



# MediaTone At A Glance

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## Introduction

WebEx offers a suite of powerful and effective software tools that deliver a secure, reliable and real-time collaboration experience over the web. The WebEx MediaTone Network, the purpose-built infrastructure supporting this offering, is hosted in modern data centers around the world, providing the most reliable and highly available service of its kind. The MediaTone Network provides secure SSL and AES encryption of session data. Meeting content is non-persistent in the MediaTone Network, ensuring mission-critical protection robust enough for the U.S. Department of Defense and Fortune 1000 companies. Additionally, by switching rather than storing data, MediaTone delivers accelerated, real-time collaboration, unlike the store and forward approach, which—because it stores data on intermediate servers during transmission—introduces significant delays before delivering content to participants.



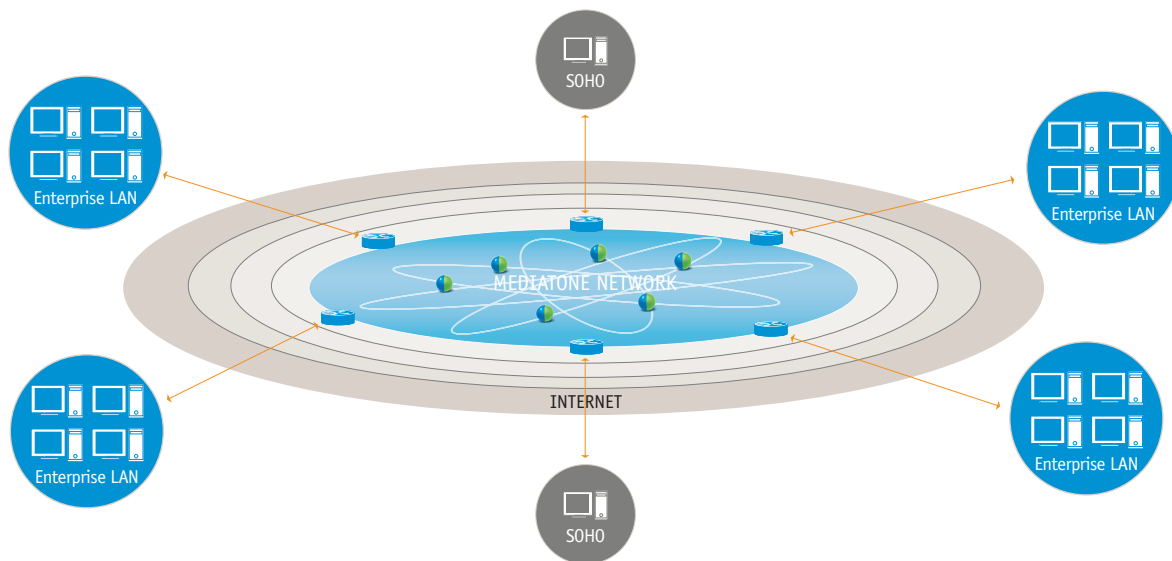
## MediaTone: More than a Network

*Web collaboration now provides the ability to share a wide array of rich-media data types, such as video, voice, presentations, and other electronic document types.*

As a result of IP networking, the Internet has become the primary communications network for business and professional data exchange between knowledge workers, their coworkers, and clients. While the World Wide Web has long provided the ability to view web pages and graphics, only in the last five years have we been conferencing successfully with two or more participants. And web collaboration now provides the ability to share a wide array of rich-media data types, such as video, voice, presentations, and other electronic document types.

This expanded capability introduces a greater burden on the infrastructure carrying these sessions. Additionally, the importance of response time and session reliability increases as activity scales to the enterprise level. Interactive business communication is inherently real-time and becomes more significant as groups of participants engage each other while sharing desktops, applications, voice and video in the session. For this, a dedicated and specialized platform is ideal. The WebEx MediaTone Network provides this platform.

