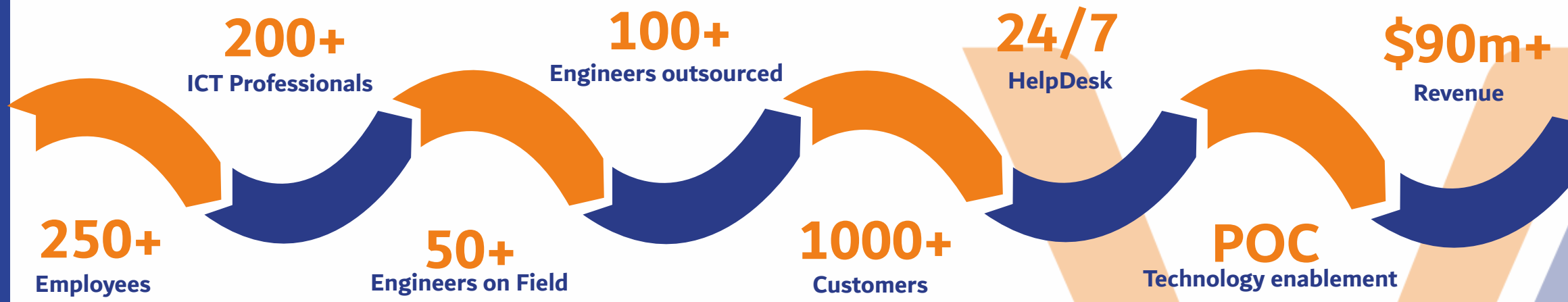
SEVENSEAS©
TECHNOLOGY

Rethinking IT

SEVEN SEAS
TECHNOLOGY

Today


250+
Employees
200+
ICT Professionals
50+
Engineers on Field
100+
Engineers outsourced
1000+
Customers
24/7
HelpDesk
POC
Technology enablement
$90m+
Revenue

Our Solutions

Enterprise Systems

Servers, Storages, Converged Systems , Laptops & PCs, Thin Clients Workstations, Printers IPG, Convertibles & detachable , All-in-ones , POS

Data Networking & Information Security

Wired & Wireless solution, Infrastructure Security , Data & App Security Identity Security, Managed Security Services, Cloud Security , Consulting Services

On- Premises Solutions

Microsoft EA, Client & Server Migrations, Virtualization, AD Consolidation, Exchange, Lync, System Center, Portals & Database Services.

Cloud Solutions

Office 365, Exchange Online, SharePoint Online, Lync Online, MS Team, MS-Azure, EMS ,OMS, Public/ Private/Hybrid Cloud, Hosting, Collaborations & DR Services

Infrastructure

Structured Cabling, Physical Security, UPS Solutions ,Audio Visual System & Data Center

Business Application

SQL Server, SharePoint, Microsoft ERP & CRM, SAP, FM ERP , RPA & Business Intelligence

Unified Communication

VoIP PBX, Call Center, CTI, CRM, IVR, Auto Dialler, Fax, Conferencing, Call Billing & Call-recording

Support Services

Warranty Services, Implementation Services, IT Relocations, SLA based Services, Consulting, Managed Services & Outsourcing

Cloud Capabilities

Azure Security Services

Azure Security centre, defender for azure, Azure Sentinel, Forcepoint/Fortigate NGFW deployment.

Security Services

Microsoft Defender for Office 365, Endpoint and Identity, Microsoft Information Protection, Microsoft Cloud App Security, Identity Governance.

Azure Solutions

Assessment and Cloud migration framework, Server migration to Azure, Azure Virtual Desktop deployment, New server hosting, BCP/DR deployment, backup, New PaaS deployment

Office 365 Solutions

Email Migration to Office 365, Adoption strategies for Collaboration services, Enablement of Office 365 Services

Network Solutions

Native Azure networking services, third party networking services like Cisco/Fortigate/Forcepoint deployment to azure

Cloud Governance

Cost Control, Access provisioning, Workload monitoring, cost analysis and report generation, budgeting the cloud costs

Calling and Meeting Services

Dial in Conferencing, PBX integration with Teams, live events and broadcasting, Manged voice services.

