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E-book

Beyond the Call Quality Dashboard:

Turning Microsoft Teams Call Information
into Actionable Insight

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For many organizations today, Microsoft Teams has become integral to the way they do business – not just becoming central to collaboration across Microsoft 365, but also enabling video and voice communication inside and outside the organization. Voice enhancements including Teams Voice, Calling Plans, Direct Routing, Operator Connect have driven adoption of Teams like never before. According to Microsoft on their April Quarterly Earnings Call, the total Operator Connect minutes increased 8x quarter-over-quarter in the first quarter of 2022 alone. In short, Teams Voice is increasing in popularity and use.

Because of this, organizations need to be able to ensure service quality, so that Teams supports and doesn't hinder productivity. Microsoft provides the Call Quality Dashboard (CQD) as a means to historically understand when individuals, and groups of users based on network, building, and location data have had issues, empowering those responsible in IT to dig a bit deeper and determine if there is something that can be done to improve service quality.

One of the challenges in doing this is there are many factors outside of Microsoft Teams that can impact call quality. So, it becomes necessary to take the foundation of the CQD and all

the insight it provides, and look for ways to augment that data with visibility into any and all aspects of the connection between the user and any of the Teams Voice-related services to get a much broader picture of what may be impacting Teams calls as the first step to taking action to actually remediate any issues affecting the user experience with Teams calls.

In this white paper we'll look at some of the challenges organizations face when it comes to monitoring Teams call quality, what Microsoft offers to help with this, and how its services can be enhanced using third-party solutions.

Martello: 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, giving organizations both proactive 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.

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Why should you be monitoring Teams calls for the service quality?

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A lot of organizations that have moved to Teams over the past year or two have done so in an accelerated fashion, and under considerable duress. Now that the dust has settled, these same organizations are finding themselves faced with the challenge of taking advantage of every aspect of Teams – including Voice Calling.

To their credit, Microsoft has put a lot of effort and resources into building a robust, highly available, highly durable platform that will support its users. But we also know that there are always challenges and potential performance issues affecting user's experience with Teams. While even Microsoft is susceptible to issues, if and when users are having service quality challenges with Teams calls, it's unlikely it has much to do with Microsoft.

The reality is there are so many areas where things can go wrong. For example, take the scenario of someone joining a Teams call from their home network, each of the following can have a significant effect on the experience in Teams and the quality of the call:

- **Endpoint performance** – If the endpoint is being overwhelmed by some other application running there, it's going to affect Teams' ability to deliver a great experience. Also, the peripherals used – specifically non-certified headsets –may also impact call quality.

- **The connection from their home to their ISP** – Unlike the corporate world where everything is standardized, users utilize a wide range of WiFi solution, Internet routers or modems, and Internet providers, all of which can be a source of latency resulting in Teams service quality issues. Something as simple as a user sitting a little too far from their access point can impact Teams call quality. On top of this, many people working from home are competing for bandwidth or connectivity with other members of their families, as most home networks aren't built with business applications in mind.

- **The internal network** – Microsoft recommends that users of Teams (and every other Microsoft 365 service) take the most direct path between the user's endpoint and the Microsoft Cloud. But many organizations require users to connect to the corporate network first (to access corporate resources), and then pass through the network to reach the Microsoft Cloud. This introduces latency from routing misconfigurations, use of network security solutions that scan network traffic, proxies, and even just oversaturation of the network from use.

- **The path from the ISP into the Microsoft network** – This is when you get specific about the path any given user takes to interact with the Microsoft Cloud. It's entirely possible that a user in the Paris office working remotely could utilize a VPN that connects them to the corporate network using a data center in the US, which then routes to the Microsoft Cloud within the US – all because of the use of a VPN. This is also not restricted to people working from home, where calls are accessing the Microsoft network can also affect different business sites.

- **Interaction between Teams and Telephony** – With Teams calls specifically (whether using Direct Routing, Operator Connect, or Calling Plans) there are telephony devices and services that come into play, including SIP gateways, session border controllers, and PSTN providers.

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Every one of these aspects of connectivity between the user and their calls over Teams has the ability to inject latency, packet loss, and jitter, which will all adversely impact Teams performance, and create a poor end-user call experience.