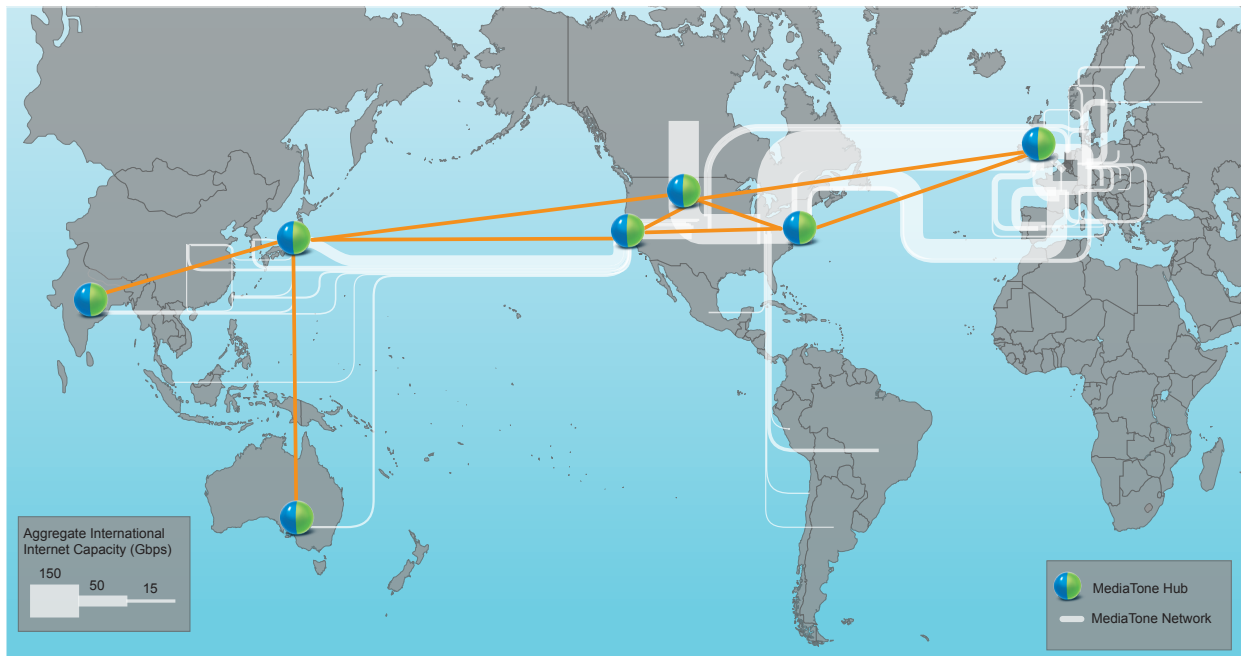
Figure 1. Connectivity of the WebEx MediaTone Platform



## Distributing the Collaboration Infrastructure

In order to meet the requirements of real-time collaboration the infrastructure must be distributed and provisioned to meet varying loads at any junction. It also must have dense connectivity between geographically distributed nodes.

