IDT XPRESS

How to configure MS Teams Direct Routing: DIY

Our guide will cover a number of scenarios, which may apply to a variety of network configuration and infrastructure setups.

2023

Table of Contents

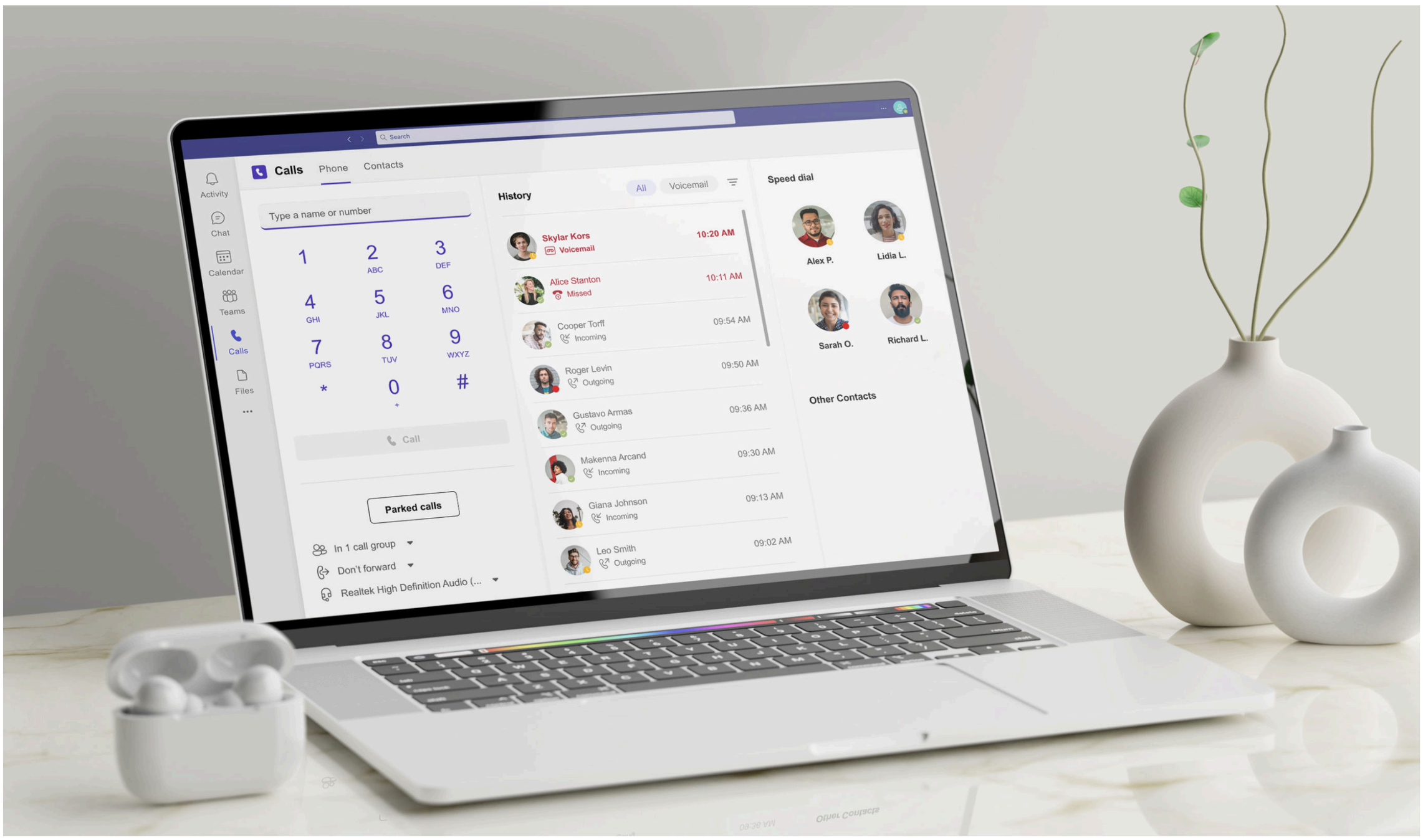
Introduction

Most users of Microsoft 365 (formerly Office 365) are familiar with the fact that its collaboration component Microsoft Teams provides facilities for file sharing, persistent chat, calendar, and meetings, as well as plug-ins for other Microsoft and third-party applications. However, relatively few organizations are aware that you can use MS Teams to make and receive business phone calls.

In terms of user statistics, as of 2023, Microsoft Teams has over 500 million daily active users worldwide. This number is expected to continue to grow as more organizations adopt remote work and distributed teams become more common. Microsoft Teams has also continued to innovate with new features and integrations, making it a powerful tool for collaboration and productivity.

In this report, we'll be outlining the steps you can take to configure MS Teams Direct Routing for business telephony. Our guide will cover a number of scenarios, which may apply to a variety of network configuration and infrastructure setups.

