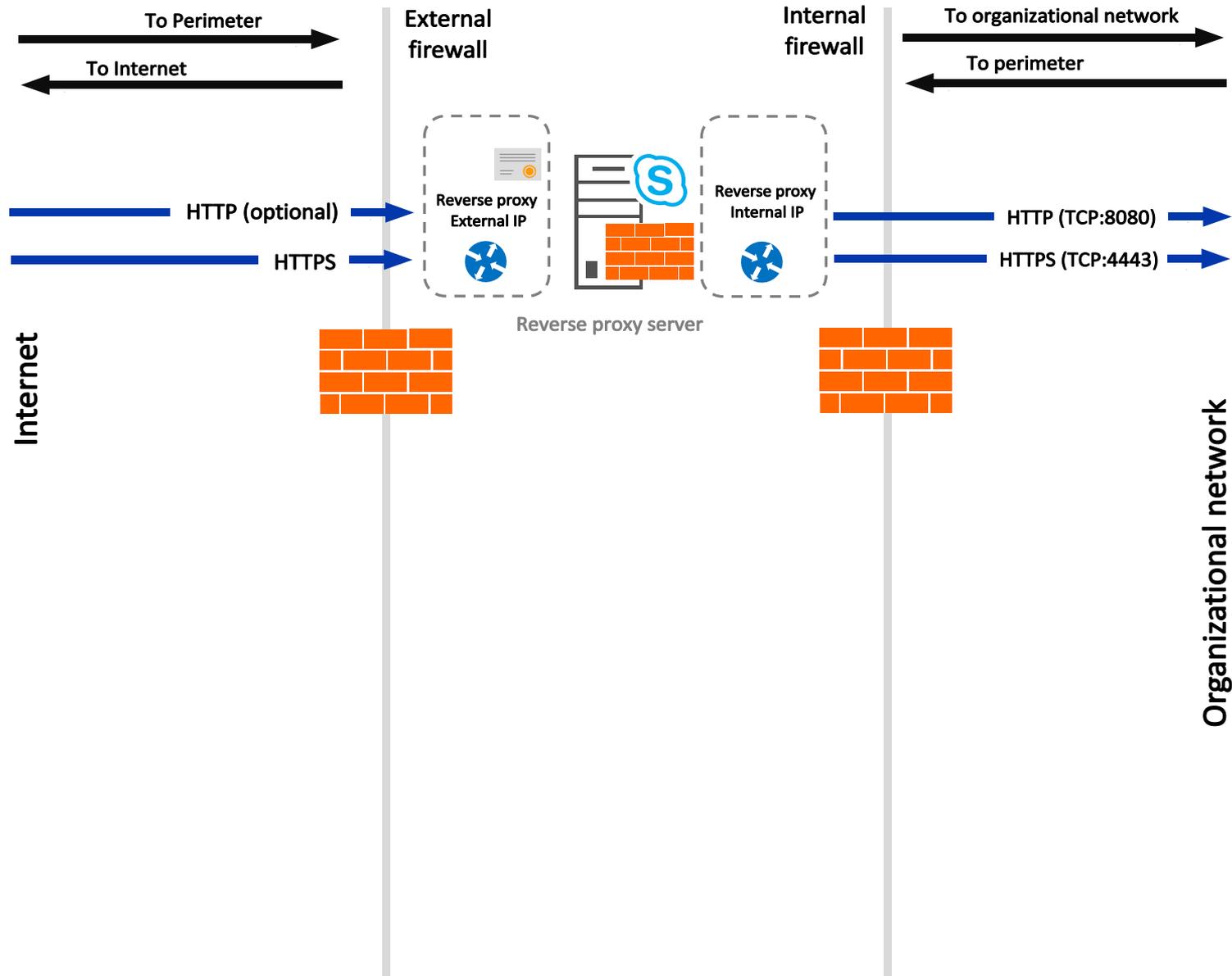
# Defining Remote Users

- Remote users:
  - From the internal organization
  - Authenticate in internal AD DS
  - Same experience as internal users
- Federated users and authenticated users:
  - Authenticate in their respective infrastructures
  - Display information controlled by respective administrators
- Skype Public (PIC):
  - No conference: one-to-one only
  - Presence, IM, audio, video
- XMPP:
  - IM and presence only
- Anonymous and guest:
  - Conference only (IM, Audio, Video, Sharing, and so on)

