RingCentral

Enabling Always-on Business with Enterprise Reliability

White Paper

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Background

Business communication needs and means have changed drastically over the years. Today, companies require secure, always-on solutions that are available and scalable globally. Users expect to be able to access all system features at all times, regardless of the device, mode of connection, or their physical location. There is little room for erratic performance and problematic applications.

Traditional on-premises, hardware-centric communication and collaboration systems have proven inept to keep up with these changing business and user needs, and the related inefficiencies and complexities have made way for unified, cloud solutions—unified communications as a service (UCaaS).

Though cloud solutions are keeping pace with and are able to address business requirements and user expectations better than before, concerns about security, reliability, quality of service (QoS), service control, and support remain as they did with traditional PBX systems. These are critical parameters for organizations to evaluate while looking to move their systems to the cloud. Also, the onus is on cloud service providers to not only provide a solution that is business-ready and delights end users but is also reliable and secure.

RingCentral views the following four pillars as not only founding principles for all our architecture and infrastructure decisions, but also critical elements to ensure a reliable and secure solution.

Scalability

The RingCentral platform supports users at over 350,000 businesses worldwide. It currently supports over 10 billion minutes of voice traffic per year and is built to handle 2x the capacity.

The modular pod design offers remarkable flexibility and allows seamless integration of additional pods as the subscriber base continues to grow. Unlimited new user groups can be added at any time, without taking the system offline to rebuild databases or add new servers. Network application triggers generate alerts when resources need to be reallocated, and the entire system is constantly monitored for any bottlenecks or blockages.

In addition, pod architecture incorporates a virtual chassis, deploying a direct-path algorithm that enables multiple individual physical switches to act as one via a high-speed link—coupling or uncoupling depending on system demands. The result is optimal traffic flow, superior flexibility, and instantaneous scalability.

Regardless of system load, the RingCentral platform is robust enough to handle unforeseen spikes in activity. RingCentral also operates a full-scale laboratory environment offline to thoroughly test any network changes before rolling them out—expansion efforts never affect customers' phone service.

What it means for RingCentral customers

RingCentral's multi-tenant network is designed with built-in 2x capacity, allowing customers to double in size overnight without an issue. Also, instances are designed at concurrent call volume, ensuring any fluctuations at the customer's end are met and remain non-call blocking at all times.

The RingCentral administrator portal plays an important role in offering customers the flexibility to manage their own systems and users. System administrators with the highest levels of access can control every aspect of the solution, including moves, adds, changes, deletions (MACD) through the portal. This lets customers scale up and down in real time, with no dependence on RingCentral. Of even greater value to customers is the ability to manage the entire system from anywhere, at any time, through a web browser or via the mobile application on their smartphone or tablet.

Redundancy

The RingCentral system is home grown, purpose-built to perform as a highly redundant, reliable, and secure global communications network. This is an important distinction in the UCaaS industry.

Core technology infrastructure and our global network are housed in multiple geographically diverse, state-of-the-art, Tier 4 data centers, minimizing the risk of loss and regional service interruption due to natural disasters and other catastrophic situations. RingCentral has 17 such data centers around the world. These data centers share hosted facilities space with some of the world's largest financial institutions, high-tech companies, telecommunications carriers, and the world's top internet exchange points, ensuring the fastest response times and interconnect services possible.

Within each major data center, RingCentral builds multiple layers of redundancy into a vendor-agnostic, commodity-based architecture. Internet access is ensured by purchasing multiple internet transits. All service components are designed to ensure high availability, fault tolerance, and fault impact segregation. Customer data, including service configurations, messages, etc., is fully replicated across RingCentral data centers in real time. PSTN access, at each data center, is ensured by purchasing connectivity from multiple Tier 1 global telecommunications providers. This geo-redundant, active-active architecture ensures high availability at all times.

In the event of a failure, RingCentral's automated systems, in conjunction with an always-on, world-class network operations center (NOC), ensure rapid transition to back up systems as needed to maintain uninterrupted service availability. If a system failure is detected within one of RingCentral's data centers, the redundant system—whether within that same data center or at another data center—takes over operations in accordance with internal failover policies and procedures.

What it means for RingCentral customers

These geographic and internal redundancies built into RingCentral architecture provide customers with a highly available and enterprise-class business communications and collaboration solution. In the event of natural disasters, such as severe storms or earthquakes or human-made disasters like hardware failures and fiber cuts, RingCentral ensures no loss of functionality or customer data.

RingCentral's network operations center (NOC) operates 24/7/365 and engineering teams continuously monitor countless systems, metrics, and alarms to ensure optimal system configuration and service availability.

Quality

RingCentral has established its own backbone and developed peering relationships to provide enterprise-grade quality of service. These relationships allow direct interconnect with service providers, be it telcos or internet service providers (ISPs). Direct peering (ASN to ASN) with over 200+ ISPs globally enables RingCentral to route around congested points of the network.