Figure 2. WebEx MediaTone Global Reach



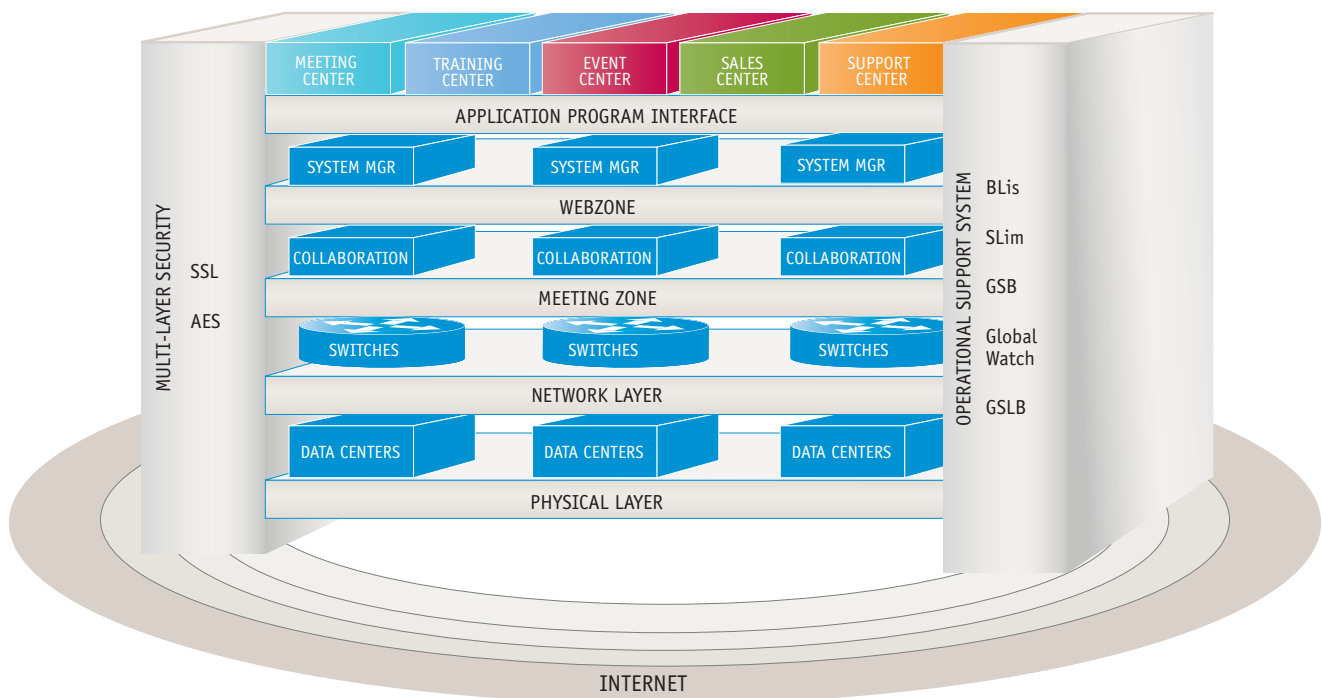
WebEx data centers house our Collaboration Clusters all of which are interconnected with dedicated, high speed fiber. WebEx data centers peer with the highest density Network Access Points of the Internet allowing participants and hosts to enter the MediaTone Network closer to their Internet Service Provider.



# MediaTone Architecture

Housed in super secure data centers, MediaTone is built on a fault-tolerant IP network designed to operate 24x7x365. Each of the 30+ clusters connects via high-speed redundant fiber links. Within this infrastructure are two zones: a Web Zone and a Meeting Zone, which represent the two main activities of the host and participants. WebEx encrypts the connection to the MediaTone network using 128-bit SSL encryption, and encrypts all presentation sharing content using AES encryption.

Figure 3. WebEx MediaTone Architecture



Within each MediaTone data center are numerous scaled collaboration switches and session managers optimized for real-time multimedia traffic. These devices switch and replicate data to participants in real-time with very low delay. The session manager provides a secure meeting experience by working with the collaboration switches to authenticate and join participants. Because there are usually more than two participants involved—making this a multi-point session, and since the Internet doesn't support multicasting—MediaTone handles replication of collaborative data to all participants.



*WebEx employs a proprietary encoding technique on documents called the “Universal Communications Format” (UCF). Analyzing document structure within the WebEx client enables UCF to reduce document size by up to 50%.*