Although you might think that a lot of these challenges have been mitigated with people moving back to their well-tuned corporate networks, this is often not the case. And there's a couple of reasons for this: first, a lot of these offices were architected for voice, not for video and collaboration. Second, there are persistent VPNs in these offices which are ensuring secure links back their headquarters. So, it's not uncommon to see users actually having a great Teams experience at home, but a terrible experience when they return to the office.

Because Teams call and voice service quality can be a multi-faceted problem, how can you gain the needed intel into each of these aspects of a connection with Teams in order to first determine an issue exists and then the insight to potentially do something about it?

Let's begin with Microsoft and the visibility they provide built into Microsoft Teams.

Martello Insights: Microsoft Teams Calls Require Complete Visibility

Only by having visibility into the full paths your Teams calls are taking and understanding this can you start to control the experience people have within the Teams environment. Whether it's a call, a video, or content sharing, as the signal moves through the path between the user, Teams, and telephony, it will hit many components along the way – all of which fall outside the control of both Microsoft and, in many cases, the organization itself.

Martello Vantage DX collects information from Microsoft Teams, all of Microsoft 365, the corporate network, telephony devices and services, routing, and more to provide you with a complete picture of what's in between the user and their Teams call, and whether any facet is causing service delivery issues.

With dashboard views from many viewpoints, and an ability to drill down when problems arise, Vantage DX provide both the high-level and detailed visibility needed to understand not just when service quality issues arise, but why.
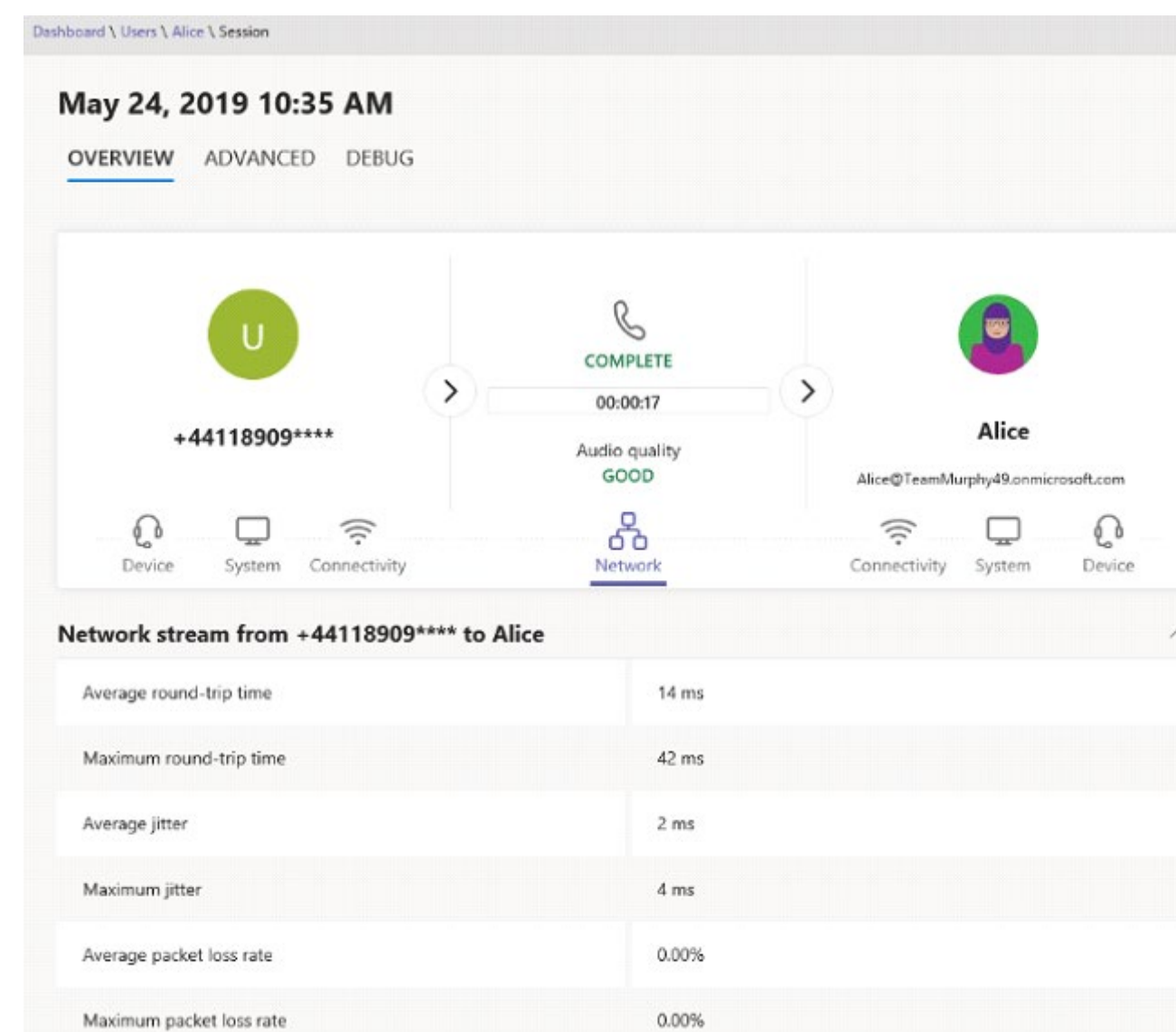
How Microsoft provides visibility into Teams calls

