Integrated Research

Prognosis helps Microsoft Lync fit the Enterprise Big Picture

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Lync is not simply another productivity application from Microsoft. It has the ability to transform the way people communicate and collaborate. This easy-to-read paper explains how Prognosis performance management helps Lync fit into the enterprise 'Big Picture'.
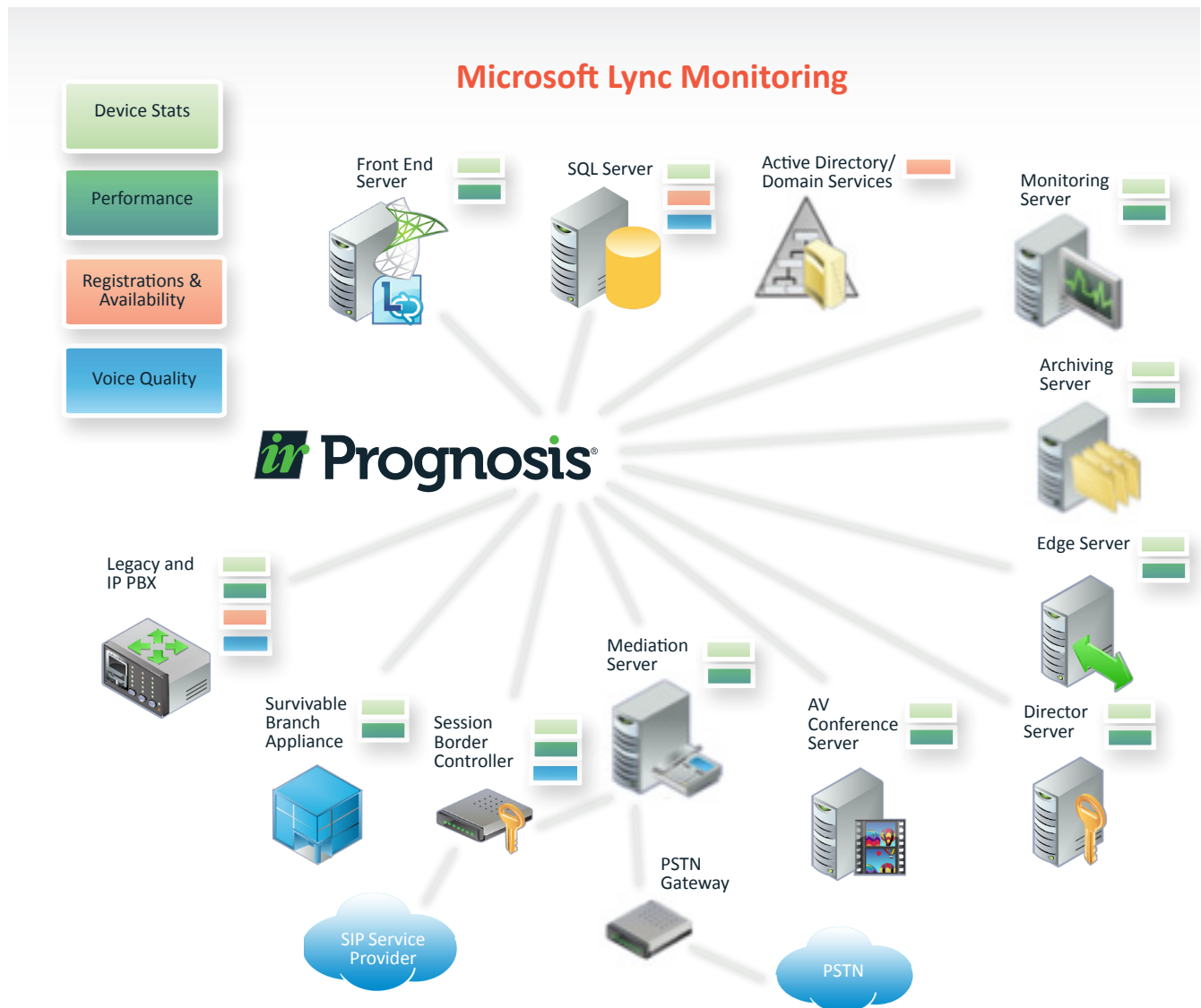
How will Lync perform on my network?

Where, when and how to invest in Lync is a perplexing question for many executives involved in infrastructure decision making. How Lync will perform on the network worries others, because performance issues have the potential to impact anyone using Lync's Unified Communications (UC) functionality.

Lync with its IM and Presence, video and enterprise voice capabilities is becoming a key communications enabler that is surfaced not only through the Lync client, but also in Microsoft's Exchange Outlook Web Access, Outlook, and other office application interfaces.

In effect Lync is becoming a unified communications hub for many organizations. With the expanded use of Lync and greater adoption of its voice and video features, and the change in client expectations, demand has grown for more comprehensive performance management.