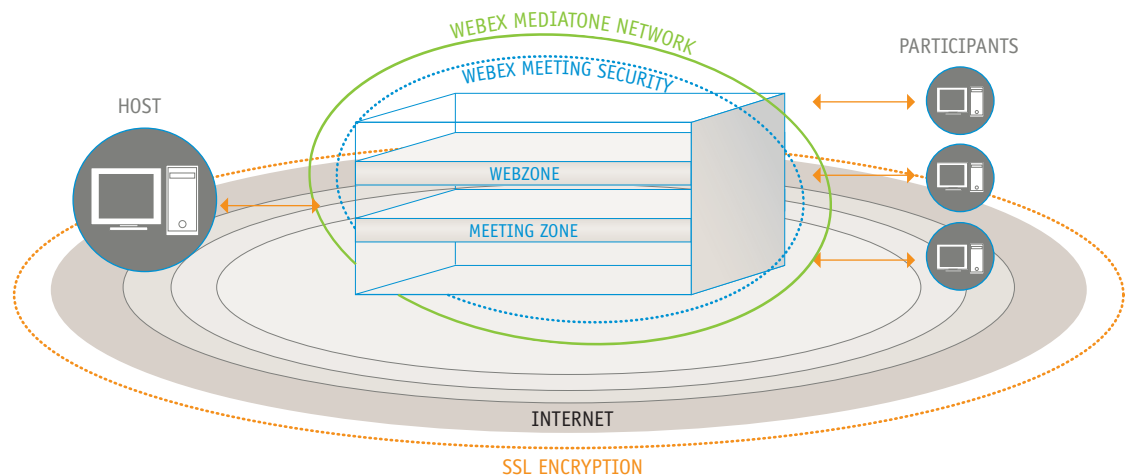
## Considering Bandwidth

Due to the nature of network communications, transporting multimedia data can stress the network infrastructure. Therefore, information should be compressed provided that compression doesn't affect the clarity of the experience. Compression provides two important benefits: it minimizes latency and adds another layer of protection—improving overall session quality. WebEx employs a proprietary encoding technique on documents called the “Universal Communications Format” (UCF). Analyzing document structure within the WebEx client enables UCF to reduce document size by up to 50%. Decoding may be performed only from within the WebEx client in an authenticated session. UCF employs document vectorization as well as difference encoding to transmit only changes.

## Securing Collaboration

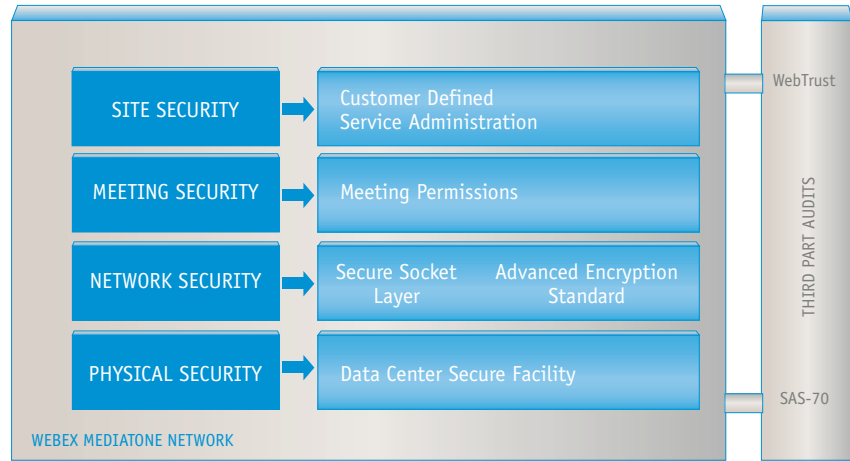
As an application service provider, WebEx relies on clients place their trust in the integrity of the service. WebEx created a robust, multi-level security model that conforms to the stringent requirements of the DoD and many Fortune 1000 enterprise customers. This security model conforms to ISO 17779 processes and procedures, providing vigilant vulnerability assessment, threat management, and analysis on a daily basis.

Figure 3. Web Collaboration Session over the MediaTone Network



# The WebEx Multi-Layer Security Model

WebEx assigns data security the highest priority in the design, deployment and maintenance of its network, platform and applications, and its offerings meet the most stringent security requirements of businesses and government agencies.



As shown in the Figure 4, the WebEx security architecture provides the following protections:

Security Layer	Functions	Standards	Advantages
Site Security	Customer-defined admission, management and access.		Password-protected access to branded site, viewing of meetings or other sessions settable.
Meeting Security	Attendee privileges and feature-access, expulsion, communication.		Host/Presenter regulates attendee access levels, in-meeting rights, saving, chat, etc.
Network Security	Data content security, intrusion control, switched – non-persistent data.	SSL 128 bit Encryption AES 128 bit Encryption ISO 17779 Security Recommendations	No admission to session without meeting manager authentication, signed VeriSign certificate. All documents are encrypted using AES.
Physical Security	Tier-1 Data Center hardening. Two factor building access. Massive D/C and A/C power. Extensive redundancy provisioning.	Carrier Class, Tier-IV(?), SAS-70, > 225 watts/sq. foot, Zero Single Point of Failure (ZSPF)	Bomb-proof, can generate power sufficient to light a small city during outages. Severely redundant architecture. Impervious to unauthorized access (careful).
3rd Party Audits	Web Trust	AICPA	Prestigious Audit
	SAS-70 Type II	AICPA Statement of Auditing Standards	Prestigious Audit
	VeriSign	SSL 128 bit certificates	Trusted 3rd party
	NSA	Advanced Encryption	Unbreakable (careful)