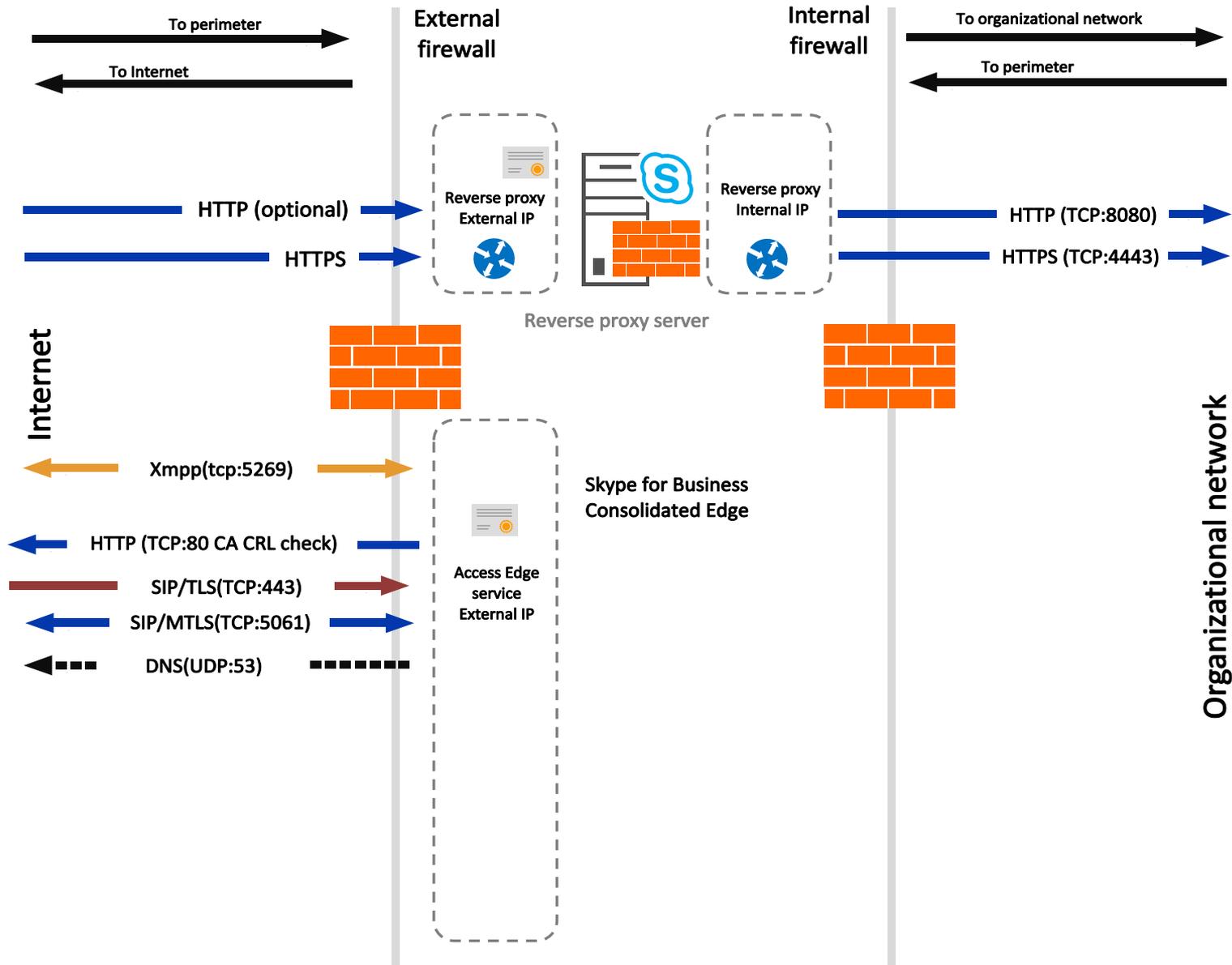
# Edge Server Services

- The Skype for Business Server Edge Server role requires two network adapters:
  - One configured as the external, Internet-facing network adapter
  - Another configured as the internal, LAN-facing network adapter
- If you can use three public IP addresses per Edge server, most of the traffic can communicate on port 443
- If you set aside only one public IP address per Edge server, traffic differentiates based on port rather than IP address

