



Teams Voice Scenarios and Integration Concepts

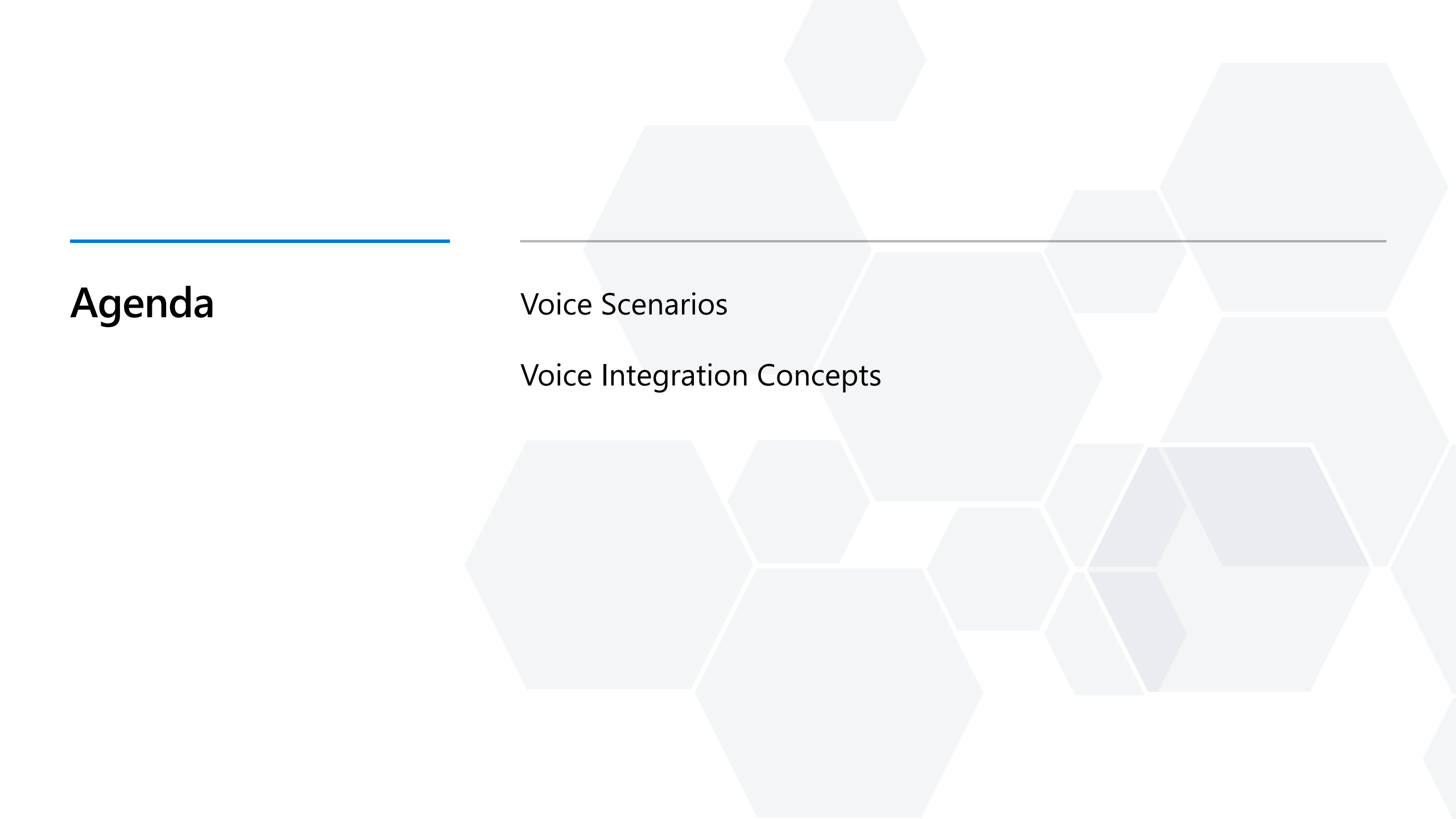
Dave Jennings
Principal Program Manager
Microsoft Teams



Agenda

Voice Scenarios

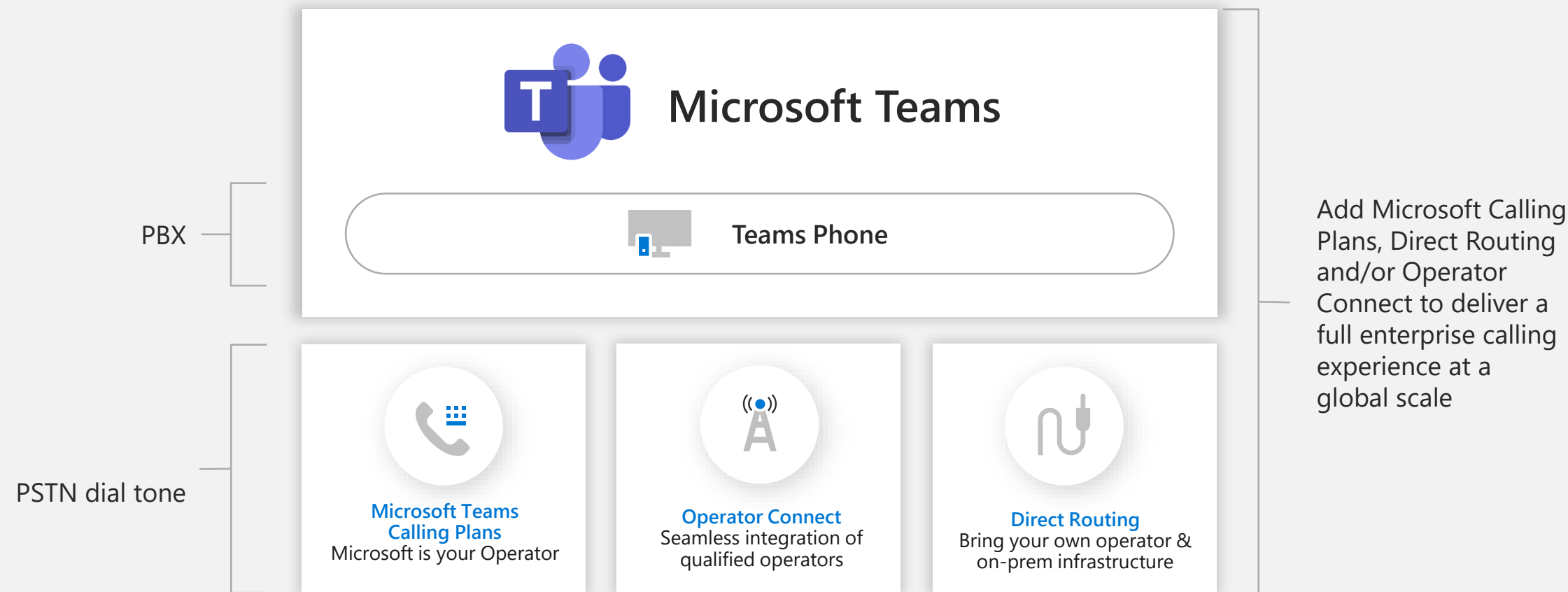
Voice Integration Concepts



Microsoft Teams Voice Scenarios Overview



Simplify Calling Enablement and Migration with Microsoft Teams



Microsoft Teams Voice Capabilities

Microsoft Teams Calling Plans

Microsoft is your operator

Operator Connect

Simply and seamlessly integrate qualified operators

Direct Routing

Use your existing infrastructure, supported in >180 countries



Teams Calling Plans



What are Microsoft Teams Calling Plans?

When combined with Microsoft Teams Phone, Calling Plans can become your complete phone system.

Calling Plans provide employees with a primary phone number (either new or existing) and lets them make and receive phone calls outside of the organization.

Users can be assigned existing phone numbers or get new ones.

Calling Plans features:

International Calling Plan

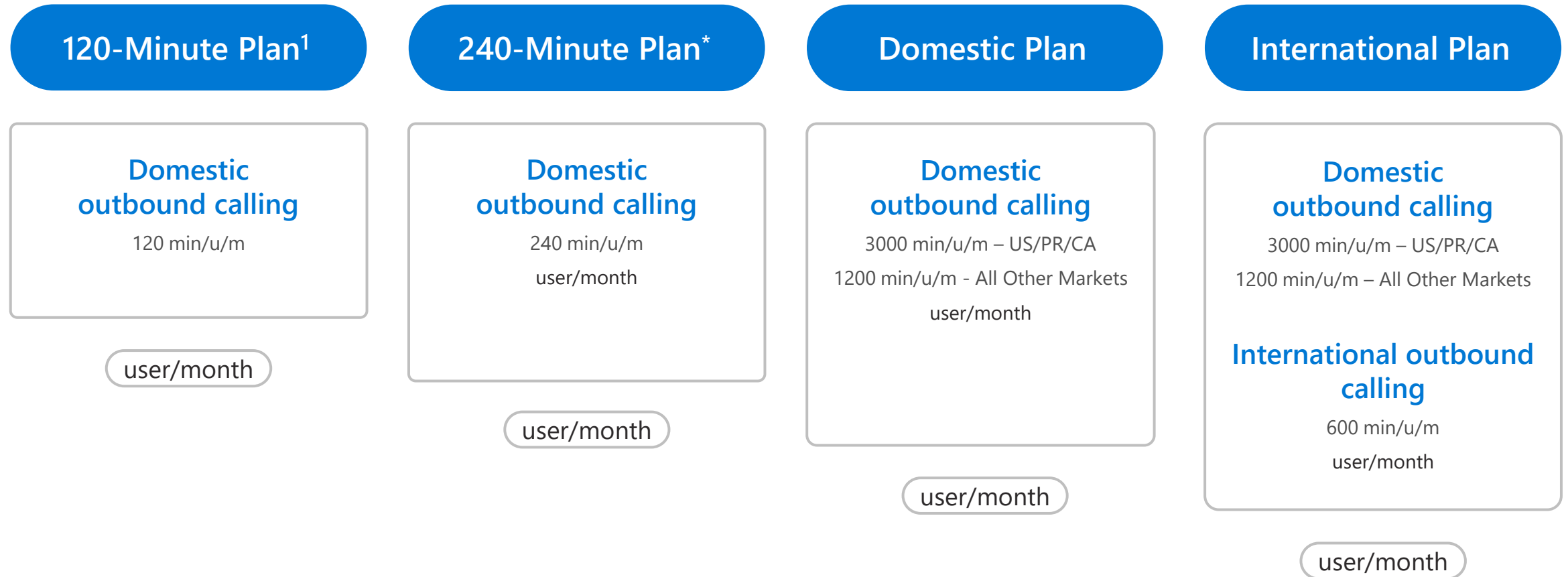
Licensed users can call out to numbers located in the country/region where they are assigned in Office 365¹ and to international numbers in [196 countries/regions](#).

