



Kloud 7

Business Communication Services

Platform Infrastructure

Disaster Recovery &
Network Redundancy

Documentation Guidelines

Documentation relating to services provided by Kloud 7 LLC. are informational guidelines that showcase technical details and use case scenarios designed to enhance product usability. Please contact hello@kloud7.com or call 844-855-6837 for all additional inquiries..



Kloud 7: Options for Disaster Recovery and Resiliency

The ability to keep telephone systems operating in the event of a service impairment or a catastrophic event is one of the chief selling points for Hosted Voice over IP (VoIP) technology. Enterprises and their End-user customers are increasingly expecting business continuity as a feature of next generation communications systems – basically, looking for ways to continue their business uninterrupted in the event of an issue with any location. Conditions such as power failures, access facility failures, network failures and devastating weather patterns – notably flooding – cannot be gracefully handled by a premise-based PBX, since it (or the Access connections to it) may not be functioning during the disaster or outage condition.

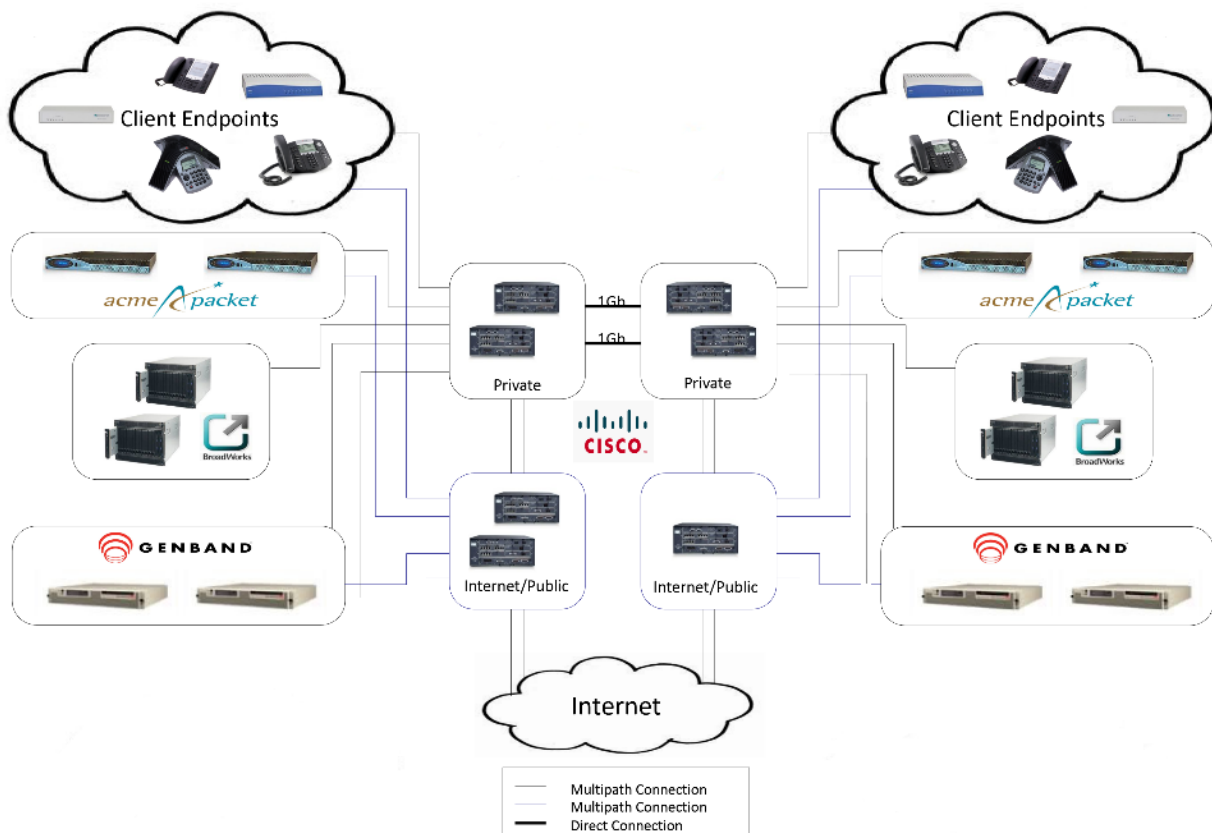


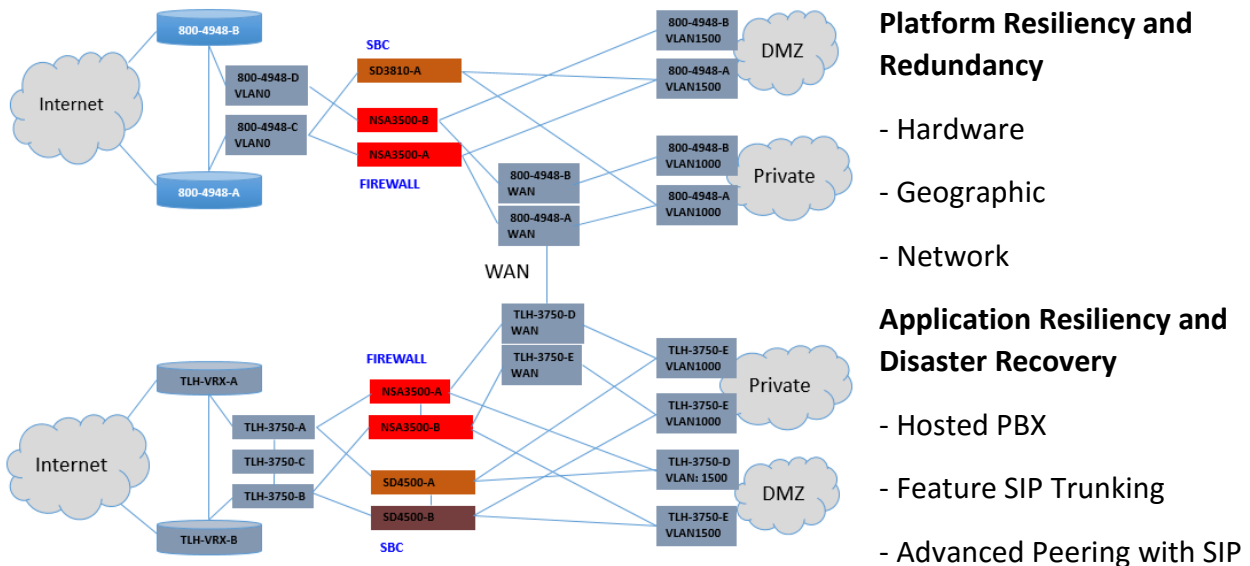
Figure 1: Kloud 7 Core Infrastructure visualization

Kloud 7 voice service delivery network architecture includes numerous points and levels of disaster or outage protection that allow for graceful recovery with, and in most cases, without human intervention whether the Enterprise still has their PBX or Key System on premises or if they have now converted to a Hosted PBX offering. There are recovery options at each level of platform device, network connection and within the specific applications used for telephony service delivery and availability under any condition.