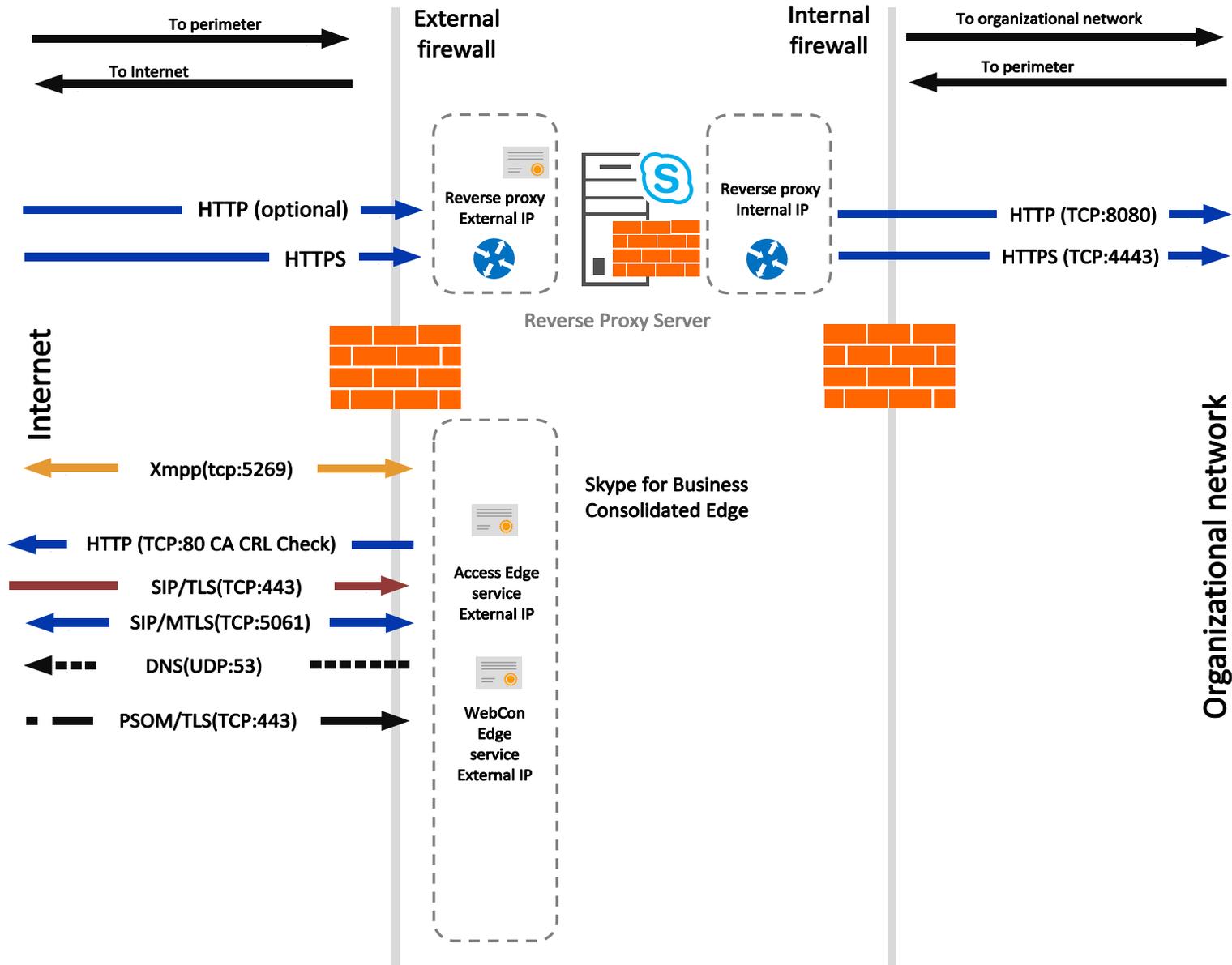
# Edge Server Services



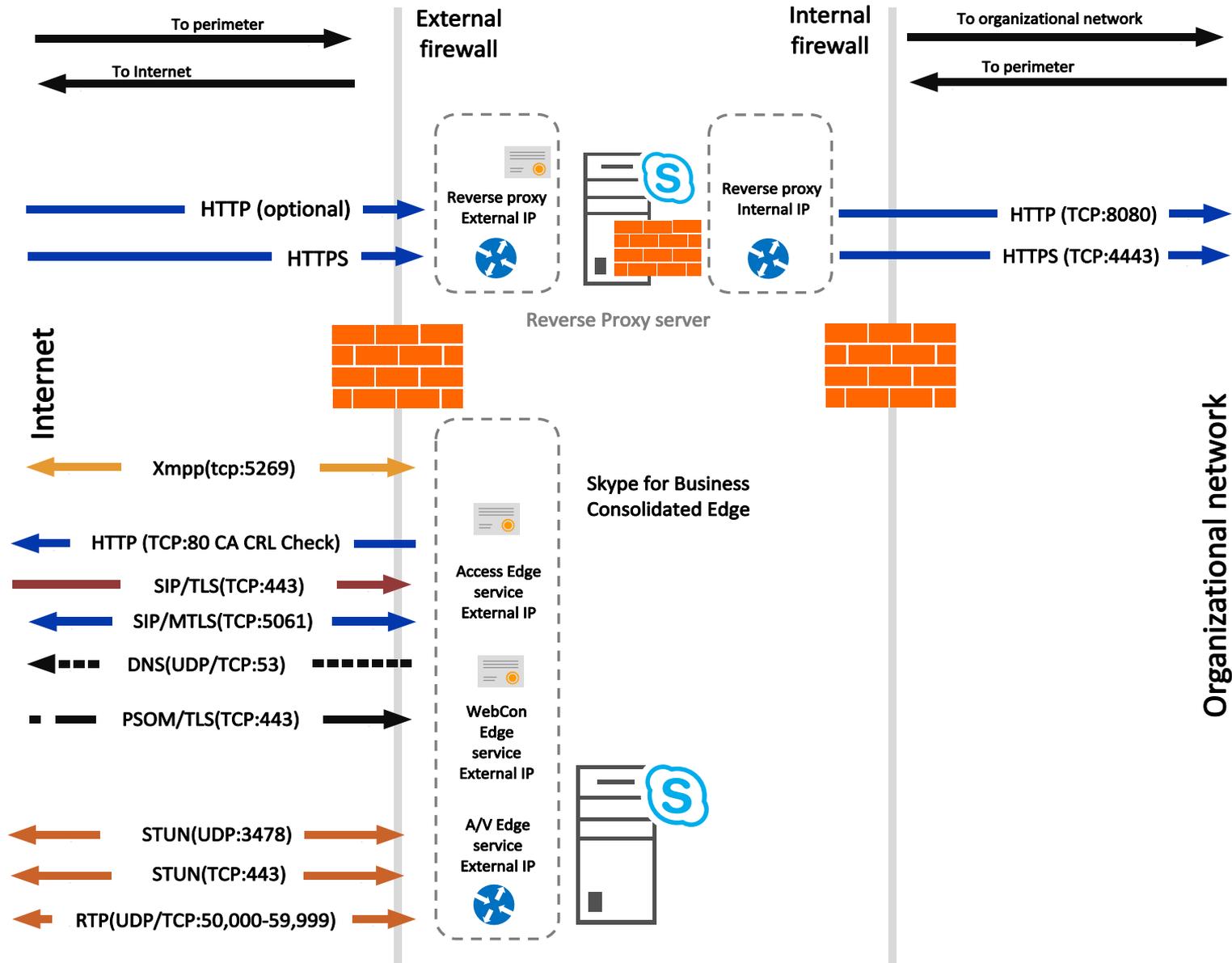
# Edge Server Services



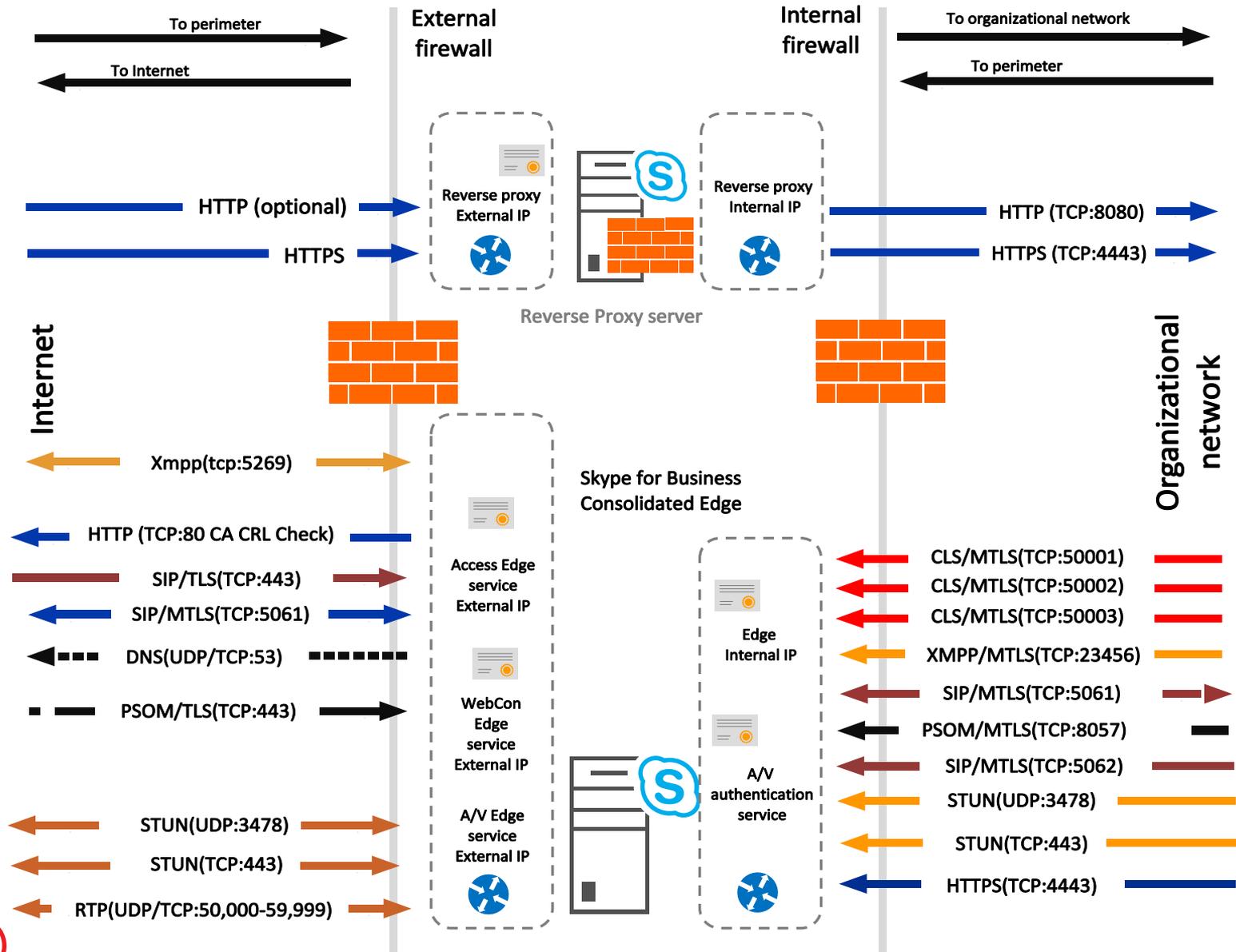
# Edge Server Services



# Edge Server Services



# Edge Server Services



# Network Address Translation

- External firewall handles NAT
- Public IP address, configured by using Skype for Business Server Topology Builder
- NAT-enabled public IPv4 address will be used in SDP

The screenshot shows the 'Edit Properties' dialog box for a Skype for Business service. The dialog is divided into two main sections: 'General' and 'A/V Edge service'. The 'General' section is currently selected and shows the following configuration:

- Service: conf.adatum.com
- Port: 443 (TLS)
- IPv4 address: 192.168.1.6
- IPv6 address: (empty)

The 'A/V Edge service' section shows the following configuration:

- Service: av.adatum.com
- Port: 443 (TCP)
- IPv4 address: 192.168.1.7
- IPv6 address: (empty)

The 'NAT-enabled public IPv4 address' field is highlighted with a red box, indicating that this field is the focus of the configuration. The dialog also includes a 'Help' button and 'OK' and 'Cancel' buttons at the bottom.

