GARTNER REPORT: SIP TRUNKING

SIP Trunking Slashes U.S. Telecom Expenses by Up to 50%.

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SUMMARY

Network architects and procurement managers can leverage SIP trunking services to slash enterprise telecom expenses by up to 50%. Enterprises should leverage the competitive SIP trunking market as U.S. service providers are reducing rates to win new business and retire their legacy TDM networks.

OVERVIEW

Key Challenges

- Capturing value from existing PBX assets while migrating to Session Initiation Protocol (SIP) trunking
- Planning and managing WAN upgrades associated with incremental voice over IP (VoIP)/SIP traffic
- Managing complex telephony invoices that are difficult to understand, predict and charge back to individual business units.

RECOMMENDATIONS

- U.S. enterprises of all sizes should migrate to SIP trunking, which will reduce monthly telecommunication expenses by up to 50%.
- Enterprises that have yet to migrate their installed PBX's to VoIP should still assess the potential savings from SIP trunking as part of their enterprise telephony strategy.
- Enterprises that have already deployed SIP trunking should review existing contracts to ensure they are getting the most competitive rates, since U.S. SIP trunk pricing is declining by 5% to 7% per year.

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Introduction

A migration to SIP trunking will reduce telecom expenses by up to 50% in the U.S. for a typical enterprise. While 80% of large enterprises in North America have some SIP trunks in their environments, only 10% have fully completed migrating to SIP trunking.

The primary reasons SIP trunking migrations are delayed include:

- **Legacy PBX:** Many enterprises have PBXes that are more than 10 years old and do not support VoIP/SIP. The perception that upgrading the PBX is a prerequisite for migration to SIP trunking has precluded network and sourcing professionals from investigating SIP trunking.
- **WAN upgrades:** Wide area network (WAN) bandwidth and quality of service (QoS) are required to optimally support enterprise voice. Greater availability of Ethernet access and continued reductions in U.S. Multiprotocol Label Switching (MPLS) rates have lowered this barrier to production SIP deployments.
- **Complexity:** VoIP/SIP is relatively new and requires a staff that understands both IP data networking and telephony. SIP trunking service providers are providing managed service offerings to reduce design requirements and mitigate deployment risk.

Analysis

How SIP Trunking Reduces Telecom Expenses

SIP trunks will reduce telephony expenses in the U.S. by up to 50%. SIP trunking offers savings over traditional TDM trunking due to:

1. **Aggregation of trunks:** In a centralized SIP trunking architecture, voice trunks from many sites are consolidated into a few data centers. This centralization reduces the aggregate number of voice trunks by 20% to 40%, depending on size of the environment. In addition, some providers allow for sharing of SIP trunking bandwidth between data centers, allowing for optimization of available call paths across an entire enterprise instead of dedicating call paths per physical connection. This design can also be used to provide site redundancy for high availability while only paying for the call paths required to support a single site requirement.
2. **Aggregation of access:** A few high-speed Ethernet access links are more cost effective than many T1s. Since most enterprises have redundant fiber connectivity from data centers, adding Ethernet links for voice is cost-effective and easy.
3. **On-net calling:** If audio conferencing or IVR services are sourced through the SIP trunking provider, the provider will treat the associated long distance traffic as on-net, and waive long distance charges. Some service providers will also waive long distance charges going to other enterprises that reside on their network.
4. **Bundled feature charges:** SIP trunks bundle common features into a fixed charge. Primary Rate Interface (PRI) D channels' signaling and information are part of the SIP invite message. There is no longer a separate charge of $100 per D channel on a T1/PRI.