Resiliency, Redundancy and Disaster Recovery Options

Kloud 7 core platform is designed with integrated resiliency options to further extend protections through our SIP Trunking and Hosted PBX offerings. There are a broad array of Resiliency, Redundancy and Disaster Recovery options to meet every customer need from core platform support to end user device availability.

Figure 2: Kloud 7's Network Resiliency Visualization



Platform Resiliency and Redundancy

- Hardware
- Geographic
- Network

Application Resiliency and Disaster Recovery

- Hosted PBX
- Feature SIP Trunking
- Advanced Peering with SIP

Platform Resiliency and Redundancy

Hardware Redundancy

Kloud 7 uses redundant hardware in active standby mode for all of the core platform components offered as part of any service offering as well as remote hardware redundancy, defined below as geographic redundancy. The various systems with hardware duplication are as follows:

- Access SBC: Acme Packet Net-Net 4500 – primary, hot standby.
- Peering SBC: Genband Quantix – primary, hot standby.
- Data Networking: Layer 3 and Layer 2 redundancy using Cisco 7204VXR's, Cisco 3750's and Cisco 4948's.
- BroadWorks: IBM (NEBS 1 compliant) servers used for application delivery, application DB, and application interface run in full active-active mode to support seamless failover.
- Cortex® - primary, hot standby Platform OSS Portal.
- Loki® - primary, hot standby Broadworks Applications Portal.
- Data Firewall: Sonic Wall running in High Availability mode.