# Internal and External DNS

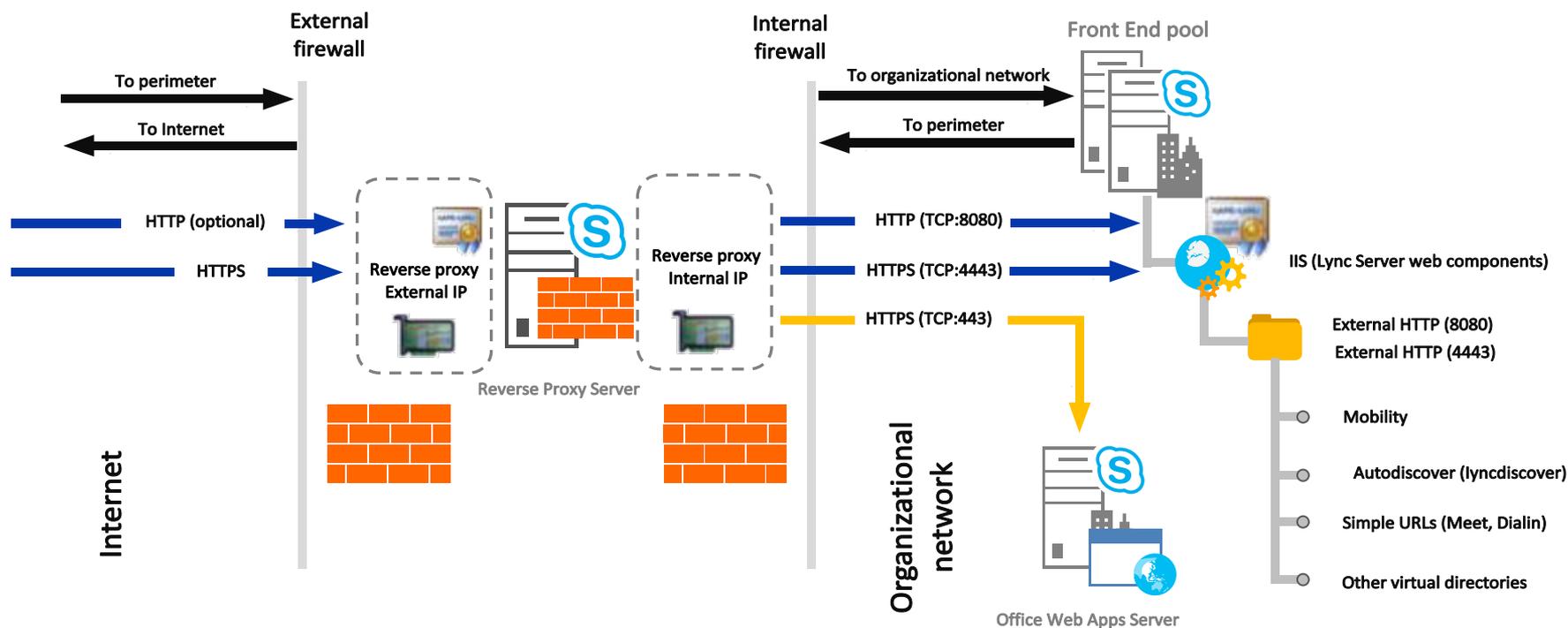
- Split-brain DNS:
  - External and internal DNS resolves the same name differently
- Typical external service (SRV) resource records include:
  - `_sip._tls.adatum.com SRV 0 0 443 sip.adatum.com`
  - `_sipfederationtls._tcp.adatum.com SRV 0 0 5061 sip.adatum.com`
  - `_xmpp-server._tcp.adatum.com SRV 0 0 5269 sip.adatum.com`
- Firewall must block internal Skype for Business clients from connecting to external Edge server addresses

# Configuring Edge Server Certificates

- Public certificates used on the external network adapter with three IP addresses:
  - Sip.adatum.com
  - Conf.adatum.com
  - If servers are pooled, same public certificate and private key on servers
  - Use a public CA, which external parties trust
- Internal, private certificates on the internal network adapter:
  - Individual server names
  - Pool name
  - If servers are pooled, same private certificate and private key on servers
  - Use a private CA if internal clients only need trust

# Using Reverse Proxy in Skype for Business

## Enterprise perimeter network



# Configuring Reverse Proxy

- Reverse proxy:
  - Requires a TLS/443 listener on the Internet
  - Inspects traffic and only allows true HTTPS
  - Port redirection from external 443 to internal 4443
  - Port redirection from external 80 to internal 8080 but only if allowing unencrypted connections!
  - Performs additional inspection depending on make and brand
  - Resides in the perimeter network
- Microsoft offerings for reverse proxy:
  - Web Application Proxy, which is a Remote Access component in Windows Server 2012 R2 that requires AD FS
  - IIS-ARR, which is a downloadable add-in to IIS

# Configuring Reverse Proxy Certificates

- Only external clients and participants use a reverse proxy
- Use public certificates when using HTTPS
- For the TLS channel to establish a connection, a reverse proxy must trust the internal CA
- Wildcard support is limited

# Using the Windows Server Web Application Proxy

- New in Windows Server 2012 R2
- Requires AD FS
- Skype for Business Server uses pass-through authentication
- IIS ARR as an alternative?

