

WHITE PAPER

Virtualizing Video Conferencing for Business

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Abstract

Server virtualization has been at the top of the CIO agenda for several years now. And no wonder, it cuts cost and reduces maintenance. Cloud computing takes that up a notch by managing the virtualized resources on behalf of the customer. This paper describes Nefsis cloud computing architecture and how it uses virtualization to deliver the benefits of scalability, high availability, and lower cost of ownership for business video conferencing.



Virtualizing Video Conferencing for Business

Managing video conferencing availability usually falls to IT, but traditional video conferencing products do not look, behave or act like most IT assets. They are dedicated, single-function devices with no provision for scalability or high availability.

By contrast, cloud-based video conferencing uses virtual conference servers much like any other virtualized application. The virtualized server approach fits today's managed service IT strategy better than standalone video conferencing systems that are islands of computing, largely being left behind. Now, with a worldwide cloud of physical servers and evenly distributed virtual conference sessions, HD video conferencing finally fits the approach with which IT managers are so familiar: failover, scalability and load balancing.

In addition, the cloud-based approach dramatically simplifies activation and maintenance of a secure, company-wide video conferencing application because it does not rely on infrastructure hardware components that are difficult to expand.

This paper describes the advantages of using a truly distributed, cloud computing architecture for business video conferencing as a means of achieving scalability, high availability and lower cost of ownership.

Standalone Video Conferencing Systems

To extend traditional boardroom-to-boardroom video conferencing to more than two sites, most video conferencing vendors like Polycom and Tandberg sell a dedicated multipoint conferencing unit (MCU), an endpoint MCU, or a piece of software that goes onto a dedicated appliance. Whether hardware or software, in the eyes of the IT managers who need to support it, the result is the same:

- Single point of failure – If something goes wrong with the dedicated equipment (hardware/software failure, power failure, interrupted connection to the network), any conferences in progress are abruptly terminated, and no failover-ready devices exist to resume or restart the conferences.
- Square peg in a round hole – IT managers are used to products and services that offer redundancy, failover and load balancing, none of which dedicated video hardware offers.

IT managers looking for scalability and high availability in traditional video conferencing equipment find relatively few options, other than layering on expensive, redundant connections from an Internet Service Provider (ISP).

The Virtual Conference Approach

To align video conferencing with the way IT managers think about and acquire capacity, online service providers such as Nefsis have introduced cloud-based virtual conferencing servers (VCS), with failover, load balancing and global distribution of servers. Unlike most conferencing products that dedicate infrastructure hardware (MCUs, etc.) to specific video conferences, Nefsis provides video conferencing anywhere by virtualizing the conference across multiple servers at ISPs around the world.

Virtual Conferencing Servers

To improve the local delivery of video conferencing services, each video conference runs on a VCS, which in turn runs on one of several physical servers in a geographical region (e.g., eastern U.S., western U.S., northern Europe, Asia, etc.). This accelerates video conferencing performance and improves the online experience of all participants. Each VCS can handle hundreds of simultaneous video conferences with dozens of simultaneous participants. This type of nearby service heuristic is unmatched by centralized data centers, single-server hosted solutions, and other solutions based on single-site infrastructure.

Failover

Traditional video conferencing products rely on a physical box located in a specific room in a specific location. This puts their online meetings at risk of failure from problems with hardware, power, and network connectivity. Introducing failover to this model involves expensive alternatives such as leasing MCUs in various regions and subscribing to redundant connections.

In the Nefsis model, video conferencing takes place in the cloud, where it is easy to move virtual resources among physical servers. If a physical server fails, other physical servers in the same region take over the conference without user intervention.

Scalability

Instead of customers having to purchase dedicated equipment and additional connections, Nefsis monitors the load on physical resources and adds physical servers as growth in a region demands. IT managers enjoy the same high availability and scalability for video conferencing that they see in their other IT systems, but without any additional effort or capital outlay.

Load balancing

To balance the load in a region, Nefsis runs a set of proprietary algorithms on the back end of each physical server. The algorithms harvest real-world information about the video conferences in progress: number of active conferences, number of participants, latency, congestion, performance, server load, memory consumption, CPU utilization, and quantity

of data running to and from the server. Based on these factors in the cloud, Nefsis determines the best physical and virtual server on which to host a new conference, with the goal of keeping all servers in a region at the same level of utilization.

Security

IT managers require security in their organizations. The technical security challenge in the video conferencing industry is the business desktop. Traditional boardroom video conferencing systems have open connections to the Internet or private virtual circuits, while desktops are behind firewalls and often proxies. Only a limited number of solutions exist for solving the proxy traversal problem for desktop video conferencing. One can put infrastructure hardware, such as MCUs, video-specific routers and gateways in a DMZ; timeshare the same from a communications service provider; or use cloud computing where these capabilities are accomplished by shared resources in the cloud. The Nefsis cloud accomplishes proxy traversal and video communications services using multicore software on standard servers, further reducing costs. Additionally, Nefsis secure web video conferencing and chat services use meeting passwords, encryption and signed certificates (VeriSign) to ensure security and confidentiality. The online service allows only secure SSL/TLS connections, and the connections are constantly monitored.

Lower cost of ownership

Virtualized conferencing achieves a lower cost of delivery because the shared resources in the Nefsis cloud are utilized more efficiently and do not require an up-front investment on the part of the customer. Given equivalent bandwidth, Nefsis end-to-end parallel processing software is able to deliver HD video quality on par with any multipoint infrastructure solution, while the cost of delivery is substantially lower. IT managers need not concern themselves with owning, maintaining and upgrading any particular piece of equipment.

Conclusion

The Nefsis global cloud has substantial physical resources organized into multiple operating regions worldwide. With virtual conferences distributed evenly across these resources, video conferencing is now supported by load balancing, failover and scalability, finally fitting the standard IT approach to maintaining and providing services.

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