Secure Real-Time
Communications

ribbon

# Transition to Microsoft Teams

Microsoft proclaimed Teams as "the primary client for intelligent communications in Office 365" as part of a new vision for intelligent communications at the Ignite 2017 conference. Since that time, Microsoft has continued to add real-time communications capabilities to Teams in an effort to make it the preferred communication and collaboration client for customers. As capabilities and integrations are added, customers are challenged to understand exactly how this change in direction affects them and how they should best react. Microsoft has done a good job providing advice for people regarding staggered plans to move groups of users from Skype for Business to Teams. This technical brief focuses on connectivity for customers planning on transitioning their telephony to Teams.

## What is Teams?

Because Teams will eventually replace Skype for Business as Microsoft's primary chat, voice, video and meetings client in Office 365, many people think of it in only those terms. In fact, Teams is much more than that. Microsoft describes Teams as a "hub for teamwork". It's a digital space, outside of email, where people can share ideas and related files.  For example, if I were responding to a request for proposal, I could create a "team" of people that would help with the response. Within that team I could share the RFP from the customer and ask that the subject matter experts that make up the team, share answers, and related documents and links. The conversations and files would be available to anyone that was added to the team at any time. Real-time communications are facilitated within the Teams client. I can right-click on any member of the team to start a chat or voice or video call.

Microsoft has many integrations to Teams, including, but not limited to, their Office suite of products.  Teams is included in their Enterprise E1, E3 and E5 licenses, helping to accelerate its adoption. By the end of its first year in existence, Teams was being used by 200,000 organizations. Many of those organizations are using the collaboration functionality of Teams while evaluating the telephony functionality. There are a number of reasons some organizations have not fully adopted Teams telephony, including waiting for necessary features like boss and delegate support, but Microsoft is eliminating one of them in the second quarter of the 2018 calendar year.
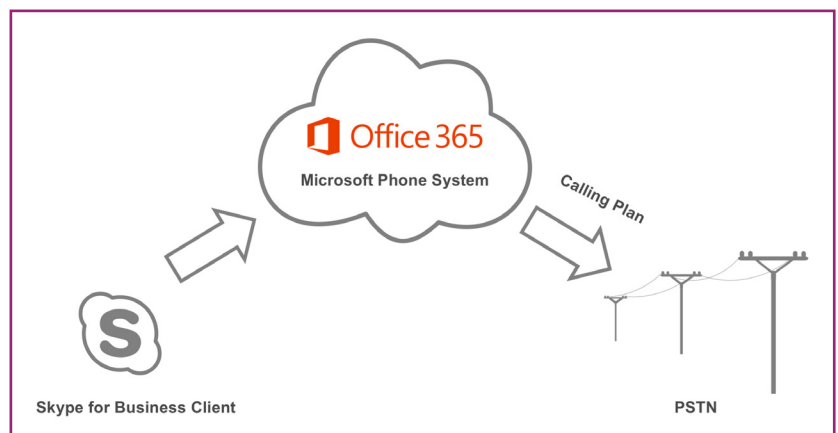
Microsoft introduced the concept of "Direct Routing" at Enterprise Connect 2018. This functionality adds the ability for organizations to route calls from their own telephony trunk directly to Teams, through a Microsoft-certified session border controller (SBC), in Office 365. For companies with locations not serviced by Microsoft's Calling Plan, this removes a major obstacle to Teams telephony adoption. With that issue eliminated, the next question becomes, "How do I begin to move users to Teams telephony?" The answer to this question depends on your current telephony systems architecture. Your transition to Teams will differ based on how you make external calls, today.
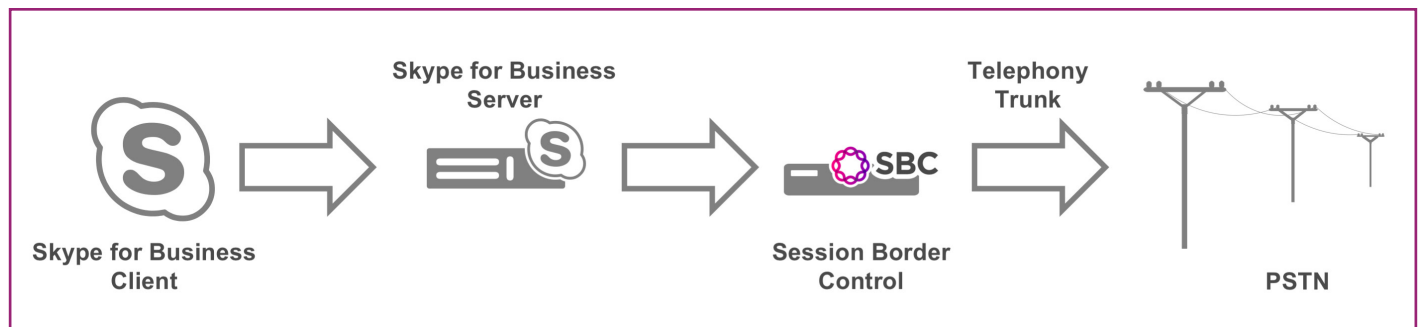
## How do you make external calls?