# Mobile Device Capabilities

- Skype for Business Mobile app
- Lync 2013 mobile
- Presence and IM
- Wi-Fi and/or data channel for VoIP and video
- If VoIP is unavailable, use PSTN callback
- Server-side conversation history
- Calendar for today and tomorrow
- Mobility policy

# Autodiscover Service

- Automatic discovery = lyncdiscover and lyncdiscoverinternal
- Mobile devices are directed to the external web service by default
- Hairpinning occurs when an internal client goes out and back in through the same firewall
- **Set-CsMcxConfiguration** used to configure whether the mobility service web service publishes the internal or external web service URL

# Configuring a SIP Federated Domain

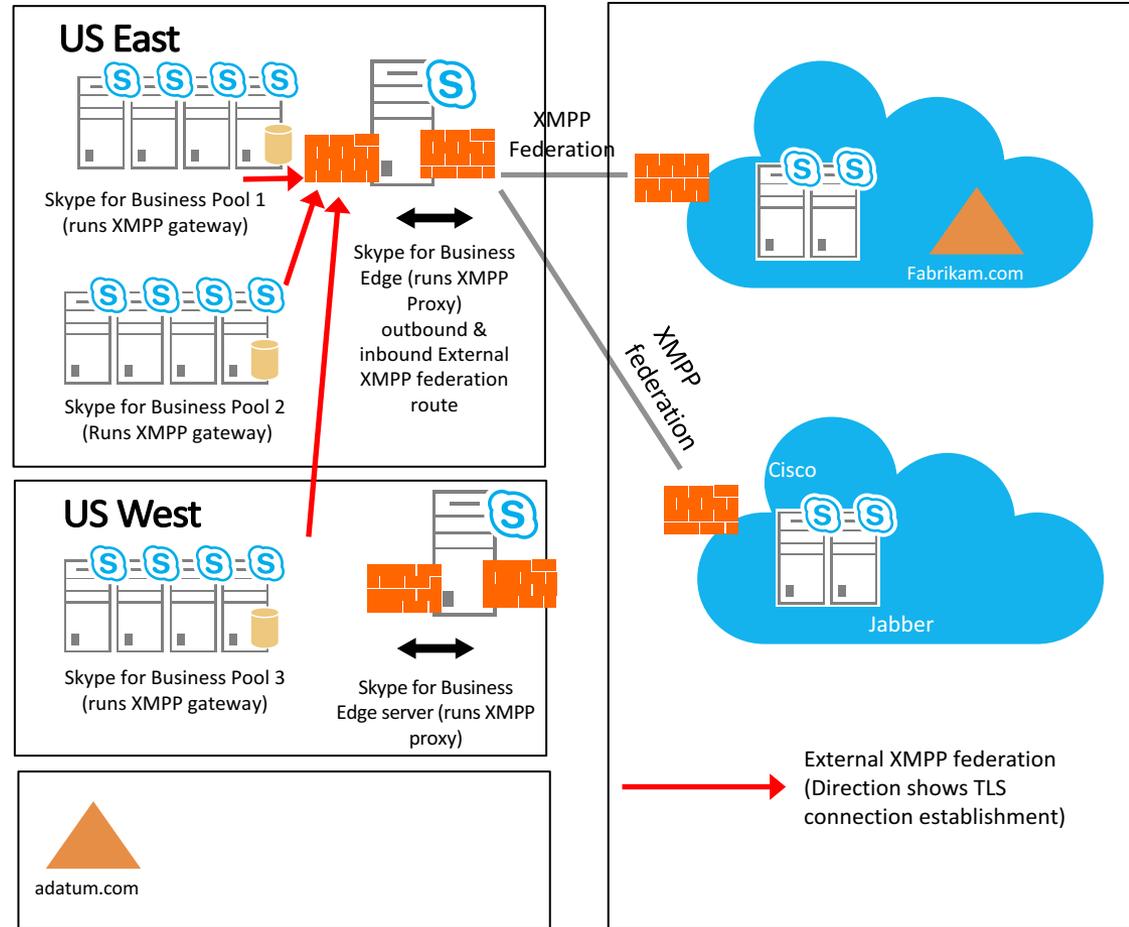
- Allowed Partner Server allows communication with domains with configured Edge server addresses
- Allowed Partner Domain enables communication with allowed domains and automatic discovery of Edge server addresses and port
- Discovered Partner Domain enables automatic discovery of partners by using DNS

# PIC Provisioning

- <https://pic.lync.com>
- Required information to initiate the PIC process:
  - Microsoft agreement number
  - Access Edge service FQDN
  - SIP domains
  - Any additional Access Edge service FQDNs
  - Contact information

# XMPP Federation

- XMPP natively integrates with the Skype for Business Front End Server and Edge Server:
  - A separate gateway is not necessary
  - Integrated setup and management
- Scale-out and high availability are consistent with the rest of Skype for Business
- Cisco and Jabber interoperability