Geographic Redundancy

Kloud 7 runs all core platform components with geographically diverse redundancy. Kloud 7's Points of Presence include: New York, Los Angeles and Tampa Bay for Hosted PBX infrastructure.

Network Redundancy

There are three levels of protection required for high availability network redundancy. Kloud 7 provides all three and has options to further extend network resiliency, based on the SPP's requirements:

1. First, there is the geographically redundant network. In the event of a scheduled service interruption (i.e. maintenance) or an unscheduled outage at a primary facility, voice traffic and end point registrations are re-routed automatically (normally without service break) to minimize the point of failure by utilizing dynamic DNS entries, by sending traffic to a mirrored secondary location.

2. Second, there is redundant IP bandwidth access from unique carriers that use diverse underlying network connections. This allows re-routing based on IP carrier network congestion or network outages.

3. Third, in the event that an SPP uses MPLS or other dedicated entrance facilities, there are multiple physical entrance paths at each Kloud 7 PoP to enhance access bandwidth diversity to the platform through the use of multiple Network to Network Interfaces (NNIs) in combination with resilient VRF VLANs.

In addition to platform network redundancies, each SPP can take extra steps to ensure maximized uptime. These enhancements can include turning up additional carriers in primary and secondary geographic locations, provisioning backup dedicated bandwidth and providing their own geographic administration diversity.

Application Resiliency, Redundancy and Disaster Recovery

Application Resiliency and Redundancy enhances the Kloud 7's Platform's high availability core functionality options by providing additional options, features and resiliency that expand the SPP's Disaster Recovery capabilities in nearly all imaginable fault scenarios.

These enhancements are included in the following Product offers:

- 1. Hosted PBX Application Options**
- 2. Hosted PBX Mobility Options**
- 3. Feature SIP Trunking**
- 4. Advanced Peering SIP Trunking**

1. Hosted PBX Application Resiliency, Redundancy and Disaster Recovery Options

a. Automatic device acknowledgement and configuration

- i. With the automatic device acknowledgement and configuration capabilities, an IP Phone can be moved to another physical location with ease.

b. Call Forwarding:

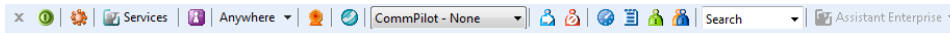
- i. This feature gives an entire company or an end user the option to reroute incoming calls to alternative locations in the event of a loss of data connectivity with the Hosted VoIP Platform.

- c. Hunt Groups, Queuing and Simultaneous Ring:
 - i. Hunt groups allow a caller to automatically find an available (i.e. “not busy”) user from amongst a group of listed numbers.

2. Hosted PBX Mobility Options

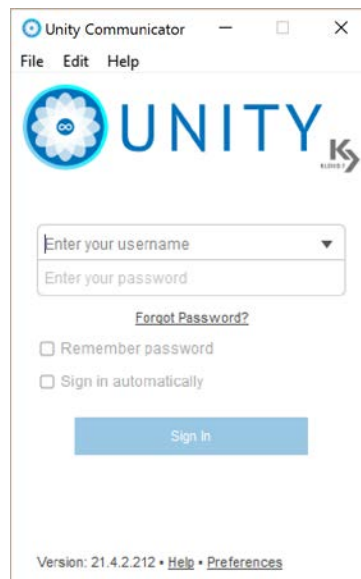
- a. Assistant Tool Bar:
 - i. The Assistant Toolbar is set of forwarding and redirection controls that are available for nearly all desktop and laptop browsers.

1. Figure 3: Assistant Toolbar



- b. Remote Office:
 - i. This feature enables users to access their Hosted PBX User telephony service from any end point, on-net, or off-net.
- c. Anywhere:
 - i. Anywhere enables End users to link any device (mobile, soft-client, land-line and/or disaster recovery center, among others) to their main phone line.
- d. Unity Client Software Platform:
 - i. The Unified Communications soft client called Unity Communicator is a desktop, tablet or smartphone application for accessing and using the business telephony services any BYOD device model.