5. **Tariffs:** Traditional time division multiplexing (TDM) telephony tariffs do not apply equally to SIP.
    a. **Intrastate:** Many providers charge a single rate for long distance calls when using SIP trunking. Enterprises with high concentrations of intrastate calling can save as much as 70% over a traditional TDM pricing model for intrastate calling.
    b. **Local usage:** Local calling within a local access and transport area (LATA) boundary is unlimited and included in the base SIP trunk charge.
    c. **Taxes:** Universal Service Fund (USF) and other taxes are waived or reduced as compared with traditional TDM voice solutions. Enterprises should ensure that all applicable taxes and fees are included in their telecom RFPs to compare proposals fairly.
6. **Billing simplification:** The cost of billing — tracking internal use, making accurate chargebacks, etc. — accounts for as much as 40% of costs of a telephony service. Some providers offer SIP trunking with fixed-rate billing, making costs predictable, including a flat rate for normal usage with a fee for bursting above the negotiated threshold.
7. **Pooling:** Minutes can be pre-purchased in a fixed amount per month at a bulk discount for the enterprise. For instance, 100,000 minutes per month can be pre-purchased for one cent per minute, and enterprises with more than one million minutes a month can often negotiate rates below one cent per minute. Exceeding the pooled minutes will result in a per-minute usage charge, typically 25% higher than the pre-purchased minutes.
8. **Support:** Management, administration and support for SIP trunks require half the staff for support than traditional T1/PRI. Moves, adds, changes and deletes are done primarily via software by an end user through a portal.

While SIP trunking will reduce an enterprise's telecom expenses, a quarter of the savings may be offset by WAN bandwidth upgrades. Enterprises should investigate whether a centralized or decentralized deployment model makes the most financial sense. A centralized model aggregates all the voice trunks into a few data centers and is dependent on a robust WAN to carry the voice traffic from the data center to an enterprise's sites. A decentralized deployment model has SIP trunks going directly into each of an enterprise's sites and does not require any incremental WAN investment. With either architecture, it is recommended that enterprises select a provider that provisions concurrent calls at the enterprise level, including trunks for redundancy.

