Video 2.0

The Experience Paradigm Shifts Again

Changing the Face of Video

The Paradigm Shifts Again

Change triggers more change when trends never imagined by the architect of a single innovation begin to appear—and change paralyzes companies that remain rooted in the past. While some companies adapt successfully to new technologies, others falter. Such is the nature of business whenever the paradigm shifts.

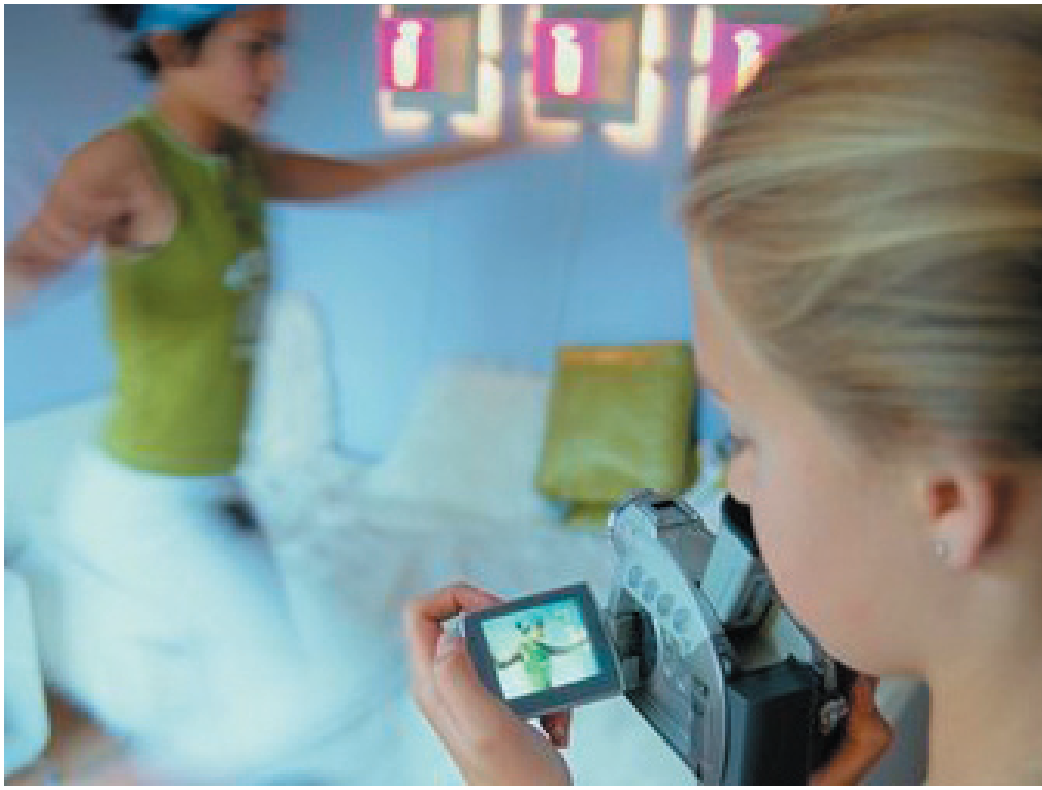
Recognizing a shifting paradigm is critical to dealing with it. Maintaining success requires changing the way things are done. Over the past 18 months, a new paradigm swing in video-based entertainment—also known as the Video 2.0 experience—has made old business models obsolete and created entirely new ways to view content. The video experience will never be the same again, and new capabilities in the IP next-generation network (IP NGN) will be required to deliver on the promise of this new technology swing.

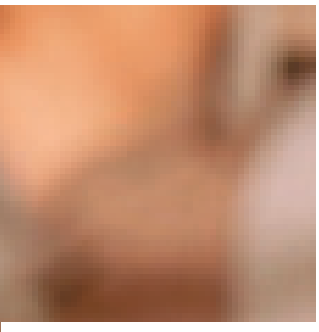
Following the Money

Today's video subscribers want choices, personalization, community-based content sharing, and often instant gratification. No longer complacent to be viewers, they are now producers or distributors in their own right, empowered by the worldwide IP network. People no longer buy CDs to get a single song or remain glued to television to catch the 8pm broadcast.

Apple's iTunes® service—with over a billion downloads a year—demonstrated, unequivocally, that digital distribution not only works but can reach new customers. Download-to-own television and podcasts followed with time-shifted programming to a device other than the television, while Comcast's own on-demand digital TV service has reached more than 3 billion cumulative video-on-demand (VoD) streams in just 2 years. Time-shifted viewing—what you want when you want it—is changing the way people watch video. Even the major broadcasters are posting their most popular TV shows to Websites moments after they are seen on network television.