Enterprises typically fall into one of three buckets of usage:

**1) Skype for Business Online,**
**2) Skype for Business on-premises or**
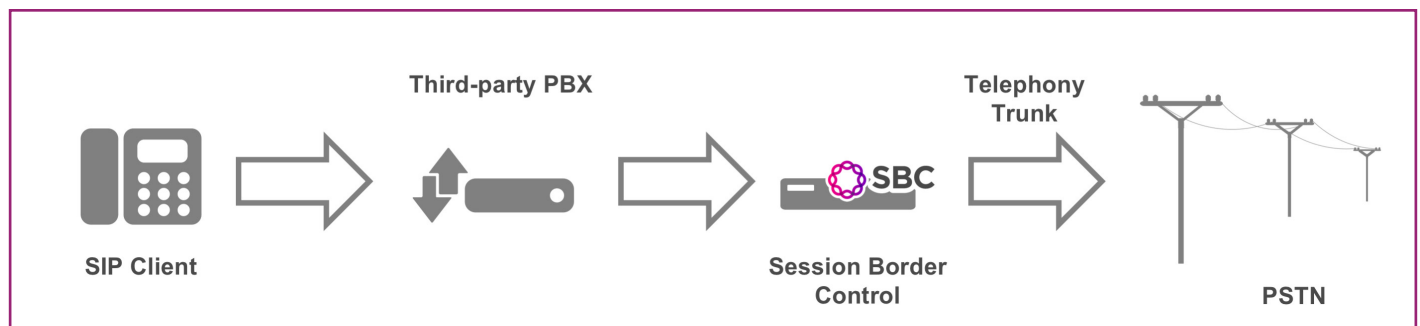**3) A third-party PBX.**

Each of these brings unique considerations and will be covered separately to reduce confusion even if you may have different locations in your company falling into one or more of the buckets. If you are using Skype for Business Online, exclusively, for your enterprise voice needs, your external phone calls use the Microsoft Calling Plan to connect to the public switched telephone



network (PSTN), when the Phone System cannot connect them to trusted endpoints in another domain. These calls are then routed through the Phone System to the PSTN and connected to their destination outside of your company.

If you are using Skype for Business on-premises, your external calls connect through a telephony trunk to the PSTN. An SBC or media gateway is used to gather the call information and route it to the PSTN.  SBCs are the preferred choice, because they offer security (e.g., encryption and topology hiding) and network address translation (NAT) traversal in addition to being able to translate between the differing codecs that Voice over IP (VoIP) uses (this is referred to as "transcoding"). The SBC or media gateway may reside in your company or at an internet telephony service provider (ITSP), but it sits on the "edge" of your network, between your company and the PSTN.



