

Operator Connect or Direct Routing?

MANAGING MICROSOFT TEAMS PHONE SERVICE QUALITY

By Nick Cavallancia, Microsoft MVP



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In December 2019 Microsoft Teams had just 19 million daily users; today that figure stands at around 270 million. Over the past three years Teams has become the de facto voice communication tool for a large percentage of organizations. But with many companies having implemented their Teams setup rapidly in the face of a dramatically changing business environment, some IT teams have been struggling to know how to get the most out of their Teams environment.

Microsoft's integration of Teams with in-house telephony, digital phone systems, and service providers has led to a new way for organizations to expand their use of Teams as part of extending the organization's traditional "four walls" to incorporate a hybrid workforce.

In this whitepaper we'll look at how Microsoft has been developing the Teams environment, how it is working in partnership with telephony service providers across the world to provide stable infrastructure for distributed businesses, and how IT departments can gain in-depth visibility into how that infrastructure is performing and work to proactively remediate problems to ensure optimum call quality across whatever Teams connection package they choose.





MARTELLO INSIGHT

Comprehensive Call Visibility for Microsoft Teams

Microsoft has taken great strides to provide organizations using Microsoft Teams' call functionality with visibility into when and where call quality issues exist. But they have always trusted in their partners to find ways to enhance built-in capabilities with partner solutions. Martello Vantage DX provides comprehensive visibility across every aspect of a user's use of Teams. This gives organizations insight into when, where, and why Teams call issues exist – as well as how to remediate the issue, in some cases, before a user even experiences it.

Look for insights from Martello throughout this paper.



What are the options today for Microsoft Teams voice connectivity?

At the time of writing Microsoft provides three options for Teams voice connectivity, with a fourth option due to come to market soon. These options include:

- ▶ **Calling Plans** – Calling Plans provide a monthly service that gives organizations a direct phone number and a certain quantity of minutes on a per-user license. All services are offered directly from Microsoft through Office 365, and there is no extra PSTN carrier contract.
- ▶ **Direct Routing** – Direct Routing enables organizations to connect their internal on-premises telephony infrastructure directly to Microsoft Teams.
- ▶ **Operator Connect** – Operator Connect allows enterprises to leverage service providers or “operators” to provide Teams calling as a managed service.
- ▶ **Operator Connect Mobile** – Similar to Operator Connect, the Mobile version allows a user’s SIM-enabled phone number to also be their Teams phone number.

Choosing which deployment is best for your organization

Calling Plans, which are relatively simple to deploy and manage, are a great choice for smaller organizations with simple calling requirements. The issue for some organizations is that the Calling Plans option is not available in every country.

Direct routing is currently the most common deployment for Teams voice as it offers the greatest flexibility and leverages the customer’s own telephony and infrastructure. However, it can be more complicated to set up and support and isn’t the right fit for those organizations with differing needs across multiple countries.

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Managing Microsoft Teams Phone Service Quality

To add greater flexibility in terms of connecting to the Microsoft network, Operator Connect allows companies to use their existing telephony service providers, to manage the connection to Microsoft Teams. By passing responsibility for managing the setup and support of routing calls to the Microsoft network to the existing operator it removes complexity for the organization, effectively allowing them to combine the simplicity of Calling Plans with the flexibility of Direct Routing. It additionally moves the management of the infrastructure to the service provider, offloading responsibility from the organization itself.

While Microsoft doesn't as yet offer full feature parity between Direct Routing and Operator Connect, the latter can be customized depending on your operator. You can see a detailed comparison of the two options in the chart below.

