


Cisco AVVID — The Architecture for E-Business

A decorative graphic on the left side of the page, consisting of a blue square with white curved lines forming a stylized globe or network pattern.

Executive Summary

Cisco AVVID (Architecture for Voice, Video and Integrated Data), defines a framework for building and evolving customer networks that support Internet business solutions. The industry's only enterprise-wide, standards-based network architecture, Cisco AVVID provides a roadmap for combining business and technology strategies into one cohesive model. Cisco AVVID describes network elements for clients (devices with which users access the network), the network infrastructure (network platforms and intelligent network services), Internet middleware (software and tools), Internet business integrator interaction, and Internet business solutions.

Cisco AVVID comprises a consistent approach and set of best practices that provide a reliable foundation on which to build demanding Internet business solutions. Enterprises that build end-to-end Cisco AVVID infrastructures are highly agile and adaptable, responding easily to threats and opportunities as business practices are reengineered. While still embracing standards, openness, and the concept of multivendor ecosystems, Cisco AVVID provides added value in end-to-end networking services that help enterprises meet the needs of a rapidly changing environment.

Background

The goal of Cisco AVVID is to provide a roadmap for enterprise customers to use as they design and implement networks. In the past, networking vendors typically offered similar enterprise network architectures that were, almost without exception, proprietary, closed, and hierarchical. A typical example is IBM Systems Network Architecture (SNA), which dictated all enterprise customer choices from computing platforms to networking protocols and terminal devices. Even though vendors such as IBM ensured a level of interworking and reliability by controlling all aspects of the system, innovation was limited and costs remained high because the large amount of proprietary equipment in the system posed challenges for potential competitors in engineering to a closed standard architecture.

By contrast, today's data networks have evolved based upon open standards such as TCP/IP, UNIX, Ethernet, and de facto standards such as Microsoft Windows. These data network technologies are often described as client/server-based. The open nature of these networks speeds innovation and decreases cost to end users through competition. In many cases, even de facto standards such as Microsoft Windows have well-documented application programming interfaces (APIs) to allow interaction between devices and applications.



As client/server networking has grown, the requirements of enterprises have also evolved. Applying technology to business practices—such as sales, support, customer response management, accounting, and supply chain—has brought tremendous benefits in increased efficiency and lower costs. Many of these new technologies support entirely different business models (for example, business-to-consumer e-commerce, business-to-business online exchanges, and so forth). In other cases the new technologies have been used to reengineer existing business practices. In all cases, the need for reliability, performance, and ease of deployment and management remains crucial because these applications have become more critical to the success of enterprises (whether profit-making or service-oriented). With the growth of the Internet, these emerging business applications and practices have been termed Internet business solutions. Whether accessed by the global Internet or an enterprise-wide intranet, the basic technologies and models of the Internet (such as TCP/IP and server-based processing) are being used. In many cases, user access to these solutions comes over the global Internet or through Internet-based technology such as browsers. A major need for the enterprise, then, is to use the inherently open and innovative technology of the Internet to meet demanding business requirements.

Because enterprises have embraced open client/server and Web-based computer models, they face the challenge of creating well-designed network architectures. In many cases, the temptation to build networks using best of breed (that is, individual high-performing devices from different vendors) or best of bid (lowest cost) logic has created problems. Although the standards were sufficient to build functional networks, Internet business solutions create demands beyond mere connectivity. While standards remain fundamental, enterprises now require solutions based on devices and applications that work well together beyond the lowest common denominator of shared technology standards.

For example, as more and different applications begin sharing the data network, the need for management, reliability, and control increases. Unlike traditional hierarchical network architectures such as SNA, the emerging network model is widely distributed so that servers anywhere in the network provide information and processing services to users regardless of location. Adequately serving the needs of Internet business solutions in this environment requires a consistent set of network services end-to-end through the network, providing prioritization, high availability, and performance. In much the way that a level physical foundation provides the reference point and support for a complex physical building, these consistent services provide a foundation for rapid deployment and easy administration of Internet business solutions.

One of the benefits of Cisco AVVID is that it advances the state of the art in voice and video solutions. Data networks have benefited from open standards since the 1980s, yet voice and video have remained primarily proprietary solutions because of the idiosyncratic and demanding requirements of voice and video traffic (for example, the need for limited jitter and delay). Developments in processing power and networking standards now permit voice and video to be carried along with data on a single IP-based network infrastructure. While tremendous cost savings and application richness result from the convergence of voice, video, and data, the resulting demands on the network make the end-to-end capabilities of Cisco AVVID all the more important.



Why Cisco AVVID?

