

WHITE PAPER

## **Anticipating Opportunity in the Triple-Play Market**

Issues, Possibilities and the Importance of  
Standards-based Technology

## I. On-demand Video: A Cornucopia of Choice—Or Is It?

For consumers and providers alike, the burgeoning triple-play market presents a plethora of service possibilities well beyond voice, high-speed Internet, or even television—true content on demand, multiple delivery mediums and a wide-open race for market domination. Spurred on by TiVo's cult following, the popularity of cable operators' on-demand offerings, and the immediate success of Apple Computer's iTunes downloadable video content, triple-play providers are rushing to enable myriad access options for content delivery, enabling potential viewing habits (and revenue streams) such as:

- Watching a television show on a laptop after it's been broadcast, with commercials, for a small per-show fee.
- Watching a show on the television the day of the broadcast, prior to its official airing, without commercials as a premium subscription service.
- Buying and downloading the first season of a television series after the season ends, viewable on multiple devices.
- Purchasing pay-per-view movies to be watched over a several-day period.

Cable channels, broadcast networks and theaters have been the traditional channels for video content distribution. However, just as the recording companies are rapidly losing control of their channel, so too are the networks losing control of content. Apple's recent announcements to sell ABC and NBC programming, as well as Pixar short films through the iTunes Music Store, is another step toward disintermediation, delivering content directly to consumers. Accordingly, each option has its own price point, creating endless permutations for consumer choice—and infinite revenue opportunities for providers of content and triple-play services.

### All roads lead to digital rights management

The video portion of the triple-play market is an open playing field on which providers are scrambling to strike a dominant position. However, the two factors that will most influence any participant's success are, arguably, largely beyond their control. They are:

- The introduction of new technologies.
- Rapidly changing consumer behavior.

As consumers are presented with new options for accessing video content—such as downloading it to their computers, or receiving it on their televisions over the Internet via IP television (IPTV)—they will embrace some delivery methods and not others. It is impossible to predict whether, for example, major broadcast networks' imminent launch of on-demand access to popular shows will eclipse mobile viewers' preferences to watch these same shows on laptop computers or iPods.

Irrespective of which offerings and delivery channels emerge victorious, all providers share a common concern: effective digital rights management, which can be defined as "Any technology used to protect the interests of owners of content and services (such as copyright owners). Typically, authorized recipients or users must acquire a license in order to consume the protected material—files, music, movies—according to the rights or business rules set by the content owner."<sup>1</sup> In the triple-play arena, carriers are asking content providers to release the "keys to the kingdom." Digital rights management assures that the "treasures of the kingdom" continue to have value.

Digital rights management plays a central role in the future of the triple-play market because it allows value to be assigned to the *time*, *quality* and *place* of content delivery. This capability is essential because accurate tracking enables smooth business operations and helps maximize revenue capture. Digital rights management systems interact with other key systems in a triple-play providers' infrastructure, including the asset database, subscriber database, policy management system and service database.

Optimal performance of the complete delivery system is the foundation of exceptional service delivery and high levels of customer satisfaction. Network resource management—known as network asset management in its advanced form—plays a similarly critical role in enabling triple-play providers to pursue

<sup>1</sup> Source: [www.microsoft.com](http://www.microsoft.com)

opportunity in the near- and long-term. In simple terms, network resource management is used in broadband networks to keep track of the way link resources are allocated to connections. The two primary resources these systems tracks are capacity (bandwidth) and connection identifiers. Network resource management systems monitor network capacity and control the allocation of capacity to connections when requested.<sup>2</sup> Network asset management goes beyond this tactical, reactive orientation to offer both a high-level, strategic view of network resources and an extremely granular view into the smallest components of network inventory.

Network asset management is essential because if a network's capabilities are not known at both global and granular levels, triple-play providers will by default engage in a dangerous guessing game - exactly what can the network handle? In the high stakes market for on-demand video, providers cannot risk overestimating their networks' capabilities. In effect, these base systems ensure that:

- When a customer requests a service, the resources are available to offer it.
- The service is compatible with the customer's existing devices and connections.
- Providing such a service is not in violation of a digital rights agreement.