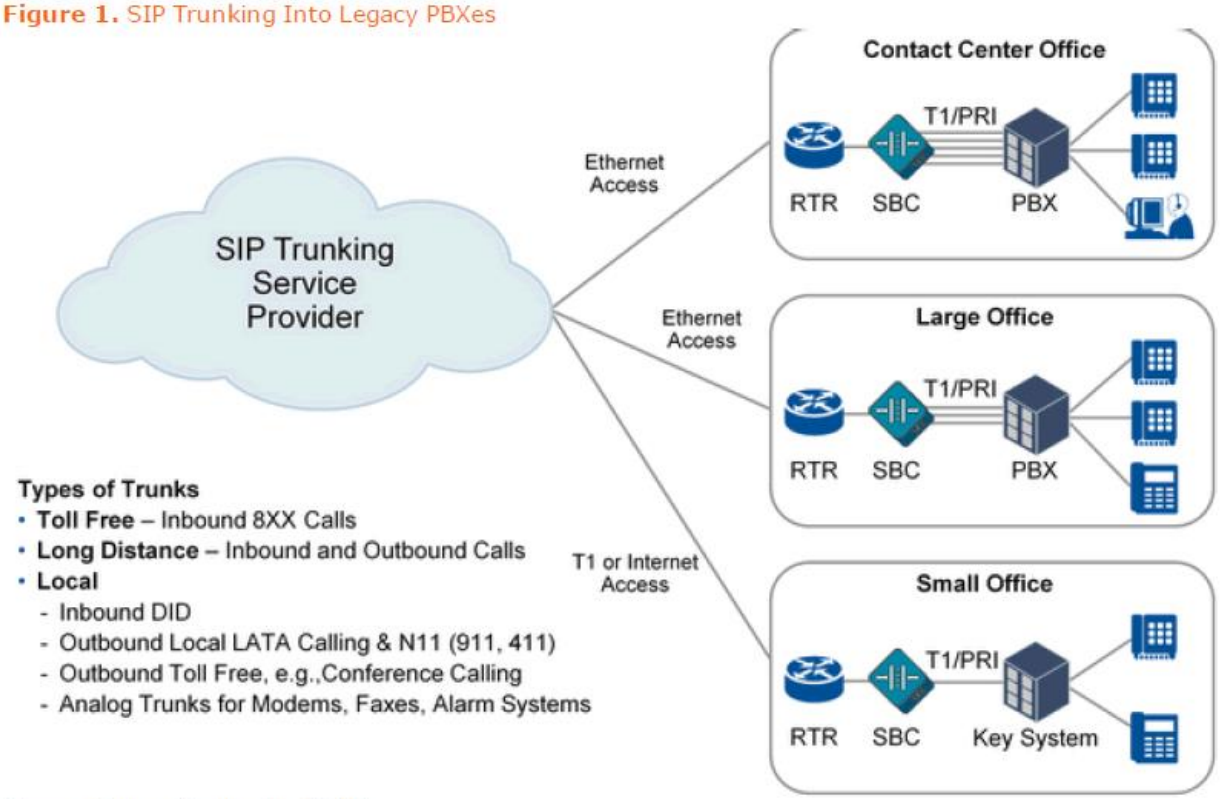
SIP Trunking With Legacy TDM PBX

SIP trunks can be utilized with legacy PBX environments, and upgrading the legacy PBX to VoIP is not a requirement to realize incremental savings from SIP trunking. SIP trunking service providers offer managed service to support legacy PBX's, utilizing VoIP media gateways, allowing the enterprise to gain SIP's cost savings and flexibility.

Hybrid session border controllers (SBCs) supporting legacy PSTN interfaces are used for integration between SIP trunking service providers and legacy PBX's. These SBCs convert VoIP/SIP back to T1/PRI to connect back into the PBX. Legacy analog foreign exchange station (FXS) and foreign exchange office (FXO) ports can also be supported for key systems, modems or fax machines. The benefit of using hybrid SBCs versus pure VoIP media gateways is that they allow smooth migration when the enterprise retires the legacy PBX and deploys a new IP PBX or unified communications (UC) system. The SBCs will then take the role of interoperability, security and quality assurance.

SIP trunks can be delivered over an MPLS network, or via a dedicated network into each site. As Ethernet access has become more prevalent throughout the U.S., and access costs continue to decline significantly, local network access costs are less of a barrier to SIP trunking adoption. Figure 1 shows an example of a distributed SIP trunking architecture into an enterprise with a legacy PBX infrastructure.

Figure 1. SIP Trunking Into Legacy PBXes



Source: Gartner (September 2014)

SIP trunking service providers manage routers and SBCs on site and provide a customer portal to track usage, report problems and adjust capacity as required. Redundant network connections can provide high availability when required.

SIP Trunking Negotiation Best Practices

SIP trunking pricing models have evolved over the last three years and are no longer replicas of traditional TDM contracts and rates. Enterprises with an existing three year SIP trunking contract approaching renewal can reduce rates by 20% to 30%. Enterprises migrating to SIP trunking should follow the best practices described below to ensure they receive the best prices from their service providers.

1. **Use RFPs:** Enterprise procurement managers who use RFPs get rates 15% to 20% lower than those who simply renew rates with their incumbent service providers, according to Gartner contract reviews with clients.
2. **Conduct annual rate reviews:** Sign three year contracts with service providers and insist on annual rate reviews to take advantage of the 5% to 7% per year decline in rates.
3. **Leverage pooling:** Pre-purchase a pool of minutes per month to ensure the best long distance rate discounts.
4. **Specify single-rate long distance:** Request a single long distance rate for interstate and intrastate long distance, including toll-free services.
5. **Negotiate bursting:** Negotiate for services that allow for 25% additional capacity above predicted concurrent calls to handle unforeseen call volumes.
6. **Estimate taxes:** Ensure service providers provide an estimate of monthly tax and fee expenses.
7. **Bundle:** Consider SIP trunking providers for audio conferencing and other hosted telecom services, and negotiate to waive on-net long distance costs to providers' cloud offerings.
8. **Seek fixed-rate billing:** To reduce administrative billing costs, buy SIP trunks, such as MPLS trunks, with a charge for access and normal predicted peak concurrent calls. With bursting, enterprises can get the guarantee of additional capacity when call volumes exceed typical peak call volume, but only pay for it when it is used.
9. **Determine local phone number footprint:** Understand your SIP trunking provider's native phone number footprint and emergency 911 coverage. Not all providers have phone numbers that cover all of the United States.