Then there was a phenomenon from nowhere which, mere months after going live, culminated in a $1.65 billion acquisition by Google. YouTube with an estimated 120 million video streams downloaded daily by an estimated 6.2 million daily Internet visitors, has changed video distribution and viewing forever.





Person-to-Person Content

Person-to-person video community-based sites have created an entirely new interactive forum as well as a virtual worldwide independent video network with free content coming from anywhere. YouTube offers viewers an opportunity to instantly self-publish and push their production to millions who can share it, chat about it, and spend hours watching it— eyeballs that are literally glued to Internet-enabled screens.

This kind of stickiness offers opportunities for advertising across TVs, PCs, cell phones, personal digital assistants (PDAs), iPods, X-Boxes, or a host of newly conceived interactive platforms that can search, browse, download, or host new forms of video independent of broadcast content. The world of many services to many screens is a reality, and video is leading the way.

Video 2.0 Cuts the Cord to the TV Set

The Video 2.0 paradigm shift is rooted in the evolution of the Internet to Web 2.0—a migration from an Internet that relied upon static published content to one that takes advantage of interactive or two-way communication. Video 2.0 is interactive, where broadcasts and downloads operate on a one-way and "one size fits all" model. Today's content is personalized. Subscribers can pick, choose, download, upload, critique, and eliminate content choices at will. Video 2.0 content can be created by subscribers, indexed by subscribers, and reviewed by subscribers, and the content has become as compelling as some Hollywood productions.

A universe of personalized rich media cannot be tamed by traditional broadcast and cable networks or their timeslot programming tsars. Leapfrogging technology fuels the trend by offering new devices, portability, access from anywhere, and forms of personalization that accelerate massive change in viewing, production, and distribution. The IP network must make it all work together to maintain an integrated video and visual experience.

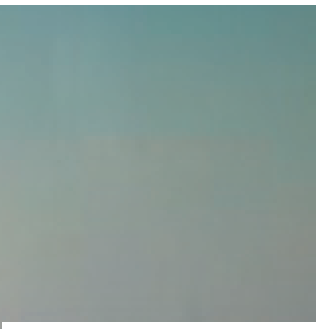
Video 2.0 Is Multidimensional

The Video 2.0 experience is multifaceted, offering an endless array of IP-enabled entertainment. Content that is just a click away using Internet TV through Slingbox or community sites such as YouTube and MySpace, interactive gaming sites, managed services such as iTunes, and broadcast networks from ABC to BBC or the cable networks of Comcast, Time Warner, or Cox—all this is part of the expanded Video 2.0 pool of entertainment. Network television becomes just one more interactive, personalized experience when it is IP-enabled through cable, IPTV, and mobile networks.

But Video 2.0 encompasses so much more by including business users too. Much of this video content is for consumers. Yet business video is equally as important to the "anything-to-anywhere" Video 2.0 experience and offers business subscribers ways to connect, communicate, and collaborate through telepresence, video-enabled chat, video conferencing, unified communications, or vertical applications such as distance learning and remote medical diagnosis.

The Cisco IP NGN Defining, Preserving, and Realizing Video Content

The Video 2.0 paradigm shift requires an IP NGN that is capable of defining, preserving, and realizing video to retain the visual experience for the viewer—regardless of access network, application, or device. Cisco® enables a connected-life experience over its end-to-end IP NGN solution that is unparalleled in the industry and is crafted to deal with the paradigm shift to Video 2.0.



Define it ...

Competitors' IP networks may be capable of getting content from one place to another, but in a Video 2.0 world so much more is needed—and possible. As video broadcast, on-demand viewing, and advertising content travels from a national center or headend to a metropolitan or regional center, local programming or advertising can be injected for local audiences. Scientific Atlanta, a Cisco company, offers a headend solution that is powerful, flexible and one that enhances the overall visual experience by transmitting the greatest number of channels with the best image quality and best possible bandwidth efficiency—whether provider networks are xDSL; fiber to the home, curb, or neighborhood (FTTx); or hybrid fiber-coaxial (HFC).

Enhancing IP networks with the Cisco Content Delivery System (CDS) allows providers to manage and deliver any content, on demand, to anywhere or any device—streaming to PCs, PDAs, iPods, cell phones, etc.—while offering capabilities to manage bandwidth constraints and screen displays that maintain the integrity of the video stream for each viewer. The Cisco CDS manages content diversity whether it is pushing content—such as broadcast—or pulling individualized content instantly to support niche or long-tail requests for individuals or small demographics.

VoD requests, Web requests, gaming sessions, or even individualized advertising are all possible. Network Personal Video Recorder (nPVR) support offers time shifting for viewers while allowing providers to use the network instead of expensive customer premises equipment (CPE) to offer trials of new services, thereby reducing expense when offering new services.