That's why real time insight into Lync client services and the availability, capacity and workloads of the servers that provide them is vital. These insights can be gained through a UC performance management platform like Prognosis, which can amalgamate Lync capacity and availability management together with other vendors' servers in a single pane of glass.

Microsoft Lync Monitoring

Device Stats

Performance

Registrations & Availability

Voice Quality

ir Prognosis®

Front End Server

SQL Server

Active Directory/ Domain Services

Monitoring Server

Archiving Server

Edge Server

Legacy and IP PBX

Survivable Branch Appliance

Session Border Controller

Mediation Server

AV Conference Server

Director Server

PSTN Gateway

SIP Service Provider

PSTN

In this way you can gauge the capacity of servers in your Lync UC ecosystem to handle an increasingly complex load of IM, voice and video traffic. You can view voice streams, Presence and IM sessions, inter-server communications, call load, call types, virtualized server performance and much more.

This information helps you address the challenge of building a multi-platform and multi-vendor solution that can replace potentially decades-old technology that despite its limitations is reliable, well-understood and trusted.

Microsoft Lync client

Lync functionality is delivered to users by various Lync clients including feature bundles that provide an integrated set of UC capabilities including:

1. Instant Messaging and Presence,
2. Audio, video and web conferencing,
3. Voice features and capabilities (known as "Enterprise Voice").

This gives IT delivery teams great flexibility in getting the right functionality into the right hands.

However, to ensure the desired functionality is delivered as part of a quality user experience, Lync administrators must manage many things including voice quality, Presence, IM, video, SIP trunking, gateway performance and availability. This is because even if users are given greatly enhanced capabilities through new collaboration services coupled with a wide choice of IP-IP communications options, failure in any of these areas will tar the entire Lync user experience with the brush of poor service.

Microsoft Lync Server

Ensuring Microsoft Lync delivers UC services such as telephony, video conferencing, collaboration and instant messaging requires comprehensive performance management. This drives a need for a more effective and detailed monitoring, reporting and alerting regime to provide operational performance insight and the long-term view needed for capacity planning.

Microsoft Lync administrators depend on a deep understanding of Lync usage including:

Voice quality

It's vital to know what voice quality is like across the business because poor voice quality is detrimental to everyone. Whether it means you need to repeat yourself because you couldn't be heard, words were disjointed, you experienced echo, or because the meaning was lost, everyone suffers. For call centers it means rework, extended time to close calls and impaired customer satisfaction.

Prognosis provides a Lync site voice quality overview out of the box that summarizes voice quality and drill downs that display individual audio streams showing latency, jitter and packet loss to assist in troubleshooting.

Other information is readily available regarding calls' origins and destinations, and further details like the IP addresses of participants, pool, port, subnet and so on. If you need voice quality history you can view all the calls made at a particular point in time, and see voice quality patterns, or drill into a specific call's voice quality.

Call activity

Understanding the rate of calls going through the network, and grouping them by recently attempted, active and completed, helps you provision sufficient bandwidth and ensure that the correct QoS policies are in place to deliver consistent and reliable voice quality. Being able to review call history provides insight to the calls attempted by type, from which pool they've come, from which server within the pool, and their duration and direction.

If you need more granular detail you can look at the information per call in real time and establish the impairment causes, including the maximum amount of MOS degradation in any given interval.

Busy hour activity

Prognosis identifies the originating PBX for busy hour call attempts and matches it to the number of completions for those calls. In addition busy hour statistics for each vendor's PBX, and statistics aggregated over multiple PBXs ensure you understand voice traffic peaks and can adequately provision for them.

Grade of Service, which is the probability of a call being blocked or delayed for more than a specified interval, is calculated using these metrics. It may be viewed independently from the perspective of incoming versus outgoing calls, and is not necessarily equal in each direction or between different source-destination pairs.

The metrics in the table below are indicative of just some of the information Prognosis provides that delivers a comprehensive picture of call activity in the busy hour.

	Metrics that matter
Configured and registered devices	The average and maximum simultaneous numbers of configured and registered devices.
Average call length	This is the average length per call that originated from the devices.
Average call rate	The average number of calls per day.
Calls connected ratio	The total number of calls connected compared to the total number of calls processed.
Calls abandoned ratio	The percentage of calls abandoned to total calls processed.
Call failure ratio	The percentage of processed calls that terminated with a disconnect cause code indicating failure.
Total device Erlangs*	The total time spent off hook on connected calls by all devices.

* What is an Erlang?

One Erlang of carried traffic refers to a single resource being in continuous use or two channels being in use 50% of the time. For example if two circuits are both busy all the time that would represent two Erlangs (2E) of traffic, or a channel that is occupied for one hour is said to have a load of one Erlang (1E).