This whitepaper explores the various market scenarios that may play out in the nascent triple-play market, the key technology systems that are enabling digital rights management capabilities, and the critical role played by network asset management solutions such as Visionael® Network Resource Manager (NRM) in allowing triple-play providers to pursue opportunity in the near- and long-term.

## II. Market Assessment: "The Battle for the Living Room" and Beyond

The entertainment potential of video on demand (VOD) is front-and-center in consumers' minds. The mainstream media devotes significant coverage to speculating about how future

entertainment may be delivered, and the impact on consumers.

This article, excerpted from the Chicago Tribune, is typical:

"We're sitting in our living rooms waiting for the science-fiction reality to begin.

You know... the time when by pushing a couple of buttons, you can watch a new movie while surfing the Web while talking on a videophone while cueing up your favorite music while vaporizing aliens on a video game...

...that futuristic scene is moving closer to our present. Everyone says so. Too bad almost no one agrees on how or when we're going to get there.

First there's the question of how all of this entertainment and information will travel into your home. Through television cables? Phone lines? Fiber? Satellites? Newspapers flung onto your porch?

Then there's the matter of what home device will receive and present this material. A TV set-top (a.k.a. cable) box? A computer? A video game console? An iPod? A superduper cell phone?

And, of course, every device in your household is going to talk to each other, zipping pictures, music, data and voices this way and that. Will all of these machines learn to speak a common language or will standards disputes cause households to continue resembling digital Towers of Babel?

That's just a taste of what's being played out right now in the ongoing Battle for the Living Room. It's a bit of a free-for-all right now, which, to many analysts, means that the consumer has much of the power. For instance, many of us don't care who provides us with high-speed Internet access as long as the price and service are right.

Here's a closer look at these two main battlefronts:

The pipe

'The pipe' is how industry folks refer to the means of delivering data, services and content to the home, whether through cable lines, phone lines, satellite signals or some other medium.

Cable companies such as Comcast wish to continue supplying TV programming, of course. The phone companies such as SBC don't want to lose their traditional business either.

But unless you're still working with carrier pigeons, you're aware that cable and the telcos (that is, telecommunications companies) also have been vying for your high-speed Internet service—and they'd like to provide a lot more as the pipe gets wider and wider.

SBC and Verizon are laying fiber lines to some homes and have begun offering high-definition television programming. Schadler, who wrote an extensive analysis last December titled 'The Battle for the Digital Home,' noted that the telco lines 'can provide unlimited HD streams,' compared to the cable lines' finite capacity.

In a further blurring of roles, earlier this month Sprint Nextel, Comcast,

<sup>2</sup> Definition adapted from en.wikipedia.org.

Time Warner Cable, Cox Communications and Advance/Newhouse Communications announced a cable and wireless joint venture that would allow customers to 'seamlessly interface between e-mail, home and mobile voice mail, digital video recorders (DVRs) and photo programs.'

The idea is that one service package and a bundle of devices would cover home and wireless phones (with one voice mailbox among them), high-speed Internet access and e-mail, a programmable video recorder plus streamed television programming, music, video clips and games."<sup>3</sup>

The article further describes the land-grab brewing in the set-top box arena, noting Cisco Systems' recent purchase of Scientific-Atlanta, the recent release of Microsoft's Xbox360 console and Sony's Playstation 3 (due in 2006) as "opportunities for the companies to establish entertainment hubs in the home."

In sum, the VOD market is likely to take one of two directions:

- Carriers will offer a fixed set of services based on a very narrow range of devices that they will largely control—this is analogous Microsoft's IPTV model (see Verizon FIOS discussion below).
- The triple-play video on demand market will forever remain fragmented sub-optimized. This is due to the complexity that results from the separation of—and competition between providers in—the consumer device market, the gateway market, the carrier market and content market. In this scenario, consumers can only hope for accurate provisioning of reliable services, at best.

If the first scenario does indeed materialize, how are the various players positioned to win?