Support Services

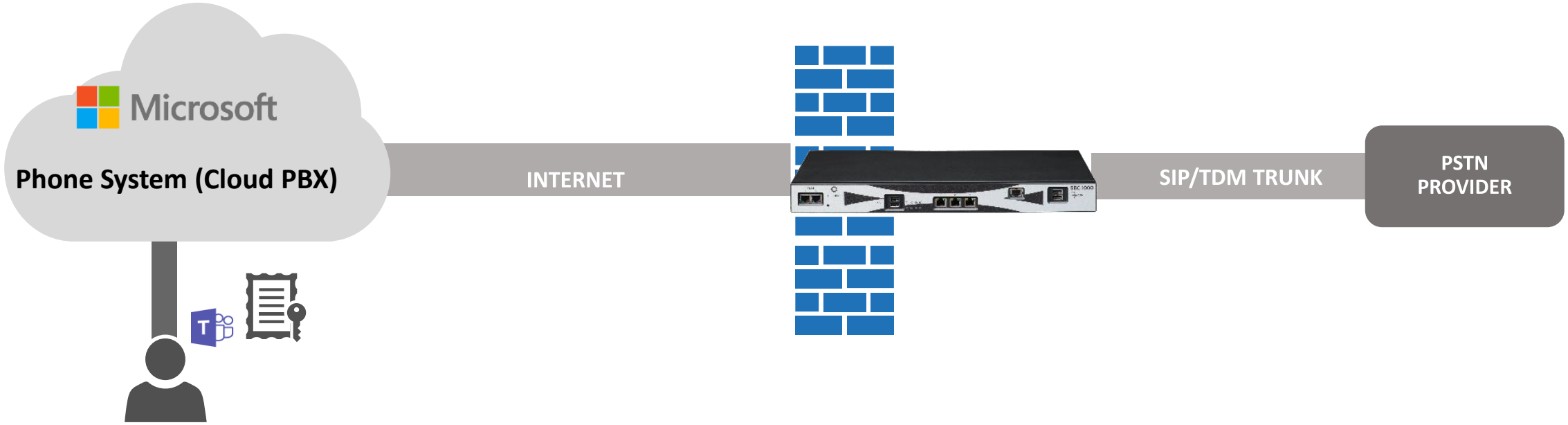
Monitoring of Resources, patching and life cycle maintenance of OS and SQL servers, Scheduled tasks for resources, SLA based break fix of cloud resources

What is Microsoft Teams Direct Routing?

- Direct Routing is a way to provide a **PSTN (public switched telephone network)** connection to Microsoft Teams users so that they can make and receive external phone calls on any device using Teams.

- Microsoft Teams can now be used as a business telephony solution, replacing (or can work in coexistence) an existing PBX phone system and its associated equipment and costs with a cloud-based system, to provide full PBX voice calling capabilities inside and outside your organization.

MS Teams Telephony Architecture



Microsoft Provides:

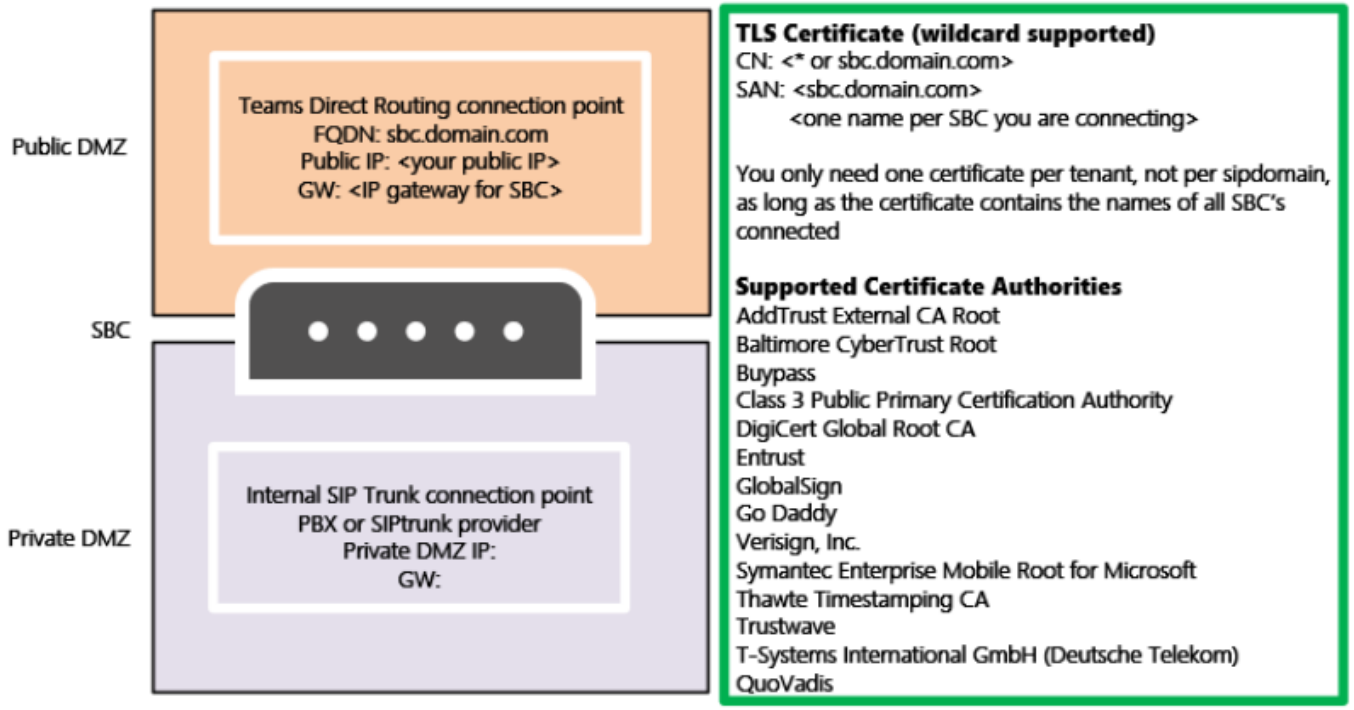
- Phone System;
- Teams Client

Customer Provides:

- The supported SBC, ex: Ribbon;
- Access to the SBC from the Office 365;
- Public IP for SBC;
- Register FQDN name for SBC;
- Certificate;
- Telephony trunk;