If you are using a third-party PBX, it acts in the same fashion as Skype for Business on-premises. The difference, of course, is that it is not a Microsoft solution. This comes into play when you have some people that use the local PBX and some that use Microsoft Phone System. Microsoft refers to this as "Hybrid Voice." While Skype for Business on-premises can connect directly to the Phone System (known as On Premises Call Handling (OPCH)), third-party PBXs need Skype for Business Cloud Connector Edition (CCE) to route calls to the Phone System. Ribbon Communications Cloud Link is Microsoft-certified SBC with CCE running on it. Cloud Link can route calls from your third-party PBX to the Phone System.
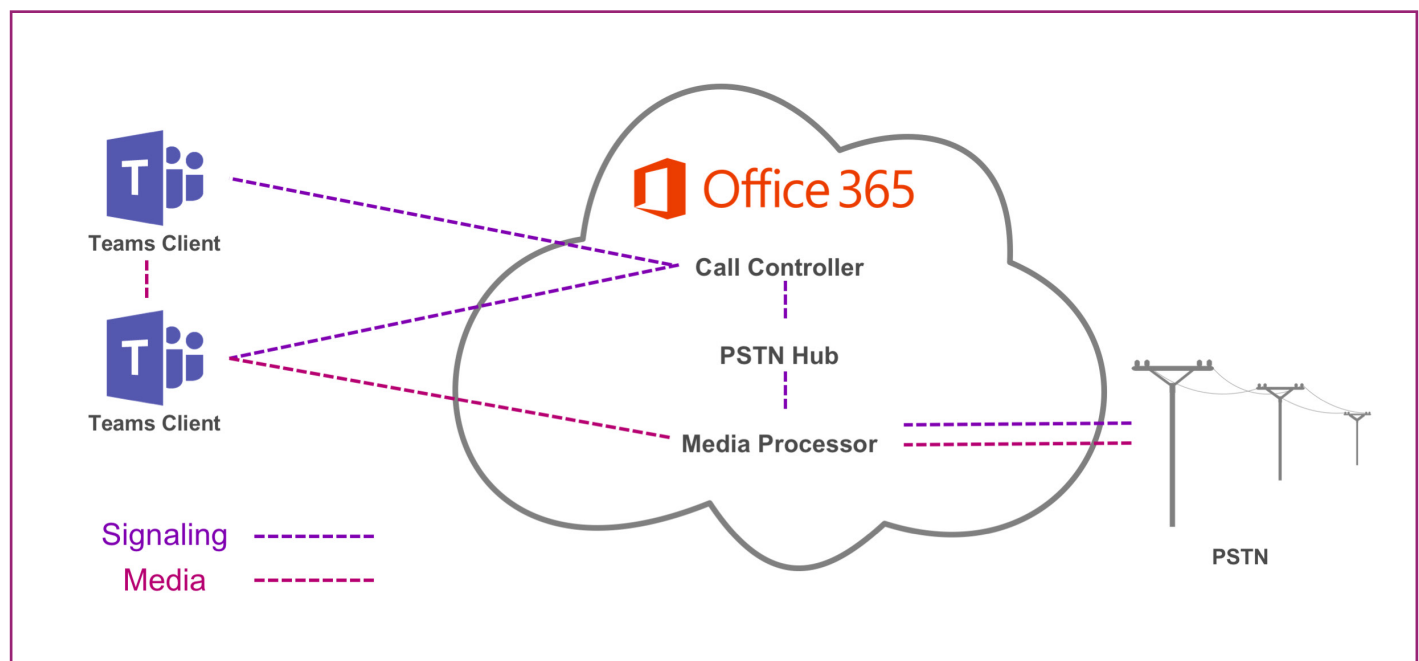
## Components of a Phone Call

To better understand how phone calls are handled with Teams, it's important to understand the components of a phone call. Phone calls have two basic elements: signaling and media. Signaling is the part that connects the two parties. It finds the destination, initiates the connection and tears it down when the call is finished. Media is the actual call audio. The call audio contains more data than the signaling. Media is often routed differently to save on transportation costs associated with sending it over the network.

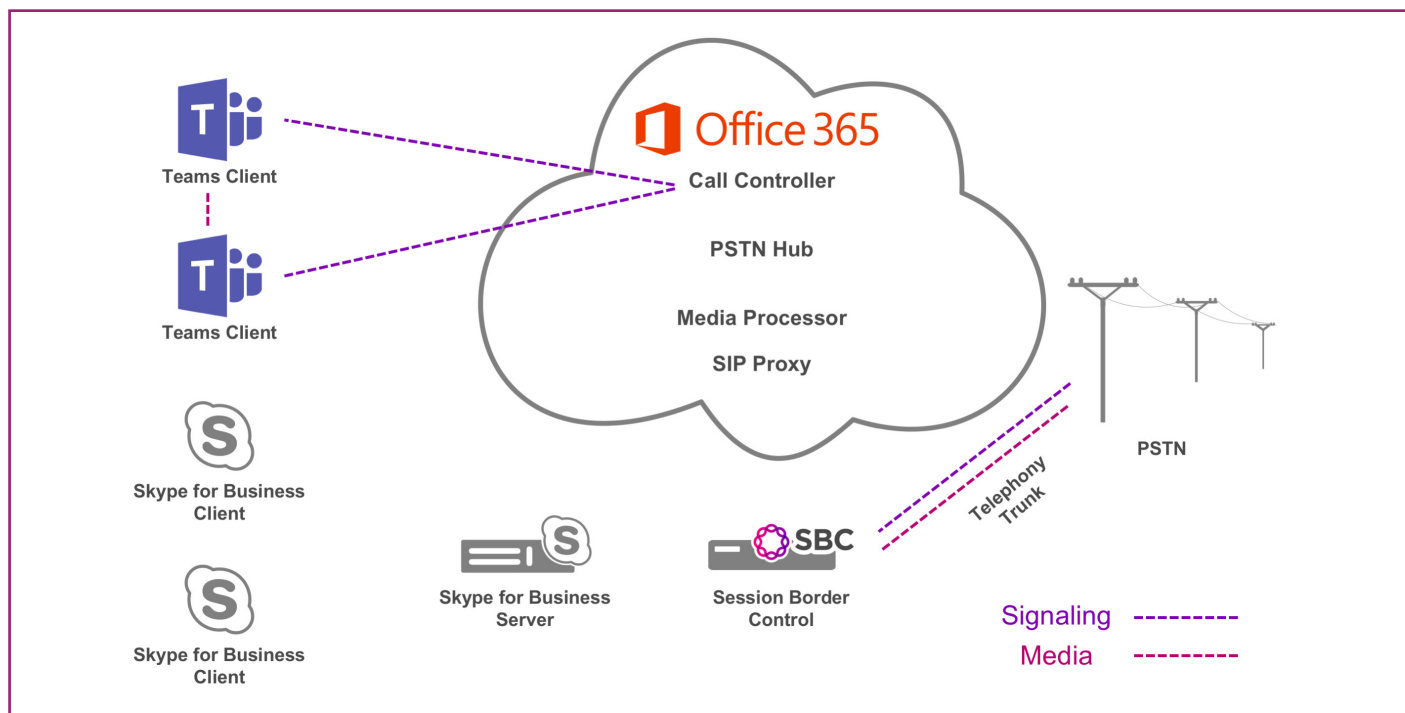## Transitioning from Skype for Business Online to Teams