To start, Microsoft has gone to great lengths to ensure that there's good call quality and a great user experience within Teams by including functionality that can be broken down into two different categories: what the user sees, and what they don't see. Users see functionality like the pop up that reminds them if they've left themselves on mute when talking – these kinds of capabilities ensure as great a call experience as the user needs to know about. But behind the scenes, Microsoft is working overtime with technologies designed to optimize whatever network connectivity is present between the user and Teams.

Microsoft knows that where a user's call is accessing its network has a fundamental effect on quality, so it wants to make sure that wherever an individual sits – whether it's at their home office, their business, or a hotel room – they're as close to the Microsoft network as possible. And this is being achieved through relationships with ISPs. There have also been improvements to the Teams codecs, with the introduction of the AI-powered audio codec, Satin, which establishes high-fidelity, professional-grade audio.

On top of this Microsoft provides some key tools to help admins get that sought-after visibility into their call networks, so they can start to pull together a picture of where issues are occurring:

Dashboard \ Users \ Alice \ Session

May 24, 2019 10:35 AM

OVERVIEW   ADVANCED   DEBUG

U   COMPLETE   Alice
+44118909****   00:00:17   Alice@TeamMurphy49.onmicrosoft.com
Audio quality
GOOD

Device   System   Connectivity   Network   Connectivity   System   Device

Network stream from +44118909** to Alice**

Average round-trip time	14 ms
Maximum round-trip time	42 ms
Average jitter	2 ms
Maximum jitter	4 ms
Average packet loss rate	0.00%
Maximum packet loss rate	0.00%

Call Analytics

This is a powerful tool which visualizes call session data to help IT understand both perceived call quality and technical call quality, using data being made available to the admin within a maximum of 30-mins after a Teams call has ended. Found in the Teams admin center, call data is organized by audio device, system, connection, and network, providing visibility into call session details.

Call Analytics serves as the frontline for anyone supporting Teams users. For example, if a user called the helpdesk about the audio quality of a Teams call, should there only be one person having the problem, Call Analytics can provide granular details about that user's calls to enable the admin to identify what similarities exist during problem calls (e.g., using a particular headset).

Call Quality Dashboard (CQD)

Created to help admins monitor call and meeting quality at an organization-wide level, CQD can provide 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.

If set up correctly the CQD can be used both proactively and reactively, providing you an overview of performance that you can use to analyze calls over time.

This visibility facilitates an understanding of when issues are occurring, and in some ways, may be likely to occur in the future.

Both CQD and Call Analytics require that admins know how to look at the collected call session data and have some degree of experience to quickly identify root causes of problems.

