Voice and Data Networks Integration

A network is any system that transfers information (data) between two or more points. This includes the things you see; like phones, computers, applications (e.g., Microsoft Teams, Salesforce), Point of Sale (POS) systems, security cameras, computer cables, servers, and signage; and the things you don't; like switches, data packets, redundancy, failover, cybersecurity, backup, and Access Points (APs). Organizations and individuals are the winners with better phone service, lower prices, new features, less maintenance, and increased choice.

THE BENEFITS AND PURPOSE OF STRONG NETWORKS

Any frailty of the network can quickly have huge repercussions. Information needs to remain secure and accessible, whether it's a customer's buying history or proprietary information like a production process. Lag to access information can stall operations, meaning lost productivity or opportunity. As the capital of information grows, organizations need to be able to collect and work with the data without limitation.

COMMUNICATION
fast, seamless interactions between one or more individuals or entities. This can be anything from a direct customer service phone call/ Video chat/ SMS message or a transfer of files without physical media.

COLLABORATION
anywhere in the world multiple users can simultaneously work together or pass projects across time zones to maintain a productive workflow 24 hours a day, 7 days a week.

RESOURCE SHARING
efficiencies are unlocked, from simple items like sharing printers and storage, right through to cost saving allocation of resources including Inteligent call routing or SD-WAN systems that prioritize and regulate optimal data flow.

The start and end of every network conversation should be about performance and limitations. Are certain applications, like Microsoft Teams running slowly? Do calls drop out or is voice quality below where you'd like it to be? Are more seats being paid for than used? Each challenge can be approached in different ways – from providing more bandwidth overall to prioritizing some activities over others (e.g., Salesforce over Facebook, or voice over video) to active admin systems that regulate usage and empower users.

EXAMPLES OF NETWORK TECHNOLOGY

There have never been more choices for connecting to your network. Some are new and innovative, while others date back to the last century. This conversation is not about what is best overall, but rather what is the best application in each situation. Additionally, no one solution is foolproof, having multiple connections in place, and the management systems to prioritize/direct activity can increase productivity and elevate

user experiences. Data networks can be classified based on size, physical architecture, and coverage area. Common examples include:

PAN (Personal Area Network) is a network designed to connect computers and devices within a user's personal workspace.

LAN (Local Area Network) is a type of data network that uses switches, routers, cables, and access points to enable the interconnection of devices and endpoints to internal/web servers within a limited area (such as a building or an office).

Wi-Fi is a wireless LAN standard, used for communication among devices on a small scale. Wi-Fi can be one of the cheapest and fastest ways for short-distance transmission, enabling regular activities like video streaming, VoIP, online gaming, and web browsing. Wi-Fi uses radiofrequencies between devices. 2.4 GHz provides great coverage but slower speeds, while 5GHz has faster data rates but over a smaller area. Wi-Fi devices need to have an initial connection (often wired via DSL, cable, or fiber, or via a mobile hotspot) unless they're part of a mesh system that works together to extend coverage. The current Wi-Fi security standard is WPA2 or WPA3.

Bluetooth is a short-ranged wireless technology that allows devices to transmit data or voice over a short distance, eliminating cables and

providing a convenient connection standard. Most Bluetooth devices have a maximum connectivity range of 30 feet, although that distance can be reduced if an obstacle, like a wall, is in the way. This technology is generally secure and safe because they operate across frequencies, hopping hundreds of times each second.

MAN (Metropolitan Area Network) is designed and works essentially like a LAN -- but it covers a much larger area. A MAN can be designed to span several buildings and typically covers a metropolitan area or campus.

WAN (Wide Area Network) is a collection of LANs and other data networks that share information and communicate over a large area (typically 50 kilometers or more in diameter). The internet is the largest example of a WAN, relying on a large, complex network of service providers using servers, modems, switches, and routers to provide connectivity to organizations and individuals all around the world.

Satellite/Microwave network is made up of one central hub and thousands of remote hubs designed to transmit everything from weather data, voice and data to mobile devices, television, telecommunications, radio, navigational information, military surveillance, and broadband internet service. The signal can bounce off a satellite or be terrestrial, but both require line of sight to work.

Cellular Data Network is a wireless network, often referred to as Mobility, where fixed-location transceiver base stations (distributed over land cells) provide each cell point with network coverage to enable it to transmit content such as data and voice. Each cell is designated with a unique frequency (or set of frequencies) to avoid communication interference with other nearby cells.

CLOUD CONNECTION OPTIONS

Public Internet. The most obvious way to connect to the Cloud is via the public internet. While cost-effective and readily available, it can have limitations for security, latency rates, consistent throughput, and reliability – all the things that most organizations are not willing to sacrifice. This option is often called IP access or IP transit.

Cloud Prioritization dynamically reserves a portion of normal internet bandwidth for select Cloud applications, both incoming and outgoing. Certified network service providers offer this direct peering with Cloud providers to enable end-users with direct access to the Cloud services. An example of this would be the Microsoft Azure Peering Services (MAPS).

Direct Cloud Connect is the fastest and safest method for Cloud connectivity, with a dedicated ethernet internet-bypass solution. It is the result of Amazon, Microsoft, Google, Oracle, and IBM working together with network service providers to enhance end-to-end Cloud connectivity and automation capabilities without touching the internet. Examples of this approach include AWS Direct Connect, Microsoft ExpressRoute, and Google Cloud Interconnect.

Cloud connect does not have to require huge resources or a large corporate network. Organizations can integrate Cloud connectivity into an IP-VPN (or MPLS-WAN) or through SD-WAN (SD-WAN Cloud Access/SD-WAN Multi-cloud) approaches.