Domestic Calling Plan

Licensed users can call out to numbers located in the country/region where they are assigned in Office 365¹.

¹Within select countries; see the service terms for details. Domestic Calling Plan is bundled with Business Voice in select markets.

Microsoft Teams Calling Plans



Minute limits are applied toward outbound minutes per user per month and pooled at the tenant level by plan and geography type. Only assigned licenses count towards total pooled minute limit, not the total number of purchased licenses. For more information, please see the [Which Calling Plan is right for you?](#) article.

Calling Plans : Minute Pooling Example

One plan per user. Minutes are pooled at plan and country level.

UK Domestic



5 Users

6,000

1,200 min/u/m
X 5 users
= 6,000 minutes



Cannot share
pooled mins

US Domestic



5 Users

15,000 mins

3,000 min/u/m
X 5 users
= 15,000 minutes



Cannot share
pooled mins

US Domestic & International



5 Users



Whichever is
reached first

15,000
domestic
mins

3,000
international
mins

3,000 min/u/m
X 5 users
= 15,000 dom. Mins

600 min/u/m
X 5 users
= 3,000 int'l mins

*Note: Pool size is based on *assigned* licenses and not on purchased licenses.*

International Plan: Where can you call?

196+ countries included in International Plan

Not included in calling plan*

Antarctica	Kiribati	Seychelles
Burundi	North Korea	Sierra Leone
Chad	Liberia	Solomon Islands
Cook Islands	Madagascar	Somalia
Cuba	Maldives	St. Helena
East Timor	Mauritania	Tokelau
Falkland Islands (Malvinas)	Niue	Tonga
Gabon	Papua New Guinea	Tunisia
Gambia	Samoa	Tuvalu
Guinea-Bissau	Sao Tome and Principe	Vanuatu

***Calls to these countries require consumption (Communication Credits) and are billed per minute.**

For current list of available dial-in and dial-out countries, please visit our [countries list](#).



Communications Credits

Communications Credits enable additional capabilities beyond what is included in the **Audio Conferencing** and **Calling Plan** subscription plans.

Communications Credits uses a **pre-paid billing model** and can be enabled on any tenant licensed for Audio Conferencing or Calling Plans.

Communications Credits provides:



Audio Conferencing

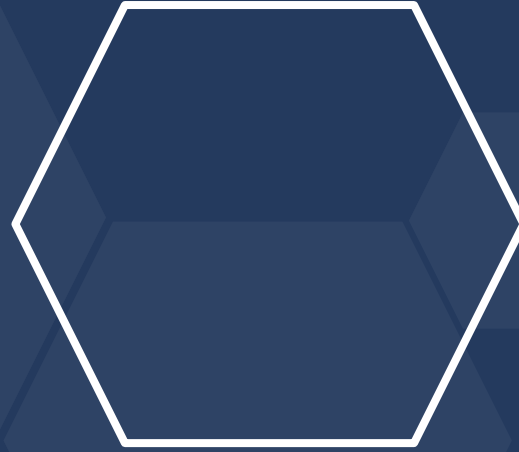
- Toll free dial-in conferencing
- Dial out conferencing to pay-as-you-go countries
- Dial out conferencing to Included/zone A countries after monthly allocation of minutes has been consumed*



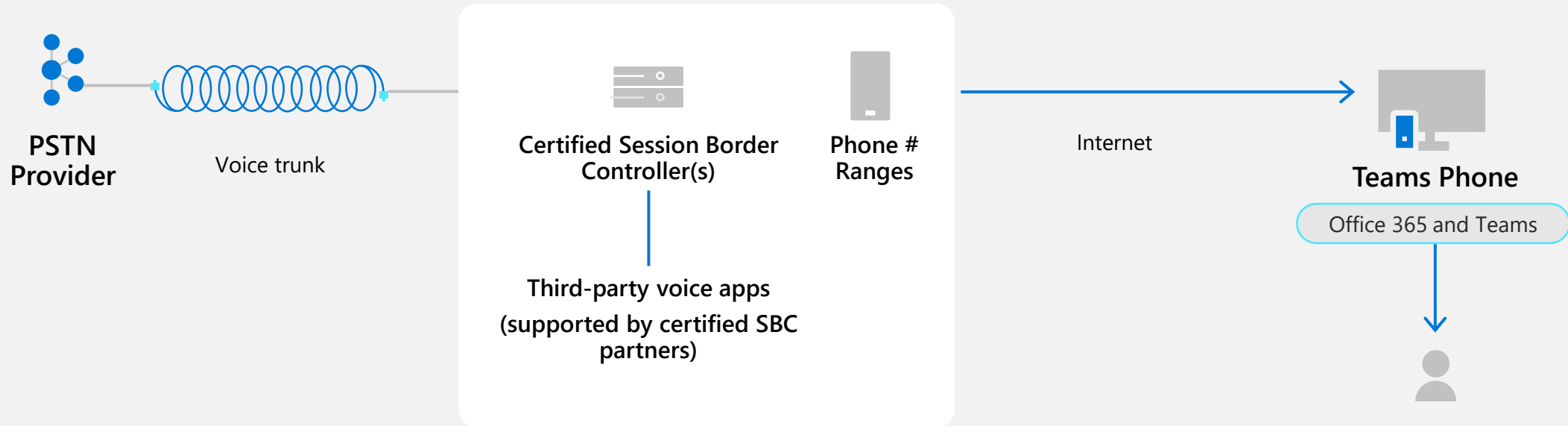
Calling Plan

- International outbound calling (for Domestic Calling Plans)
- International outbound to any country not included in base service plan (for International Calling Plans)
- Ability to overrun subscription plan minutes per month and pay per minute over the monthly allotment

Teams Direct Routing



Direct Routing



Directly route dial tone to Microsoft Teams users

Direct Routing in Microsoft 365 allows customers to connect their SIP trunks directly from their network. Customers can work with their local telecommunications provider to enable Microsoft Teams users to make and receive telephone calls. No porting required – keep your numbers.

Interoperability with third-party systems

Direct Routing allows customers with users in the Microsoft cloud to continue using third-party systems such as PBXs, call center, and analog telephony adaptors (ATA) helping preserve key investments.

Session Border Controllers (SBCs) certified for Direct routing

Microsoft partners with selected Session Border Controllers (SBC) vendors to certify that their SBCs work with Direct Routing

Microsoft works with each vendor to:

- Jointly work on the SIP interconnection protocols.
- Perform intense tests using a third-party lab. Only devices that pass the tests are certified.
- 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 SBCs.
- Establish a joint support process with the SBC vendors.
- SBCs can be physical appliances, or deployed in the cloud.
- List of supported SBCs: <https://aka.ms/dr-sbc>

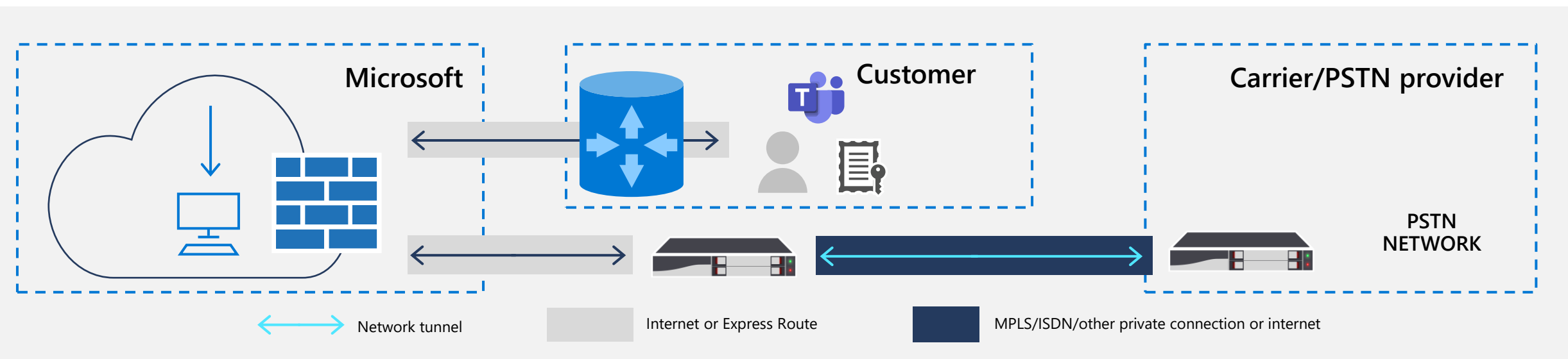


Session Border Controllers certified for Direct Routing



For the latest updates, please refer to: <https://learn.microsoft.com/en-us/microsoftteams/direct-routing-border-controllers>

Notional Direct Routing Deployment Model



Requirements to each involved party:

Microsoft	Customer	Carrier
Teams Phone Teams client Support (including incident transfers been Microsoft and SBC vendors) Configuration guidance/documentation	"E5" or "E3 + Microsoft Teams Phone licenses" Contract with carrier The supported SBC (including the support contract) Access to the SBC from the Office 365 Public IP FQDN Certificate Configuration of SBC with Office 365 and carrier	Telephony trunk Support