## ROI factors are driving the development of the triple-play market

Although consumer appetite for specific VOD services is certain to shape the triple-play market, the interests of its participants is, in turn, shaping consumer demand. Each category of market player faces distinctly different return on investment (ROI) challenges, which are driving their approaches to monetizing content:

- **Wireline telecommunications** carriers face dramatically

declining revenues in traditional "plain old telephone service" (POTS) as businesses and consumers flock to voice over IP (VoIP). VoIP system sales grew 31 percent in the year ended in June 2005, while legacy voice systems sales during the same period dropped by 20 percent, according to a report by Merrill Lynch.<sup>4</sup>

- As a result, wireline telecommunications companies like Verizon are looking to triple-play services such as IPTV to replenish revenues. Verizon recently announced its second FIOS IPTV rollout, delivered over the company's fiber-to-the-home network. The FIOS TV service combines regular broadcast cable with IPTV-based VOD service, according to a Verizon spokeswoman. The company has deployed Microsoft TV set-tops, adapted for hybrid use. In differentiating itself from competitors, FIOS TV features 330 total channels including 180 digital video and music channels, the Mid-Atlantic Sports Network, more than 20 high-definition channels and more than 1,110 video-on-demand titles, a number scheduled to increase to 1,800 in December 2005.<sup>5</sup>
- **Cable operators** are well positioned to capitalize on the video on demand market, having an existing customer base, much of which also buys high speed Internet access and, increasingly VoIP telephony. However, this industry faces significant pressure on its core revenue source—subscriptions to cable television channels—as the U.S. Federal Communications Commission recently suggested that cable companies could best serve their customers by allowing them to subscribe to individual channels instead of packages of several stations. FCC Chairman Kevin Martin said the FCC will soon release a new report that reverses the Commission's earlier opposition to a la carte cable pricing. Cable operators and programmers strongly disagreed with Martin's position, arguing such a shift would, among other

<sup>3</sup> "Living room's the battlefield in digital tech wars," by Mark Caro, Chicago Tribune, November 27, 2005.

<sup>4</sup> As cited in "VoIP Growth Vastly Outpacing Traditional Voice," Dan Neel, CRN, November 28, 2005.

<sup>5</sup> "Herndon, Va., gets FIOS TV," Carol Wilson, Telephony Online, November 22, 2005.

<sup>6</sup> "FCC seen backing new cable pricing: WSJ," Reuters, November 29, 2005, and "FCC to take a second look at a la carte cable pricing," USTelecom Daily Lead, November 30, 2005.

things, undercut smaller cable networks and reduce consumer choice.<sup>6</sup>

- **Wireless carriers** see customers' embrace of wireless technologies throughout the household as a way to increase the number of devices they can place with each customer, leveraging public wireless networks such as WiFi and private networks such as WiMax. For example, carriers such as Nokia and Ericsson are poised to offer the ability to seamlessly take a handset from the public wireless network to a private WiMax network, allowing consumers to gain more functionality from their wireless handsets and virtually eliminate the need for a landline telephone. Because the popularity of VoIP is also eroding wireless providers' revenues, they, like other market participants are searching for new revenue streams, including the wireless transmission of video content. For example, in February 2005 Verizon Wireless announced a partnership with Warner Music Group to offer music video downloads for its VCAST high-speed wireless VOD service.

All triple-play providers are striving to position their VOD services as value-added offerings, for the simple reason that consumers will willingly spend money for services they perceive as new, exciting and entertaining. Video on demand clearly falls into this category. However, commodity services such as voice and high-speed Internet represent cost-savings opportunities—consumers want to acquire as many features and functions (and the highest bandwidth) at the lowest cost. As triple-play providers lower their prices on voice and high-speed Internet in an effort to acquire customers, they are betting that consumers will spend that cost-savings, and more, on on-demand video.

In the nascent, tumultuous triple-play market, there are many paths on the “decision tree” that the industry will take. How the paths intersect will determine the different ways that the video on demand opportunity can be addressed. Regardless of which players and technologies emerge as winners, certain realities will remain:

- Ease of use will be the predominant factor in marketplace success—consumers want to access VOD easily, from existing or new devices that shield them from the intricacies

of the technology. For example, one use model that is difficult to duplicate under IPTV is channel surfing.

- Digital rights management and network asset management are of paramount importance in attaining the operational excellent and competitive agility the triple-play market demands.
- Competitive convergence will drive carrier consolidation; risk-averse mass market customers will “hedge” investments by looking for devices that support industry standards (like DOCSIS 3.0) and are connection agnostic.