MS Teams Requirements & Components

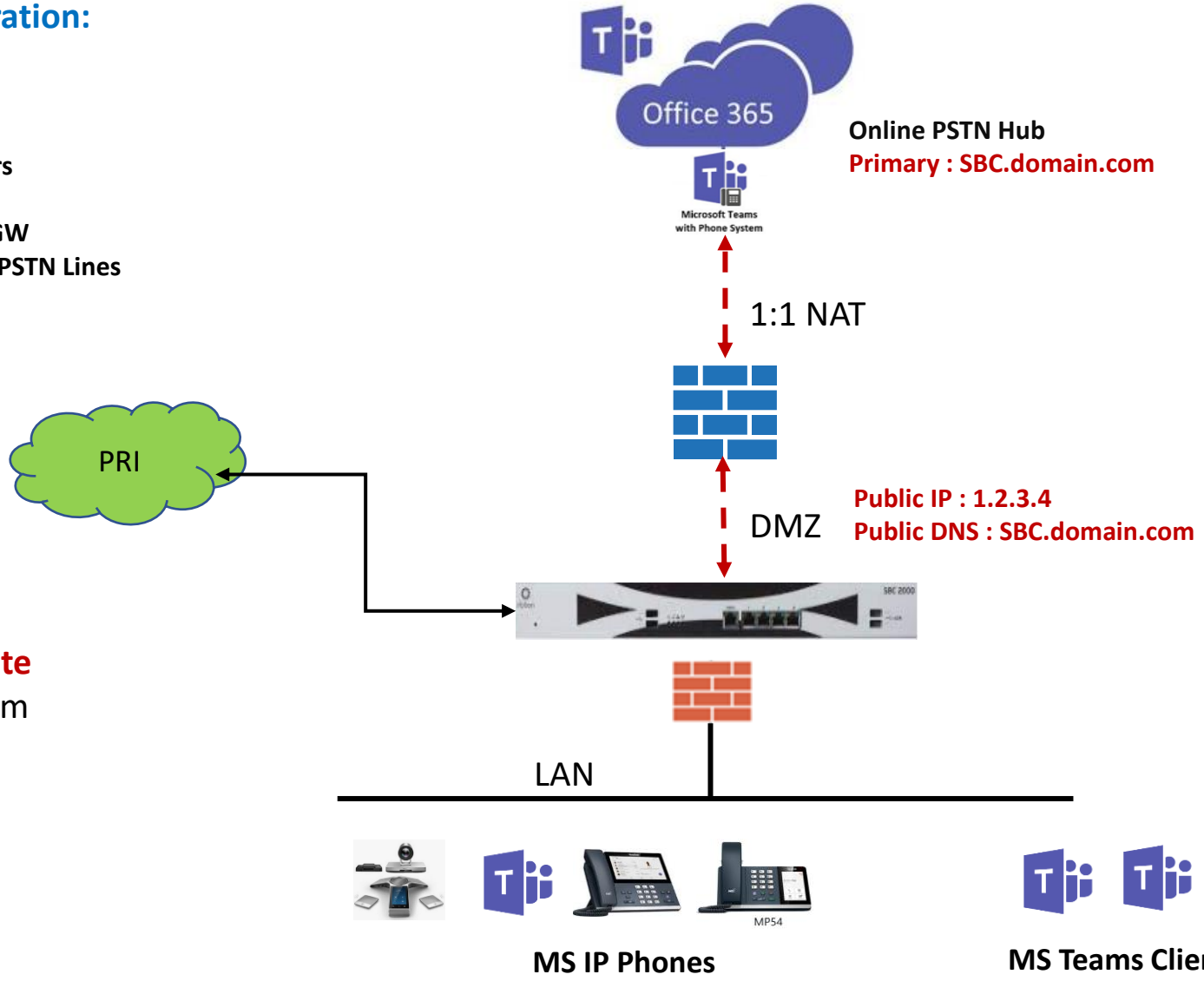
- Microsoft License E3 + Phone System (or) E5 License
- Static Public IP Address from Leased Line
- Public DNS
- Public SSL Certificate
- Firewall config 1:1 NAT
- Ribbon SBC
- PSTN



Teams Direct Routing Setup

Microsoft Configuration:

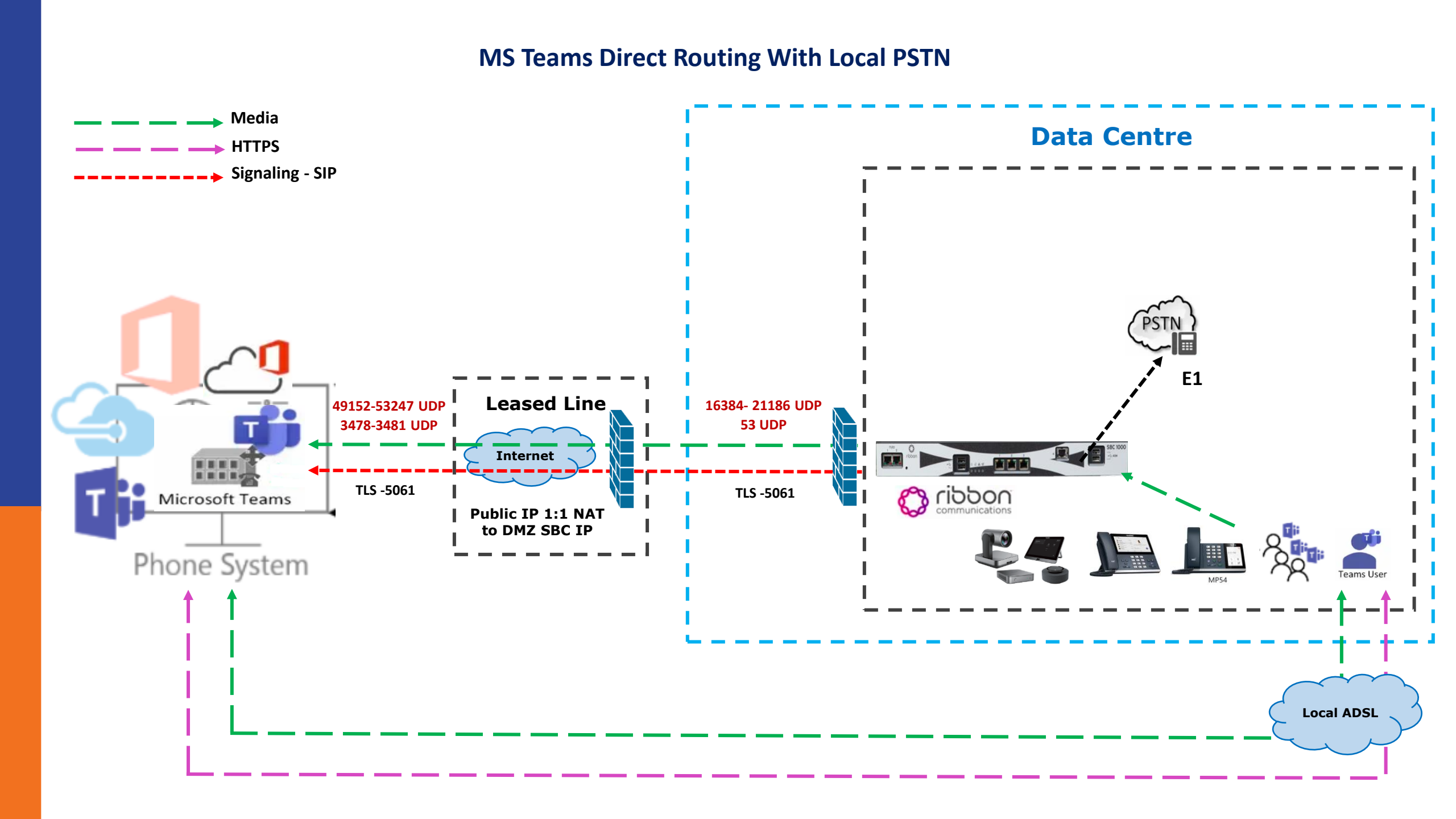
- Site Wise Users
- Site Dial Plan
- Voice Policy for Users
- 1 X PSTN GW
- Route with 1 PSTN GW
- SBC's with E1 PRI & PSTN Lines