If you are currently utilizing Skype for Business online, exclusively, the path to Teams is relatively straightforward. Instead of using your Skype for Business Client to place calls, you will use the Teams client. Your Teams client will connect to Microsoft Phone System to route phone calls. The signaling portion of the call is sent to the Call Controller in Phone System, where the destination is resolved. If the destination is external, Teams will attempt to route the media directly from the Teams client that initiates the call to the Teams client it is calling. Most phone calls can use peer-to-peer connections for the media, saving you the cost of routing the audio up to Office 365 and back down to your intranet. In some cases (e.g., when NAT traversal is required), the media will need to route through the media relay in Office 365. The signaling for external calls will route through the Call Controller to the PSTN Hub to the Media Processor in the Phone System. The media will be sent directly to the Media Processor. From there, the Microsoft Calling plan will connect to the PSTN.
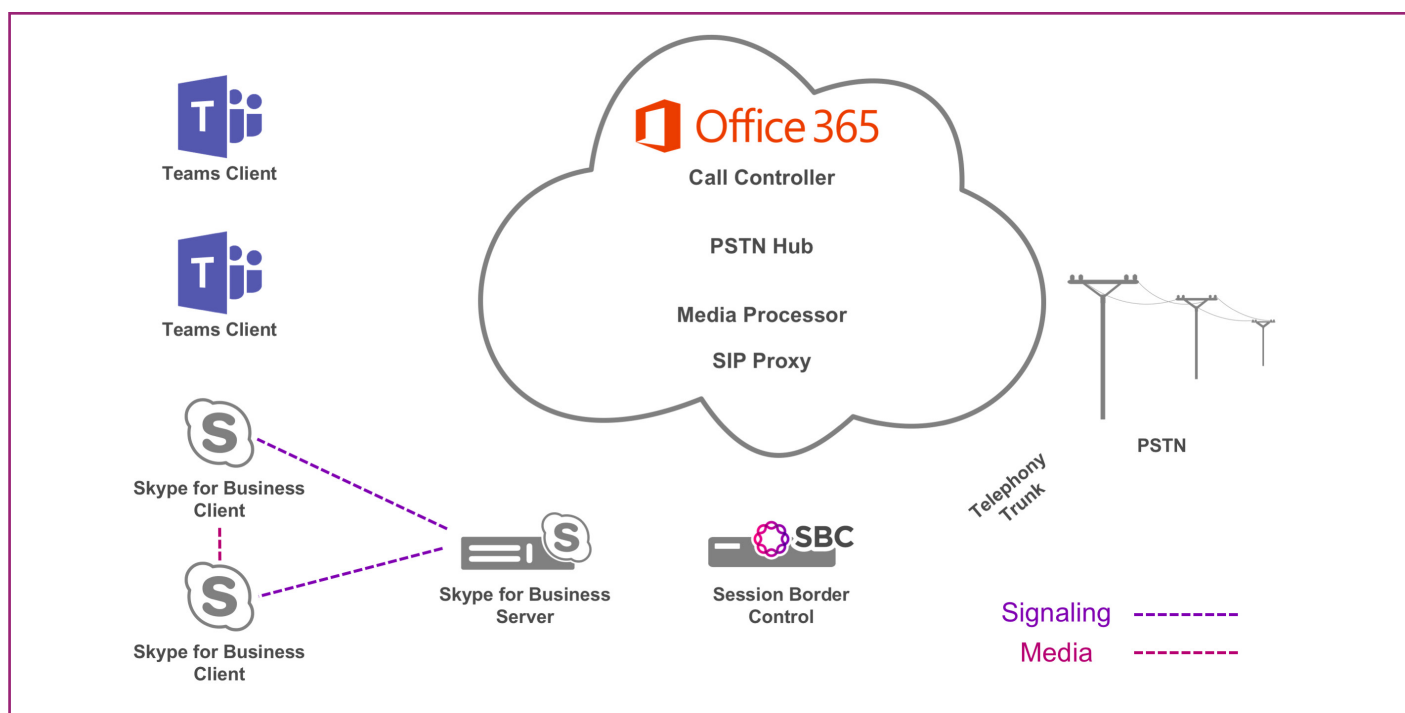