Note also that the lack of alerting capabilities prevents IT administrator to use these feature to proactively monitor the user experience and work on issue before they are reported by user support ticket. However, 3rd party solutions can meet this gap.
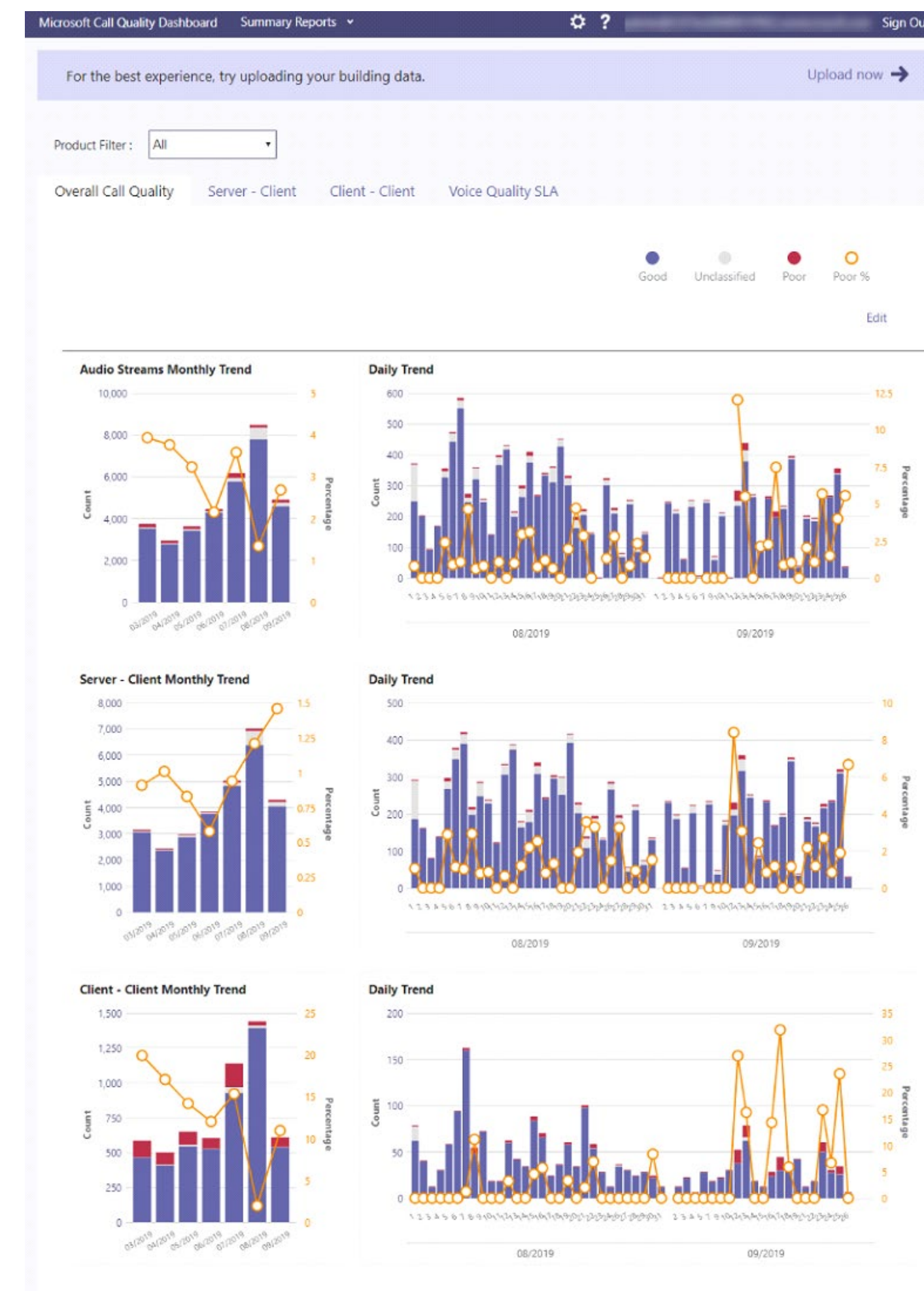
Martello Insights: Taking CQD Data and Visibility to New Heights

While the CQD enables you to monitor call activity, it relies on you architecting and implementing Teams Voice correctly. This means grouping users into networks, buildings, locations and more to more easily see where service quality issues may be occurring en masse.