Benefits of an Architecture Approach

An architecture provides both a coherent framework that unifies disparate solutions onto a single foundation, and a roadmap for future network enhancements

SPEED	Defined architectural framework and consistent services allow rapid deployment of new applications and enable an enterprise to quickly address change without re-engineering the network
RELIABILITY	Uptime of networks is increased due to a consistent architectural approach to network design
PACE OF CHANGE	Architecture-based network foundation decreases the time to test new solutions. Adaptation to new business requirements can take place rapidly, as needed
INTEROPERABILITY	Multiple solutions work together based on a common architectural approach
SIMPLIFICATION	Products are strategically deployed in alignment with the architectural framework, resulting in streamlined processes
COST REDUCTION	Through the use of a pre-defined architecture, resource and time requirements are minimized, reducing the cost to design and implement new networking technologies and solutions

Cisco AVVID Provides a Model and a Reference

Cisco AVVID can be viewed as a framework to describe a network that is optimized for the support of Internet business solutions and as a best practice roadmap for network implementation. This section discusses the various layers of the Cisco AVVID framework.



Clients

Beginning at the bottom of the diagram, Clients refers to the wide variety of devices that can be used to access the Internet business solutions through the network. These might include phones, PCs, PDAs, and so forth. One key difference from traditional proprietary architectures is that the Cisco AVVID standards-based solution allows a wide variety of devices to be connected, even some not yet in broad use. Unlike traditional telephony and video solutions, proprietary access devices are not necessary. Instead, functionality is added through the intelligent network services provided in the infrastructure.

Network Platforms

The network infrastructure provides the physical and logical connection for devices, bringing them into the network. Network platforms are the LAN switches, routers, gateways, and other equipment that interconnect users and servers. Cisco network platforms are competitive for features, performance, and price, but their key capabilities are the integration and interaction with other elements of the Cisco AVVID framework. This layer of Cisco AVVID is the foundation for all applications that will be integrated to solve business problems.

Intelligent Network Services

The intelligent network services provided through software that operates on network platforms are a major benefit of an end-to-end architecture for deploying Internet business solutions. From quality of service (QoS) (prioritization) through security, accounting, and management, intelligent network services reflect the enterprise's business rules and policies in network performance. A consistent set of the services end-to-end through the network is vital if the infrastructure is to be relied upon as a network utility. These consistent services allow new Internet business applications and e-business initiatives to roll out very quickly without a major reengineering of the network each time. By contrast, networks built on best-of-breed strategies may promise higher performance in a specific device, but cannot be counted on to deliver these sophisticated features end-to-end in a multivendor environment. Cisco AVVID supports standards to provide for migration and the incorporation of Internet business integrators, but the added intelligent network services offered by an end-to-end Cisco AVVID solution go far beyond what can be achieved in a best of breed environment.

Internet Middleware

The Internet middleware layer is a key part of any networking architecture, providing the software and tools to break down the barriers of complexity arising from new technology. The software and tools in this layer allow integrators and customers to tailor their network infrastructure and customize intelligent network services to meet application needs. This layer manages access, call setup and teardown, perimeter security, prioritization and bandwidth allocation, and user privileges. Software, such as distributed customer contact suites, messaging solutions, and multimedia and collaboration provide capabilities and a communication foundation that enable interaction between users and a variety of application platforms. In a best-of-breed strategy, many of these capabilities must be individually configured or managed. In traditional proprietary schemes, vendors dictated these layers, limiting innovation and responsiveness. Rapid deployment of Internet business solutions depends on consistent service control and communication services capabilities throughout the network. These capabilities are often delivered by Cisco from servers distributed throughout the network.

The Internet middleware layer is the glue that joins the Internet technology layers of the Cisco AVVID framework with the Internet business solutions, in effect tuning the network infrastructure and intelligent network services to the needs of the Internet business solutions. In turn, the Internet business solutions are adapted for the best performance and availability on the network infrastructure by exploiting the end-to-end services available through the Cisco AVVID framework.

Internet Business Integrators

As part of the open ecosystem, it is imperative to enable partners with Cisco AVVID. Cisco realizes the crucial requirement to team with integrators, strategic partners, and customers to deliver complete Internet business solutions. Cisco AVVID offers a guide for these interactions by describing a consistent set of services and capabilities that form a basis for many types of partner relationships.

Internet Business Solutions

Enterprise customers are deploying Internet business solutions to reengineer their organizations. The applications associated with Internet business solutions, such as Oracle, Siebel, and Ariba, are not provided by Cisco, but are enabled, accelerated and delivered through Cisco AVVID. The ability for companies to move their traditional business models to Internet business models and to deploy Internet business solutions is key to their survival. Cisco AVVID is the architecture upon which e-businesses build Internet business solutions that can be easily deployed and managed. Ultimately, the more Internet business solutions that are delivered, the more efficiently and effectively companies will increase productivity and add value.



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