White Paper

A Guide to Assessing the Network Benefits and Requirements of Cloud VoIP
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The positive impact that hosted VoIP can have on your network, infrastructure and IT team

If you’re like many companies, the problems of supporting an aging on-premise PBX have become painfully obvious. The cost and complexity of keeping the hardware alive make it more of a liability than an asset. Your current PBX may also lack the flexibility and advanced features to keep pace with a mobile and distributed workforce. So now what?

Depending on the needs of your business, hosted Voice over Internet Protocol (VoIP)—also known as cloud VoIP—can alleviate the headaches of supporting a legacy phone system while enabling a dramatic increase in productivity. Along with reliable, high-quality voice communications and advanced call management, cloud VoIP can deliver a variety of benefits—not just for your business but also for your network and IT resources. It also saves costs and eliminates the huge upfront capital expenditures for on-premise hardware.
4 common cloud phone system questions

If you’re having trouble picturing the path from legacy PBX to cloud VoIP, you’re not alone. Many businesses already rely on SaaS in the cloud for critical business applications like CRM and ERP. These cloud solutions provide enterprise-class software and supporting hardware at a fraction of the cost, and without the management headaches of supporting on-premises applications.

However, when moving any business function to the cloud, most IT professionals and their business partners want assurances regarding reliability, availability, ease of management and control, and Quality of Service (QoS). It is no different with an on-premise phone system, and RingCentral finds that customers often ask many of the same questions:

1. How can I ensure that uptime and reliability are consistently high when the equipment is not located inside my facility?
2. What happens to voice quality when employees are video conferencing, streaming music, or watching YouTube?
3. What happens if a location loses its Internet connection due to a natural disaster?
4. When VoIP providers say “hosted,” what elements of the infrastructure does the service provider furnish and maintain?

This Network Requirements guide answers these questions and others, to ensure your consideration of and transition to a new business phone system happens successfully and without surprises. This document outlines how cloud VoIP can benefit your network, data infrastructure and IT resources. Finally, it details key requirements for determining the readiness of your network and the preparation steps required to support a cloud phone system.

Anatomy of a cloud telecom system

First, let’s look at the fundamental differences between a cloud phone system and an on-premise system—either traditional PBX or IP PBX. Figure 1 depicts how these telephony networks/systems commonly appear in many companies and illustrates who is responsible for the hardware and software in each case, as well as the respective connectivity requirements for businesses with multiple locations and remote workforces.

Note that with an on-premise IP PBX, calls can go out through a traditional telco provider (PSTN) such as a provider you had for years, over the Internet (VoIP) with SIP trunking, or a combination of both. These traditional connections can be regular copper lines or a T1 with PRI circuits. MPLS typically provides connectivity between locations and the respective on-premise IP PBXs.

A cloud phone system moves all of the hardware and software—as well as the responsibility for managing, maintaining, and updating it—into the cloud. This eliminates the complexity of managing the relationships with the telco providers, PBX vendors, service and maintenance providers, as well as the need to have onsite IT staff with specialized telephony knowledge. The cloud model also eliminates the need for costly MPLS or other business exchange lines between locations, while enabling call transferring and remote administration. Finally, it seamlessly integrates not only remote and mobile workers but also critical cloud-based business applications—from Salesforce to Box to NetSuite—into the business phone system.
Figure 1: A cloud phone system replaces almost the entire hardware and software network infrastructure required for a business phone system, including the dedicated lines connecting multiple business locations. The cloud solution provider handles all hardware/software upgrades, maintenance, security updates, repairs, integration with cloud and business applications, and other management issues. Remote and mobile workers are fully integrated into the business phone system.
4 key benefits of a phone system in the cloud

In a cloud phone solution like RingCentral Office®, all the hardware and software required for managing calls and UC services runs in highly available, redundant data centers. All voice traffic runs over the Internet backbone. This approach delivers a number of benefits for your infrastructure, network, IT resources, and business.

1. **Eliminates the large upfront expenditures, licensing costs, and ongoing maintenance and management of hardware**

   The most obvious advantage of cloud VoIP is that the costly PBX hardware disappears. Along with it goes separate building wiring for phones and data, additional cards required to add new employees, and space and power to house it in your network room or data center. This becomes an even bigger advantage with multiple locations as you eliminate more than one piece of PBX hardware.

