

# Enterprise Classified Voice, Video over Internet Protocol: Driving Operational Effectiveness through Consolidation

## Executive Summary

The Department of Defense (DoD) has the opportunity to further optimize the successful Classified Voice Video over Internet Protocol (CVVoIP), formerly known as Voice over Secure Internet Protocol (VoSIP), program to provide additional economies of scale while continuing to meet the operational availability requirements for the system.

## Challenge

Over the last 10 years, the CVVoIP program has seen significant Internet Protocol Telephony (IPT) growth in the breadth of access, number of users, and operational capabilities provided to the DoD. Given the economic challenges ahead, the DoD has issued a governance to consolidate their IP communication purchases, especially with regards to IPT architectures. Even highly successful programs need to look for opportunities for efficiencies without diminishing operational effectiveness.

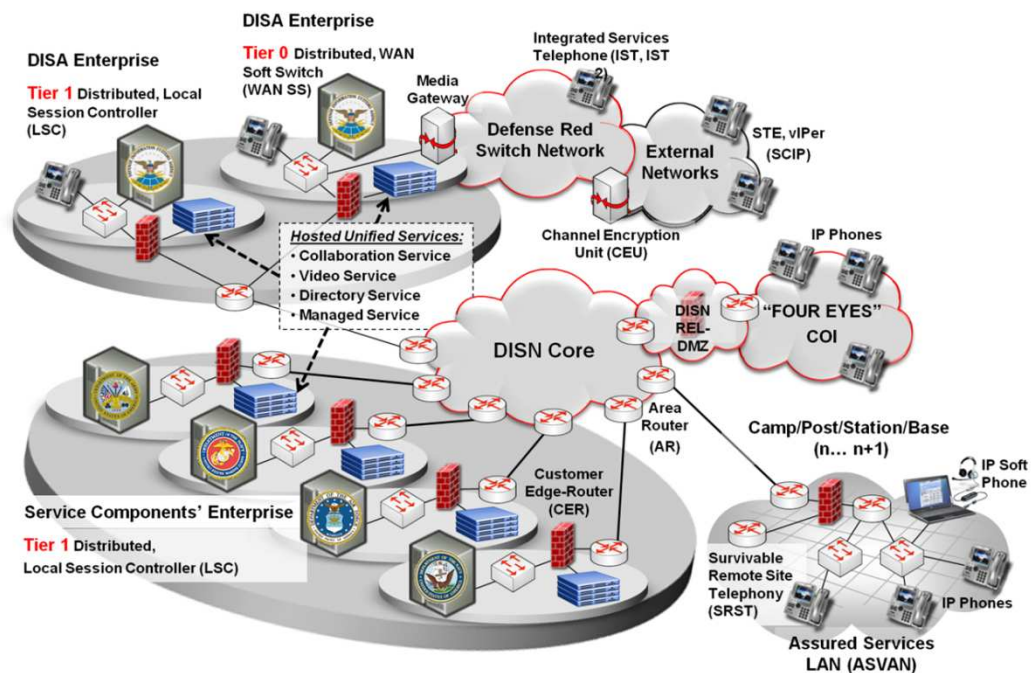
There are presently over 100 individual (Tier 1) enclaves using IPT within the CVVoIP architecture, with endpoint attachments of close to 100,000 users distributed across the DoD. Given today's fiscal constraints, the DoD is considering further consolidation of IPT to a common infrastructure, similar to what was accomplished in the DoD with electronic mail (email) systems years ago.

In the early 1990s, electronic mail services started off just as IPT has begun. Each organization had its own unique, individually maintained email system. The rapid growth led to logistical, cost, maintenance, and user problems that started to consume and overwhelm business practices and budgets. In an effort to reduce the volume of systems into fewer enclaves or larger scaled systems serving bigger populations, a consolidation initiative was adopted. The result was a significantly simplified approach where email servers and databases were consolidated into a more efficient architecture based on Service (e.g., U.S. Air Force [USAF]) and/or larger functional DoD reporting structures such as Combatant Command (COCOM); IPT architectures can follow a similar consolidation.

## Solution

The CVVoIP architecture in place today, shown in **Figure 1**, provides a foundation for greater consolidation. The architectures in the following graphics depict how, at an enterprise level, globally or regionally, a complete Service and/or COCOM (at Tier 1 [Garrison] and/or Tier 2 [Tactical]) can be restructured to leverage efficiencies of scale and provide greater productivity and collaboration. In this restructuring, the architectural redundancy and failover capability improves significantly, which enhances the survivability of the system as a whole.