Configuration and support includes interaction between four entities: Microsoft, SBC vendor, customer support and consultants, carrier

Survivable Branch Appliance with Direct Routing

A Survivable Branch Appliance (SBA) provides the ability to survive telephony connectivity for Microsoft Teams clients in case the connection between Microsoft and the customer premises is not available

Components of an SBA

- Tenant data sync service
- Keep alive interface
- Router
- NGC to SIP protocol converter
- Registrar
- Lightweight routing engine
- CDR service

Supported vendors



Survivable Functionality when in Offline Mode



Available

- Inbound PSTN call
- Outbound PSTN call
- Mute/Unmute
- Hold/Un-hold
- DTMF
- Call history during outage updated once online
- Up to 24-hour limit for offline mode (per last authentication to the Teams service)



Not Available

- VOIP calls
- User interface features: Add/Remove contact, Search, Add/Remove to speed-dial, voice mail
- In Call: call escalation to multiparty
- Complex enterprise features: Call forwarding, call queue, merge, consult transfer, delegation, call queues, and auto attendants
- e911 or Dynamic 911 support
- More than 24-hours outage

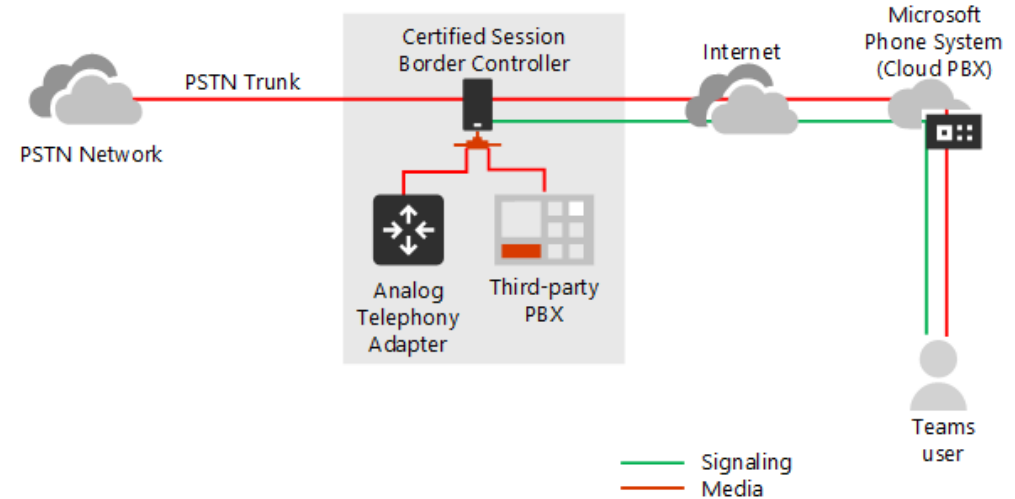
Note: Requires media bypass to be enabled within the SBC so that endpoints local to the branch site are able to route media to the SBC directly

For additional details, please refer to: <https://learn.microsoft.com/en-us/microsoftteams/direct-routing-survivable-branch-appliance>

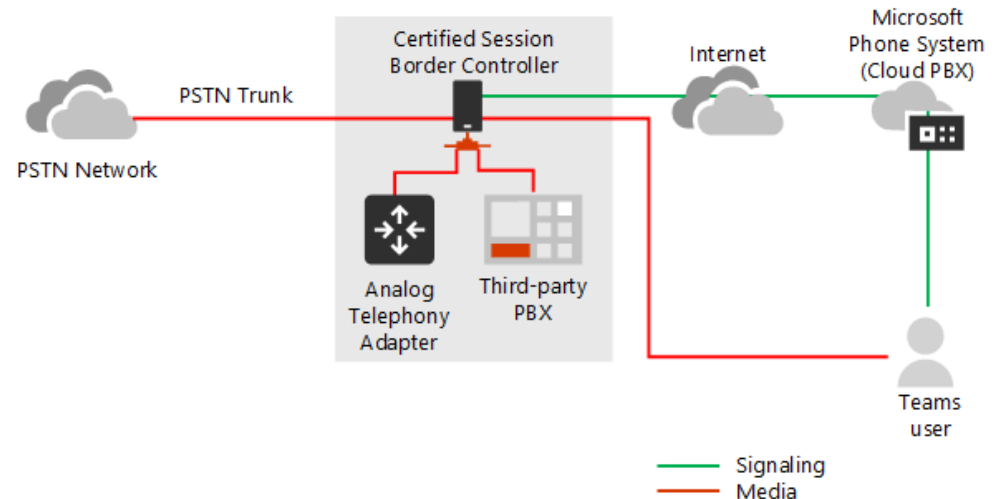
Direct Routing with Media bypass:

- Teams user needs access to the public IP address of the SBC (even from internal) unless utilizing local media optimization
- Recommended when user is in the same physical building/network as the SBC
- Signaling (SIP/TLS) is always through the Microsoft cloud

Call flow without media bypass



Call flow with media bypass



For additional details, please refer to: <https://docs.microsoft.com/en-us/microsoftteams/direct-routing-plan-media-bypass>

Direct Routing with Local Media Optimization:

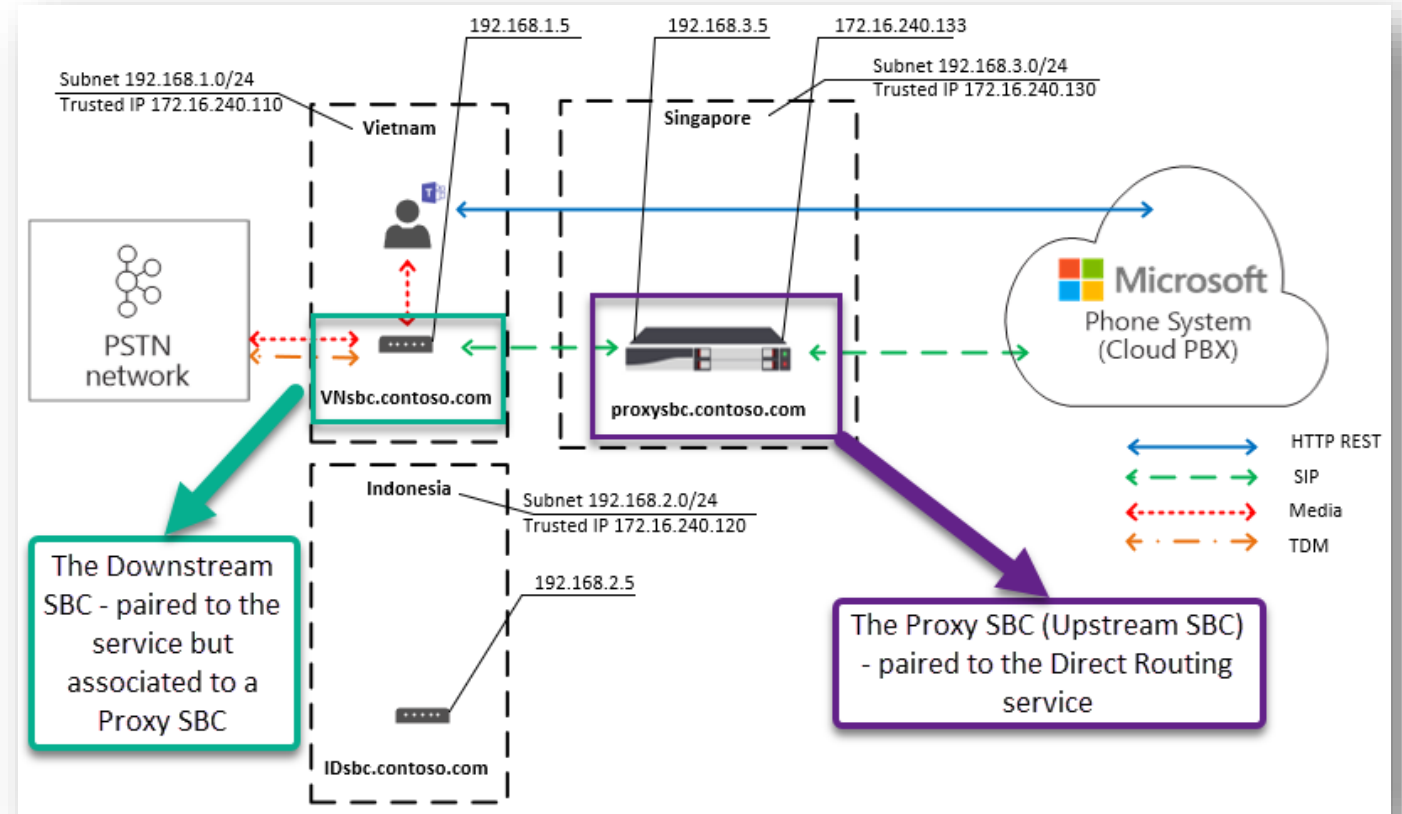
Proxy SBC

- Has a public IP address
- Deployed in the same manner as any SBC for Direct Routing
- Can be targets of Online Voice Routes

Downstream SBC

- Does not have a public IP address assigned
- Paired to the service with association to Proxy SBC
- Can be targets of Online Voice Routes