1. Figure 4: Unity Communicator for Windows



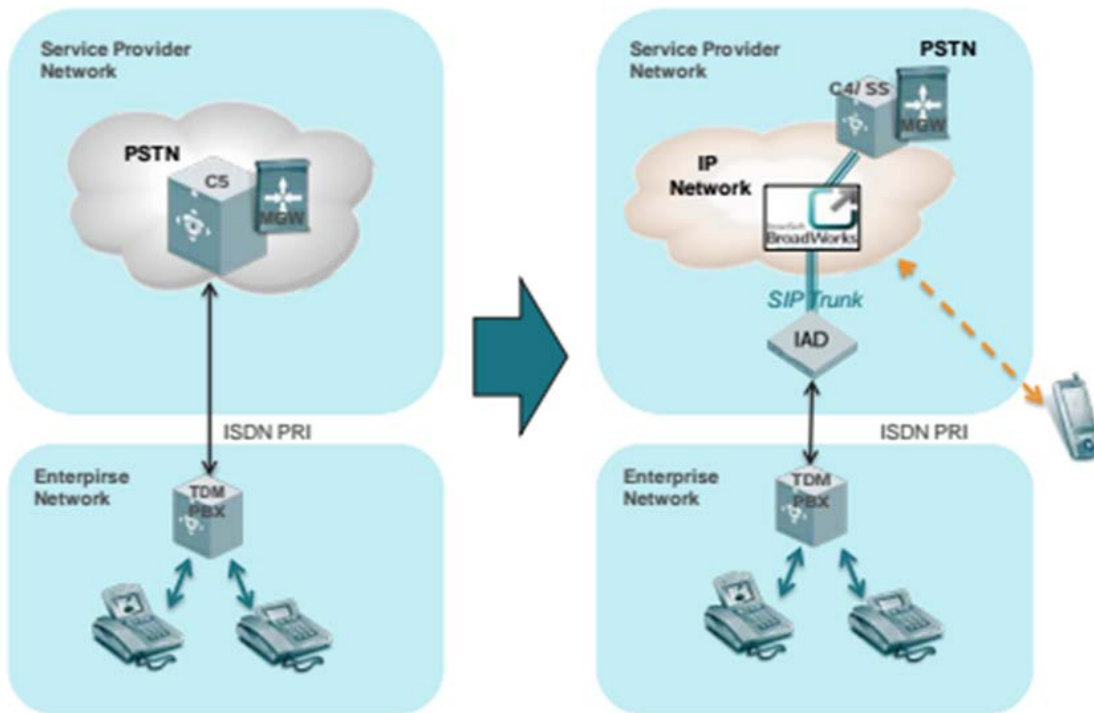
3. Feature SIP Trunking Application Disaster Recovery Options

- a. Feature SIP Trunking creates new layers of redundancy and improves disaster recover for customers using on premise PBX systems through Kloud 7’s Trunking Services