Martello's Vantage DX looks at data coming from the CQD and automatically groups calls, making it easy to create dynamic office groupings, which provides admins with the required contextual visibility in understandable organization-centric terms.
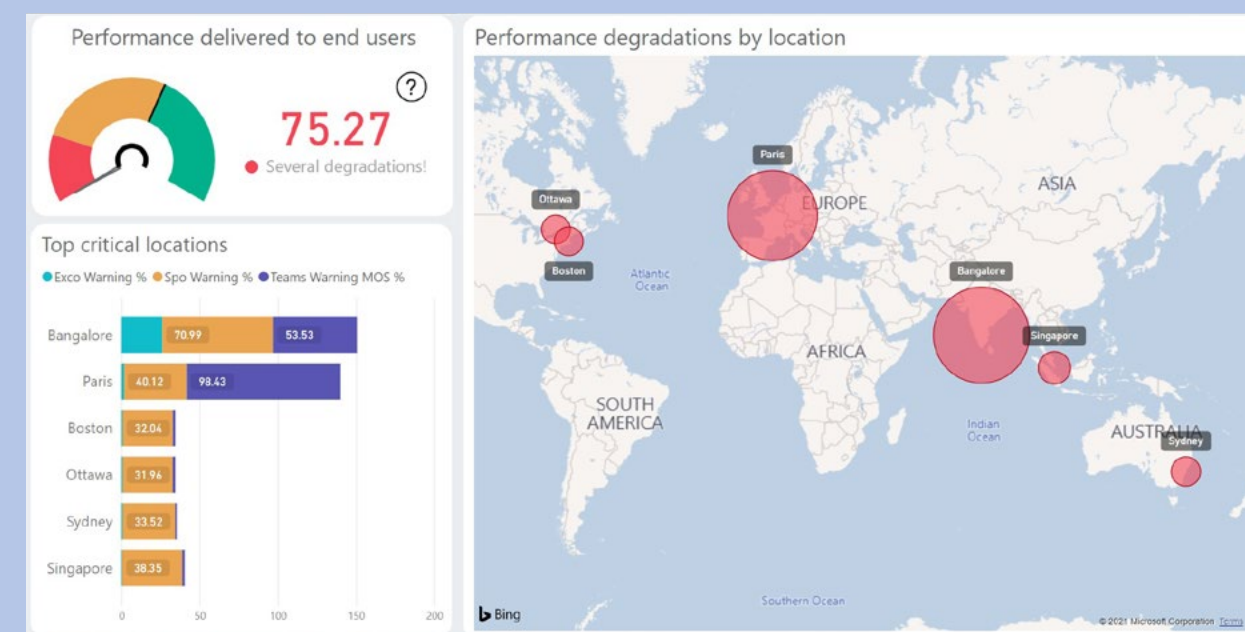
Data can be drilled into, easily searched, and and used to visualize how multiple factors can affect the user experience. Simple queries enable IT admin to look for correlation between user issues, client version, wifi version, headset, location, and more. All leveraging the data collected by CQD.

In addition, the CQD data is transformed into monitoring events that can be automatically synchronized with your IT Service Management solution to speed up response and resolution times, eliminating the need to rely on users to alert iT when problems with Teams calls and meetings are occurring.

Augmenting the CQD

Although Microsoft provides the backbone of data for you to be able to accurately monitor Teams call performance, it's still necessary for organizations reliant on Teams to have complete visibility into all aspects of the connectivity between the user and Teams. To accomplish this, there are a number of monitoring technologies available to organizations through Microsoft partner solutions that provide different perspectives to the issue of Teams calls. These include:

- **Synthetic Monitoring** – Robot agents are installed on systems to represent an office, a geography, a type of network, a specific connectivity method, etc. These agents simulate user interactions with Teams (e.g., they make calls, schedule meetings, upload and download files, etc.) to provide IT with visibility into service quality issues before users actually experience them.
- **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.
- **Network Path Monitoring** – This takes the trace route data from the network path users take to the Microsoft Cloud, to quickly pinpoint whether problems are related to the cloud provider, the corporate network, the ISP, or user's home network.