We shall also be discussing the important role of certified Session Border Controllers (SBC's) in Microsoft Teams Direct Routing implementation and looking at how you can improve MS Teams business telephony performance through Bring Your Own Carrier (BYOC).



MS Teams Phone Overview

As of 2023, Microsoft Teams Phone has gained significant traction in the market and is considered to be a strong competitor to other business phone systems. Microsoft Teams Phone is a cloud-based phone system that allows users to make and receive calls through the Teams app on their desktop or mobile device.

One of the key advantages of Microsoft Teams Phone is its integration with other Microsoft applications such as Outlook, SharePoint, and OneDrive. This integration allows for a seamless user experience, where users can access all their communication and collaboration tools in one place.

Microsoft Teams Phone also offers a range of advanced features such as call routing, auto-attendant, voicemail, and call recording. These features are highly customizable and can be tailored to meet the specific needs of businesses of all sizes.

In terms of market share, Microsoft Teams Phone has been gaining ground against competitors such as RingCentral, 8x8, and Vonage. According to a report by Synergy Research Group, Microsoft Teams Phone was the second-largest provider of cloud-based unified communications as a service (UCaaS) in Q3 2022, with a 14% market share.

Overall, Microsoft Teams Phone has established itself as a reliable and powerful business phone system, and its integration with other Microsoft applications has made it a popular choice for organizations that use the Microsoft Office 365 suite.

Using Microsoft Phone System to add Voice Calling to MS Teams

Within the Microsoft Teams collaboration platform, each licensed user can call another user within the same enterprise. However, to make calls outside the organization, the MS Teams client must have a connection to a Communication Service Provider (CSP), to get an external dial tone. The MS Teams user subscription must also include a license for the Microsoft Phone System.

Phone System brings a private branch exchange (PBX) service and associated telephony features to the Microsoft 365 cloud. Calling plans for over 16 countries are available on a per user basis, with bundles of minutes for domestic and international calling. This is a limited scope offering, most suitable for small businesses with ten employees or less.

Using Direct Routing to add Voice Calling to MS Teams

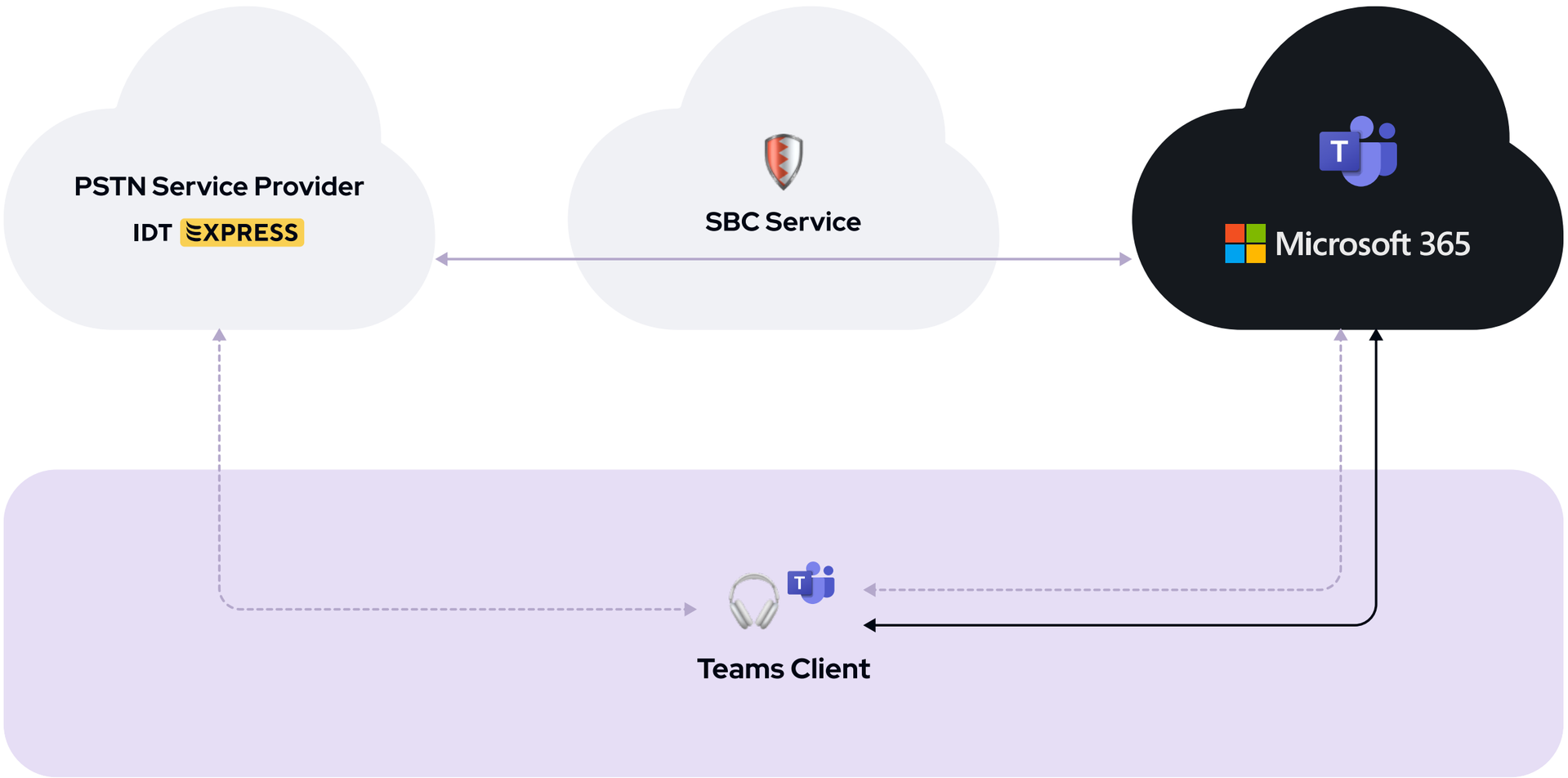
Larger scale organizations will tend to benefit more from buying their own dial tone from a service provider, and connecting it to MS Teams. Microsoft calls this option Direct Routing, or Teams Calling (which is a blanket term that also covers usage of the Microsoft Phone System).

