Polycom® RealConnect™
A preferred approach to Skype for business integration
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A journey or a destination?

Unified communications is a journey, not a destination. For many organizations, this begins not in a green field but in the midst of a bustling metropolis already bristling with UC technologies. Communications-enabled business processes, used by teams with established workflows and usage patterns and expectations, deliver value in the form of cost savings and productivity gains.

The journey is not so much about addressing an end-state of technical challenges around the integration of disparate technologies as it is about driving extension and improvement of ongoing investments.

Introduction

As a strategic partner for more than 10 years, Polycom has provided a wide array of solutions for the Microsoft Unified Communications platform and is currently the only solution partner that offers voice, video and platform solutions that directly integrate with Skype for Business. Polycom solutions have also helped Microsoft customers fill the interoperability gap and connect to existing video conferencing endpoints and infrastructure. This document focuses on Polycom’s video interoperability solution that allows Skype for Business/Lync clients to connect seamlessly with various enterprise video infrastructure and endpoints. It also covers recent trends affecting the connectivity between Skype for Business and other H.323/SIP standards-based endpoints.

Polycom’s platform solution, including Polycom® RealConnect™, is supported in Microsoft Lync 2013 as well as the Skype for Business Server 2015 environment. This document uses the term “Skype for Business” to refer to both versions, unless otherwise specified.
Integration strategies

1. Native/interoperable Skype for Business room systems

Polycom has been developing solutions for direct integration/interoperability with Microsoft UC for more than 10 years, and currently offers the choice of native Skype Room Systems such as the Polycom® CX8000, or compatible room systems like the Polycom® RealPresence® Group Series (including Polycom® RealPresence Centro™, RealPresence® Medialign™, and RealPresence® Group Convene™) or the Polycom® RealPresence Trio™ Visual+.

Polycom’s integration is achieved without any intermediary infrastructure—including gateways—and fully leverages the Skype for Business environment to provide access to presence, directory services, scheduling, drag & drop and click-to-join functionalities.

Native signaling and media codecs (RTV and/or H.264 SVC) are supported for Skype for Business as is integration with Exchange for calendaring.

The RealPresence Group Series and RealPresence Trio also support native remote desktop protocol (RDP)-based content.

The RealPresence Group Series even allows dual registration to the Skype for Business and traditional H.323 environments simultaneously, allowing for a gradual migration or retention of existing standards-based calling for B2B communications.

Polycom is currently the only vendor that supports the Microsoft H.264 SVC codec natively for Skype for Business on H.323/SIP standard-compliant video teleconferencing (VTC) systems, ensuring that full HD resolution video is supported for point-to-point and AVMCU-based multipoint calls.

However, many businesses have legacy VTC solutions from other vendors that have yet to be retired and replaced by dedicated Microsoft room solutions such as the Polycom CX8000 or compatible solutions such as the RealPresence Group Series.

Also, many companies have investments in immersive telepresence (ITP) systems with multiple screens, cameras and associated video streams that are incompatible with a Skype for Business infrastructure, so an alternative integration strategy is required to prevent them from becoming an isolated island of technology.
2. Gateways
A number of vendors have adopted a gateway approach to integration, which has the advantage of leaving existing systems untouched. This has major disadvantages, however, in terms of traffic flows and bandwidth consumption as well as potentially compromising Skype for Business’ resilient and scalable architecture.

A gateway solution also requires the deployment of additional technology to translate signaling and media, adding significant expense in addition to the impact on the traffic and architecture.

With Lync 2010, it was possible to transcode only the signaling, leaving media to the compatible H.263 codec for P2P calls with Lync 2010 clients. For a better-quality video experience, one would be required to deploy expensive media transcoding resources with all calls traversing the gateway, potentially “hair-pinning” the calls and leading to a doubling of network bandwidth consumption per call.

Moreover, this type of solution frequently lacks support for functionality like presence and directory services and any form of calendaring support.

A gateway solution might be used in conjunction with the Skype for Business AVMCU, allowing traditional VTC endpoints to join Skype for Business hosted meetings, or with an external third-party MCU.