2. **Removes the cost and complexity of managing phone lines to the telco provider and between locations**

   Since you no longer have a PBX, you don’t need the costly trunk lines, PRIs, or bonded T1s from the business location to the telco. All voice calls will travel over the Internet backbone. Similarly, if you have multiple facilities, you can eliminate the cost and complexity of maintaining MPLS, PSTN, or other business exchange lines to connect locations. Compared to moving to IP PBX, hosted VoIP can also save on upgrades to your network core.

   In addition, cloud VoIP eliminates the necessity to overprovision phone lines or PRIs. While each PRI line limits you to 23 simultaneous calls to the outside world, the RingCentral system furnishes virtually limitless inbound and outbound call capacity—without charge. You only need to ensure that you have enough bandwidth, devices, and people to answer the calls.

3. **Takes the burden of upgrades, maintenance, and repairs off IT while enabling easier control**

   As PBX hardware has grown more complex, supporting it requires highly trained technicians or costly third-party support. Whether you have PBX or IP PBX, this can mean posting dedicated resources at each location for care and feeding of the hardware. Or it puts you at the mercy of expensive truck rolls that happen on the local service provider’s schedule—not yours.

   Moving to the cloud means the hosted VoIP solution provider furnishes all the manpower and expertise required for upgrades, maintenance, and repair. A centralized system in the cloud further eliminates the need for trained staff at multiple sites, calls to local third-party support services, or one person with telephony experience driving or flying to each location. Additionally, IT gains flexibility and greater administrative control over the system with easy online accessibility to manage the system during off hours or when traveling by using a mobile device.
Provides the business benefits of advanced phone and UC features into a single system

Lack of flexibility is often a major reason for replacing a PBX with cloud VoIP. Cloud VoIP accommodates rapid growth and other business changes. For example, if your organization experiences a seasonal spike in staffing, adding a line to a legacy PBX would require the services of someone qualified in that particular hardware. However, cloud VoIP enables any IT person to add, move or change phone services—typically in seconds and from anywhere.

On top of eliminating costly outside trunk lines, a full-featured solution like RingCentral Office eliminates separate charges for features such as audio conferencing, Internet fax, web meetings, and video conferencing.

Planning for day 1 readiness

While moving from a legacy PBX to IP PBX can provide some unpleasant surprises, such as costly upgrades to the network core, there is less concern about network readiness with cloud VoIP since most businesses large enough to need a PBX have a fairly robust TCP/IP network in place. Primarily you need to ensure your existing network can guarantee high-quality voice calls, which requires adequate bandwidth (including the right commercial-grade routers) and a reliable Internet connection.

The balance of the reliability equation largely depends on the telecom network infrastructure that moves to the cloud. RingCentral assures five 9s of availability by hosting the infrastructure in secure, redundant data centers where telephony and IT experts manage the systems 24/7.

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4 keys to retaining high QoS and reliability

With a VoIP phone service, your voice is divided into data packets and sent over the Internet along various routes to the other end of the call. From the sending side, the packets travel across the IP network in a continuous stream, spaced evenly apart. Excess delay in packets arriving (latency), a wide variation in the delay (jitter), or the loss of too many packets can all potentially impact voice quality.
VoIP is a proven technology for delivering reliable enterprise-class communications, and latency, jitter, or packet loss rarely causes problems in properly engineered and implemented IP networks. To ensure high-quality calls, network reliability, security, and other key concerns of a cloud phone system, you need:

1. **Sufficient bandwidth**

   First and foremost, you need to ensure adequate bandwidth. Insufficient bandwidth can cause packet loss and other issues.

   A single VoIP call consumes approximately 90 kbps per second of bandwidth, so you can safely have 10 to 11 concurrent calls per megabyte. Multiplying your expected maximum number of calls by 90 kbps makes it easy to estimate how much bandwidth you will need in your data pipe. In the real world, relays in switches and other areas of your WAN can impact this estimate. You also need to allow for bandwidth hogs such as employees who are streaming music or uploading large image files. Consequently, RingCentral recommends you allow for three to four times your original estimate.

2. **Commercial-quality QoS router**

   Unless you set up your network to split voice and data into separate pipes, you may need a QoS-enabled router. This device can prevent latency by prioritizing voice traffic over lower-priority data traffic, such as email or large downloads. The RingCentral website provides a list of recommended commercial-grade routers.

3. **Robust and reliable Internet connection**

   The best voice quality requires a solid Internet connection. RingCentral recommends that you use a high-speed DSL, cable, or fiber-optic connection. You can easily verify your Internet connection speed in just a few minutes using the automated network capacity and quality tests available from the RingCentral website.