From a technical standpoint, Direct Routing is an implementation of Session Initiation Protocol (or SIP) trunking - a data transfer mechanism commonly associated with Voice over Internet Protocol (VoIP) communications.

Direct Routing also requires a Microsoft Certified Session Border Controller (SBC), which acts as an intermediary between Microsoft and the dial tone provider. Deployment of the SBC will depend on the design of your Direct Routing implementation, which may be in the cloud or on-premises.

Cloud-based Direct Routing

This deployment option is most suitable for organizations that don’t have or need an on-site PBX, contact center, or many analog communication devices. Cloud-based Direct Routing delivers lower network latency, and provides better support for remote and mobile users.

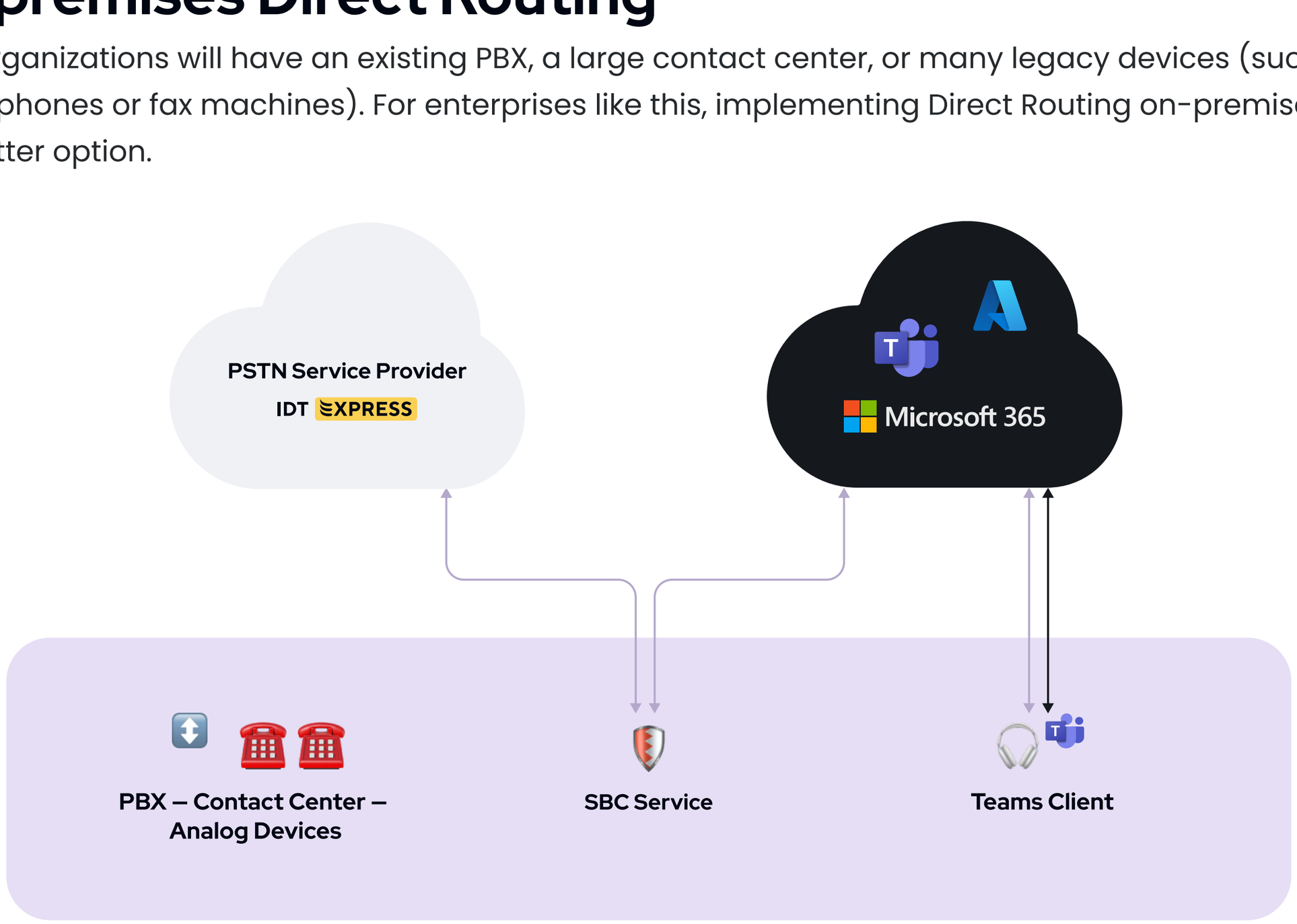


Here, your communication service provider (CSP) will connect directly to the Microsoft 365 cloud hrough a cloud-based SBC. This Session Border Controller may be one that your organization owns, and deploys in the cloud through a commercial platform such as Azure or AWS. Alternatively, the CSP itself may own, host, and manage the Session Border Controller.