4. Benefits of Feature SIP Trunking for Disaster Protection:

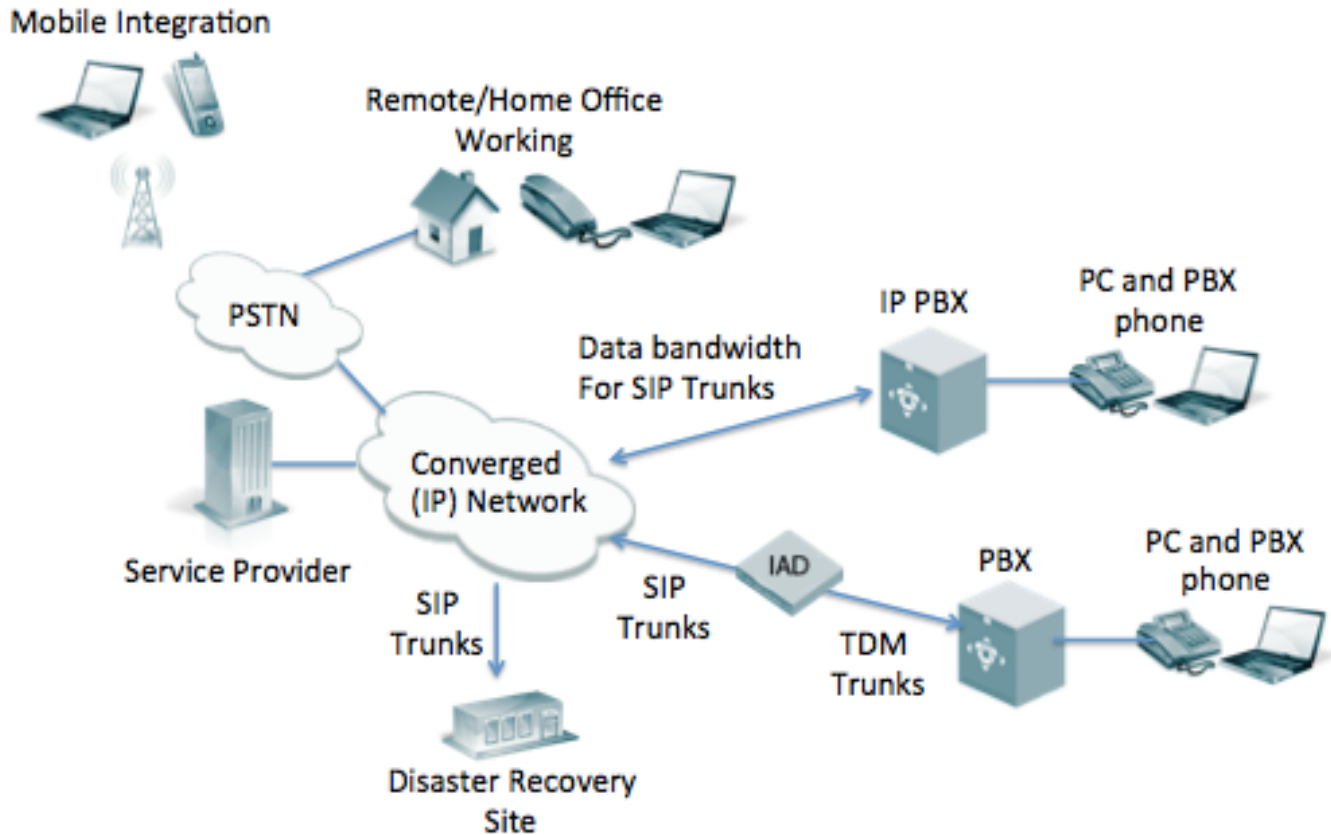
a. Feature SIP Trunking provides the following assurances against service interruption:

i. Figure 5: SIP Trunking Redundancy Plan



1. Disaster recovery solutions to redirect incoming calls to destination of customer's choice as needed.
2. Real time 'Out of Service' porting between sites via Portal supports the most dynamic business environments effectively.

ii. Figure 6: Feature SIP Trunking Converged Network illustration



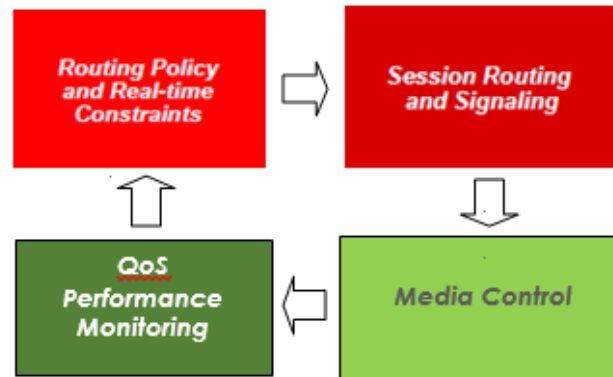
- b. Complete support for SIP Trunking to Device Mobility:
 - i. This feature provides customer activated routing and forwarding, that can include forwarding directly from a Feature SIP Trunk to a Mobile device, like a Smart Phone or a home phone, thereby maintaining active calling, even when the customer’s PBX is not available.
- c. Work Anywhere:
 - i. In event of an unforeseen or planned business communications service outage, incoming calls can be diverted to your employee’s mobile devices.

5. Peering based SIP Trunking Application Disaster Recovery Options

a. Advanced Peering SIP Trunking:

- i. Advanced SIP Trunking provides assurances against losing service by supporting disaster recovery through direction modification of SIP Trunks using sophisticated rerouting protocols.

1. Figure 7: Advanced Peering SIP Trunking routing control illustration



b. Standard Peering SIP Trunking:

- i. Standard SIP Trunking maintains all voice traffic on Kloud 7's infrastructure, maintaining traffic integrity as calls transit the resilient network platform.

1. Figure 8: Standard Peering SIP Trunking Network illustration