# Voice on-prem and in the Cloud

# Background: History of Microsoft Voice Solutions

- Traditional telephony operates on “circuit switched” network requiring dedicated circuit for each conversation
- Data networks allow multiplexing multiple streams of data over the same medium
- VoIP brings voice on to the data network with some challenges that must be handled – connect to the PSTN
- Microsoft’s solutions that work with VoIP technology



# Overview of Voice Architecture Options

- On-Premises integration with:
  - IP/PSTN Gateway
  - IP-PBX
  - Session Border Controller to ITSP via SIP Trunk
- In-cloud services offered as part of Office 365
  - Cloud PBX with PSTN Calling
  - Cloud PBX with On-Premises PSTN Connectivity
  - PSTN Conferencing

# Background Definitions

- Public Switched Telephone Network (PSTN)
- Private Branch eXchange (PBX)
- Voice over IP (VoIP)
- Session Initiation Protocol (SIP)
- Internet Telephony Service Provider (ITSP)

# Office 365 Core Components



Exchange

Exchange  
Online



Skype for Business

Skype for  
Business  
Online



Office 365

Office 365  
ProPlus



SharePoint

SharePoint  
Online

Azure AD

# Skype for Business Deployment Options



**Cloud**

Microsoft Office 365,  
Skype for Business Server  
2015

Partner-hosted multi-  
tenant



**Split Domain**

Single domain and directory  
Users split—server / online



**On-premises**

Skype for Business  
Server 2015  
Private cloud / dedicated

Enabling gradual migration and coexistence between  
Skype for Business Server 2015 and Skype for Business Online

# The Office 365 Tenant Account

- An administrative presence in the Office 365 cloud
- Required to acquire and provision Office 365 cloud based services
- Requires providing a valid e-mail account for verification

# Azure Active Directory and Azure AD Connect

- Synchronizes changes between Active Directory Domain Services (AD DS) on premises and Azure Active Directory Services (AADS)
- Provides for easier Identity Management between the two directories
- Azure Active Directory Connect
  - Replaces DirSync from earlier Office 365 Split Domain type deployments
- Active Directory Domain Services becomes the authoritative source for information
- Recommended to also enable Password Synchronization

# Skype for Business Voice Workloads

- Enterprise Voice (on-premises)
- Dial-in Conferencing (on-premises)
- Cloud PBX with PSTN Calling
- Cloud PBX with On-Premises PSTN Connectivity
  - Cloud PBX with existing Skype for Business Server Deployment
  - Cloud Connector Edition
- PSTN Conferencing