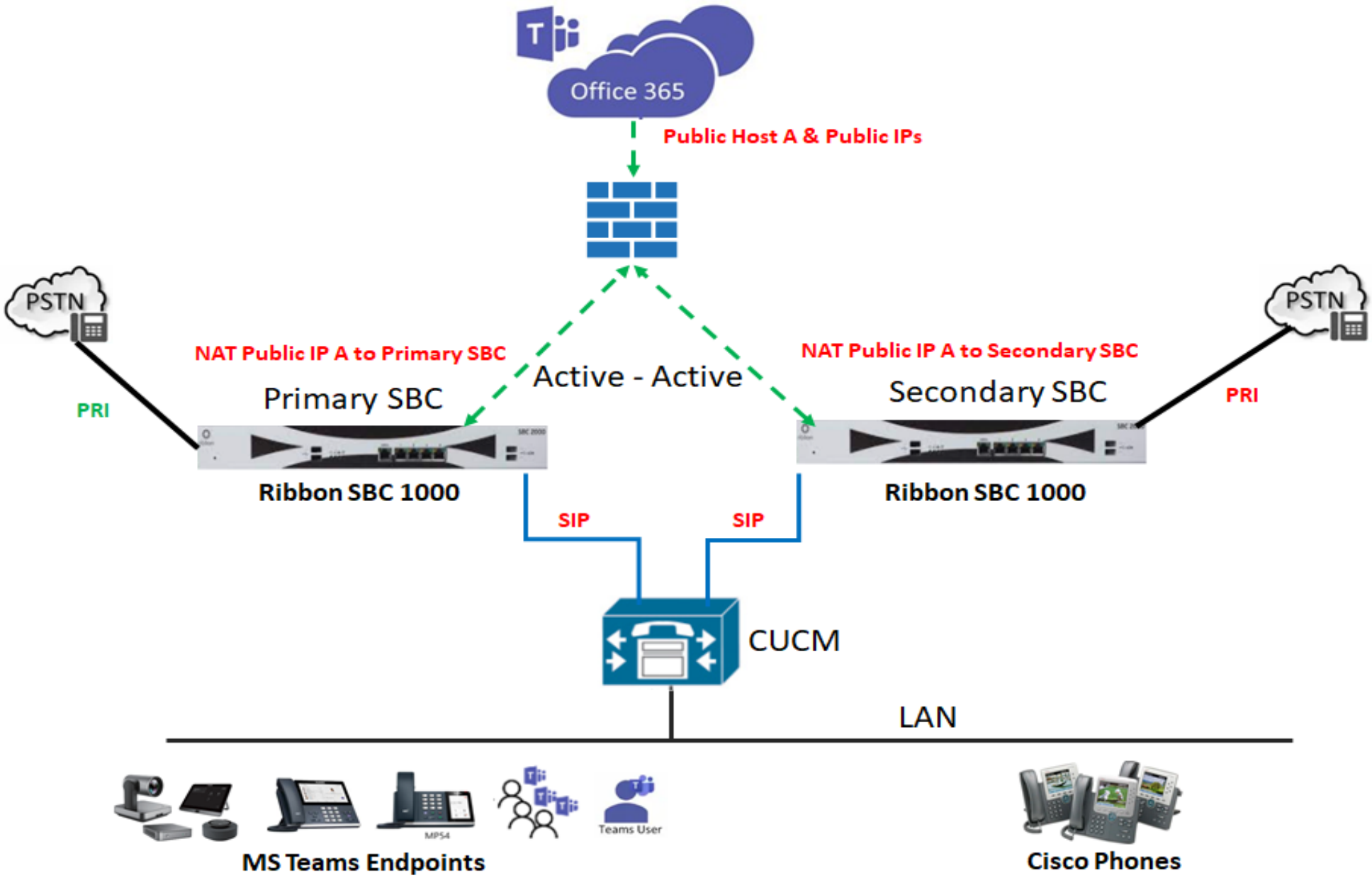
Public SSL Certificate

CN: SBC.domain.com

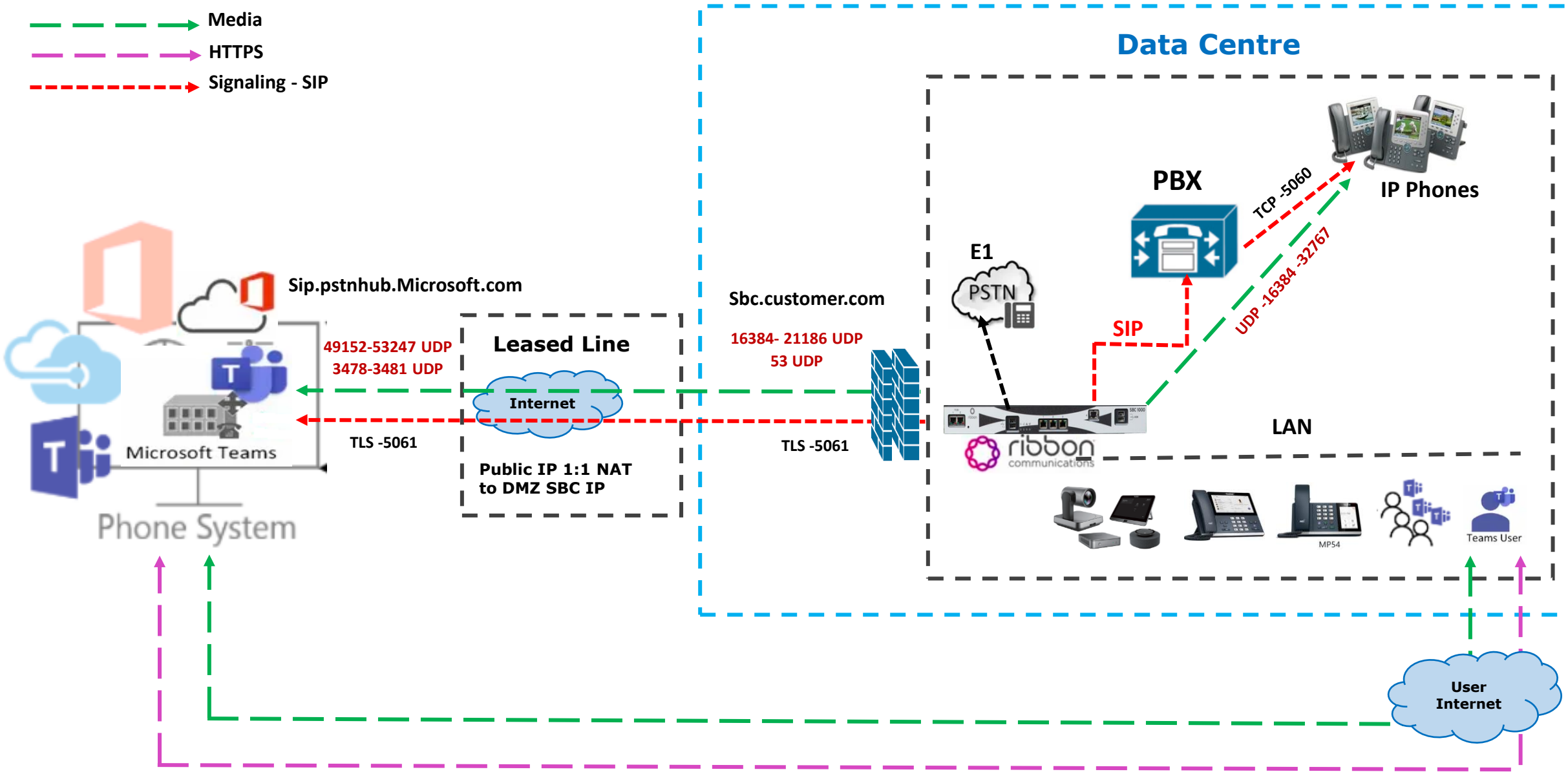
MS Teams Direct Routing With Local PSTN



MS Teams Direct Routing Setup HA With PRI & CUCM



MS Teams Direct Routing With PBX– Upstream Deployment



Network Requirements

Network Requirements:

Teams Session:

Activity	Download bandwidth	Upload bandwidth	Traffic flow
Peer-to-peer audio call	0.1 Mbps	0.1 Mbps	Client <> Client
Peer-to-peer video call (full screen)	4 Mbps	4 Mbps	Client <> Client
Peer-to-peer desktop sharing (1920×1080 resolution)	4 Mbps	4 Mbps	Client <> Client
Two-participant meeting	4 Mbps	4 Mbps	Client <> Office 365
Three-participant meeting	8 Mbps	6.5 Mbps	Client <> Office 365
Four-participant meeting	5.5 Mbps	4 Mbps	Client <> Office 365
Five or more–participant meeting	6 Mbps	1.5 Mbps	Client <> Office 365

PSTN Session: (Teams user to External Party)

Activity	Bandwidth	Traffic Flow
Audio Call	90 Kbps (G.711)	Teams Client <> External Party

Network Quality:

Value	Client to Microsoft Edge	Customer Edge to Microsoft Edge
Latency (one way)	< 50 ms	< 30 ms
Latency (round-trip time, or RTT)	< 100 ms	< 60 ms
Burst packet loss	<10% during any 200-ms interval	<1% during any 200-ms interval
Packet loss	<1% during any 15-sec interval	<0.1% during any 15-sec interval
Packet inter-arrival jitter	<30 ms during any 15-sec interval	<15 ms during any 15-sec interval
Packet reorder	<0.05% out-of-order packets	<0.01% out-of-order packets

Firewall Port Requirements
MS Teams & SBC

TEAMS TO SBC

DMZ Firewall Ports (Teams to SBC 1:1 NAT)			
Traffic	From	To	Destination Port
SIP/TLS	Teams SIP Proxy 52.114.148.0 52.114.132.46 52.114.75.24 52.114.76.76 52.114.7.24 52.114.14.70	Ribbon SBC IP (NAT IP)	5061 TCP (TLS Traffic)
SIP/TLS	Ribbon SBC IP (NAT IP)	Teams SIP Proxy 52.114.148.0 52.114.132.46 52.114.75.24 52.114.76.76 52.114.7.24 52.114.14.70	5061 TCP (TLS Traffic)
UDP/SRTP	Teams Media Processor (ANY) 52.112.0.0/14 52.120.0.0/14	Ribbon SBC IP (NAT IP)	16384- 21186 UDP
UDP/SRTP	Ribbon SBC IP (NAT IP)	Teams Media Processor (ANY) 52.112.0.0/14 52.120.0.0/14	49152-53247 UDP 3478-3481 UDP
DNS	Ribbon SBC IP (NAT IP)	Internet	TCP 53
DNS	Ribbon SBC IP (NAT IP)	Internet	UDP 53
NTP	Ribbon SBC IP (NAT IP)	Internet	UDP 123

CUCM TO SBC

Ribbon SBC DMZ & Cisco CUCM IP's			
Protocol	Source IP	Destination IP	Destination Port(s)
SIP	Ribbon SBC DMZ IP (Internal IP)	CUCM IP Publisher & Subscriber & IP Phone Subnet	5060 TCP
SIP	CUCM IP Publisher & Subscriber & IP Phone Subnet	Ribbon SBC DMZ IP (Internal IP)	5060 TCP
RTP SRTP	Ribbon SBC DMZ IP (Internal IP)	CUCM IP Publisher & Subscriber & IP Phone Subnet	16384 to 32767 UDP
RTP SRTP	CUCM IP Publisher & Subscriber & IP Phone Subnet	Ribbon SBC DMZ IP (Internal IP)	16384 to 32767 UCP

Video Devices Solution for Microsoft Teams

MVC320

for focus and small rooms

MVC400

for huddle and small rooms

MVC940

for extra-large rooms

MVC660

for medium rooms

MVC640

for small and medium rooms

MVC840

for medium and large rooms

MVC860

for medium and large rooms

A20

for huddle and small rooms

THANK YOU

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