## Transitioning from Skype for Business On-Premises to Teams

Microsoft Teams is only available in the cloud. This means that as you move people from Skype for Business On-Premises to Teams, their calls initiate in the cloud instead of the local Skype for Business server. Microsoft recommends moving to Teams gradually. For a period of time, you will have some people that use Teams and initiate calls from Office 365, using Phone System and some that initiate calls on-premises, using OPCH. We refer to people as being "homed" to the PBX that initiates the routing of their calls. The call flow diagrams get complex because you will have two PBXs (Skype for Business on-premises and Phone System) and two clients (Skype for Business and Teams). We'll build this one as we cover how calls are placed.
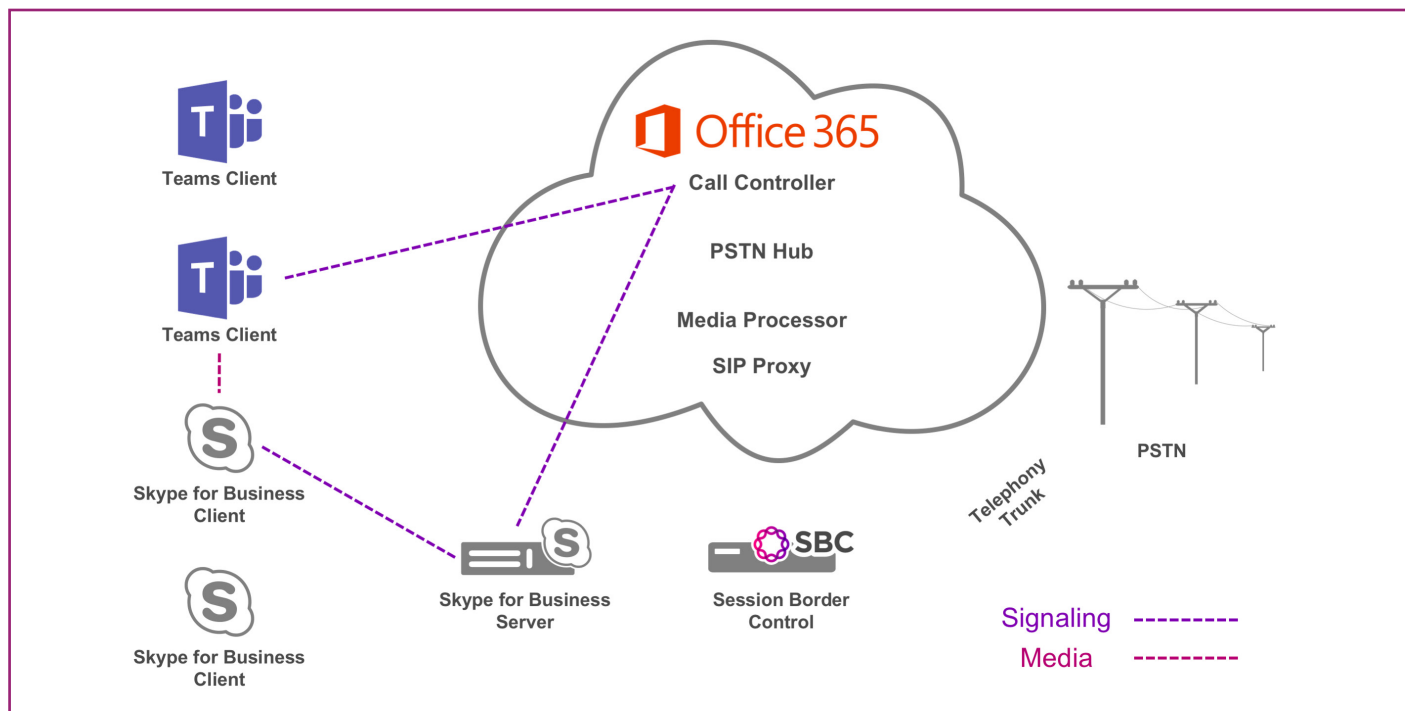
Internal calls that are routed from someone using Teams to another Teams user have their signaling go through the Call Controller in the Phone System while their media will travel peer-to-peer, as long as the addresses can be resolved.
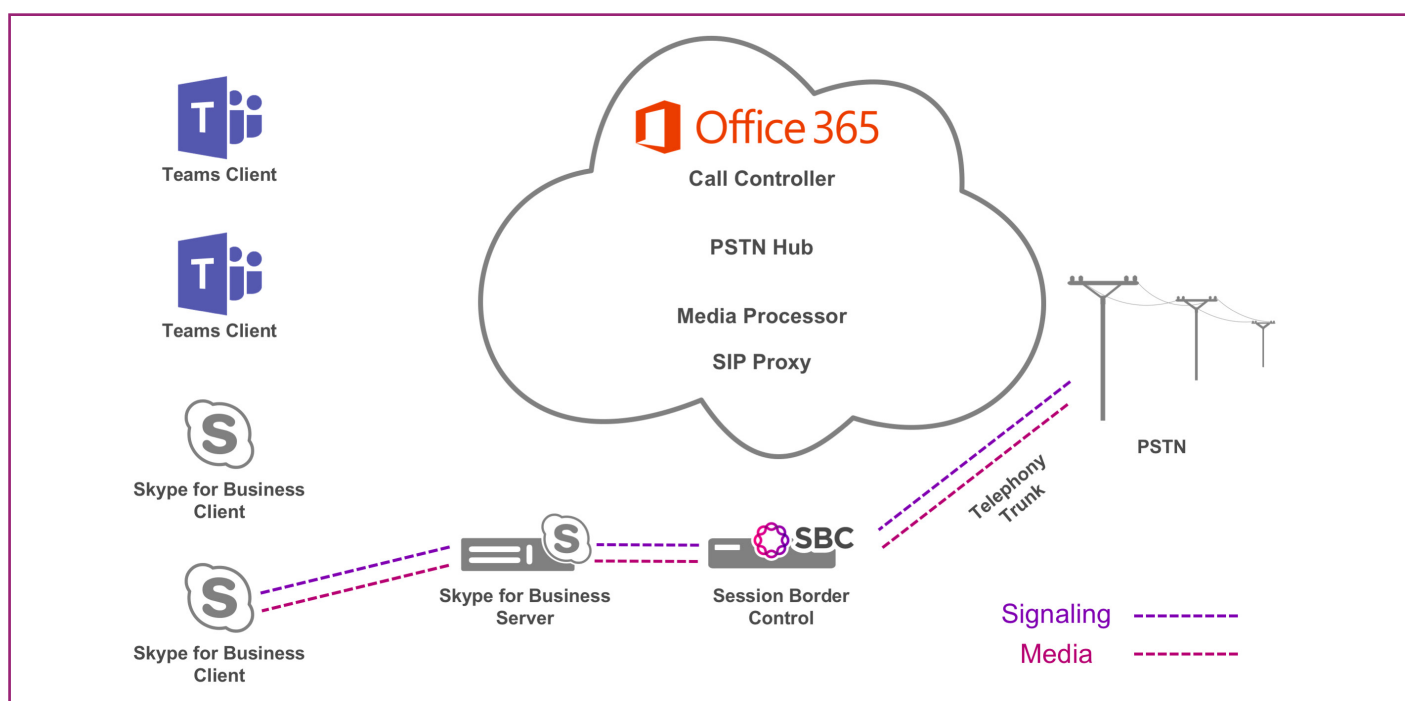