# Skype for Business PSTN Connectivity Options



Online

- Cloud PBX in Office 365
- PSTN services provided by Microsoft



Split Domain

- Users hosted in Office 365
- Customer PSTN services integrated on-premises



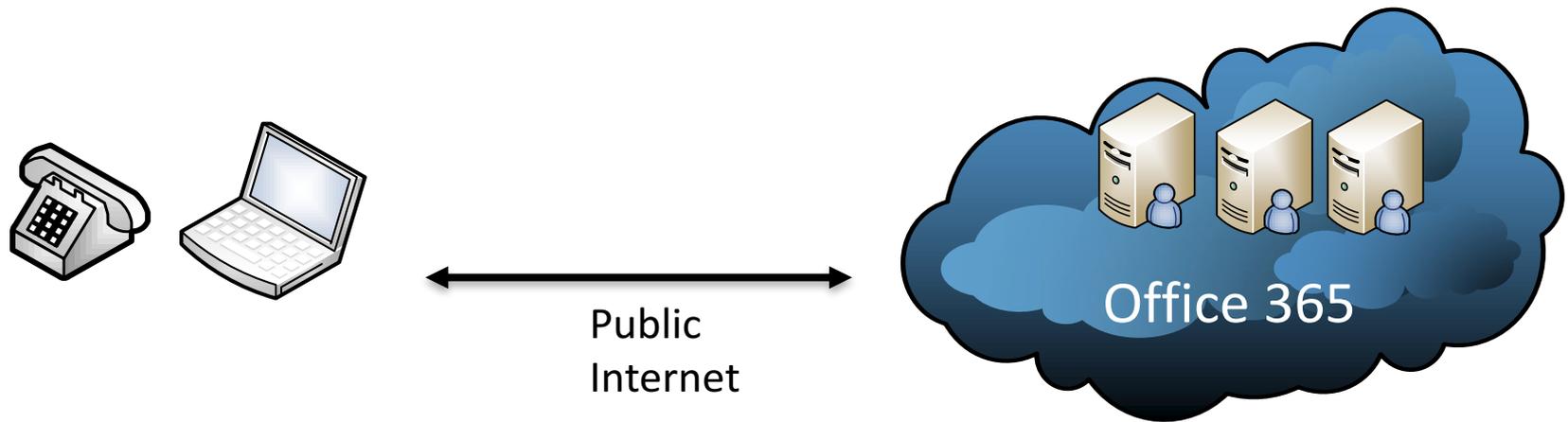
On Premises

- End-user features & customer PSTN services integrated on-premises

# Cloud PBX with PSTN Calling

Two core parts always in the cloud

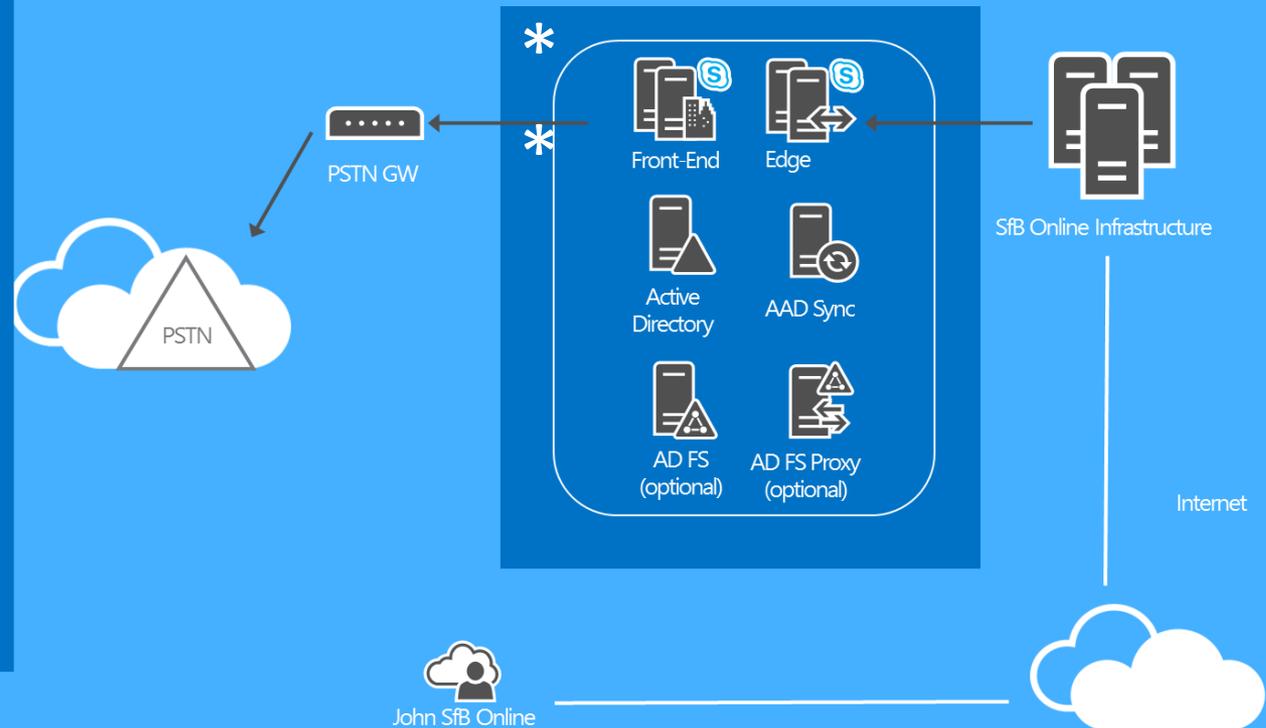
- Cloud-based call control for end-users
- Tenant admin user experience for IT Pros



Independent of PSTN Services and On-Premises PSTN Connectivity

# Cloud PBX with On-Premises PSTN Connectivity

Enables Public Switched Telephone Network (PSTN)/PBX connectivity for cloud users through the PSTN infrastructure that is part of the on-premises deployment



\*\*On-Premises Environment could also be supported by Cloud Connector Edition

# User Management in the Cloud

- Office 365 Portal

Home > Active users

[+ Add a user](#) [More](#) Filters All users  [Export](#)

<input type="checkbox"/>	Display name ^	User name	Status	Sync Type
<input type="checkbox"/>	Aik Chen	AikC@Lab28211.O365Ready.com	Unlicensed	Synced with...
<input type="checkbox"/>	Alex Darrow	AlexD@Lab28211.O365Ready.com	Skype for Business PSTN Dom...	Synced with...
<input type="checkbox"/>	Alex Wu	AlexW@Lab28211.O365Ready.com	Unlicensed	Synced with...
<input type="checkbox"/>	Allie Bellew	AllieB@Lab28211.O365Ready.com	Unlicensed	Synced with...
<input type="checkbox"/>	Amy Alberts	AmyA@Lab28211.O365Ready.com	Office 365 Enterprise E5	Synced with...
<input type="checkbox"/>	Arlene Huff	ArleneH@Lab28211.O365Ready.com	Unlicensed	Synced with...
<input type="checkbox"/>	Aziz Hassouneh	AzizH@Lab28211.O365Ready.com	Unlicensed	Synced with...
<input type="checkbox"/>	Bonnie Kearney	BonnieK@Lab28211.O365Ready.com	Unlicensed	Synced with...
<input type="checkbox"/>	CIE Administrator	admin@SkypeAir1830.onmicrosoft.com	Skype for Business PSTN Dom...	In cloud

- Skype for Business Online

## Skype for Business admin center

dashboard

**users**

organization

voice

dial-in conferencing

online meetings

tools

reports



<input type="checkbox"/>	DISPLAY NAME ^	USER NAME	LOCATION
<input type="checkbox"/>	Alex Darrow	AlexD@Lab28211.O365Ready.com	US
<input type="checkbox"/>	CIE Administrator	admin@SkypeAir1830.onmicrosoft.com	US
<input type="checkbox"/>	Garth Fort	GarthF@Lab28211.O365Ready.com	US
<input type="checkbox"/>	Janet Galore	JanetG@Lab28211.O365Ready.com	US

Děkuji za pozornost