Cloud-based Direct Routing for MS Teams and SBC deployment are particularly appropriate for business users who operate in the Microsoft Azure cloud environment. Having all of these infrastructures in the same cloud provides efficiency and performance benefits.

On-premises Direct Routing

Many organizations will have an existing PBX, a large contact center, or many legacy devices (such as analog phones or fax machines). For enterprises like this, implementing Direct Routing on-premises may be a better option.



Here, calls move in and out of the system through an on-premises SBC which is connected to your organization's communication service provider, and to the Microsoft 365 (Azure) cloud. Note that there may be considerable costs involved in maintaining legacy communication devices and infrastructure. In the long term, it may be more cost-effective to consider upgrading to a fully digital infrastructure and cloud-based deployment model.

Phased Deployment of Direct Routing

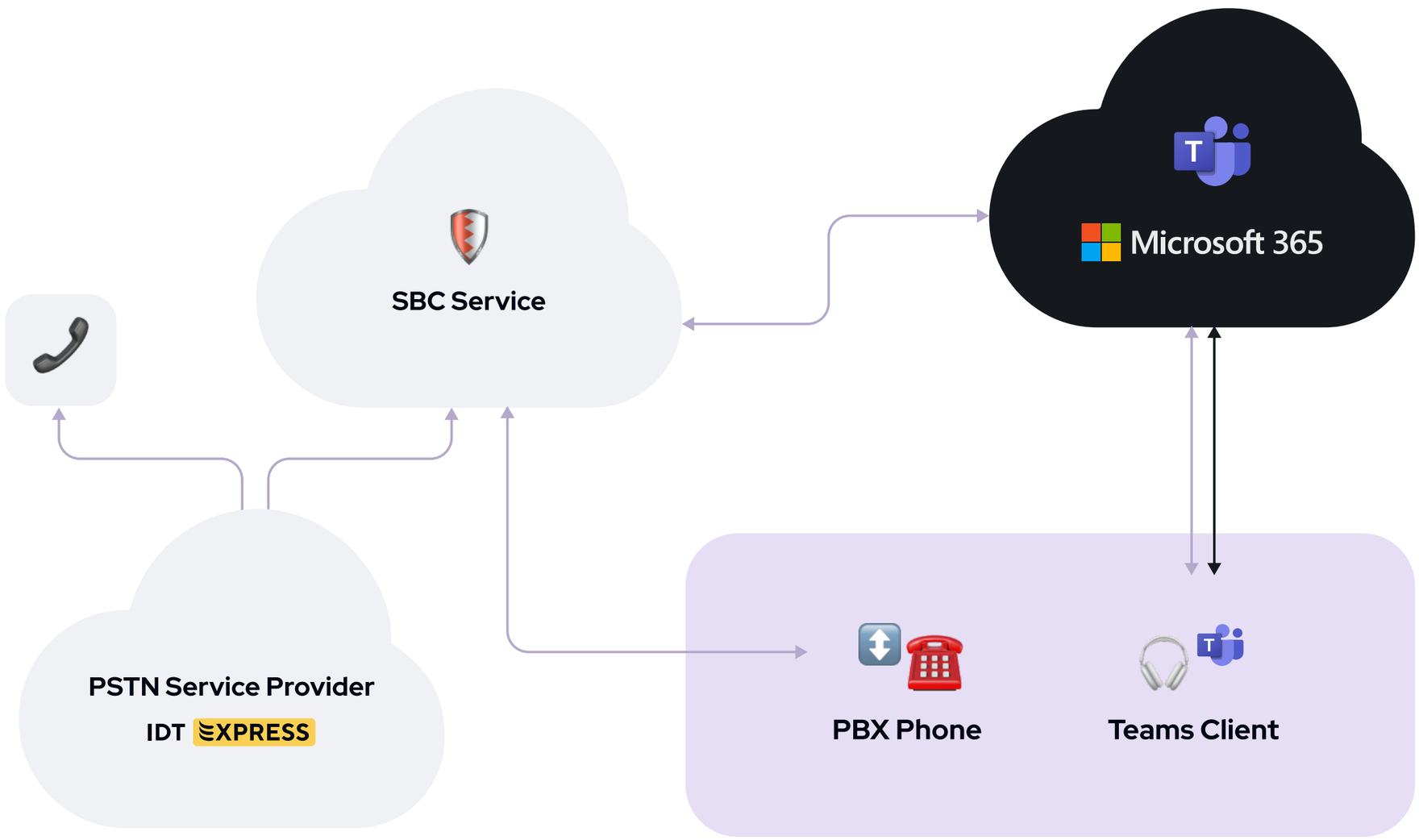
Many organizations will have a significant and standing investment in existing infrastructure, such as an on-premises PBX, or a long-term contract with a Unified Communications as a Service (UCaaS) provider. They may also have complex call routing rules, dial plans, and business workflows in place, which it would to difficult to migrate en masse to a completely new system.