4. **Reliable, secure and redundant cloud data centers**

   RingCentral ensures that your new cloud phone system will offer five 9s reliability. The system is hosted in geographically redundant data centers that are located near major Internet trunks. These facilities undergo SSAE-16 and/or ISO 27001 audits, and are protected with state-of-the-art security at the technology and physical layers. The cloud phone system also offers several layers of built-in data security. In addition to managing your telecommunications infrastructure, these security measures essentially offload some of your IT department’s data security concerns as well.

   Another key aspect of reliability to consider when comparing cloud VoIP to an on-premise system is disaster recovery. Thanks to the cloud architecture and redundant data centers with backup power, a loss of Internet connectivity or other catastrophic event at a business location will have almost no impact on the business operation. Incoming calls either go to voicemail in the cloud data center or are automatically forwarded to a user’s mobile phone.
Conclusion

Moving your phone system to the cloud can save on expenditures such as phone line monthly charges and outside service calls. The management of almost the entire network and infrastructure moves to the cloud and becomes the responsibility of the provider. Additionally, while separation by distance from the physical hardware may seem to require giving up control, you actually gain easier control of your telecommunications infrastructure from a simple web-based console.

Within the cloud, RingCentral experts handle all maintenance, upgrades and integration with ERP, CRM, and other cloud-based business applications. Additionally, because the cloud powers your phone system, you get the added benefit of receiving automatic additions and systematic updates of the latest features at no additional cost. Therefore, you always have access to the most advanced productivity and communications tools. As a result, IT is left with fewer routine tasks, which allows you to refocus your team of IT professionals on more strategic initiatives.

Related documents

1. 7 Business Benefits of Moving from an On-premise PBX to a Cloud Phone System
2. Solutions for Improving Call Quality in Your Business-Class VoIP Service
3. The Role of QoS in Network Readiness and Reliability
Appendix

Terms and definitions

CRM (Customer Relationship Management) is a set of technologies and tools used to manage, improve, or facilitate sales, support and related interactions with customers, prospects, and business partners.

ERP (Enterprise Resource Planning) software stores and manages data created during every stage of business—from product planning, cost and development to shipping and payment—to provide an integrated real-time view of core business processes.

Five 9s reliability refers to a high standard (99.9995%) for the desired availability of a system. It is equivalent to approximately 5 minutes of downtime—planned or unplanned—in a given year.

PBX (Private Branch eXchange) is private telephone system that switches calls between business users on local lines while allowing all users to share a certain number of external phone lines.

IP PBX (Internet Protocol Private Branch eXchange) is a private business telephone system that provides functionality similar to PBX, but over data networks like a LAN or WAN rather than traditional circuit-switched networks. IP PBX typically can switch calls between VoIP on local lines or between VoIP and traditional telephone users.

MPLS (Multi-Protocol Label Switching) is a packet data transport service that uses a high-speed switching architecture rather than the typical routers seen in most IP networks. It transmits calls across a telco service provider’s network in a cloud-like connection between the business customer’s locations.

PRI (Primary Rate Interface) circuits are phone lines based the Integrated Services Digital Network (ISDN) standard used for carrying multiple voice calls and/or data transmissions between two physical locations.

PSTN (The Public Switched Telephone Network) also known as POTS (Plain Old Telephone Service), is the world’s hard-wired phone system over which landline telephone calls are made. To connect one phone to another on PSTN, the phone call is routed through a circuit sometimes comprising numerous switches operating on a local, regional, national or international level.

SSAE 16, or Statement on Standards for Attestation Engagements (SSAE) No. 16, is standard put forth by the Auditing Standards Board (ASB) of the American Institute of Certified Public Accountants (AICPA) that addresses engagements undertaken by a service auditor for reporting on controls for organizations that provide services to user entities. It extends to “Security, Availability, Processing Integrity, Confidentiality, and/or Privacy” for Software as a Service (SaaS), cloud computing, managed service providers, and many other IT-related entities.

ISO/IEC 27001 is an information security management system (ISMS) standard published by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

VoIP (Voice over Internet Protocol) uses the language of the Internet to place and transmit telephone calls over an IP network rather than the traditional public switched telephone network (PSTN).
About RingCentral

Since 2003, RingCentral has been breaking down the communication barriers created by complex on-premise hardware. RingCentral’s cloud phone system delivers business communications solutions that free people to work the way they want in today’s mobile, distributed and always-on workforce. Delivered on a state-of-the-art cloud infrastructure, RingCentral helps more than 300,000 customers thrive in a new world of work. Learn why.

For more information, please contact a sales representative, visit http://www.ringcentral.com or call 855-774-2510.