Integrating with PBXs

The chances are high that most businesses already have one or more PBXs meaning that many Lync deployments must work in conjunction with them. This is often the case during a transition to Lync when existing systems have not been fully depreciated for functional or financial reasons.

It can be a real art to integrate these systems, so managing the entire multi-vendor environment from a single perspective gives you a proactive way to minimize expensive outages and optimize IT resources.

Although the long term plan may be to consolidate and rationalize the environment, it's highly likely that calls will originate from one vendor's PBX and transit via a SIP trunk to another. To help ensure voice quality across multi-vendor environments, Prognosis provides end to end voice quality correlation which is invaluable in identifying any call impairments during a call. It can follow a voice stream originating from one vendor's PBX, track its quality and measure impairment factors on each network hop to its destination in another vendor's environment that may be multiple network hops away.

To help mitigate Lync integration challenges with various vendors' equipment, Microsoft's Unified Communications Open Interoperability Program makes available tests that qualify devices, infrastructure components, online solutions and third party services for interoperability. These include IP-PBXs and gateways, survivable branch appliances and session border controllers.

And within the Qualified Lync Applications interoperability program, Prognosis for UC was the first to qualify in the health management and quality of experience category (QoE). Rigorous and extensive testing requirements confirm Prognosis adds to Lync's innovative approach by enabling real time monitoring and optimization for a quality user experience .

How Microsoft Lync helps users collaborate

Picture this. You're in the office and the phone rings. You answer it to hear a colleague struggling to put together a presentation and needing your expert help. So you change to hands-free and start taking them through the problem.

After a few minutes it's clear that you need to get someone else's input. But how do you know if they're available? You can probably schedule a conference call but the only way to know if they are free right now is if they answer the phone. Or, possibly, you have separate Instant Messaging functionality that provides their Presence status.

Let's suppose that you get through to the other colleague and they are available and able to assist. It turns out that the easiest thing to do is have everyone look at the presentation at the same time and work together.

If you're lucky, the business has a collaboration tool that allows you to share a screen and, perhaps even remotely edit the document. Now you have a phone line open, a separate application for remote viewing and document editing and potentially an Instant Messaging client. With Microsoft Lync all of this is consolidated into a single activity, but the client simplicity relies inherently on a complex server environment to support it.

When the initial call comes in, you can hand the call over from your desktop handset to your computer and put the troublesome presentation on your screen. Integration between Microsoft Lync and your corporate directory will provide an easily accessible snapshot of who's available to assist and you can click on their name to conference them into the call and share the screen.

With a traditional PBX-based telephony solution in place, the integration between all of the different office activities is non-existent. Microsoft Lync integrates voice communications and application sharing with presence management and collaboration. This is more closely aligned to how we really work.

Managing the availability of Unified Messaging

One of the benefits Lync brings through its tight integration with Microsoft Exchange is message unification. Now you no longer have to check voice mail, email and any other non-unified message sources independently. This makes round the clock management of multiple Microsoft workloads and product technologies crucial to underpinning the improved productivity made possible by Lync.

Microsoft Exchange queue and replication delays, outages and overflowing mailboxes must be avoided or their impact will be felt, both by end users and also by UC processes that leverage messaging infrastructure. By monitoring overall server health, performance, availability, capacity, throughput and connections, you can identify performance trends, and know instantly about any breaches in operating conditions. In this way you can pinpoint problems and quickly minimize degraded performance, excessive queue lengths and avoid potential downtime.

Managing IM and Presence availability

Another great feature that comes with Lync is the ability to share user-to-user and application-to-user Presence information. To make the most of this productivity-enhancing capability you need to make sure that any issues are dealt with quickly and efficiently.

Prognosis provides real time monitoring of various session types including application sharing, file transfers, remote assistance, video, audio and conferences to give you vital insight to trends in your environment so you can quickly resolve issues.

Gaining insight to server load

Real time displays and historical reports showing the 60-minute period with the highest CPU utilization and the highest hourly average CPU utilization during that hour, help you ensure that no CPU is becoming overloaded and contributing to Lync service availability or quality problems. Monitoring memory and disk usage together with available disk space are all very real benefits for administrators in helping minimize expensive outages.

Searching users in Active Directory

Leveraging Active Directory information to find users by type helps identify those with specific functionality for upgrade tasks and troubleshooting as well as providing the ability to home into particular users' calls and investigate problems.

Custom searches enhance this capability further and enable administrators to focus on specific users with enterprise voice, remote call control or those using PC to PC communications only.

In this way you can view voice quality and session information rapidly for all users, user categories and call features.

Keeping watch at the branch level

It's vital for administrators to know if connectivity is lost at the branch level. For this reason Prognosis provides insight to Survivable Branch Appliance (SBA) availability status, and provides standard server metrics including CPU, memory and so on. Voice administrators can also obtain metrics from the Front End and Mediation Servers located on the SBA if they are activated.