Call flow with Local Media Optimization



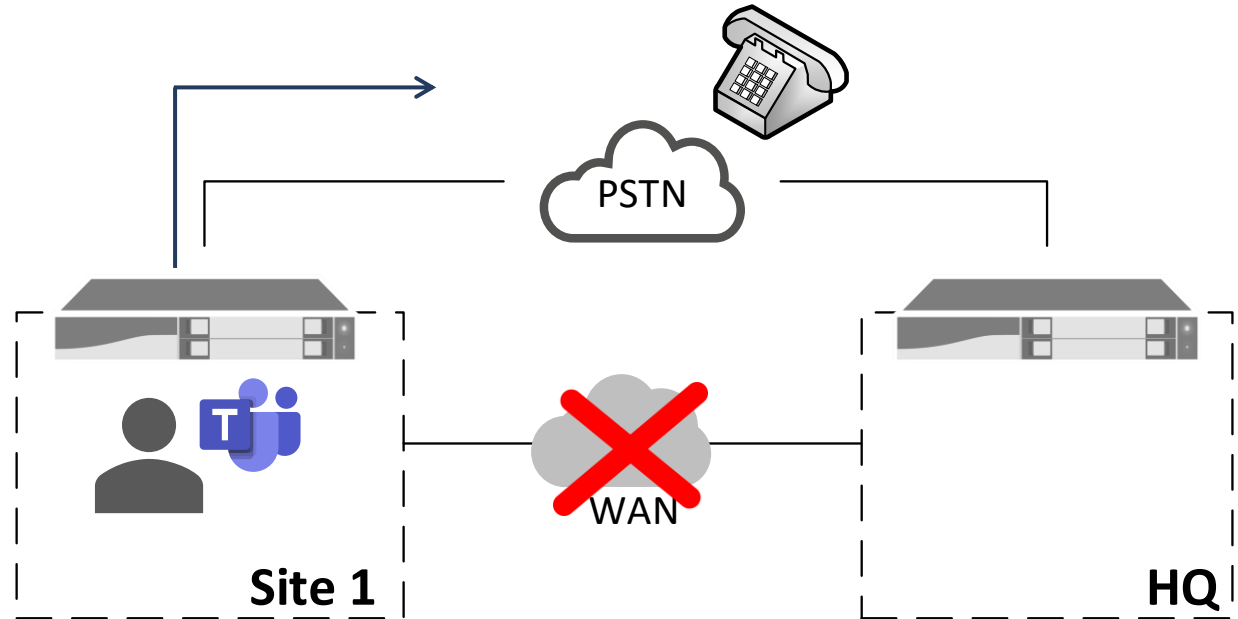
For additional details, please refer to:

<https://docs.microsoft.com/en-us/microsoftteams/direct-routing-media-optimization>

Direct Routing with Location-based Routing:

- In some countries and regions, it's illegal to bypass the Public Switched Telephone Network (PSTN) provider to decrease long-distance calling costs.
- Location-based routing is a feature that lets you restrict toll bypass based on policy and the user's geographic location at the time of an inbound or outbound PSTN call.
- Location-based routing is intended to provide a mechanism to prevent toll bypass.
- It shouldn't be used as a mechanism to dynamically route PSTN calls based on the location of the user or unintended consequences may result.

Call flow with Local Based Routing



For additional details, please refer to:

<https://docs.microsoft.com/en-us/microsoftteams/location-based-routing-plan>

Teams Operator Connect



Operator Connect for Microsoft Teams Telephony

Simply and Seamlessly Enable Calling in Microsoft Teams Using Your Existing Telecom Operator

Bring your own Telecom Operator

Maintain your operator contracts and relationships, while providing users a modern calling experience in Teams.

Setup in Minutes; Simplify Provisioning and Management

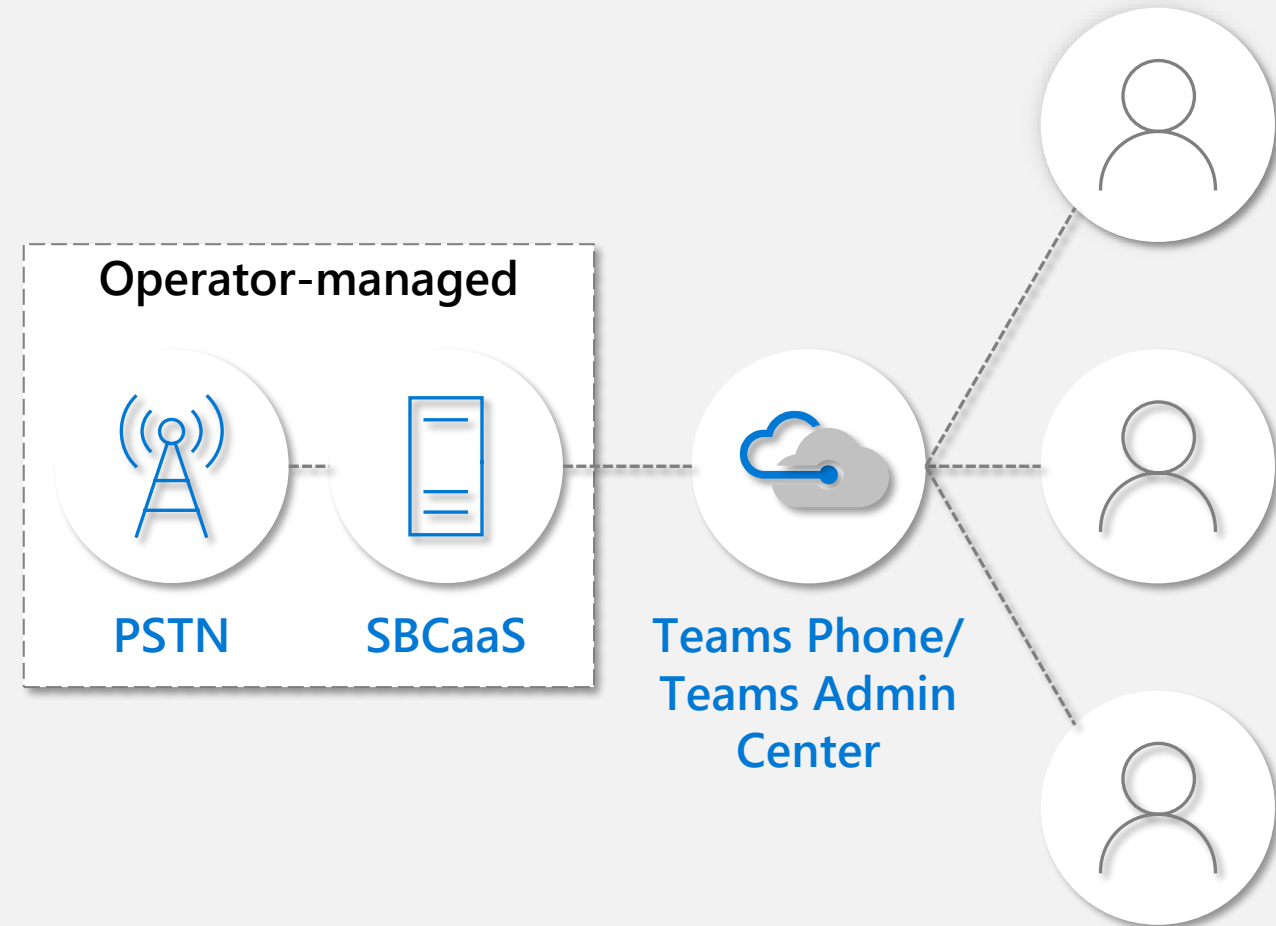
Establish the connection to your operator, provision users, and assign phone numbers from the Teams admin center.

Save on Infrastructure Purchase and Management

Manage call control in the cloud with Teams Phone, eliminating need to purchase and maintain equipment.

Feel Confident with Enterprise-grade Reliability and Support

Operators provide technical support and service level agreements, and direct peering powered by Azure creates a 1:1 network connection to enhance resilience.



Operator Connect for Conferencing

Add Telecom Operator Dial-in Numbers to a Microsoft Audio Conferencing Bridge

Bring your own Telecom Operator

Maintain your preferred telecom operator contracts and relationships as you migrate to the cloud

Variety of Telecom Operators Available at Your Fingertips

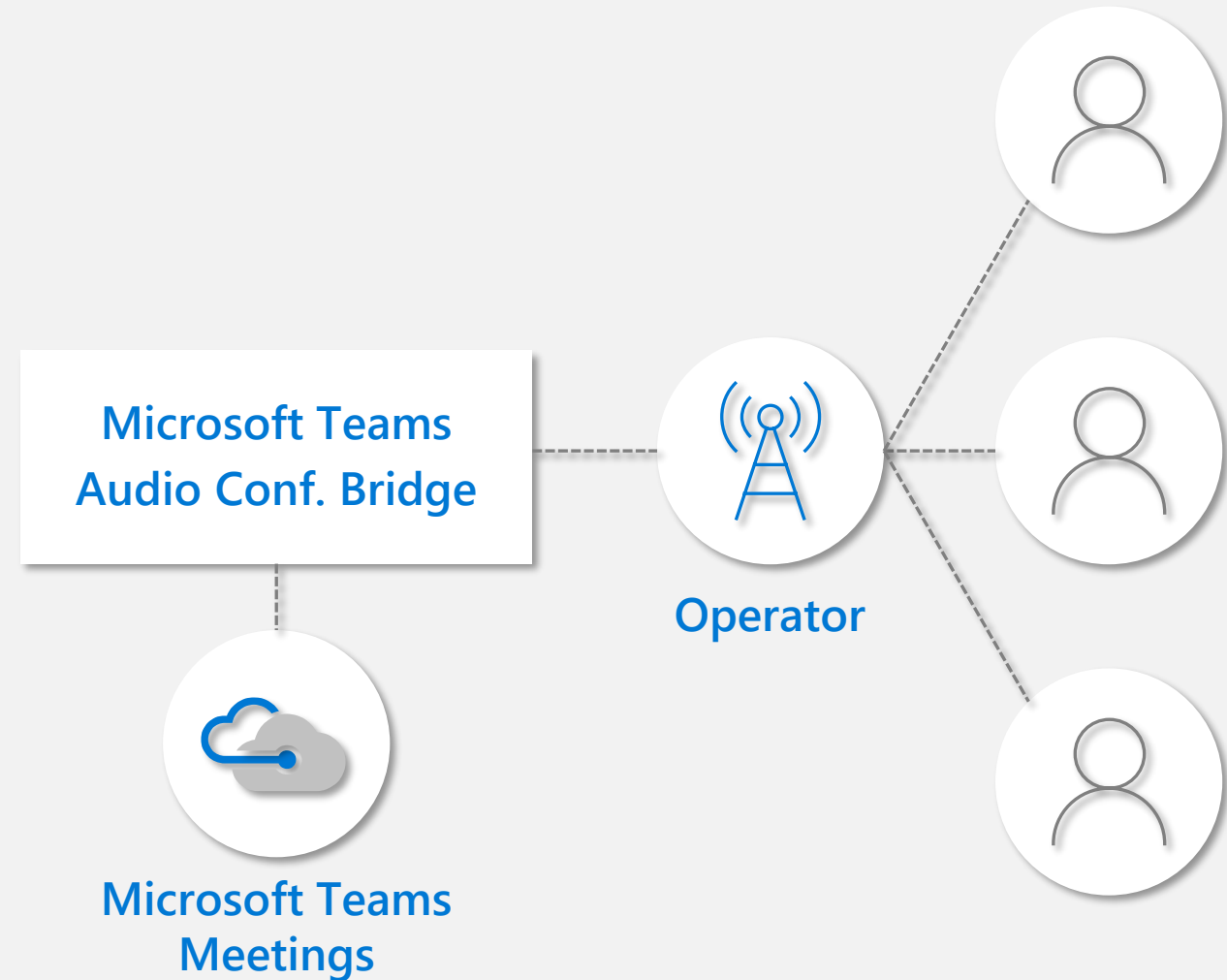
Establish the connection to your operator, provision users, and assign phone numbers from the Teams admin center