### III. Digital Rights Management: An Omnipresent Requirement

While both content providers and triple-play service providers are aggressively pursuing the revenue possibilities that VOD holds, they recognize that loosening control on content access can backfire—they do not want to experience the extraordinary revenue erosion the music industry has sustained over the past several years, particularly during the Napster era. Already, an estimated 50 percent of satellite service is stolen, one third of cable service is stolen and over one third of Internet bit traffic is stolen video content.<sup>7</sup> In order to expand content distribution—and providers' profitability—digital content must be protected.

Digital rights management (DRM) and content protection (CP) technologies are therefore extremely important in any video on demand initiative. There are two complementary components of any service provider's approach to DRM: an enterprise technology side and a consumer device side. Key issues include standards, functionality, compatibility, ROI, and opportunities and risks associated with bringing in a new CP or DRM system.

On the enterprise side, increased pressures from the content owners are forcing service providers to use CP and DRM systems; providers range from large companies like Microsoft, Macrovision and Irdeto, and smaller ones such as Conax, Latens, SecureMedia, Verimatrix, Widevine, Kasenna and Myrio. These vendors offer solutions—ranging from encryption, to dynamically renewable software-based security, to smart cards—

<sup>7</sup> Source: Verimatrix

that operate in conjunction with consumer equipment such as PCs, set-top boxes, personal video recorders (PVRs) and mobile devices.

In addition, some vendors offer digital forensics solutions that watermark and fingerprint linear broadcast and VOD content distributed over any network, enabling content owners, aggregators and service providers to track where, when and to what devices content is distributed. By placing these mechanisms at each stage of a multi-node content delivery network, these solutions allow content to be identified and tracked from its source to its destination.

On the consumer side of the equation, technologies are now available that give consumer device and set-top box manufacturers the flexibility they need to rapidly and cost effectively develop new hardware and software solutions. These include:

- A wide choice of memory card formats, networking interfaces and digital and analog input/outputs for audio and video.
- A modular interface for tuners and a PCI/mini-PCI interface to facilitate development and the testing of new configurations.
- The ability to develop software stacks in-house or select stacks from third-party providers.
- Interoperability standards and development tools to ensure that devices work together on the home network.<sup>8</sup>

### Complex interaction with a providers' system infrastructure

DRM and CP systems draw their data from other key systems that form the basis of a triple-play provider's business infrastructure:

- An **asset database** of available content and services.
- A **subscriber database** containing information about individual subscribers' viewing habits preferences.
- A **policy management** system that regulates the permissions associated with specific content.
- A **service database** that contains information about the content the provider offers—both VOD and non-VOD.

In order for digital rights management and content protection systems to deliver high performance, they must interface properly with these four core systems—and the triple-play provider's network. Visionael NRM provides an optimal solution for providers that recognize the foundation of any successful network-based service, including VOD and real-time television, is a high-performance network.

## IV. Visionael Network Resource Manager: Network Asset Management for Triple-Play Providers

Network asset management represents the next generation of software used to manage the large, growing and ever-more complex networks that will carry triple-play services. As opposed to the tactical, reactive orientation of traditional network management products, network asset management offers both a high-level, strategic view of network resources and an extremely granular view into the smallest components of network inventory. Network asset management solutions allow users to compare the desired state of the network versus its as-built state, and provide the tools to proactively manage change.

Equipped with the proper network asset management tools, network professionals can plan changes and new scenarios, implement those changes, and continually measure whether the network is meeting objectives for design. For triple-play providers, this fine level of control provides definitive answers to providers' most pressing question—"Is the company building the network the way it intends to?"—as they prepare to deliver triple-play services on a large scale.

### Visionael enables network knowledge and control

Visionael network asset management solutions are standards-based and specifically designed to enable service providers to secure and manage efficient, scalable networks, in order to maximize the profitability of current offerings while preparing to offer complex triple-play services. Visionael Corporation has

<sup>8</sup> "Delivering on the Promise of Triple Play Digital Media," [www.intel.com](http://www.intel.com).

acquired years of experience in working with telecommunications carriers, enabling it to fully understand and respond to the unique requirements of service provider networks.