	OPERATOR CONNECT	DIRECT ROUTING
Analog Devices	Not Available	Yes
PBX	Not Available	Yes
SIP Phone	Yes	Yes
Emergency Calling	Yes - State and Dynamic	Yes - State and Dynamic
Attendant Console	Yes - Extend Model	Yes - Extend Model
Recording	Microsoft Compliance Recording Only	Yes, Microsoft Recording Proprietary and Open Standard (SIPREC)
Contact Center	Extend Model Only	Yes - Extend and Connect Models (see notes)
Provisioning Experience	Phone numbers visible in Teams Admin Center Assign numbers directly to users	Phone numbers not visible in Teams Admin Center Can assign numbers through Orange self-care portal
QoS	Internet-Based only	Media and Local Media Optimization to optimize call flows where needed
Site Survivability	Limited to network resiliency	Survivable Branch Appliance
Country Coverage (as per October 2022)	Available in 60 countries	Available in 196 countries

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Extending that service further, Operator Connect Mobile is due on the market very soon. This will allow users to use the number of their mobile device as their direct Microsoft Teams number. This allows Teams to be incorporated into the user's native dialing app so that they can answer a call on that app, and quickly escalate it to a Teams call so that they can conference in more people, share screens, share content, and manipulate content together.

Microsoft currently has 33 partners for Operator Connect, covering 60 countries. With Direct Routing, you can deploy the service almost anywhere in the world, as long as the country is not embargoed. It's also important to note that this doesn't have to be a binary decision, you can mix and match based on your individual requirements at any given site.

So, the reality is that it's important to make sure that you understand all the options, engage a consultant if necessary to help you choose which option is best for you as an organization or which options are best for your different parts of your organization.

Regardless of the Teams calling option(s) you choose, a growing dependency on Teams demands that organizations realize the complexities involved. The result is a need for better visibility, to ensure performance across the entirety of the environment that makes up a user's interaction with Teams calling.



Teams Calling Adds Complexity

Managing the Teams environment can be a complex process, with multiple points of potential failure in the environment supporting delivery of the service. It's too easy to simply blame any glitch in call quality on Microsoft. However, the likelihood is that's not the case. Microsoft is continually investing in its network - and it is the second largest network in the world, with vast available bandwidth. In today's hybrid work environments, there are a swathe of other things that can go wrong outside of Microsoft itself. These include (but are not limited to):

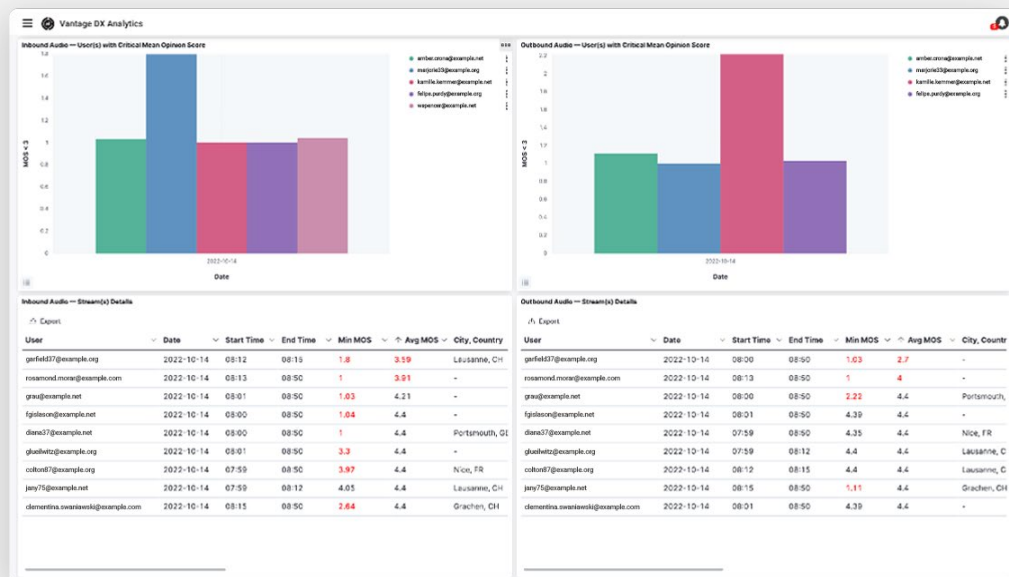
- ▶ **Existing legacy telephony** – Things like session border controllers and SIP trunks can be a barrier to connection to the Microsoft Network and be the source of a negative effect on call quality.
- ▶ **Network connection** – How is the caller accessing Teams? Are they going over a private internet connection or are they on the internal network? If they are accessing the call from their home network, are they using a VPN, do they have a correctly configured firewall? If they're using Wi-Fi are their kids or their partner all streaming content at the same time and eating up the bandwidth? Each individual element of how the user is connecting to the call can impact its quality. And there's a lot of different components to that.
- ▶ **What equipment is the end user using** – Equipment can have a huge impact on Teams call quality. If the user is on an older laptop that has not been updated recently or is using a non-compliant headset/handset this can dramatically impact call quality.