This fully distributed, real-time content delivery system offers scale and resiliency that allows providers to target individual users or small communities with selected promotions by injecting customized ads into the programming stream, reaching new levels of personalization. By prepositioning frequently used content at the network edge and using innovative streaming technology, it can rapidly fetch and send any media to any device. This programmable solution uses splicing techniques that are faster than real time, recompiling content in real time to meet the needs of single viewers or unique communities.

Welcome to the Human Network

The Cisco IP NGN is designed to meet the emerging requirements of a viewer's world now defined by Video 2.0. The architects of the Cisco IP NGN, however, recognize that IP networking is not static; it is dynamic, ever-changing. One thing is certain, the experience paradigm will shift again and new evolutions will require that the network be flexible enough to keep pace with them. The Cisco IP NGN is committed to keeping up, to evolving, and to changing in order to meet the needs of people. Welcome to the human network.

Preserve it …

As video traverses the routers and switches of an IP network, an end-to-end system preserves the integrity of the visual experience for all subscribers.

If experience providers cannot tell who is on their network, what they are doing, or how subscribers are invoking the network, the entire integrated video paradigm collapses. Service intelligence at the network edge is essential to manage and deliver an acceptable viewing experience across IP-based wireline, cable, Wi-Fi, or mobile networks.

The Cisco Visual Quality Experience (VQE) technology—a series of technical innovations—offers wireline providers a means to precondition copper lines, which are notoriously sensitive to packet loss from bursty noise or inclement weather. By providing error detection and repair that avoids pixilation and facilitates viewing basics such as fast channel change, IPTV networks can compete on par with cable and satellite. Augmenting the IP network with Video Call Admission Control (VCAC) allows any IP service provider to better manage oversubscription and ensure the integrity of a visual experience for all subscribers.

Service intelligence found in the Cisco Intelligent Services Gateway (ISG) simplifies authentication by permitting sign-on from any access point to a multitude of services facilitating the overall subscriber experience. Subscriber profiles are extensible based on usage patterns that adapt over time. Integrating local policy management into edge devices enables Cisco to provide dynamic quality of service (QoS) on a per-subscriber basis.

Application awareness permits service prioritization of any content from or to any device applied on a per-service basis, allowing the network to elevate the priority of voice over IP (VoIP) or video services that cannot sustain latency or elevate priority on a per-subscriber basis for fee-paid service-enhanced performance.

Cisco offers a full suite of products ranging from the Cisco 7600 Series Routers at the edge to the Cisco CRS-1 Carrier Routing System at the core to manage unified quadruple-play (video, voice, data, and mobility) service delivery and use advanced multicasting while taking full advantage of the industry's most robust service intelligence capabilities enabled by offerings such as the Cisco Service Control Engine and Cisco ISG.

Realize it …

The dynamics that comprise the Video 2.0 environment requires content to be viewed across any number of screens. IP-enabled solutions must overcome a plethora of problems ranging from simple bandwidth management—moving from standard-definition TV (SDTV) or high-definition TV (HDTV) across mobile, Wi-Fi, cable, and wireline networks—to telepresence solutions where large screens must capture life-size personalities and present every nuance to the viewer while offering simultaneous voice to maintain the integrity of this "almost-there" encounter.

Cisco offers a variety of set-top box (STB) options such as direct-to-disk content transfer that allows subscribers to immediately burn DVDs directly from their STB while watching a pay-per-view session. Linksys®, a division of Cisco, offers a complete set of home-connectivity options to further provide for the connected-life experience.

Video-enabled iPods, X-boxes, cell phones, PDAs, PCs, and laptops all have peculiar presentation requirements to maintain, control, and present content as expected to a viewer. On and off does not work in an IP world that must accommodate pause, fast forward, and rewind—all done in real time. But the end-to-end Cisco IP NGN solution can accommodate the complexities of the Video 2.0 world order.

But the reach of Video 2.0 is incomplete unless it encompasses the world of business too. Innovative new technologies, such as Cisco TelePresence, combine rich audio, high-definition video, and interactive elements that work together to deliver a "virtually there" in-person experience over the IP network. Cisco TelePresence offers a lifelike visual experience linking people to people, connecting them with each other across places to experience events in their personal and professional lives.

Dumb networks beware! Viewer's devices must remain lightweight. They cannot be burdened with "heavy smarts" to be Video 2.0-ready. Intelligence in the network is required to coordinate bandwidth, prioritize services, manage both sourcing and delivery while scaling to meet each subscriber's request for content on-demand. All this requires closely managing control and delivery capabilities to ensure applications run as each subscriber expects. The Video 2.0 quality of experience dynamic is more complex than ever before and IP network advances must keep up as the paradigm shifts to allow providers to succeed in their mission. IP networks cannot remain rooted in the past.

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