For this reason, many enterprises prefer to leave their existing infrastructure in place while performing a gradual migration to MS Teams. Making the shift incrementally and having a shared dial plan minimizes disruption to both users and customers during the transition period. Phased migration also enables organizations to develop a backup plan, in case any issues arise.

A piecemeal approach to migration is also appropriate for enterprises that only wish to make MS Teams Calling available to a select group of their workforce -- for example, the executive suite and mobile employees. There are a number of ways to achieve this, while preserving your existing PBX.

Trunk-side Integration

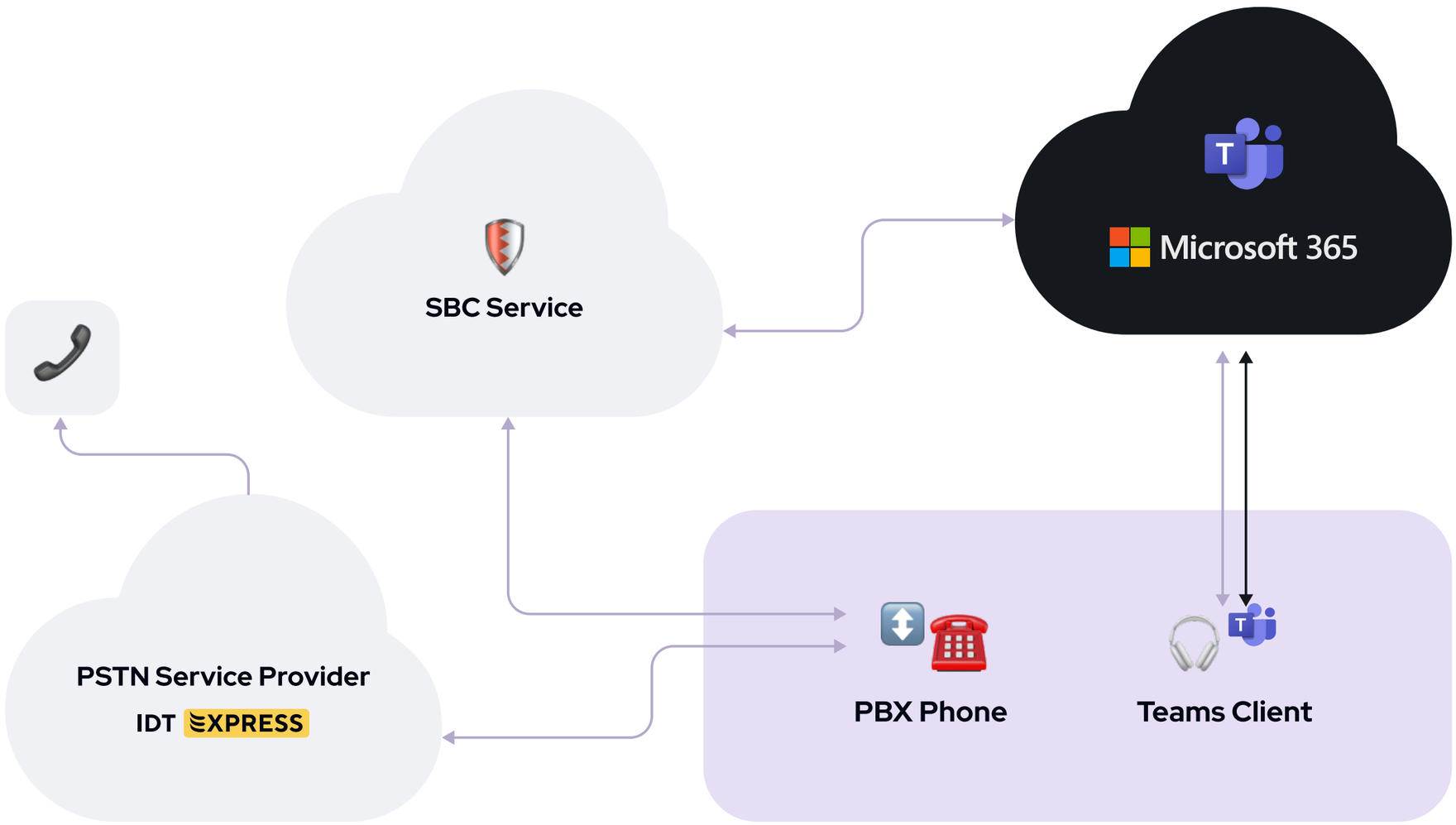
Trunk-side integration involves the integration of phone lines, so that any inbound call rings on multiple devices (simultaneous ringing). Calls entering the Session Border Controller are replicated through call signaling, so that multiple endpoints on multiple systems can ring at the same time.