Expanded Geographic Dial-in Coverage

Manage call control in the cloud with Phone System, eliminating need to purchase and maintain equipment

Feel Confident with Enterprise-grade Reliability & Support

The tight partnership with operator partners provides enhanced technical support and service-level agreements to address reliability



Operator Connect for Mobile

Simply and Seamlessly Enable SIM-Enabled Unified Calling in Microsoft Teams Using Your Existing Mobile Telecom Operator

Bring Your Own Mobile Operator

Utilize a single SIM-enabled number as your unified number to support all mobile and calling scenarios directly through Teams.

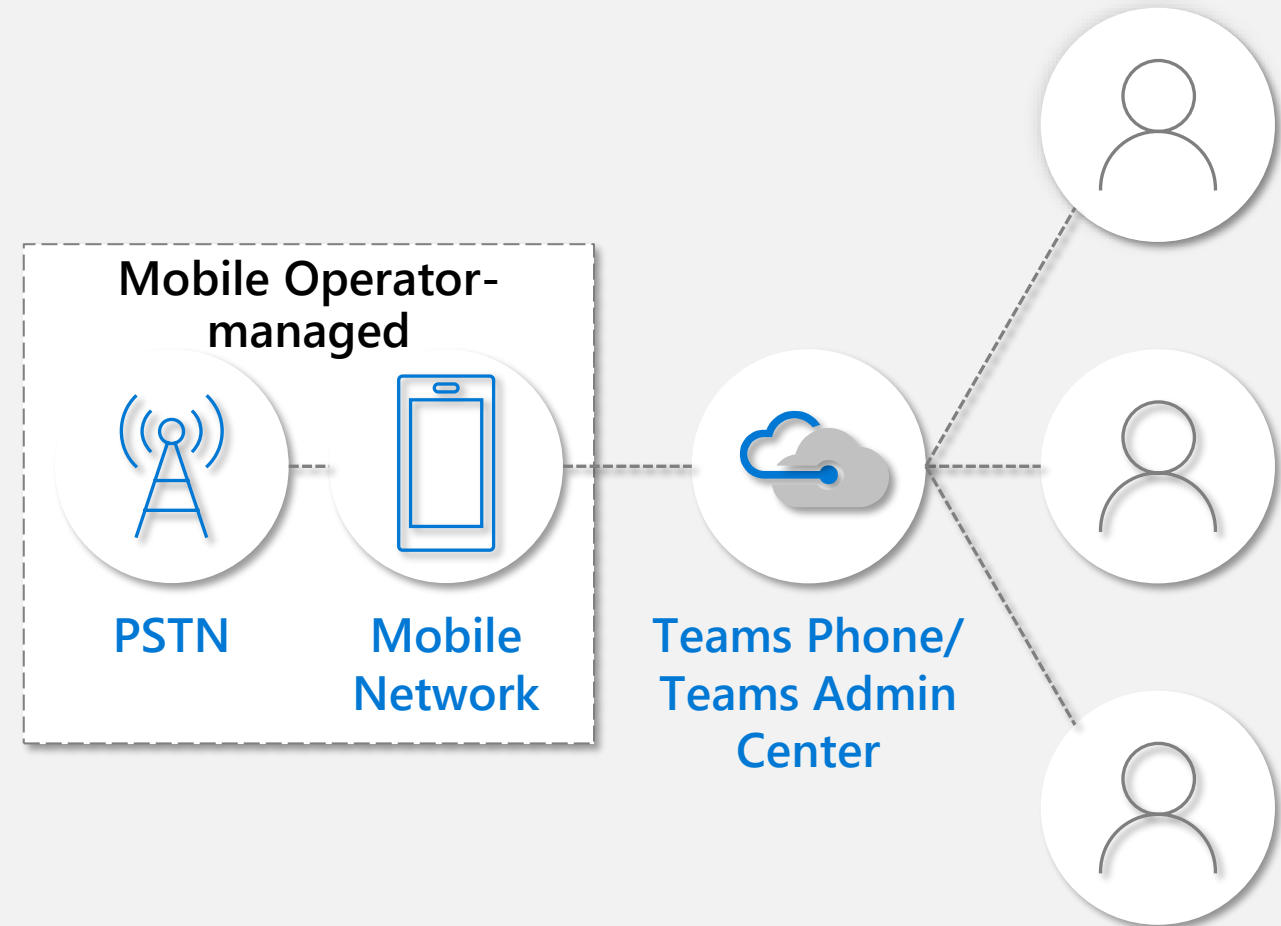
Variety of Mobile Telecom Operators Available at Your Fingertips

Establish connection to your mobile operator via the Teams admin center by leveraging the same familiar Operator Connect experience to provision users and assign phone numbers directly.

Converged Fixed-Mobile Communication Flexibility

Enable flexible communication and collab scenarios through leveraging your mobile phone's native dialer, seamlessly moving calls across networks/devices; enhancing with collaboration (e.g. adding video to an existing call (via VoIP) directly and natively through Teams.

**Coming Soon



**Initial partners at launch



<https://aka.ms/OperatorConnect>

<https://techcommunity.microsoft.com/t5/microsoft-teams-blog/highlights-from-enterprise-connect-2022-new-microsoft-teams/ba-p/3263176>

Operator Connect: Enhancements

Interconnection	>	Direct peering through Microsoft Azure Peering Service (MAPS) Provisioning APIs and an operator portal for setting up trunk to Microsoft Teams
Number provisioning	>	Upload (using API or portal) phone numbers/DID's to the Teams admin center Display and assign phone numbers/DID's to tenants in the Teams admin center
Management	>	Seamless customer provided access (by geography) to operator for management of voice tenant Operator management portal for customer tenants
Reporting	>	API's and reporting for sharing CDR, QoE, telephone numbers, and SLA Joint customer admin reporting (CQD / CDR)
GTM	>	Operator presence in Microsoft Teams admin center, by geography and service Assignment/management experience for operator numbers and plans embedded in the portal
Operations & communications	>	Regular communications for service interface changes and product updates Regular communications around network SLA and call quality
Support	>	Joint back-to-back support model, support-to-support, and engineering-to-engineering Proactive diagnostic/alerts for trunk setup and health

-
- Dashboard
- Teams
- Devices
- Locations
- Users
- Meetings
- Messaging policies
- Teams apps
- Voice
- Operators
- Phone numbers
- Emergency policies
- Dial plans
- Direct Routing
- Voice routing policies
- Call queues
- Auto attendants
- Call park policies
- Calling policies
- Caller ID policies
- Policy packages
- Analytics & reports
- Org-wide settings
- Planning
- Call quality dashboard

Operators

Here you can manage partnerships with phone number providers. You can only acquire phone numbers from providers you have established partnership with. [Learn more](#)

Operator summary

39

All operators


0

My operators

- All Operators
- My Operators

Unites States of America

Calling, Audio conferencing



Contoso Telecom


Available products

✓ Calling,
✓ Audio conference

Served regions

USA, Canada, +3 more

Offer details



TelePacific


Available products

✓ Calling,
✓ Audio conference

Served regions

USA, Canada, + 101 more

Offer details



ODAA Corp.