Microsoft has included a gateway server role in the Skype for Business Server 2015 platform for deployment on-premise called the Video Interoperability Server, but this is supported only for a small number of specific Cisco endpoints. It requires deployment of a partnered and dedicated CUCM, and is limited to one-way video calling and has no support for content, presence or directory.
3. Meet on the MCU (MoM)
This integration method has proven very popular in recent years because it is relatively easy to deploy, and most solutions enable a unified meeting experience for traditional VTC and Skype for Business clients without the requirement for any additional gateway.

The Polycom® RealPresence® Platform has supported MCU integration since the days of Office Communications Server (OCS). It contributed significant value to the video experience for OCS and Lync 2010 clients. Where the Microsoft MCU was only capable of presenting a video switched/active speaker view of the conference, solutions like the Polycom RealPresence® Collaboration Server (RMX®) offered a superior continuous presence view, allowing better participant interaction.

Unlike the previous described solution, this integration method also has the advantage of providing support for a wide range of legacy systems and connectivity (e.g., ISDN) and the ITP environments.

However, since the introduction of Lync 2013, and now Skype for Business, the Microsoft AVMCU has provided a much better native video experience for its own clients in the form of the Gallery View, which offers users the ability to see up to five active speakers, with an option for a separate Panoramic video offered via a round-table (Polycom CX5x00) video device.

The Meet on the MCU (MoM) strategy also adds additional cost, as this external MCU must be scaled to accommodate both the legacy systems and the Skype for Business systems that will be joining them. As businesses adopt the Skype for Business workflow, and the use of video increases, this MoM approach can prove increasingly costly, forcing a continuing investment in what Microsoft considers to be a legacy environment.

Online/cloud services offering a MoM solution enable a more palatable pay-as-you-go option, but there is still an effective duplication of costs for Skype for Business users that requires licenses to enable access to the external service. Meanwhile, a perfectly good and familiar MCU experience within the Skype for Business or Office 365 environment goes to waste.

Users familiar with the Skype for Business client interface and video experience can find themselves in an unfamiliar meeting space that lacks the features and facilities they have come to expect in a native Skype for Business meeting environment.

Workflow is also impacted, forcing Skype for Business users to decide in advance whether a meeting should be conducted on the Skype for Business MCU or via the external MCU or service. Getting that decision wrong can disrupt the meeting, or foist unnecessary cost on the business.
Introducing the Polycom RealConnect solution

In June 2014, Polycom released the first Polycom RealConnect for Lync solution, which offered a unique and innovative approach to addressing the challenges that are mentioned in each integration strategy. Since then, Polycom RealConnect has become the de facto model for connecting Skype for Business/Lync clients and standards-based endpoints. Polycom has also made major advancements toward the solution, adding support for service provider topology and, after it was introduced in mid-2015, Skype for Business Server 2015. The Polycom RealConnect solution is part of the Polycom® RealPresence Clariti™ collaboration infrastructure software that gives users a comprehensive videoconferencing and collaboration solution with flexible purchasing and deployment options. There is a Polycom RealConnect integration add-on service to ensure successful implementation of RealConnect in a Microsoft environment.

Although the Polycom RealConnect model is copied by other vendors, the full experience of RealConnect has not been replicated, especially since some of the workflow requires coordination between video endpoints and the bridging platform, and Polycom is the only vendor that offers a full suite of voice, video and platform products that directly integrate with Skype for Business/Lync and Exchange Server.

RealConnect innovations include the following:

- **Skype for Business Conference ID as the virtual meeting room (VMR) number for VTC endpoints.** Polycom RealConnect provides an easy way to join Skype for Business and non-Skype for Business conferences by leveraging the Skype Conference ID that is generated in the meeting invite as the VMR number for standard VTC endpoints.
- **Native video experience for both Skype for Business and non-Skype for Business users.** Skype for Business users see the familiar filmstrip view (Gallery View) and content presented on the content stage. VTC participants see the familiar Continuous Presence layouts (with 10 and more participants) in addition to the content screen.
- **Significantly reduced transcoding resources.** This is achieved by leveraging Skype for Business AVMCU for handling media from Skype for Business clients. As mentioned in the MoM method, connecting both VTCs and Skype for Business users on the third party bridge significantly increases the resources required and duplicates the cost.
- **One Touch Dialing.** Polycom introduced a server-side application that enabled Polycom RealPresence Group Series and Polycom HDX® systems, as well as Cisco endpoints (that support Cisco Calendaring) to join a Polycom RealConnect meeting with one-touch dialing. These endpoints connect to the Polycom platform and receive continuous presence video to fully use the display real estate. Also, telepresence systems, with multiple cameras, will be shown in the optimized layout on the Polycom bridge.

