SIP Smart:

Avoid the Top SIP Trunking *Gotchas*

Your enterprise is ready to reap the cost, productivity and flexibility benefits of SIP trunking. With a wide array of SIP options and providers available, even an experienced IT decision-maker can be overwhelmed with dozens of decisions. Each is best made when your evaluation includes the following issues, or "gotchas," that too often jeopardize successful SIP implementations.

Carrier & Access Gotchas

To better weigh a provider's merits relative to your requirements, consider these gotcha risks that can arise on the service provider's side.

Support Gotcha: Does the service provider offer assistance with network configuration, or end support at the network edge? Consider your end-to-end connections. With many providers, as long as packets are reaching your router, support beyond that point is unavailable, or comes at an additional cost.

Connection Gotcha: Some SIP providers don't—or can't—offer private, dedicated connections. Be aware that dedicated connections come with improved quality of service and reliability. Some providers even offer SLAs. If quality and security are essential to your enterprise, ask about this; the answer may help narrow your choices considerably.

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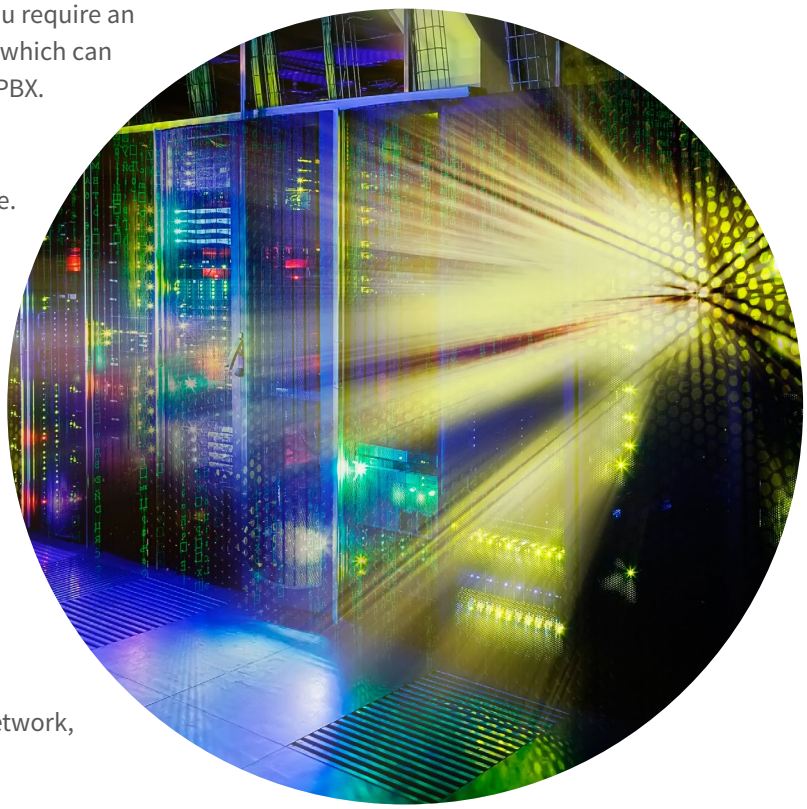
Gotchas in Your Network

Each component in your data network (for example, inside-the-edge equipment such as switches and routers) plays a vital role in the successful use of SIP for voice services. Here are some common issues that can be difficult to pinpoint with new deployments.

IP-PBX Gotcha: Is your IP-PBX ready for SIP? Do you require an additional SIP module? Not all PBXs are SIP ready, which can lead to costly and inconvenient upgrades for your PBX. Consider asking your SIP provider if the company has tested and certified interoperability with your specific PBX model. Ask to see the configuration file. Newer SIP providers won't have this important documentation until they've internally certified all their SIP trunks with the leading PBX vendors.



Firewall Gotcha: Is you firewall SIP ready? If an enterprise firewall is not SIP-aware, this can result in voice-quality degradation on your network, and may cause dropped calls. Problems are more likely to arise if your firewall is responsible for any type of encryption process or deep packet inspection. Make sure your firewall can handle the packet load when encrypting and decrypting every packet that comes across your network, including all your voice traffic.

Session Border Controller (SBC) Gotcha: The SBC is deployed primarily for SIP, voice and video transmission, often as a type of firewall specifically for the IP-PBX. SBCs can alleviate a number of issues, including those involving legacy equipment compatibility, toll fraud and phone-system security. Talk to your prospective provider about SBC best practices. If the response is a blank stare or silence, consider that a red flag.

Router Gotchas: Do you need to address NAT traversal? Network address translation (NAT) is a technology used with firewalls and routers to allow multiple devices on a network with private IP addresses to share a single public IP address. For a device with a private IP address to communicate with devices on the Internet, the router performs a translation operation. If settings are out of sync, and no rule exists telling the router what to do with incoming traffic, the router will most likely discard it. At a minimum, check the default VoIP settings associated with NAT traversal. They may need to be disabled.

Deployment & Other Gotchas

In general, there are three models for deploying SIP at multiple sites. These models often are referred to as centralized, decentralized and hybrid. With the centralized model, SIP traffic is backhauled from the remote sites to a central location. The decentralized model uses separate SIP trunks for multiple sites. The hybrid approach often is useful for phased migrations.

In choosing a deployment approach, key considerations include the number of employees at each site, inbound and outbound calling volume, survivability requirements and average or overall bandwidth usage. Choose the method that affords the most efficiencies, cost savings and compatibility with your legacy equipment.

This graphic summarizes key advantages and shortcomings of each model.