Martello Insights: The Path Taken Makes a Difference!

Microsoft is so determined to ensure the highest service quality and user experience, they provide guidance on exactly how organizations should architect both the user's path to Microsoft 365 services, as well as what architectural pitfalls to avoid. But many organizations are not able to redesign how their network is designed, what services and proxies are in place, and the resultant path users must take to access Microsoft Teams.

Vantage DX uses Active Network Path Monitoring to provide visibility into where along a user's path is performance suffering – and who owns that part of the path.
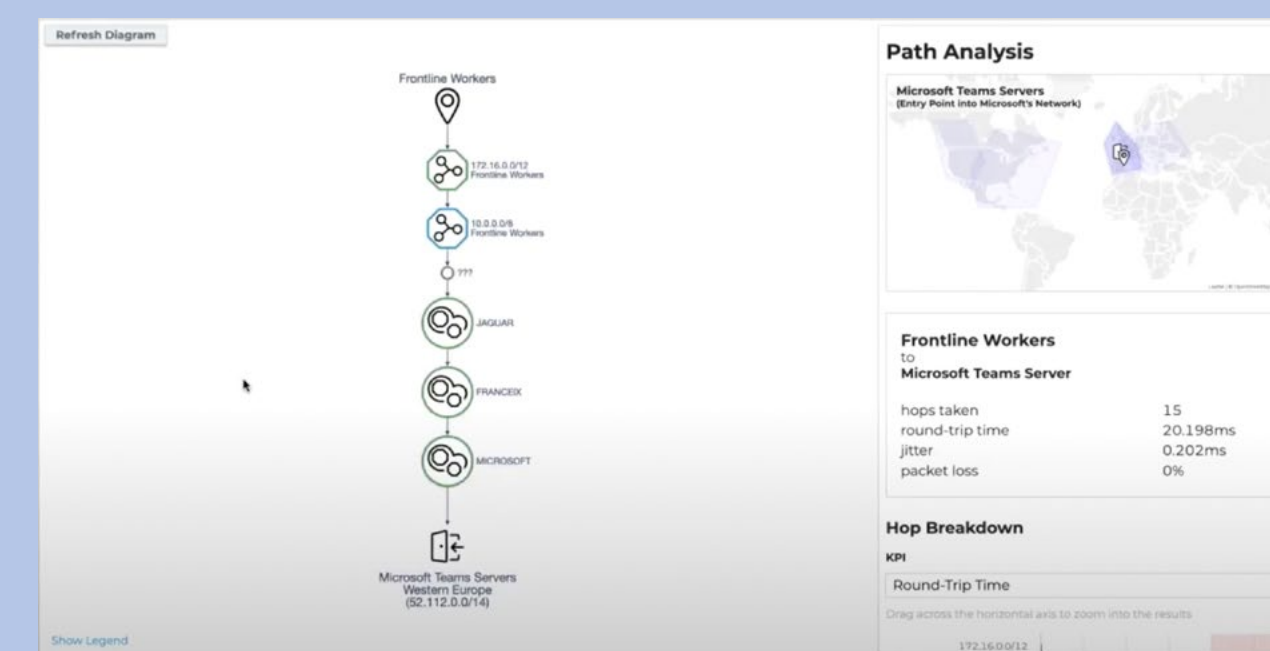
This provides actionable insight that allows IT teams to drill down into their environment (if they are the problem), call the ISP (should they be the issue), or notify impacted users of an outage should there be no immediate remediation available.

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Turning Call Information into Actionable Insight

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Leveraging these three monitoring technologies augments the call data from CQD with activity, infrastructure, service, routing, and experiential data that can help identify when service quality declines, who is impacted, and in many cases, what the right course of action is to remediate the issues. In total, using these four sources of information, organizations can gain insight that they might not be able to obtain otherwise with reactive call data alone. This actionable insight manifests itself in three ways that can speed up the process of both reactively and proactively addressing Teams service quality issues.