This approach is particularly suitable for organizations that have a legacy PBX and want to use their Teams mobile client to make and receive calls, and for users who frequently work remotely or from home. Note however that in this configuration, the Teams environment and the PBX environment remain separate, and only interact with each other during external communications.

Using Phone Stations

Using the ability of an existing PBX to ring multiple devices, it's possible to split calls after they reach the PBX（call forking) to ring multiple devices that alert Teams clients and the PBX's desk phones.



With station-side integration, all the calls go through the PBX, and users can call anyone internally simply by dialing an extension. The PBX can send calls directly to Teams users, making this configuration ideal for Teams Calling provision to a limited set of users.

While versatile, this method does come with associated costs. With an existing PBX remaining in place, your organization must budget for its continuing maintenance, licensing, and support. In addition, the organization must also pay for Microsoft Phone System licenses and SBC services for users that require Teams integration.

Mixed Deployments

Some organizations may be spread across multiple sites and geographies, making it difficult to coordinate and implement a mass migration to Microsoft Teams Calling. Some sites may only have Microsoft Teams deployed, some may be using trunk-side integration, while others may be operating with station-side integration.

Such a mix makes it imperative to optimize Teams Calling implementation across diverse environments. A wise choice of Session Border Controllers, and the deployment of Bring Your Own Carrier can help in achieving this.

The Importance of Certified Session Border Controllers

Microsoft only supports Phone System with Direct Routing when used with certified devices. To this end, Microsoft partners with selected Session Border Controller (SBC) vendors to certify that their SBCs work with Direct Routing. To achieve this certification, SBS's must past stringent tests and run daily tests with all certified devices in production and pre-production environments. Validating the devices in pre-production environments guarantees that new versions of Direct Routing code in the cloud will work with certified SBC's.

Online, Microsoft maintains a complete list of certified SBC's - Session Border Controllers certified for Direct Routing with Microsoft Teams. For MS Teams subscribers, using these SBC's confers a number of advantages beyond their legal requirement. They include the following:

Ease of Transition

A Microsoft-certified SBC (or service) provides organizations the option of leaving their existing PBX or cloud unified communications (UC) solution in place, and keeping their existing dial tone agreements. This makes phased transitions to Teams Calling easier.

Provisioning Remote Locations

With a hub and spoke network topology, organizations can use a centrally located SBC in the corporate data center, which acts as a hub for provisioning remote offices (the "spokes"). This approach enables subject matter experts to work locally on any issues that may arise. Voice traffic can also emanate from the central data hub to a communications service provider (CSP), reducing the number of access points that the organization needs to monitor and manage.

Using Local SBC's

Organizations can position routers for the SBC at remote locations to connect to the Internet locally, reducing the length of the path to the application server. In the same way, an SBC located at a remote office can connect SIP trunks to the Microsoft Teams Phone System .

In addition, a local SBC can seamlessly reroute voice traffic if a wide-area network (WAN) failure occurs. So a certified Session Border Controller can act as an integral part of the organization's plans for business continuity, Disaster Recovery, and overall resiliency.

List of MS Teams Certified SBCs

Here is the complete list of MS Teams certified SBC vendors.