Available products



✓ Calling



Served regions



Italy, Germany, + 2 more


Offer details



- 
-  Dashboard


 Teams 



 Devices 



 Locations 

 Users

 Meetings 

 Messaging policies

 Teams apps 

 Voice 

Operators

Phone Numbers

Emergency policies

Dial plans

Direct Routing

Voice routing policies


Call queues



Auto attendants



Call park policies



Calling policies



Caller ID policies

 Policy packages

 Analytics & reports 

 Org-wide settings 

 Planning 


 Call quality dashboard 


Phone numbers


 Manage porting PIN


To set up calling features for users and services in your organization, you can get new numbers or port existing ones from a service provider. You can manage phone numbers including assigning, unassigning and releasing phone numbers for people or for services like audio conferencing, auto attendants or call queues. [Learn more](#)



- Numbers
- Order history

 Add

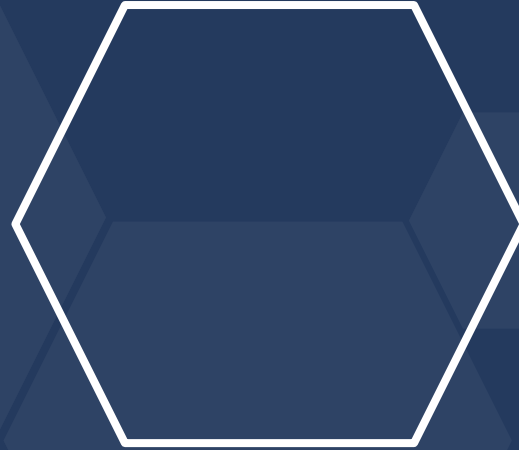
 Port

 Edit

 Search for phone numbers



Teams Dynamic (911) Emergency Calling



Overview: Dynamic Emergency Calling

Route emergency calls based on the known location of the Teams client



Call Routing Service included for Calling Plan Users



Direct Routing users must obtain additional service [Emergency Routing Service Providers – see <https://aka.ms/dr-sbc>]

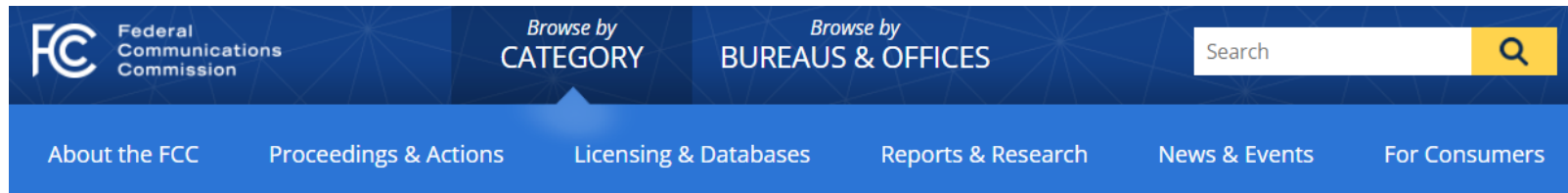


Direct Routing can also leverage Emergency Location Identification Number [ELIN] gateways [upcoming support – see <https://aka.ms/dr-sbc>]



Configure security desk notifications

Legislation: Dynamic Emergency Calling (source FCC)



Home / Public Safety / Policy and Licensing Division / 911 Services /

Multi-line Telephone Systems – Kari’s Law and RAY BAUM’S Act 911 Direct Dialing, Notification, and Dispatchable Location Requirements

911 Services

[Annual 911 Fee Reports](#)

[911 Strike Force](#)

[911 Master PSAP Registry](#)

[Dispatchable Location](#)

[PSAP Text-to-911 Readiness and Certification Form](#)

[Task Force on Optimal Public Safety Answering Point Architecture \(TFOPA\)](#)

[Indoor Location Accuracy Timeline and Live Call Data Reporting](#)

In August 2019, the Commission adopted rules implementing two federal laws that strengthen emergency calling: Kari’s Law and Section 506 of RAY BAUM’S Act.

Kari’s Law – Direct Dialing and Notification for MLTS

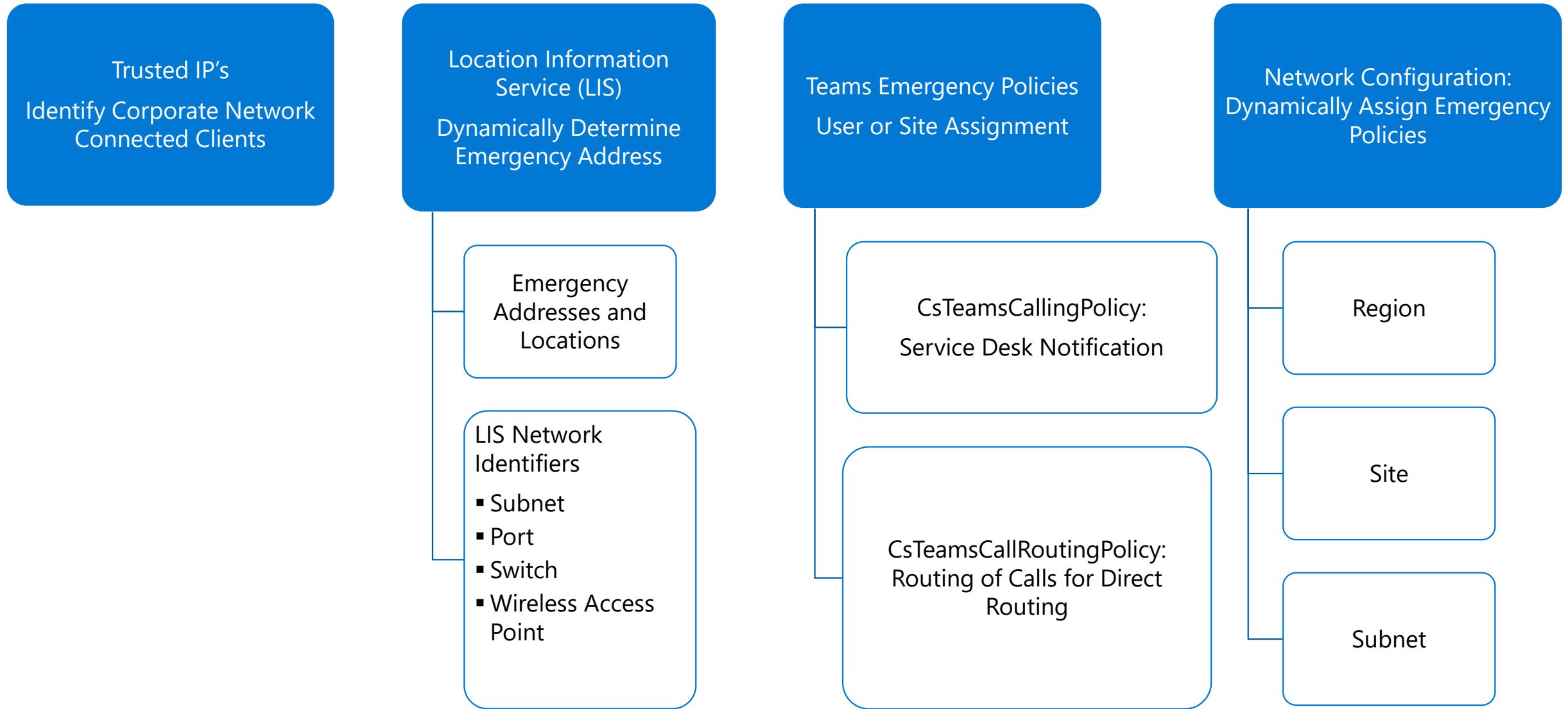
Kari’s Law is named in honor of Kari Hunt, who was killed by her estranged husband in a motel room in Marshall, Texas in 2013. Ms. Hunt’s 9-year-old daughter tried to call 911 for help four times from the motel room phone, but the call never went through because she did not know that the motel’s phone system required dialing “9” for an outbound line before dialing 911.

Congress responded by enacting Kari’s Law in 2018. Kari’s Law requires direct 911 dialing and notification capabilities in multi-line telephone systems (MLTS), which are typically found in enterprises such as office buildings, campuses, and hotels. The statute provides that these requirements take effect on February 16, 2020, two years after the enactment date of Kari’s Law. In addition, Kari’s Law and the federal rules are forward-looking and apply only with respect to MLTS that are manufactured, imported, offered for first sale or lease, first sold or leased, or installed after February 16, 2020.

Under the statute and the Commission’s rules, MLTS manufacturers and vendors must pre-configure these systems to support direct dialing of 911—that is, to enable the user to dial 911 without having to dial any prefix or access code, such as the number 9. In addition, MLTS installers, managers, and operators must ensure that the systems support

<https://www.fcc.gov/mlts-911-requirements>

Dynamic Emergency Calling Configuration Components



For additional details, please refer to: <https://learn.microsoft.com/en-us/microsoftteams/configure-dynamic-emergency-calling>

Dynamic Emergency Calling Considerations: Direct Routing

For Direct Routing, an Emergency Routing Service Provider is required for integration so that emergency calls with a dynamically acquired location will be automatically routed to the Public Safety Answering Point (PSAP) serving that location.



With Direct Routing, you must further define:

- Emergency calling policy**
- Emergency call routing policy
- Dialplan supporting emergency number routing
- Additional configuration as required for routing emergency calls with certified 911 Provider

Certified 911 Providers for Direct Routing

- [Bandwidth Dynamic Location Routing](#)
- [Intrado Emergency Routing Service \(ERS\)](#)
- [Intrado Emergency Gateway \(EGW\)](#)
- [Inteliquent](#)

For additional details, please refer to: <https://aka.ms/tec>

Dynamic 911 Emergency Banner Notification

Search

MA

Activity

Chat

Teams

Calendar

Calls

Files

Calls

Phone

Contacts

Reminder: In the event of a medical emergency, dial 911, where a trained emergency dispatcher will handle your call and dispatch emergency personnel as necessary.

OK

Type a name or number

1

2

3

4

5

6

7

8

9

*

0

#

Call

History

All

WOODWARD IA

Missed

5/9/2022

LIVA,MICHELE

Missed

5/3/2022

DEBT RELIEF

Missed

5/2/2022

WASHINGTON CALL

Missed

4/26/2022

Debra Berger

Missed

4/26/2022

WASHINGTON CALL

Missed

4/26/2022

WASHINGTON CALL

Missed

4/26/2022


Speed dial

Test Contact

Test

Other Contacts

Dynamic Emergency Work From Home Considerations

 **Calls** Phone Contacts

Type a name or number

1

2
ABC

3
DEF

4
GHI

5
JKL

6
MNO

7
PQRS


8
TUV

9
WXYZ

*


0
+


#


 Call


Work number: +1 425-555-1212

Parked calls

 One Microsoft Way, Redm..