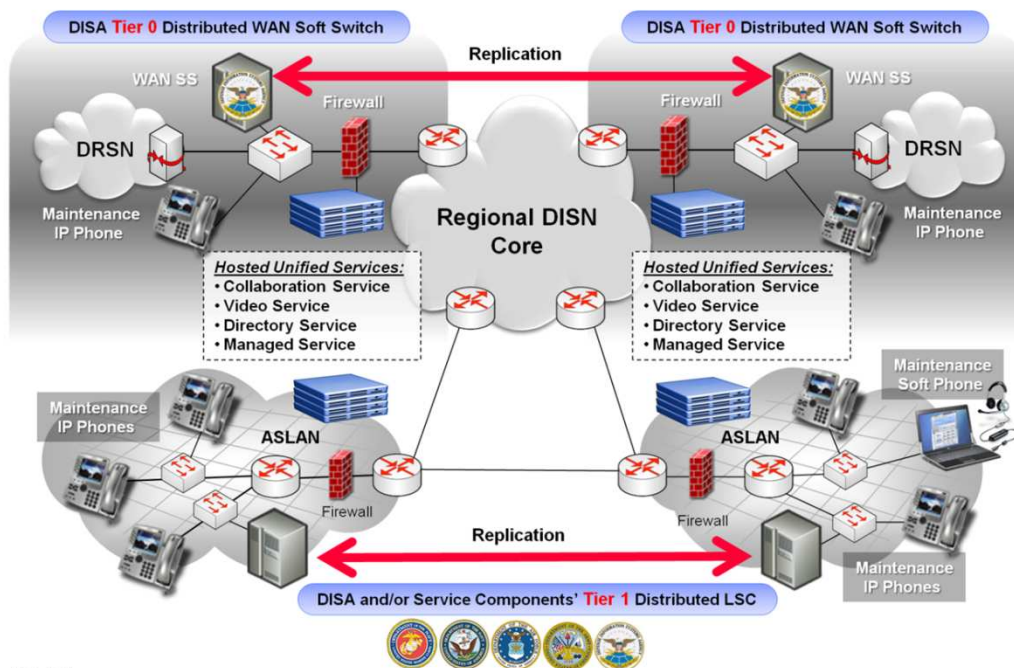
**Figure 1.** Architecture 1: DoD Enterprise CVVoIP Service



The existing CVVoIP program is managed by the Defense Information Systems Agency (DISA) and follows the DISA Unified Capabilities Requirements (UCR). The proposed architectural modernization is also aligned with the requirements and policies identified in the UCR. The tiered approach to building the original horizontal and vertical communications structure is unchanged. However, by combining units, organizations, and departments (at Tier 1 and/or Tier 2) along Service affiliations and/or COCOM alignments (e.g., USAF, Southern Command [SOUTHCOM], Central Command [CENTCOM], DISA) larger populations of DoD Service members' telephony requirements can be provisioned from a higher level in the architecture. The DISA CVVoIP Tier 0 "Core" is already consolidated and forms the basis of the fundamental foundation of the tandem switch IPT architecture.

This enhanced aggregation will facilitate simpler dial plans, smaller IP routing tables, reduced route patterns, and strengthened redundancy, failover, and survivability due to greater geographic distribution of telephony call-control platforms. Additionally, simplifying the architecture enables the consolidation of Information Assurance (IA) programs and resources, thus streamlining certification and connection processes and overhead. This architecture will also reduce the aggregated amount of maintenance downtimes and increase cost savings through economies of scale.

In order to migrate to this enhanced, consolidated enterprise architecture, additional resiliency must be built into some key components. The majority of that can be accomplished by distributing assets strategically across the network infrastructure where one or two outages will not impact the system at large. Architecture 2 (**Figure 2**) demonstrates the basic concept of telephony call-control distribution, where the whole is greater than the sum of its parts. This is accomplished by database replication across the enterprise so that the system knows, and can, provision "dial tone" and telephony services when and wherever needed.

**Figure 2.** Architecture 2: DISA Regional CVVoIP Service

The call-controls within each region should be designed to provision signaling from a minimum of two sites. Restructuring the global enterprise (all four regions) into a single distributed architecture with a master publishing database would provide maximum survivability, failover, and redundancy, reducing the risk for the overall enterprise system. By use of virtualization, each call-control software image within the enterprise decreases the size, weight, and power for each installation. Furthermore, by utilizing a data center model for a unified call-control computing system, stability is achieved since there are a minimum number of master call-control platforms. The ultimate results are significantly lower hardware and maintenance requirements, simplified deployment and operations due to streamlined call-control management, and specifically crafted backup procedures yielding speedier recovery of damaged or lost software images. A decrease in equipment used for call-control reduces risk and improves security. This simplified architecture also makes it easier to provision additions off of firewall DMZs for video and conferencing resources without jeopardizing security, while maintaining a separation of data and voice/video services because it is one system.

### Summary

In conclusion, the success and stability of DISA's CVVoIP program provides a strong foundation for further architectural modernization. Modernization enables improved survivability and operational efficiencies. This in turn, allows simplified provisioning of services which will open the door for new capabilities such as enhanced collaboration tools. For more information on Classified Voice Video over Internet Protocol, contact your Cisco Representative.



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