Vendor	Product	Non-media bypass	Media bypass	Software version	911 Service Provider Capable*	ELIN capable
Microsoft	Azure Communications Gateway	✓	✓	2023-01-31	✓	✓
AudioCodes	Mediant 500 SBC	✓	✓	Supported 7.20A.258 (Recommended 7.40A.400)	✓	✓
	Mediant 500 Li SBC	✓	✓	Supported 7.2x.xxx (Recommended 7.40A.400)	✓	✓
	Mediant 800 SBC	✓	✓	Supported 7.20A.258 (Recommended 7.40A.400)	✓	✓
	Mediant 2600 SBC	✓	✓	Supported 7.20A.258 (Recommended 7.40A.400)	✓	✓

Vendor	Product	Non-media bypass	Media bypass	Software version	911 Service Provider Capable*	ELIN capable
	Mediant 4000 SBC	✓	✓	Supported 7.20A.258 (Recommended 7.40A.400)	✓	✓
	Mediant 1000B SBC	✓	✓	Supported 7.20A.258 (Recommended 7.40A.400)	✓	✓
	Mediant 9000 SBC	✓	✓	Supported 7.20A.258 (Recommended 7.40A.400)	✓	✓
	Virtual Edition SBC	✓	✓	Supported 7.20A.258 (Recommended 7.40A.400)	✓	✓
	Mediant Cloud Edition SBC	✓	✓	Supported 7.20A.258 (Recommended 7.40A.400)	✓	✓
	Mediant 3100	✓	✓	Supported 7.20A.250 (Recommended 7.40A.400)	✓	✓
Ribbon Communications	SBC 5400	✓	✓	Supported on available versions of 11.1 and later, 10.1, 9.2, and 7.2 (Recommend latest version of 11.1)	✓	
	SBC 7000	✓	✓	Supported on available versions of 11.1 and later, 10.1, 9.2, and 7.2 (Recommend latest version of 11.1)	✓	
	All SBC SWe variants, including hosted offers	✓	✓	Supported on available versions of 11.1 and later, 10.1, 9.2, and 7.2 (Recommend latest version of 11.1)	✓	
	SBC 1000	✓	✓	8.x, 9.x or 11.x	✓	✓
	SBC 2000	✓	✓	8.x, 9.x or 11.x	✓	✓
	SBC SWe Edge (formerly SWe Lite)	✓	✓	8.x, 9.x or 11.x	✓	✓
	EdgeMarc Series	✓	✓	16.3.2	✓	✓
Thinktel	Think 365 SBC	✓	✓	1.4	✓	✓
Oracle	AP 1100	✓	✓	Supported 8.3.0.0.1 & Recommended 8.4.x & 9.x	✓	✓
	AP 3900	✓	✓	Supported 8.3.0.0.1 & Recommended 8.4.x & 9.x	✓	✓

Vendor	Product	Non-media bypass	Media bypass	Software version	911 Service Provider Capable*	ELIN capable
	AP 4600	✓	✓	Supported 8.3.0.0.1 & Recommended 8.4.x & 9.x	✓	✓
	AP 6300	✓	✓	Supported 8.3.0.0.1 & Recommended 8.4.x & 9.x	✓	✓
	AP 6350	✓	✓	Supported 8.3.0.0.1 & Recommended 8.4.x & 9.x	✓	✓
	VME	✓	✓	Supported 8.3.0.0.1 & Recommended 8.4.x & 9.x	✓	✓
	AP 3950	✓	✓	Supported 9.x	✓	✓
	AP 4900	✓	✓	Supported 9.x	✓	✓
TE-SYSTEMS	anynode	✓	✓	Supported 3.20 (Recommended 4.0)	✓	✓
Metaswitch	Perimeta SBC	✓	✓	4.7 (4.9 for Media Bypass)	✓	✓
Cisco	Cisco Unified Border Element (CUBE) for 1000 Series Integrated Services Routers	✓	✓	Supported IOS XE Amsterdam 17.2.1r (Recommended 17.6.1a)	✓	
	Cisco Unified Border Element (CUBE) for 4000 Series Integrated Services Routers	✓	✓	Supported IOS XE Amsterdam 17.2.1r (Recommended 17.6.1a)	✓	
	Cisco Unified Border Element (CUBE) for 1000V Series Cloud Services Router	✓	✓	Supported IOS XE Amsterdam 17.2.1r (Recommended 17.3.3)	✓	
	Cisco Unified Border Element (CUBE) for 1000 Series Aggregation Services Routers	✓	✓	Supported IOS XE Amsterdam 17.2.1r (Recommended 17.6.1a)	✓	
	Cisco Unified Border Element (CUBE) for Catalyst 8000 Edge Platforms	✓	✓	Supported IOS XE Amsterdam 17.3.2 (Recommended 17.6.1a)	✓	
Avaya	Avaya Session Border Controller for Enterprise (ASBCE)	✓	✓	Release 8.1.1 (8.1.2 for Media Bypass)		
Nokia	Nokia Session Border Controller	✓	✓	22.8	✓	
Italtel	NetMatch-S CI	✓	✓	Supported 8.3.0.0.1 & Recommended 8.4.x & 9.x		
Ericsson	vSBC 2.16	✓				