RingCentral data centers—in close, physical proximity to the world's top 20 internet exchange points—are co-located with all major telecommunications carriers to ensure the fastest response times and interconnect services possible.

To consistently deliver the highest HD quality possible, RingCentral employs the advanced Opus Interactive codec, as well as the wideband G.722 codec. HD voice with Opus codec is enabled by default on RingCentral apps, providing a better user experience with more clarity in HD voice, especially in limited bandwidth environments.

RingCentral has also developed one of the most proactive QoS initiatives in the industry, **RingCentral Quality Assurance™ (RQA)**, that covers:

- Network Address Translation (NAT)
- Bandwidth
- Monitoring
- Firewall
- DHCP
- DNS
- Last mile integration
- Wireless operation
- Line testing

At the core of RQA is proactive identification, a proven methodology that uses state-of-the-art software and tools to proactively identify customers who are experiencing quality issues, as defined by industry-standard metrics. Every network call is scored using various industry standards including MOS, R-factor, jitter, packet loss, and call failure. Scoring is combined with a trend analysis that maps call quality on a weekly basis.

Technology is only part of the equation. RQA analysts proactively contact customers to conduct remote site surveys. These comprehensive evaluations include analysis of the ISP, hardware specifications, and network layout in order to understand patterns and internet usage. RQA analysts then create reports based on best practices and their findings, which include a predefined network layout and any hardware (e.g., router) recommendations. Analysts are also certified to place diagnostic tools on the customer's premises in order to get detailed, end-to-end network traffic pattern and usage metrics.

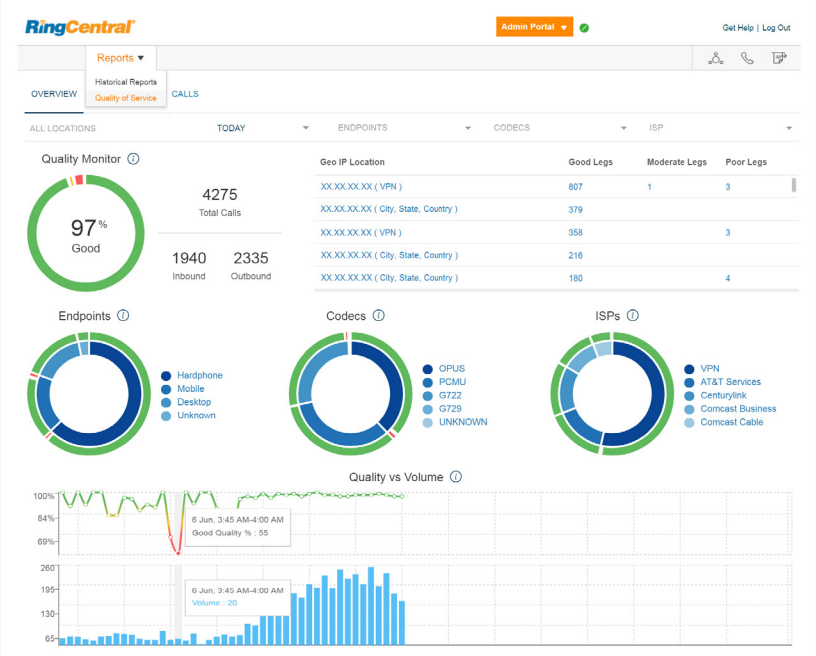
What it means for RingCentral customers

RingCentral has a history of innovation and a proven track record of investment to ensure customers and end users enjoy the highest quality HD voice. To back this goal, RingCentral offers SLAs for both availability (99.999% uptime) as well as voice quality (minimum MOS score of 3.8) over any connection, including OTT and mobile.

RQA offers significant benefits to RingCentral customers on a variety of levels—there's no need to employ third-party vendors to monitor service and uptime.

RingCentral also equips customers with the necessary data and tools to be able to monitor their systems themselves. With quality of service analytics, administrators have access to key operational QoS metrics in near real time to monitor the global voice quality and to diagnose call-quality issues impacting their users. Our powerful reporting dashboard provides the ability to monitor voice quality and call volume at an aggregate organizational level. Administrators can also drill down into specific calls to identify specific call-quality information, including packet delay, jitter, and packet loss. This provides end-to-end visibility into network conditions, from one caller to RingCentral to the other caller and back. With this information, administrators can isolate potential problems affecting call quality for accurate resolution. Quality of service analytics can help administrators understand:

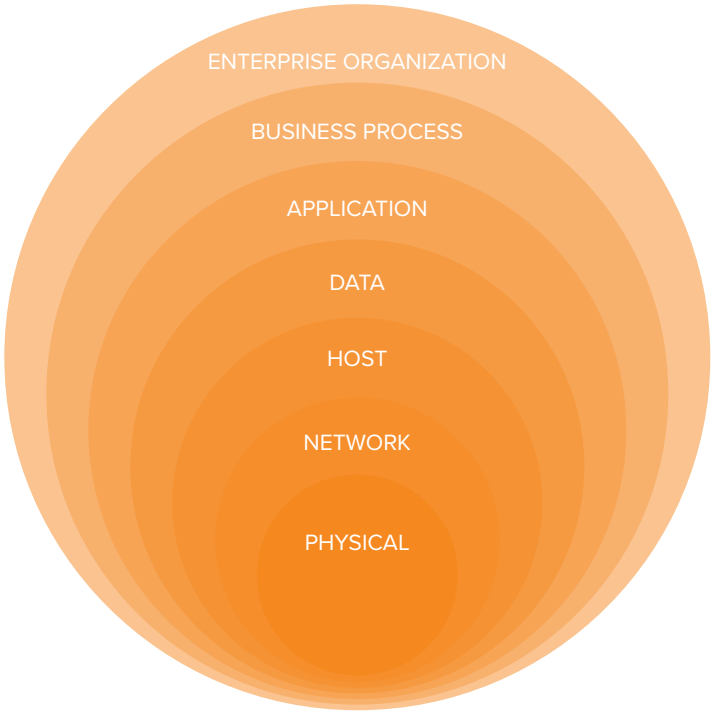
- Overall quality of voice calls
- Trends across regions, offices, and network providers
- User experience for a particular group of users
- Patterns in call quality over the course of a day due to overall call volume
- How codecs perform against varying network issues



The Overview dashboard allows you to easily monitor, analyze, and resolve issues proactively.

Security

Security is a crucial component of the RingCentral system and encompasses policies and governance practices (people), service development and operational processes (process), and application and infrastructure layers (technology).



RingCentral's robust security program includes policies and procedures around change management, access management, vulnerability management, incident response, fraud monitoring, audits, access reviews, trainings, and third-party testing.

The platform is deployed across SSAE 16, SAS70, and ISO 27001-audited data centers, protected by the most robust electronic prevention systems, on-site engineering specialists, and security guards.

Network and application perimeters are protected with firewalls and session border controllers. Administrative access requires authenticating first to the production VPN gateway and then to local infrastructure systems. Technology layers include intrusion detection systems, system logs, and fraud analytics. Operational processes include system- and service-level monitoring, system hardening, change management, and regular vulnerability scans.

To prevent interception of customer communications, RingCentral provides Transport Layer Security (TLS) and Secure Real-Time Transport Protocol (SRTP) encryption between all endpoints, including desk phones, conference phones, and the RingCentral Phone™ desktop and mobile apps. Customer endpoints are viewed as an important part of the data ecosystem, and RingCentral ensures encryption of customer data-at-rest.

Steps are taken for proactive fraud mitigation, preventing toll fraud through access control and usage throttling, and accounts are actively monitored to detect irregular calling patterns and to prevent fraudulent charges.

RingCentral voluntarily undergoes security and vulnerability audits by major partners and third parties, such as SSAE 16 SOC2 Type II, FINRA Cyber Security Controls, and HITRUST CSF Certification.

RingCentral maintains an aggressive internal privacy policy. Only trained, authorized personnel with a specific need-to-know and only in special conditions (to resolve an issue or accomplish a task) are allowed access to customer data in the production environment. This aspect of security is strictly followed and frequently trained.

RingCentral Office® has earned Skyhigh's CloudTrust™ rating of Enterprise-Ready, the highest rating possible. This puts RingCentral in the company of trusted cloud solutions such as Adobe EchoSign, Box, DocuSign®, HubSpot, Marketo, Salesforce®, and Workday.

What it means for RingCentral customers

While customers manage their account policies, user permissions, and login information, RingCentral ensures peace of mind by instituting robust security measures at every level of their architecture and processes.

RingCentral has the technology, team, and policies in place to protect data comprising voice calls, faxes, business SMS, voicemails, recorded conversations, etc.—both in transit and at rest.

Partnerships with best-of-breed security companies and frequent verification and validation by independent auditors ensure RingCentral is set up as a secure platform.

Getting started

For more information on cloud communications and collaboration solutions and RingCentral's commitment to reliability, visit ringcentral.com.

For more information, please contact your channel manager.
Visit partners.ringcentral.com or call 800-595-8110.

RingCentral, Inc. (NYSE:RNG) is a leading provider of global enterprise cloud communications and collaboration solutions. More flexible and cost-effective than legacy on-premises systems, RingCentral empowers today's mobile and distributed workforce to communicate, collaborate, and connect from anywhere, on any device. RingCentral unifies voice, video, team messaging and collaboration, conferencing, online meetings, and integrated contact center solutions. RingCentral's open platform integrates with leading business apps and enables customers to easily customize business workflows. RingCentral is headquartered in Belmont, California, and has offices around the world.

RingCentral

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