MARTELLO INSIGHT

Spotting problems on all sides of the divide

With so many potential areas affecting call quality, both inside and outside the organization's network boundaries, Teams admins need to be able to negotiate huge amounts of data to understand where a problem may be occurring. If you're just dealing with native Microsoft data sources, this can seem daunting.



Martello Vantage DX displays a short window of call activity, which admins can use to easily drill down into to establish key data, such as whether it was on a Calling Plan, Direct Routing, or Operator Connect. They can also see data on the audio streams and video streams, session border controller etc. This way Teams admins can quickly identify if there is a problem with the telephony experience and what part of the network it is occurring on.

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If you're working with a third-party operator to manage your Microsoft Network connection, they can help with a lot of different elements to improve Teams call quality, such as improving geo-resiliency in the architecture behind Teams. Using transport relays and media processors that are scattered all over the world, they can reduce the amount of time it takes for your data packets to get to Microsoft, reducing any potential latency in meetings or presentations. However, everything above is going to fall outside of their remit, and instead is the responsibility of your organization's IT team.

Oftentimes operators report that even if they go through an extensive planning process with the customer, and then deploy the systems and get everything tested and signed off, problems can still occur later down the line if somebody has changed a configuration of something like a firewall or endpoint, or if firmware upgrades have not been kept up to date.

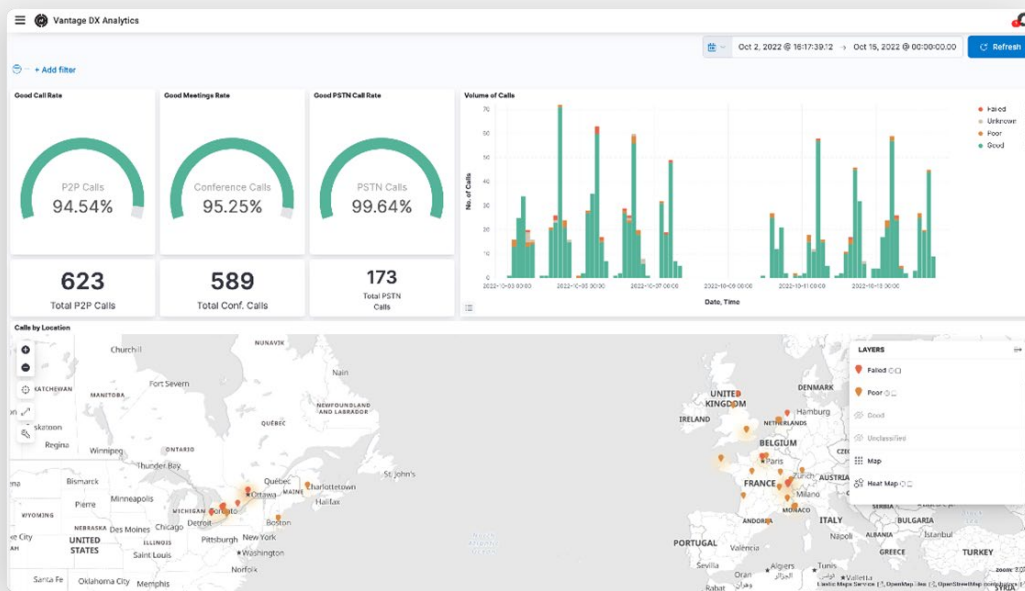




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Getting the global view

Managing Teams across multiple locations can leave admins with the job of effectively looking for a needle in a haystack when it comes to ironing out potential network problems that could be affecting localized call quality.