Internal calls between Skype for Business clients will have their signaling and media stay on-premises. The Mediation Server component of Skype for Business Server is used to place calls between Skype for Business clients.
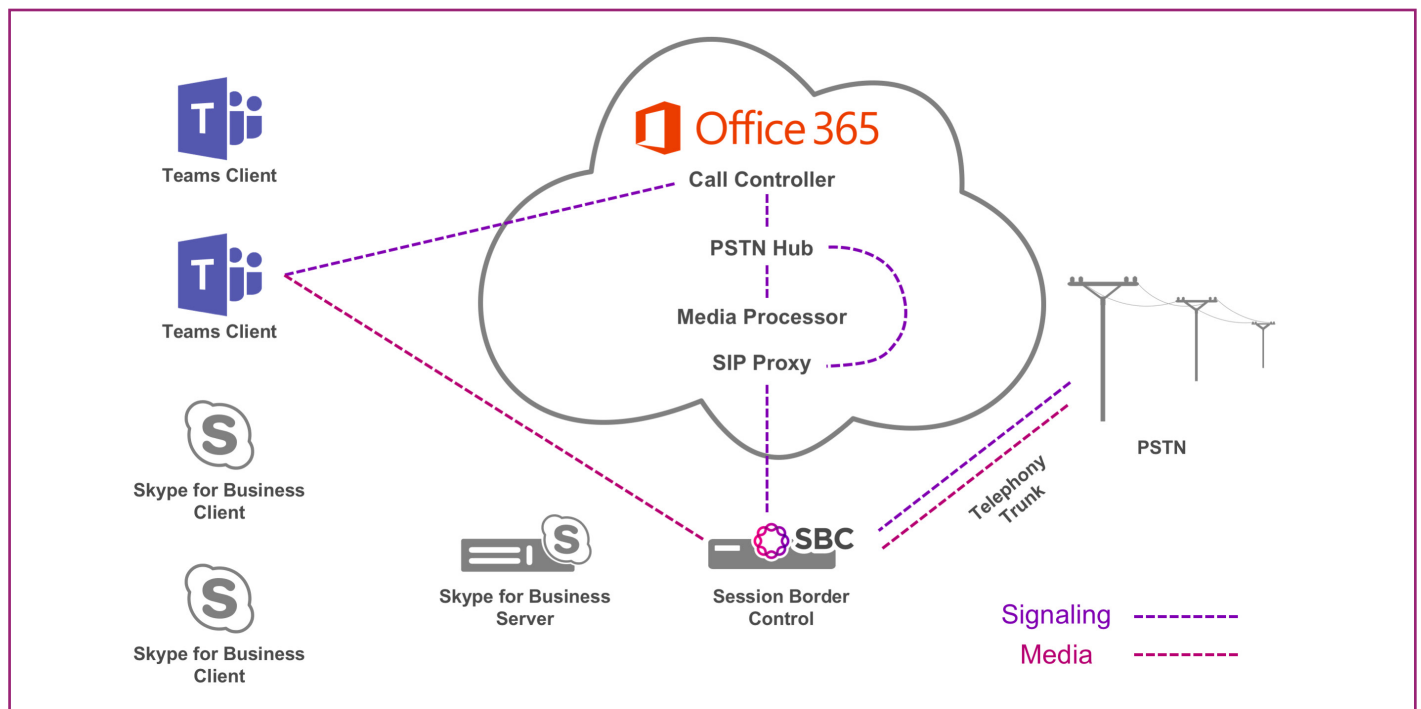
Internal calls between a Teams and Skype for Business on-premises user will use the Call Controller in the Phone System and the Skype for Business Server on-premises. Media will be sent peer-to peer, as long as the addresses can be resolved.