The native support for Skype for Business meeting scheduling, especially when combined with the one-touch dialing scenario, almost completely removes the need for gateway use cases. For the majority of cases, standard room endpoints are located in conference rooms that need to be reserved anyway. In this case, a user can walk into the reserved conference room and immediately join the scheduled call.
### Table 1. Summary of benefits introduced by Polycom RealConnect solution

<table>
<thead>
<tr>
<th>Areas</th>
<th>Benefits</th>
<th>Benefit Details</th>
</tr>
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<tbody>
<tr>
<td>Native scheduling workflow</td>
<td>Simplified workflow</td>
<td>• No third-party plugins</td>
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<tr>
<td></td>
<td></td>
<td>• Leverages native Outlook Calendar and Skype</td>
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<td></td>
<td></td>
<td>• For business add-on</td>
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<td></td>
<td></td>
<td>• No change in workflow/no user training needed</td>
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<tr>
<td>Single click-to-join from both Skype for Business clients and Polycom standards-based systems/Cisco endpoints</td>
<td>Simplified workflow</td>
<td>• Consistency in joining a meeting from Skype for Business client or video endpoint</td>
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<tr>
<td></td>
<td></td>
<td>• Single step to dial the conference (one-touch dialing) from Polycom endpoints (HDX, RealPresence Group Series) or Cisco endpoints that support calendaring</td>
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<td>• No need to dial to an IVR first and type a conference ID manually</td>
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<td>• Reduced user errors</td>
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<tr>
<td>Native video layout and content support</td>
<td>Familiar user experience</td>
<td>• Familiar multipoint layout is preserved for both Skype for Business clients (gallery view) and standards-based video endpoints (continuous presence)</td>
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<td></td>
<td></td>
<td>• Native RDP content is supported for Skype for Business clients while standards-based video endpoints receive BFCP/H.239</td>
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<tr>
<td>Efficient resource usage</td>
<td>TCO</td>
<td>• Reduce transcoding resources required for the meeting</td>
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<td></td>
<td></td>
<td>• Leverages AVMCU to support Skype for Business clients instead of directing all media traffic to the third party bridge</td>
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<td></td>
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<td>• Customers leverage what’s paid/included in the Skype for Business license (conferencing on AVMCU)</td>
</tr>
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</table>

**Figure 5. Polycom RealConnect for Skype for Business architecture**
Polycom RealConnect workflow

Polycom RealConnect for Skype for Business simplifies the entire videoconferencing experience with innovative ideas.

1. Scheduling

Native Skype for Business Calendaring—There is no third-party plugin or add-on to install to schedule a call on a third-party bridge. A conference organizer can schedule a Skype for Business meeting as before and invite users and conference rooms. The Polycom RealConnect solution leverages an audio conference ID that is embedded in the meeting invitation. (Note: The audio conferencing dial-in must be enabled by an administrator so the conference ID is included in the meeting invitation.)

To join a conference from a Skype for Business client, click on the meeting link in the meeting invitation, or the meeting event in the client calendar screen, to initiate dialing from the client.

To join a conference from a standard (H.323/SIP) endpoint, multiple ways are available depending on the customer endpoints used and their preferences:

- One-Touch Dialing—This feature defines a simple solution as it leverages calendaring integration and one click to join the meeting, and is available to Polycom HDX, RealPresence Group Series (including RealPresence Centro, RealPresence Medialign) and Cisco’s latest endpoints that support calendaring. In this case, when the meeting time arrives, the user can select the meeting and, join the conference with just one click.
- Dialing the Conference ID manually–In cases when the room endpoint does not support calendaring, or was not invited to the meeting, the user can enter the conference ID manually (taken from the meeting invite) and join the conference.

- Enter the Conference ID using DTMF–The user dials first into an entry queue (or a lobby), and then enters the conference ID using the remote control keypad.