Multi-Site SIP Deployment Models

Service provider support for decentralized and hybrid solutions accommodate a wide range of enterprise requirements.

CENTRALIZED

BENEFITS

- Reduces costs
- Simplified service management: call plans, CPE

CHALLENGES

- Survivabilty
- Emergency service support

DECENTRALIZED

BENEFITS

- Diversity options
- Optimal bandwidth planning, use of session pooling
- Lower latency
- Redundancy and survivability

CHALLENGES

- More expensive - CPE
- More complicated to manage
- Higher bandwith requirements

HYBRID

BENEFITS

- Accommodates specific site requirements
- Enterprise can optimize bandwidth utilization
- Can be configured to address regional needs
- Redundancy/resiliency

CHALLENGES

- The ability to centrally manage this solution is critical

There is no right answer; the selection of a deployment model depends on enterprise requirements.

Decentralized-SIP Gotcha: Deploying SIP trunks at multiple sites may require added expense in terms of capacity and CPE. Your business operates five locations; each has 100 employees. You may decide that you need a ratio of SIP trunks per employee of 10:1. You believe this ratio is justified to ensure that each site can always send and receive as many calls as needed. This balance means you'll have 50 SIP trunks for 500 employees. But what happens if your headquarters has very high call volumes while some of your remote sites rarely use the phones? Capacity may go unused at some locations while your headquarters doesn't have sufficient capacity for its call volume. In addition, a decentralized architecture, with SIP trunks and PBXs at every site, can be complex to manage on a daily basis.

Other options exist, as with the centralized model, that allow unused capacity to be assigned elsewhere in the network when and as needed. A centralized SIP solution, for example, connects one or two sites directly to the service provider and uses an enterprise's existing network connections to provide the call flow to the other sites. Each location is connected by an MPLS circuit, assuring privacy and security. Additionally, voice and data are centralized at one location with a geographically redundant failover. As the business grows, the enterprise need only add nodes to the MPLS network for end-to-end control and efficient use of SIP trunks.

Centralized SIP Gotcha: A centralized SIP architecture is optimal for many businesses, but enterprises using this model will want to ensure survivability for remote sites, and understand how emergency calls are handled. A 911 call originating from a remote location may present the hub address to the public safety answering point (PSAP), resulting in inaccurate information being transmitted to PSAPs and on to first responders. In addition, some enterprises may find that their service provider's centralized SIP solution doesn't allow enough flexibility to tailor survivability for each location.

Faxing Gotcha: Sending traditional paper faxes over SIP can be highly problematic and unreliable. If your business depends on the ability to fax paper documents with precision for compliance or regulatory purposes, make sure to test faxing with your provider, or consider retaining a traditional business line exclusively for faxes.

Redundancy Gotcha: If your phone system is mission critical, make sure your prospective SIP provider can offer backup solutions. At some point a primary node in the network may be unavailable due to scheduled maintenance or failure. In this case you will probably need an option for processing voice traffic. Also, ask about the service provider's own disaster recovery plan and geographic redundancy. Your continuity planning should be complemented and reinforced by that of your provider, who should be prepared to discuss backup data centers.

911-Calling Gotcha: 911 calling is a life or death matter so it bears repeating: ask your service provider about 911 call handling and setup. Will emergency responders be able to pinpoint the location when a 911 call is placed from any of your various office locations?

Key Steps for a Smooth, Gotcha-free SIP Implementation

While each enterprise is unique, and implementations vary widely, practiced SIP specialists have learned through numerous deployments that success comes with careful planning, thorough evaluation and asking the right questions. A few best practices are summarized here.

1. **Identify your business needs.** Important characteristics for SIP implementation include the number of locations and employees, as well as the number of local, long-distance and international minutes used monthly. Consider the calling patterns of your customers and employees. Don't overlook your inbound and outbound call centers, or your business's needs and tolerances for quality and security.
2. **Map your network.** Inventory your hardware (IP-PBX/PBX, routers, switches, firewalls, computers, phones), multiple location connections (point-to-point and MPLS), and your network's security and encryption. Keep in mind that some SIP providers *do not support encryption of both the SIP signal and the media stream*.
3. **Trial, trial, trial.** Try before you buy to head-off most of the gotchas that lead to SIP buyers' remorse.

Avoid Gotchas by Assessing Your Business Needs

As you explore your options for implementing SIP, and your choices in selecting a SIP provider, it's important to be aware of the trade-offs each choice represents, and how they may impact your business. Think about how you are connecting to your SIP service provider. If the method uses the public Internet — over the top, or OTT — you will probably spend less. However, a big gotcha is that you lose control once the packets leave your network, making troubleshooting a challenge across multiple providers.

On the other hand, if you're inclined toward a private connection, your primary gotchas are twofold: private connections may come at a higher cost, and not all SIP service providers can provision a secure and dedicated connection in all locations.

Three key questions should be asked and answered in depth when weighing business needs against connection choices:

1. **What is your tolerance level for quality and reliability?**
2. **How important is price to your bottom line?**
3. **How critical is the security of your calls?**

When you've fully fleshed out these parameters, apply them carefully at every step of your evaluation.

Learn More

Smart SIP trunking is explored in detail in the on-demand webinar, *Get SIP Smart: How to Avoid the Top SIP Trunking Gotchas*. Cindy Whelan, principal analyst at Current Analysis, discusses the top SIP trunking issues and how to avoid them. The narrative covers SIP from the trenches to explore key elements of a smooth SIP installation.

Watch On-Demand Webinar

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