Consolidating alerts

If you receive an alert from a device it's invaluable to see it as part of the big picture. This will mean you can correlate issues that occur in the physical domain like disk, memory or network problems with the domain where the problems manifest themselves as poor voice quality, delayed Presence updates and connectivity issues across SIP trunks.

Consolidating alerts means you can identify if alerts are related to issues across one or more Lync components, and even across systems from other vendors that nonetheless directly impact Lync. For example you might receive a rush of alerts indicating poor voice quality on Lync endpoints. Alert consolidation means you can see if this is caused by overloaded or downed Lync servers, or excessive packet loss on a link between Acme Packet session border controllers.

Reporting

Reporting is invaluable as it provides vital insight to trends and ad hoc performance incidents. Whether it's viewed on the screen or printed, report information can easily be adjusted to suit individual benchmarking requirements and show spikes and troughs outside normal operating thresholds. Flexibility is critical to your ability to quickly zero-in, capture, analyze and report on the metrics you need to demonstrate breakthrough insights and value.

For some stakeholders an executive summary gives them the high level insight they need to show availability and performance of all VoIP and UC components for the reporting period. And for others deep operational metrics help them resolve problems and justify future budget requirements.
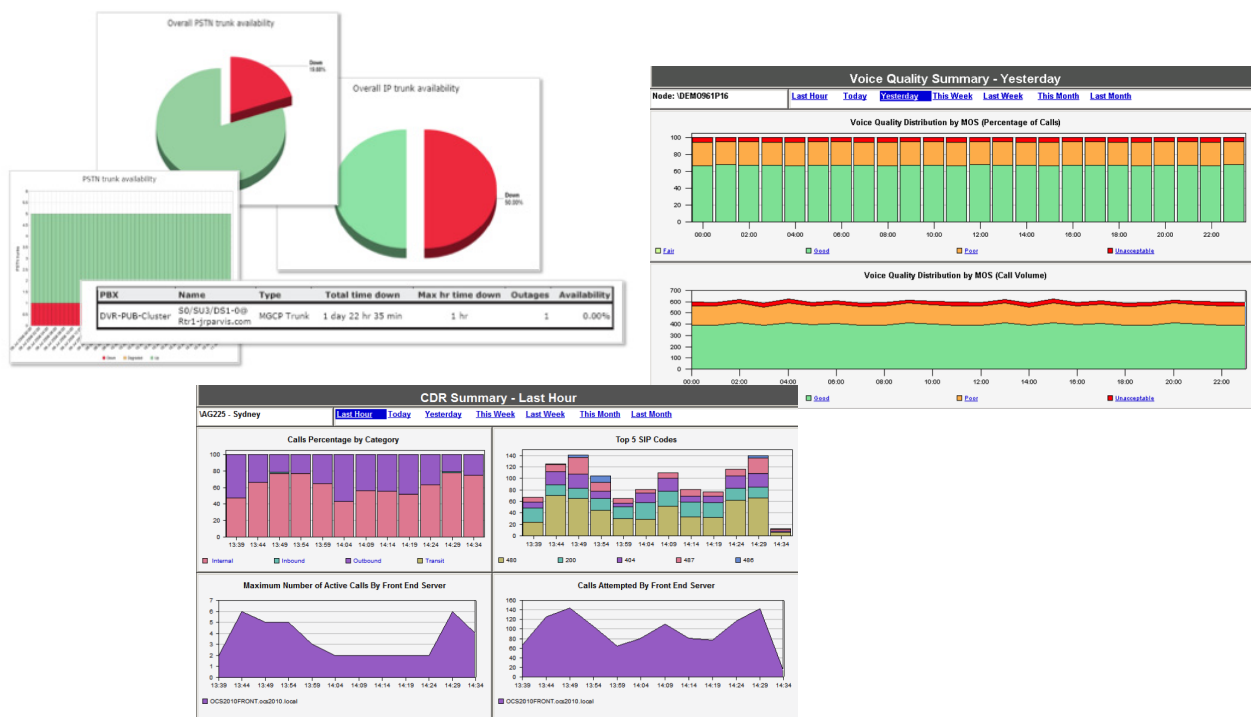
Why Prognosis for Lync?

Prognosis has been monitoring VoIP performance for over 12 years and providing mission-critical infrastructure management for more than two decades. This out-of-the-box domain experience has evolved to manage the complexities of the complete UC experience. Viewing a myriad of components, devices and platforms through a single pane of glass means systems managers can rapidly identify, address and resolve UC quality of experience issues.

If you'd like to read more white papers and case studies about optimizing UC operations and resources visit http://www.prognosis.com/resources/uc-resources/ white-papers.

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