The platform provides distributed databases and a conservative failover strategy to ensure that data is sent and received in a timely and reliable manner while maintaining full-strength security.

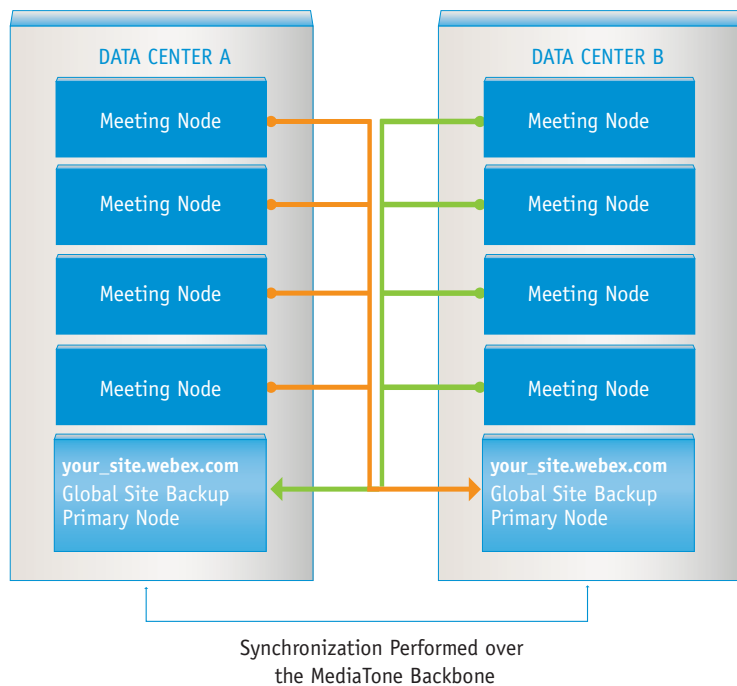
## Reliability and Availability

WebEx collaborative services rely on the MediaTone network to switch and transport real-time session data. The platform provides distributed databases and a conservative failover strategy to ensure that data is sent and received in a timely and reliable manner while maintaining full-strength security. Additionally, WebEx maintains redundant services, switches, and associated databases.

For high availability WebEx employs GSB. This architecture ensures instant and transparent failover to the backup site in the event of a failure.

The following diagram illustrates this:

Figure 5. Global Site Backup Scheme



## Delivering Reliable Web Collaboration

By design, the MediaTone network always operates at a fraction of its total capacity. GSB replicates a company's site in real time to another geographically separate data center.

WebEx delivers stable sessions to large numbers of participants as a result of high availability architecture and Global Site Backup (GSB). By design, the MediaTone network always operates at a fraction of its total capacity. GSB replicates a company's site in real time to another geographically separate data center. In the rare case of a service outage, the backup site is available transparently, without indication to the host or attendees.



Also contributing to a reliable collaboration session is a well-designed load-balancing system. “Global Server Load Balancing” (GSLB) allows traffic to MediaTone switches find the least congested switch, minimizing delays in real-time collaboration. This translates directly to a better experience for all involved due to faster screen updates and synchronization between attendees.

## Conclusion

The WebEx MediaTone network is engineered for secure, reliable real-time multimedia collaboration over the Internet. With its growing user base, WebEx employs conservative strategies with respect to maintenance, scalability, serviceability, and reliability—guaranteeing the most secure and superior user experience. This robust core switching platform was created primarily to move digital media over vast global infrastructures and forms the backbone of the MediaTone network. By switching and not storing collaboration data, WebEx maintains deep security across its MediaTone network, delivering the most reliable collaboration experience possible.

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