1. Prioritization

CQD data provides one-off visibility, helping to understand what's taking place with an individual user. But if a problem impacts a particular office or geography, having complete end-to-end visibility from so many data sources helps to establish the scope of call quality issues, helping IT teams prioritize issues based on impact to the organization, increasing the speed and efficacy of their response.
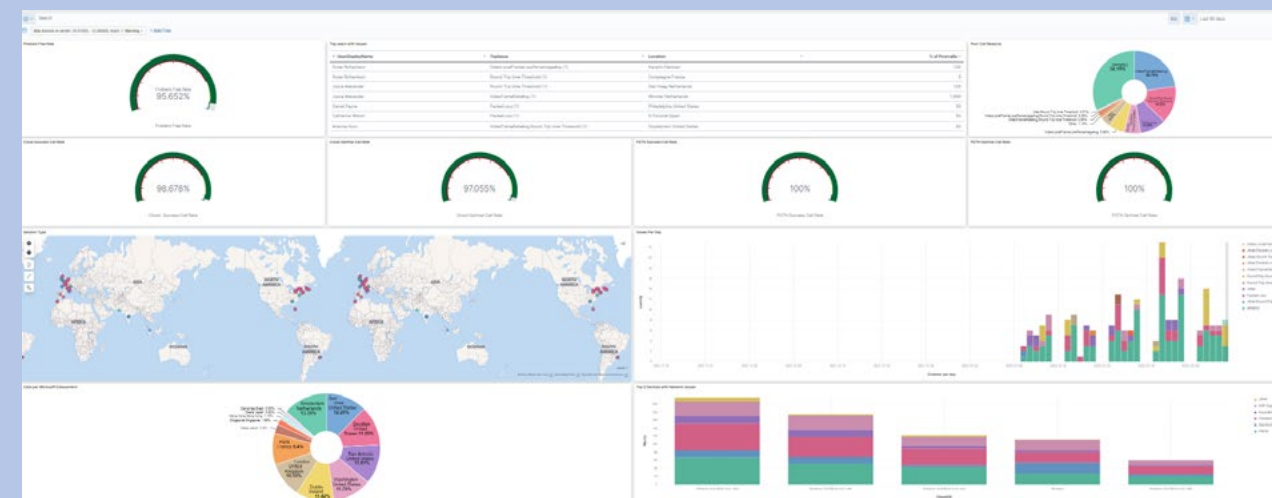
2. Resolution

Once priorities are established, resolving issues quickly becomes the charge. Having as much contextual information about the problem, where it exists, who is impacted, and what separates those having the issue from those that aren't will all help to reduce the time necessary to solve the issue. If you know, for example, that the Geneva office is having an issue making calls, it is possible with additional monitoring sources to see if the corresponding SIP provider, SBC, and PSTN connectivity are all functioning to either confirm or eliminate them as root causes.

Martello Insights: Automate the Response

Monitoring the state of Teams calls – whether just using CQD or by adding in other monitoring technologies – raises the issue of how practically should you respond? Alerts are great, but kicking off a response should look more like either creating a ticket in a service desk platform, running a script of some kind, launching more advanced workflows, or all of these.

Vantage DX supports the legacy standard set of alerting options, but also integrates with ITSM solutions such as ServiceNow and TopDesk.

By being able to link directly your call quality data to your ITSM solution, established service desk processes can be followed, with further integration to close out any alerts within Vantage DX once the ticket is closed.

3. Optimization

In some cases, with the CQD alone, your organization may only be able to achieve a certain level of call quality – and no one knows why. Partially, the issue is a lack of understanding how users connect to Teams and where in the path things slow down. By putting additional monitoring technologies in place, organizations gain visibility into whether the way the network is architected is contributing to the problem, or if it's only users connecting via a particular VPN appliance, or if it's one of the three ISPs your corporate headquarters uses. There's also an opportunity to continue to optimize Teams use moving forward, as new features are added, companies are acquired, digital transformations are implemented, and the hybrid workforce evolves over time.

Going
Beyond the
Call Quality
Dashboard

As your organization continues to increase its reliance on Teams' voice-related features, the need to look at the underlying problems – that largely reside outside the sphere of Microsoft's influence – is also going to grow. In other words, when you have lots of users on Teams, there are going to be lots of problem that have nothing to do with Teams.