External calls from Skype for Business clients will route through your Skype for Business on-premises server to your telephony trunk, same way they did before any Teams pilot was introduced.
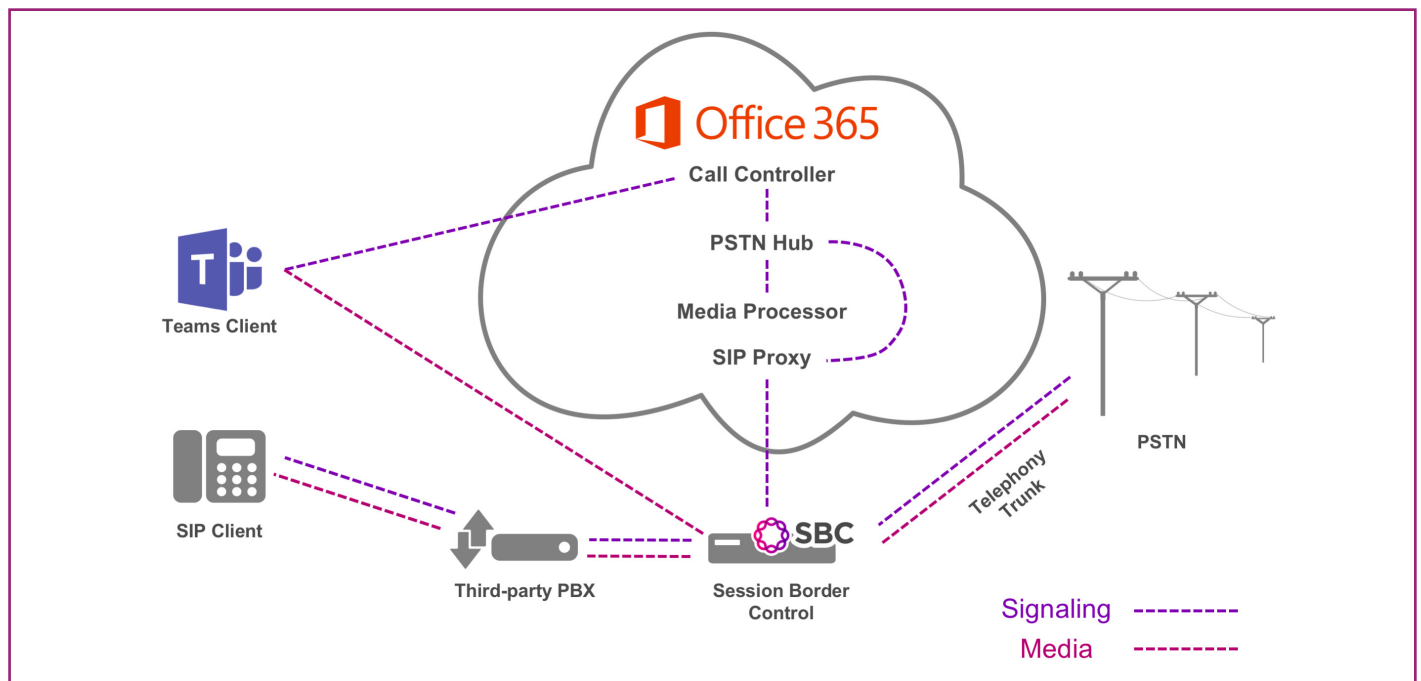
External calls from Teams clients will originate in the cloud and be routed through the Skype for Business on-premises server to your telephony trunk. The signaling flows through the Call Controller where it is determined that the call is to be placed to an external endpoint. If the destination is a trusted endpoint using Phone System (e.g., a Teams user at a company with whom one regularly does business), the signaling and media stay in Phone System. For the purpose of this diagram, we'll assume that is not the case. The Call Controller sends the signaling information to the PSTN Hub and through to the SIP Proxy. A SIP proxy is needed to work with the SBC because Teams signaling is sent through HTTP REST and not SIP. The signaling is sent to the SBC where it flows through the telephony trunk to the PSTN. The signaling information is also sent from the PSTN Hub to the Media Processor where the best path for media is determined. Media Bypass, introduced in CCE 2.0, allows the Teams client to send media directly to the SBC, saving it a journey through Media Processor in the cloud.

## Transitioning from a Third-Party PBX

Like Skype for Business on-premises, this is a Hybrid Voice configuration. The difference is that the third-party PBX can't connect directly to Phone System. As you move people to Teams, calls to them from people homed to the third-party PBX will need to be routed through an SBC that can connect to Phone System. Ribbon SBCs are qualified to connect to Phone System. They connect to Skype for Business Online using CCE. CCE is an added expense and requires a Microsoft Server license. Ribbon Cloud Link is an SBC that runs CCE natively at considerable savings. The connection to Teams will use a different method that does not require CCE. It's good news to organizations that are planning to move to Teams telephony. There's more good news for organizations that are already using a Ribbon SBC. A simple software upgrade will enable Direct Routing to Teams.



Any time that you have telephony on-premises, whether it is a common access phone, legacy analog endpoints, or telephony trunking, you will need an SBC to connect to Teams. It is certain that Hybrid Voice will be necessary as people move from using their existing on-premise PBX to Teams, and we expect Hybrid Voice to be prevalent for some time.

## About Ribbon Communications

Ribbon is a company with two decades of leadership in real-time communications. Built on world class technology and intellectual property, Ribbon delivers intelligent, secure, embedded real-time communications for today's world. The company transforms fixed, mobile and enterprise networks from legacy environments to secure IP and cloud-based architectures, enabling highly productive communications for consumers and businesses. With locations in 28 countries around the globe, Ribbon's innovative, market-leading portfolio empowers service providers and enterprises with rapid service creation in a fully virtualized environment. The company's Kandy Communications Platform as a Service (CPaaS) delivers a comprehensive set of advanced embedded communications capabilities that enables this transformation.

To learn more visit RibbonCommunications.com