Martello Vantage DX provides you with an overview of everything that is happening within Teams across the global footprint of your organization. By default, this will highlight any poor quality or failed calls, but can also include good quality calls and the health status of Teams Meeting rooms so that you get a full view of call activity. This enables IT teams to see where the greatest percentage of problems are so that they can effectively decide where to focus their time for greatest effect.

Getting a clear picture of where the problems are

Because of the complexity that exists, there need to be two clear goals for IT departments when managing Teams call quality in an effort to maximize user productivity:

1. **Ensure optimum user experience.**
2. **Have the visibility to understand where in the process a problem is.**

If the user is having a good quality call experience, it likely means one of two things: either everything's working fine, or if something's not working properly it's not yet affecting call quality. What IT admins need to be able to do is ensure in the latter case that they can proactively manage any issues to ensure that they remediate them before they become a problem for the end user, or at least inform end users that there may be a problem with call quality, but they are working on it.

So how do you get visibility into all that, and – more to the point – how do you move away from reactively firefighting problems, and instead move to proactively dealing with issues before the end user complains?

Microsoft provides two important tools to help admins get this visibility:

- ▶ **Call Analytics** visualizes call session data to help you understand call quality, using data being made available to the admin within a maximum of 30-mins after a Teams call has ended. In here you can find data organized by audio device, system, connection, and network, providing visibility into call session details. This serves as the frontline for anyone supporting Teams users.
- ▶ **Call Quality Dashboard (CQD)** has been created to help admins monitor call and meeting quality at an organization-wide level. The CQD provides insight into how users are interacting with Teams, and whether or not they're getting a good experience. It won't necessarily tell you why they might be having a bad experience, but it does provide you with a starting point to see whether any issues are isolated to one user or developing around a cluster of users – in a specific office for example.

While both of these native Microsoft tools offer admins access to a wealth of data, they require them to know how to look at the collected call session data and have some degree of experience to quickly identify root causes of problems. Neither tool provides alerts to admins when problems are detected.

Turning Microsoft call data into actionable insight

This is where working with a third-party solution provider like Martello can help. Using three different types of monitoring technologies can help to augment the data available via Microsoft and present it as actionable insights and alerts:

- ▶ **Synthetic Monitoring** – Robot agents simulate user interactions with Teams (e.g., they make calls, schedule meetings, upload and download files, etc.).
- ▶ **Real User Monitoring** – This provides visibility into what's being experienced by specific users and their activities while working from home or in the office, with alerts for issues being experienced by users.
- ▶ **Network Path Monitoring** – Using trace route data to pinpoint whether problems are related to the cloud provider, the corporate network, the ISP, or user's home network.

Using these three monitoring technologies provides activity, infrastructure, service, routing, and experiential data that can help identify when service quality declines, who is impacted, what the root cause is, and in many cases, what the right course of action is to remediate the issues.



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Turning visibility into insight

Achieving visibility is just having information but turning it into insight is about understanding how something is affecting the end user – knowing whether it is something that's going cause them issues or not. Understanding this can help you respond appropriately, to take care of issues proactively.



Martello Vantage DX helps you figure out the root cause. Using synthetic transactions, Vantage DX can simulate user behavior within Teams to see where any issues are occurring. Admins can then review this information to see whether any identified issues are going to affect user call quality and remediate the problem as quickly as possible.