2. Conference experience
Skype for Business users receive familiar video and content experience, whether or not standard endpoints join the call. They see the filmstrip view (Gallery View) of up to five active participants (plus the panoramic video if a CX5x00 is sending 360-degree video) and the content on the content stage.

Standards-based video conference systems see familiar continuous presence (CP) layouts. The CP layouts support more than 10 participants displayed on screen (depending on the number of connections) and also telepresence layouts for ITP systems. Content stream will be displayed separately when content sharing is initiated.
Service provider topology

Another significant addition for the Polycom RealConnect solution is support for service provider topology. The main difference compared to Skype for Business on-premises topology is Polycom’s infrastructure, which is registered to the Skype for Business Front End Server at the Service Provider data center, and is federated with the customer’s Skype for Business environment hosting the Skype for Business conference.

The new topology enables service providers to support multiple customers with a minimal Skype for Business deployment at their data centers, and offers all Polycom RealConnect benefits:

- Same Outlook-based scheduling (no add-ons). The generated Skype for Business conference ID is used as the VMR number for standard EP
- Native conference experience for Skype for Business and non-Skype for Business
- Transcoding resources are reduced (compared to the Meet on MCU model)
- One-touch dialing from Calendar Screen is supported

In this topology, Skype for Business participants connect to their own AVMCU (customers’ premises) rather than to the Service Provider’s Skype for Business Server.

As seen in Figure 11, the on-prem Skype for Business deployment at the Service Provider (SP) is fairly minimal. There is no need for Exchange or an AVMCU; only Front End (FE) and Edge servers are required.

In this setting, the customer only needs to provide the CAA (Conference Auto Attended) URI to the SP. The SP will provide the customer a prefix that needs to be added to the conference ID (which is used by the SP to associate a standard incoming call coming to the customer).

Lastly, the customer needs to create a routing rule that will forward the calls of internal standard endpoints to the SP.

With the Polycom Calendar Connector application, users of Polycom HDX and RealPresence Group Series endpoints, as well as applicable Cisco endpoints, can “click to join” with a single click of a button into the conference without the need to manually dial any number (as described earlier).
Polycom RealConnect for Office 365 Users
At the time this paper was written, a set of APIs to allow a third party bridge to connect directly with the Office 365 Online Server was not yet available. Therefore, Office 365 users are not able to host the Polycom RealConnect meeting. (Office 365 users can still join a Polycom RealConnect meeting scheduled by a Skype for Business user hosted on the on-prem server.)

For now, Office 365 users can drag a Polycom VMR (registered to Skype for Business on-prem server) into an Office 365 conference. Once the Polycom VMR has been added to the Lync conference, all parties can see each other, similar to a regular Polycom RealConnect conference. This method is creating an ad hoc Polycom RealConnect conference call between AVMCU and Polycom VMR manually, rather than automatically.

Additionally, Office 365 users can dial in to the Polycom infrastructure and "meet on the bridge." In this case, the Polycom MCU sends a CP layout to all parties (including Office 365/Skype for Business clients).

Future Polycom RealConnect enhancement:¹
Polycom RealConnect for Office 365
The demand for Skype for Business Online video interoperability has been increasing steadily with the rapid growth of Office 365 subscription by large- and midmarket customers. As mentioned previously, the workflow integration is critical to driving user adoption and enabling true video integration. As such, Polycom has focused on bringing the Polycom RealConnect experience to Office 365 in 2016. Due to the current Microsoft Cloud architecture, there is an interim requirement for a reduced Skype for Business on-premises server deployment to facilitate this integration. In future releases, Polycom will invest in removing this dependency as we continue to work closely with Microsoft.

Learn more about Polycom and Microsoft integrated solutions
For more information on the Polycom UC solutions for Microsoft environments, visit www.polycom.com/Microsoft or email us at TeamMicrosoft@polycom.com. For the latest product and solution documentation, visit support.polycom.com/Microsoft.

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About Polycom
Polycom helps organizations unleash the power of human collaboration. More than 415,000 companies and institutions worldwide defy distance with video, voice and content solutions from Polycom. Polycom and its global partner ecosystem provide flexible collaboration solutions for any environment that deliver the best user experience and unmatched investment protection.