10. **Use least-cost routing:** Least-cost routing is an SIP trunking pay-per-use model that allows enterprises to connect to multiple SIP trunk providers and route each call to the least-costly service provider. For example, one SIP trunk provider may offer the best domestic call rate, while another may be cost effective for international communication.

Enterprises that do not have the time or expertise to manage SIP trunking should investigate managed service offerings from the SIP trunking service providers. These managed SIP trunking service offerings provide the enterprise with a managed SBC that is configured specifically for the enterprise corporate telephony platform(s). Managed SIP trunking services provide reports on availability, usage, and voice quality, as well as support for moves, adds, changes and deletions (MACDs).

Case Study

An enterprise network manager in California with 1,000 employees at its headquarters site wanted to migrate to SIP trunking. The enterprise employed 20 contact center agents, used a third-party audio conferencing service (the company hosts a monthly 350user conference call and many other smaller conference calls) and had a large U.S. sales force, including many in California. They deployed a new VoIP phone system seven years ago to replace a legacy PBX, but kept their legacy T1 PRI trunks. As shown in Table 1, they paid $715,680.00 per year for telephony services.

Table 1. Current Telephony Bill

Trunk Type	Access	Trunks	Usage (in minutes)	Usage (in minutes)	Subtotal
	T1/PRI		Interstate	Intrastate	
Toll Free	2	30	170,000	30,000	
Rate	*$200*	*0*	*$0.02*	*$0.05*	
Subtotal	*$400*	*$0*	*$3,400*	*$1,500*	***$5,300***
Long Distance	5	100	750,000	250,000	
Default	*$300*	*0*	*$0.02*	*$0.05*	
Subtotal	*$1,500*	*$0*	*$15,000*	*$12,500*	***$29,000***
Local	17	400	0	500,000	
Default	*$200*	*$30*	*0*	*0*	
Subtotal	*$3,400*	*$12,000*	*$0*	*$0*	***$15,400***
Taxes				**20%**	**$9,940**
Monthly Total					**$59,640**
Yearly Total					**$715,680**

Source: Gartner (September 2014)

Using the Gartner SIP trunking toolkit, the enterprise issued an RFP to four of the SIP trunking service providers that were covered in Gartner's "Critical Capabilities for U.S. Wireline Telecom Services." With a onetime investment of $200,000 for routers, session border controllers and professional installation services to migrate from the incumbent carrier, the enterprise was able to reduce their telecom expenses to $288,576 a year — a yearly savings of $427,104. The enterprise chose to go with a managed SIP trunking service offering so that they did not have to train their IT staff on how to manage and support their SIP trunks.

Table 2 summarizes their new rates with SIP trunking.

Table 2. New Telephony Bill

Trunk Type	Access	Trunks	Usage (in minutes)	Usage (in minutes)	Subtotal
	Ethernet — 100M		Interstate	Intrastate	
SIP	2	450	400,000	280,000	
Rate	*$2,000*	*$15*	*$0.013*	*$0.013*	
Subtotal	*$4,000*	*$6,750*	*$5,200*	*$3,640*	***$19,590***
Managed Services				*$450*	***$450***
Taxes				*10%*	***$4,008***
Monthly Total					**$24,048**
Yearly Total					**$288,576**

Source: Gartner (September 2014)

The primary contributors to the savings include:

- **Lower trunk costs:** A single local voice channel went from $30 per month to $15 per month.
- **Lower long distance rate:** Through buying a pool of minutes, long distance rates went from 2 to 1.3 cents per minute.
- **Single rate:** Eliminated the 5 cents per minute intrastate long distance charge, and now have a single 1.3 cent per minute long distance rate.
- **On-net conferencing:** Moved their audio conferencing service from a third-party provider to their SIP trunking service provider; all site-based long distance calling charges into the conferencing bridge are waived.
- **Lower taxes:** Taxes and fees for SIP trunks based on tariffs were lower.

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