 Don't forward

 Zone Wireless

 **Calls** Phone Contacts

Type a name or number

1

2
ABC

3
DEF

4
GHI

5
JKL

6
MNO

7
PQRS


8
TUV

9
WXYZ

*

0
+


#


 Call


Work number: +1 425-555-1212


Parked calls


Your current emergency location

 Edit your address

 Confirm your address

 One Microsoft Way, Redm..

 Don't forward

 Zone Wireless

Edit your current location *(All fields are required.)*

One

Microsoft Way

Redmond

WA

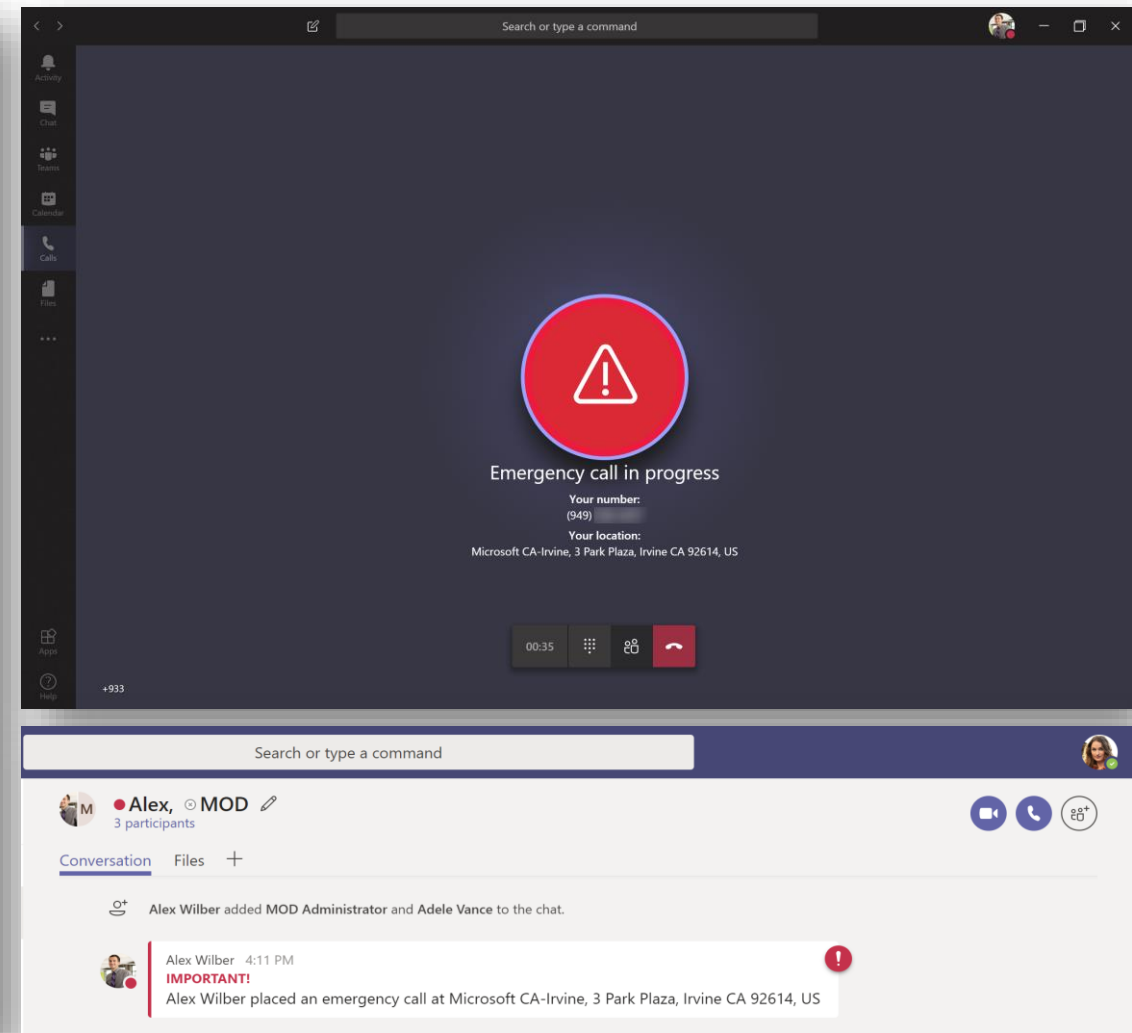
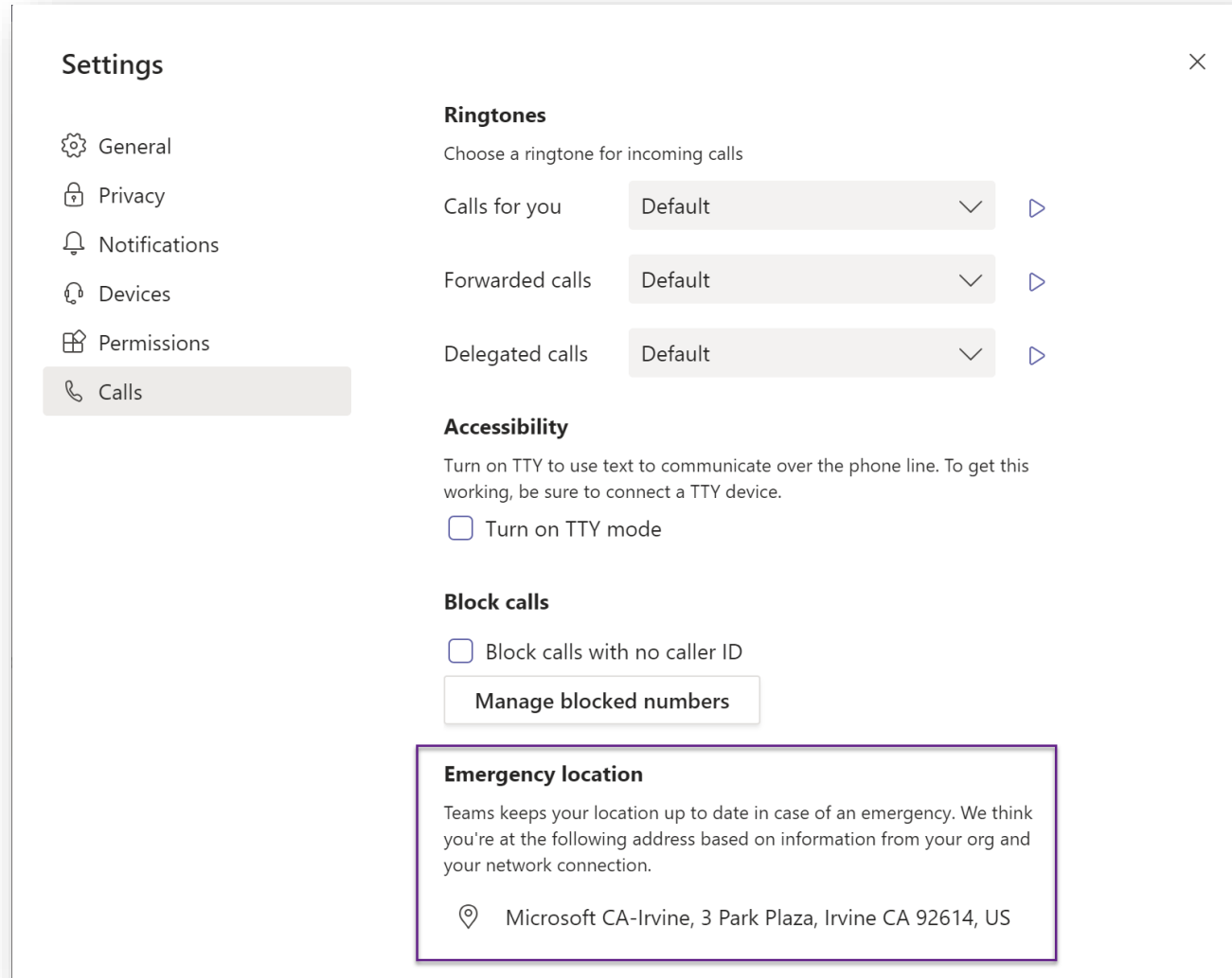
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US