In order to solve these and continue to see users having a great experience with Teams calls, it will be necessary at some point for organizations to leverage additional sources of monitoring data that provide context and insight into who, where, and why Teams call issues are occurring. By leveraging Microsoft partner solutions to gain this level of visibility, organizations will be able to more easily address service quality issues, while discovering new opportunities to elevate the overall performance and user experience of Teams and the rest of Microsoft 365.

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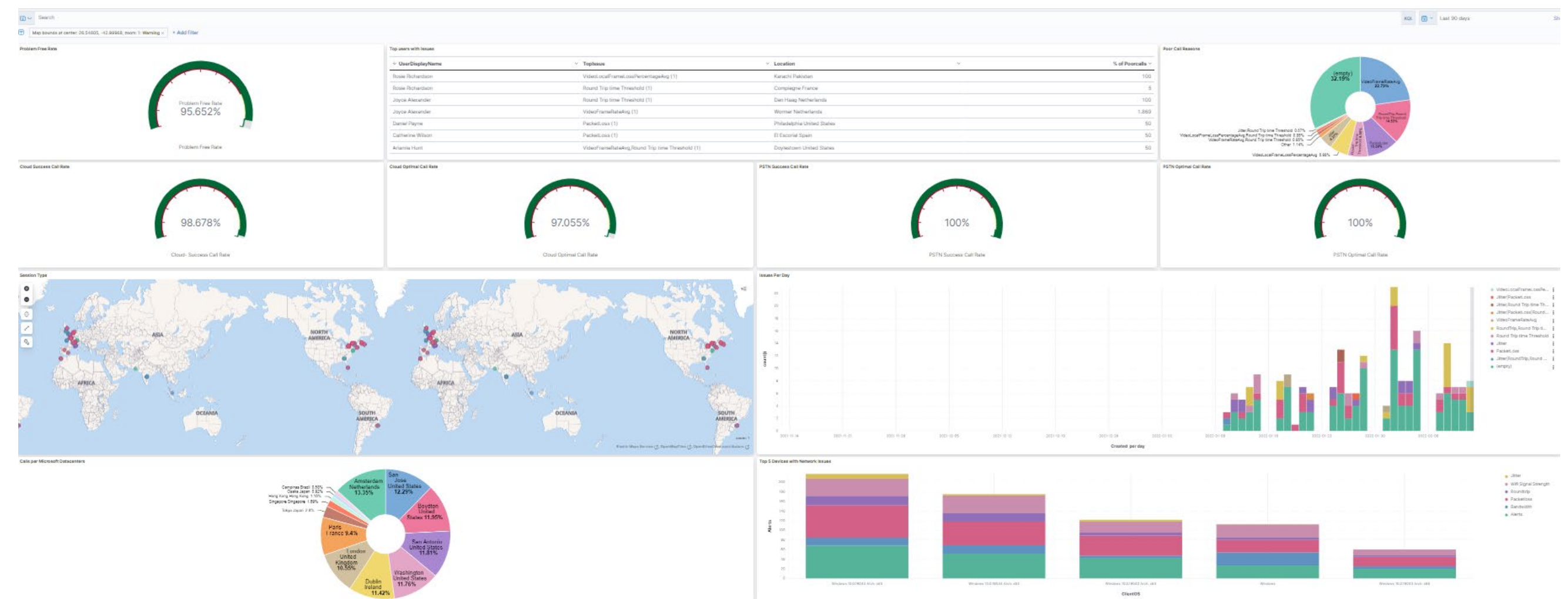
About Martello

Martello empowers IT teams around the world with unique SaaS that optimizes the modern workplace to deliver a stellar digital user experience for Microsoft Teams and Microsoft 365.

Martello bridges the gap between traditional performance monitoring tools and the need for insight into the user experience of today's mission-critical cloud services. Martello's Vantage DX provides deeper insight into Microsoft 365 and Teams performance and user experience by correlating data on network and application performance with insight into the user's experience of the service.

While other DEM solutions can make this connection between performance and user experience, Martello takes this a step further, demonstrating to enterprises why the problem happened.

Martello (TSXV: MTLO) 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

Ready to see Microsoft Teams Monitoring in action?

Book a demo