Visionael software transforms the economics of deploying, delivering and managing triple-play services, providing carrier-grade service creation and network resource management software solutions. The company's software products are a key component of any cutting-edge operations support system (OSS) or network management system (NMS). Visionael Network Resource Manager, the company's flagship product, couples the centralized repository of physical and logical network inventory with an unparalleled combination of capabilities that delivers an accurate, real-time view of network resources.

For triple-play providers, the Visionael solution delivers important benefits including:

- Reduced time and cost in deploying new equipment, because granular knowledge of network inventory reduces guesswork and potential installation problems.
- The ability to recover and re-deploy stranded assets. This leverages NRM's ability to provide current and extremely accurate knowledge of network resources. While industry-wide averages indicate that only 30 to 60 percent of network resources are known, current Visionael deployments deliver discovery levels of 99 percent-plus of network assets.
- Interfaces to digital rights, customer relationship management and service delivery systems through the Visionael application programming interface (API) set. Or use of Visionael's Integration Gateway to access Visionael APIs as Web Services, simplifying data exchange between applications.
- Increased efficiency and up to 90 percent lower labor costs associated with repetitive provisioning tasks.
- Reduced mean time to repair (MTTR) by up to 40 percent, through correlation of Visionael NRM with fault management systems. This enables service levels that support new value-added services including IP-VPNs and hosted solutions, ISP-style services and VoIP, a key component of triple-play services.

## V. Summary: Standards-Based Solutions Are Key

The telecommunications and cable television markets, spurred by the commercial viability of new distribution technologies, are undergoing rapid, dramatic change—which in turn is driving an overhaul of the methods and means used to manage an ever-expanding infrastructure. For the first time in nearly a decade, core systems are being replaced. This scenario is reminiscent of the enterprise software revolution of the 1990s, when monolithic business systems were traded in for standards-based, best-of-breed applications. In both environments, standards-based technology is essential to ensure the smooth operation of disparate “point” systems, and the flexibility to replace software functionality on a component basis as necessary.

Although consumer preferences for the delivery of new triple-play services such as video on demand are still forming, all service providers are grappling with the inevitable need to manage digital rights. Content providers and triple-play service providers are aggressively pursuing the revenue possibilities that VOD holds, but they do not want looser control on content access to result in irrevocable revenue erosion. DRM and content protection technologies are therefore extremely important in any video on demand initiative.

Of equal importance to the success of any VOD venture is optimal performance of the complete delivery system—the key to high levels of customer satisfaction. Network asset management therefore plays a similarly critical role in enabling triple-play providers to pursue opportunity in the near- and long-term. For triple-play providers, Visionael NRM, a premier network asset management solution, delivers important benefits including:

- Reduced time and cost in deploying new equipment.
- The ability to recover and re-deploy stranded assets.
- Interfaces to digital rights, customer relationship management and service delivery systems.
- Increased efficiency and up to 90 percent lower labor costs associated with repetitive provisioning tasks.
- Reduced MTTR by up to 40 percent.

## About Visionael

Visionael is a software and services company that enables customers to effectively plan for and respond to the increasing complexity associated with large computer networks, and to deliver IP services rapidly and cost-effectively. Telecommunications services providers, enterprises, government organizations, and network outsourcers rely on Visionael tools and insights to know and manage the risks associated with deploying new network technologies and services.

The company has an extensive worldwide customer base, including Alpheus Communications, Comcast, EDS, Kaiser Permanente, IBM Global Services, Sprint and Vodafone. Channel, system integrators and partners include Dimension Data, EDS, IBM Global Services, Logica and Pride. Visionael is a privately held company, headquartered in Mountain View, California, with major development facilities in Tulsa, Oklahoma and Bangalore, India. Sales offices are located throughout North America and Europe.

For more information, please visit [www.visionael.com](http://www.visionael.com), or call +1 650-963-0960.

Visionael and the Visionael logo are registered trademarks or trademarks of Visionael Corporation. All other registered and unregistered trademarks in this document are the sole property of their respective owners. ©2006 Visionael Corporation. All rights reserved.