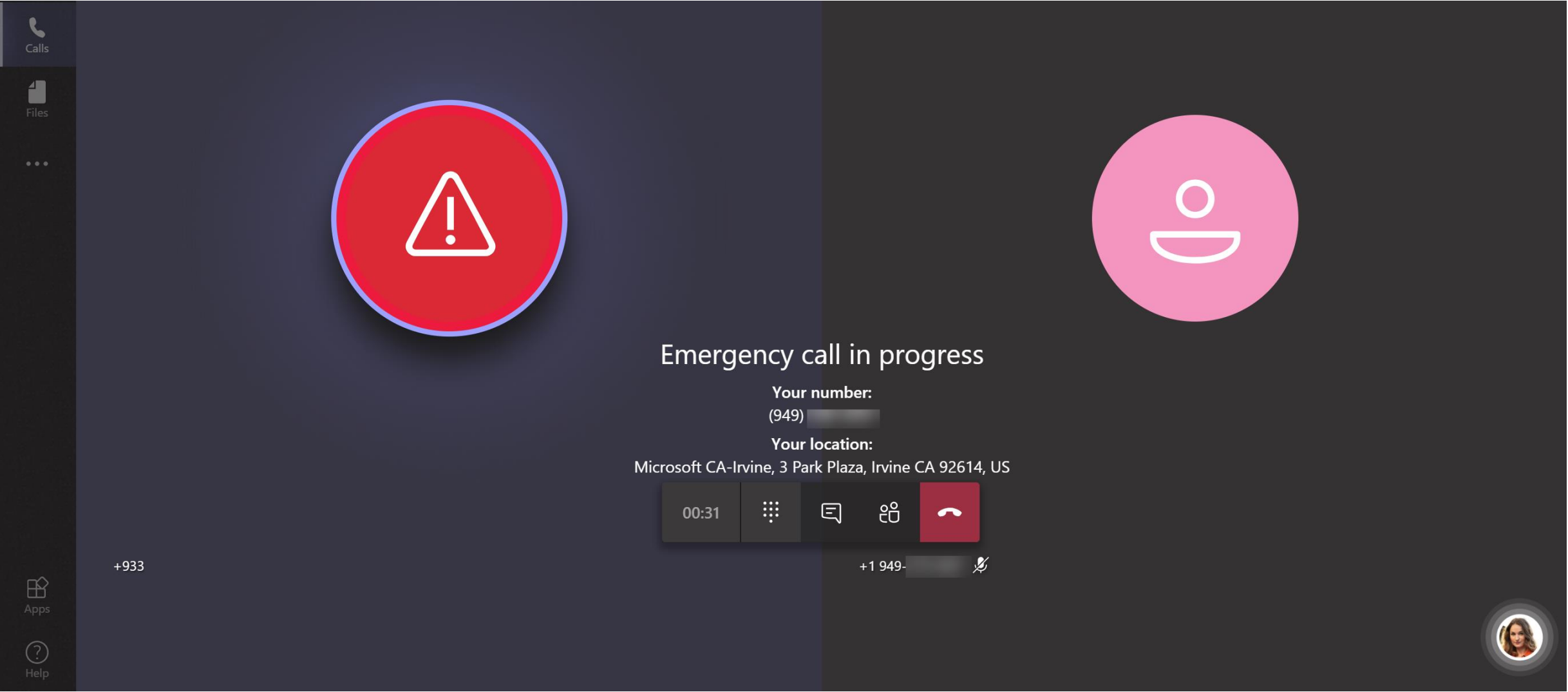
Cancel

Confirm

Dynamic Emergency Calling User Experience



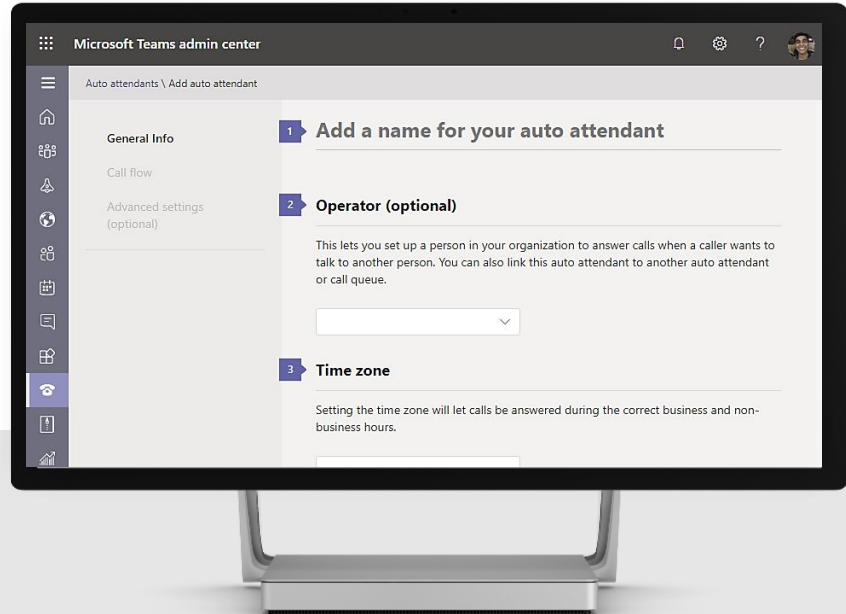
Dynamic Emergency Calling Security Desk Notification (e.g. Conferenced in, but muted)



Teams Auto Attendants and Call Queues

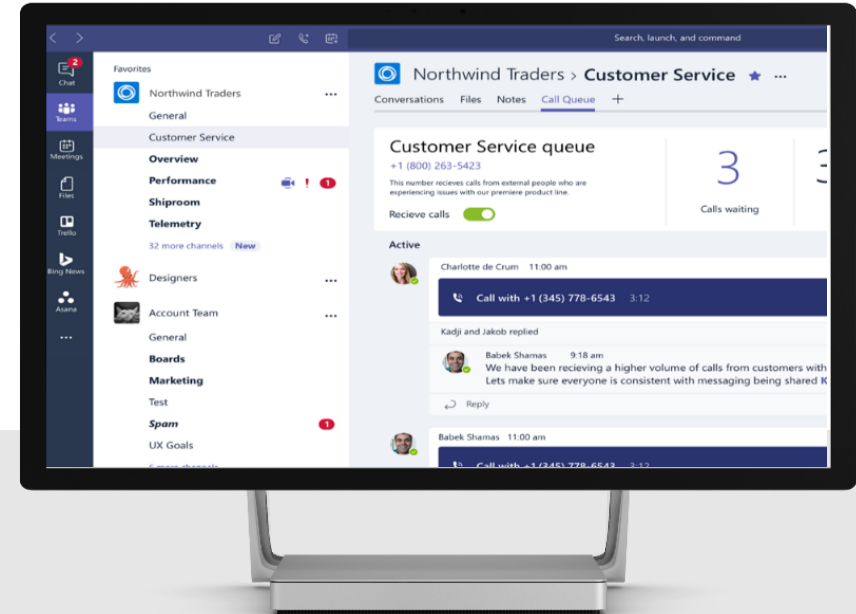


Auto Attendant and Call Queues



Auto attendant

- Toll-free and local service numbers
- Dial-by-name directory search
- Custom greetings and menus
- Operator option
- Speech recognition in 14 languages
- Admin portal UI and PowerShell cmdlets



Call queues

- Coordinate teams of people working together in a channel
- Boost collaboration and efficiency with chat and call queues
- Enjoy role-based for supervisor / agents and agent sign-in/out
- Use supervisor listen, whisper, and barge with integrated chat for cross-agent support and teaming

Call queues and auto attendant prerequisites

To configure auto attendants and call queues, you need the following resources:

A resource account for each auto attendant and each call queue

Phone System Virtual User license for each resource account

At least one Microsoft service number, Direct Routing number, or a hybrid number for each resource account that you want to be directly dialable. The service number may be a toll or toll-free number.



Agent prerequisites

Agents who receive calls from the call queues must be Enterprise Voice enabled online or on-premise users

In addition, if the call queues are using Direct Routing numbers, agents who need to conference or transfer calls also require:

1. An online voice routing policy assigned if the call queue uses transfer mode
2. An Audio Conferencing license or online voice routing policy assigned if the call queue uses conference mode

If your agents are using the Microsoft Teams app for call queue calls, they need to be in Teams Only mode




6 hidden channels

+


Filters


 Dial pad



Daniela Mander


Available to take calls






Casandra Dunn


On call






Keiko Tanaka


On call






Kadji Bell


Available






Will Little


On call






Sarah Roach


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




Bryan Wright


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




Bruno Zhao


Available





Lawrence Gilbertson

Available



Teams Voice Device Considerations



Teamwork across spaces and devices

United by Microsoft Teams



Individual workspaces

Individual office or dedicated workspace
On the go or in transit at home



Group workspaces

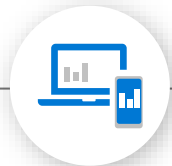
Small, medium and large meeting rooms
huddle/focus spaces and touchdown spaces
collaboration workspaces



Personal devices



Audio & video
peripherals



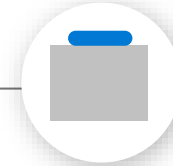
PCs and
Mobile



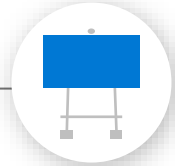
Phones



Conference
phones



Teams
Rooms



Surface
Hub

3PIP Gateway (Available today)

EoL: **July 31st 2023**

Features **Supported**

Authentication
Sign in with user credentials/Web Sign-in
Modern Authentication
Phone lock/unlock
Hot Desking Support
Calling
Incoming/Outgoing P2P calls from/to Teams users
In-call controls via UI (Mute/unmute, hold/resume, blind transfer, end call)
PSTN calls
Visual Voicemail
Static 911 support (e.g. Dynamic 911 not supported)
Device Update and Management
Device Update
In-band provisioning
QoE & Log Upload
Common Area Phone Support

Meetings
One-click Join for Pre-Scheduled Teams Meeting
Meeting Call controls (Mute/unmute, hold/resume, hang up, Add/remove participant)
Meeting Reminders
Add Skype for Business participant to ongoing meeting

Calendar and Presence
Calendar Access and Meeting Details
Presence Integration
Exchange Calendar Integration
Contact Picture Integration
Corporate Directory Access
Visual Voicemail

Features **Not-Supported**

Native Teams Device Features (e.g. Examples)
Call forwarding*
Setting presence
DND (calls will still land on 3PIP)
Anything not listed as supported is unsupported

For additional information, please refer to : <https://techcommunity.microsoft.com/t5/microsoft-teams-blog/skype-for-business-phones-3pip-support-with-microsoft-teams/ba-p/789351>

SIP Gateway

Leverage your existing SIP phone investments

User authentication

Core calling features

- Inbound / outbound calls to Teams or PSTN (hold/resume with music, mute/unmute, DTMF)
- Call transfer (single step/blind, consulted transfer)
- Dial in/out from a meeting (audio conferencing)
- Device-only "do not disturb"
- Voicemail and message waiting indicator

Integrated into Teams routing policies/regulations

Device inventory management in Teams admin center

Static emergency calling, static emergency location support with security desk notifications

Compatible SIP phones



Cisco IP Phones with MPP firmware (6821, 6901, 7800 series, 8800 series)



Polycom SIP phones (VVX series 100, 200, 300, 400, 500, 600 etc.)



Yealink (T20 series, T30 series, T40 series, T50 series)



AudioCodes 400 HD series

For additional information, please refer to: <https://docs.microsoft.com/en-us/microsoftteams/sip-gateway-plan>



Thank you.