Vendor	Product	Non-media bypass	Media bypass	Software version	911 Service Provider Capable*	ELIN capable
Cataleya	Orchid Link	✓		3.1		
ULTATEL	Teams SBC	✓	✓	1.6		
Atos	Atos Unify OpenScape Session Border Controller	✓	✓	V10R2.2.0		
Sansay Inc.	vmVSXi	✓	✓	10.5.1.354-vm-S-x64	✓	
Enghouse Networks	Dialogic BorderNet SBC	✓	✓	3.9.x		
Patton Electronics Co.	Patton SmartNode eSBC	✓		3.19.x		
M5 Technologies (previously known as Media5 Corporation)	Mediatrix Sentinel Series	✓		DGW 48.0.2340 (Recommended DGW 48.1.2503)		
Ekinops	Ekinops Session Border Controller (ONeSBC)	✓	✓	Supported 6.8.x (Recommended 6.9.x)		
	Ekinops Virtual Session Border Controller (ONEvSBC)	✓	✓	Supported 6.8.x (Recommended 6.9.x)		
46 Labs LLC	Peeredge Orchestrator	✓	✓	1.0.6		
Frafos	ABC SBC	✓		4.6		

* 911 service providers
Bandwidth Dynamic Location Routing
Intrado Emergency Routing Service (ERS)
Intrado Emergency Gateway (EGW)
Inteliquent

How Bring Your Own Carrier (BYOC) can Improve Your MS Teams Direct Routing

Using Bring Your Own Carrier or BYOC, enterprise customers gain the option of keeping their current Public Switched Telephone Network (PSTN) service providers. They can do this by redirecting existing voice circuits to the Microsoft Teams Phone System, or by implementing a hybrid solution with their existing PBX. In this way, organizations can enjoy all the benefits and features of the Microsoft Teams phone system, while retaining their existing service provider contracts, phone numbers, and calling rates from their preferred carrier.

Since an existing carrier provides the dial tone, BYOC reduces the risk of service interruption, and enables faster deployments with less friction, when trying to port large volumes of phone numbers. With the right choice of carrier, you can enjoy a voice solution that combines Unified Communications and MS Teams collaboration. Using BYOC, organizations can leverage existing voice services to power the latest Microsoft Teams features.

With the right carrier, BYOC for MS Teams also provides a mechanism for organizations to control their operational and telephone network access costs. For example, IDT BYOC helps you save 40% on your MS Teams calling plan, while also making it easier and more economical to scale operations.

Integrating IDT BYOC with MS Teams

Integrating with IDT's Bring Your Own Carrier (BYOC) service is quite simple. In just five minutes, you can start testing IDT via MS Teams platform and be assured of our superior Voice quality, concierge support, and affordable pricing. Here's how:

Here are the step-by-step instructions to enable Direct Routing:

1. Verify prerequisites: Before you begin, ensure that you have the following:
    - A valid Office 365 subscription or Teams license.
    - A phone system or SIP trunk that supports Direct Routing.
    - A public IP address or VPN connectivity to the phone system or SIP trunk.
    - A Session Border Controller (SBC) that supports Direct Routing.
2. Configure SBC: Set up your SBC to work with Direct Routing. This process will vary depending on the SBC vendor you choose. Refer to the documentation provided by your vendor for instructions.
3. Create DNS records: Create DNS records to route traffic to your SBC. You will need to create the following DNS records:
    - A DNS SRV record for your SIP domain that points to your SBC.
    - A DNS A record for your SIP domain that points to the public IP address of your SBC.
4. Enable Direct Routing in Teams Admin Center:
    - Sign in to the Microsoft Teams Admin Center with your administrator account.
    - Navigate to the Voice > Direct Routing tab.
    - Click Enable and enter the required information:
        - SIP address of your SBC.
        - Transport protocol used by your SBC (TCP or TLS).
        - FQDN or IP address of your SBC.
        - SIP listening port of your SBC.
        - SIP signaling encryption (optional).
        - Certificate thumbprint (optional).
    - Click Save to enable Direct Routing.
5. Assign Phone Numbers: Assign phone numbers to users who need to make and receive calls in Teams. You can do this in the Teams Admin Center or via PowerShell.
6. Configure Policies: Configure policies for Direct Routing, including emergency policies and call routing policies.

Once these steps are complete, you should be able to make and receive calls in Teams using Direct Routing.

Listed on the New York Stock Exchange (NYSE) and with over 30 years in operation, IDT is one of the world's largest telecom carriers and is trusted by the likes of Verizon, AT&T, Orange, Vodafone, and a thousand others. As a voice carrier, IDT integrates with MS Teams via certified SBC providers like Ribbon, Call2teams, Call Tower, and Quobis.

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Do you want to try BYOC for MS Teams?

To use IDT with MS Teams for superior call quality, maximum flexibility and better call rates, write us.

Get in touch with us