Getting the Most from Teams Calling

The fact that you're reading this paper means that your organization is heavily invested (or is planning to be) in Microsoft Teams. This reliance on Teams is only going to become more embedded within the organization, and as it does so does the need to ensure quality service delivery; being able to effectively manage its infrastructure is going to become a critical role within the IT department.

The addition of telephony infrastructure and even service providers increases the layers of complexity that make it difficult to know exactly where in the communication between a user's endpoint, their network connection, the organization's network, the Microsoft Cloud, Teams, and telephony infrastructure is the source of a problem.

To remediate and prevent problems with call quality, organizations need end-to-end visibility into how Microsoft Teams is performing – regardless of whether the connection between the user and Teams involves your organization, an Operator Connect service provider, Microsoft's Cloud, your ISP, etc. By utilizing solutions that employ a breadth of monitoring methods and data sources to provide the needed context and insight, organizations can feel confident in their choice to continue their investment in Teams.

About the Author

Nick Cavallancia is a Microsoft Cloud and Datacenter MVP and has over 25 years of IT experience dealing with the architecture, implementation and training of Microsoft technologies to enterprise customers.

Nick has attained industry certifications including MCSE, MCT, MCNE, and MCNI. He has authored, co-authored and contributed to over a dozen books on Windows, Active Directory, Exchange and other Microsoft technologies and has spoken at many technical conferences on a wide variety of topics.



About Martello

Martello Technologies Group Inc. (TSXV: MTLO) provides Microsoft 365 and Teams monitoring solutions including the Vantage DX SaaS platform, which optimize the modern workplace. The company's products deliver end-to-end visibility of the entire IT infrastructure supporting Microsoft 365 and Teams, empowering IT teams and service providers to deliver stellar user experiences. Martello Technologies Group is a public company headquartered in Ottawa, Canada with employees in Europe, North America and the Asia Pacific region.

Learn more at www.martellotech.com

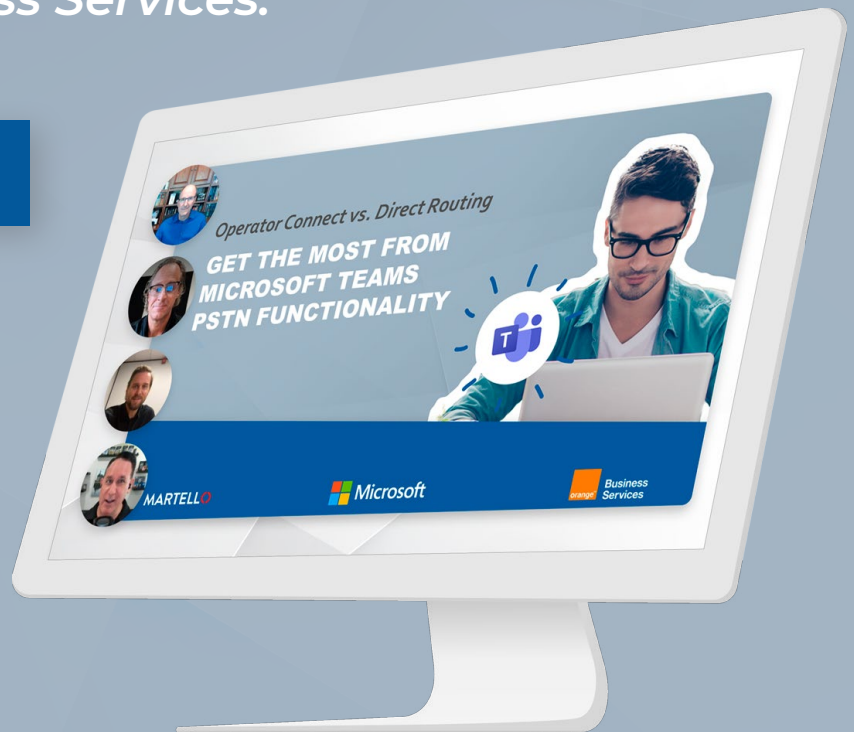
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