



Solution Assessment

Cisco IPTV Solution

Internet Protocol Television (IPTV) Solutions

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Cisco IPTV Solution

Report Info:

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Date Updated:

March 4, 2008

Solution Class:

**Internet Protocol
Television (IPTV)
Solutions****Solution Description**

Cisco's IPTV solution set consists of three essential elements that Cisco presents as "Define," "Preserve" and "Realize" the IPTV Experience. The "Define" element consists of the acquisition, processing, encoding and managing of video content within the video headend (VHE) and the delivery of interactivity enabled through the Cisco Content Delivery System (CDS). The "Preserve" element consists of preserving the next-generation video experience end-to-end (from headend to set-top box [STB]) across the carrier-class, intelligent and video-aware IP-centric Next-Generation Network (NGN). The "Realize" element consists of the Cisco customer premise equipment (CPE) and STB gear that enables the personal and differentiated video experience via the decoding, decrypting and displaying of media content. The current iteration of the Cisco IPTV Solution Assessment (SA) will address primarily the "Define" and "Realize" elements, which form the essential parts of an IPTV ecosystem.

The "Define" element includes the Power Vu Model D9850 Program Receiver for the acquisition and conversion of video from multiple sources such as satellite, off-air and fiber; the Cisco Digital Content Manager (DCM) for the processing of video signals, including grooming, multiplexing, transrating and ad insertion; the Encoder Model 9304-S and Model 9054 HDTV Advanced Compression Encoder for the encoding of video into the MPEG4/H.264 format; and the ROSA EM, ROSA Digital Headend Backup and ROSA Reporting for the management of the video headend. SciCare Integration services address the service support and integration aspects. The Cisco CDS extends an intelligent, network-based platform to deliver customized, interactive, and localized content such as VoD, nPVR, TV time-shifting, PEG channels and targeted ad insertion.

The "Preserve" element consists of Cisco's IP NGN proposition and how the IP NGN is designed to extend an open, standards-based architecture to reliably deliver content from the headend to user devices. This includes vast experience in preserving video-to-network linkages, high availability, and video-aware intelligence. The Cisco IP NGN is promoted as a multiservice platform that delivers QoS, video admission control, error repair, improved channel-change time, and enhanced multicast capabilities to further enhance the customer experience. Cisco markets its entertainment-grade services and Visual Quality of Experience (VQE) technology, which provides video application intelligence to deliver video services that use network congestion avoidance and error recovery.

The "Realize" element consists of Cisco's home device/CPE products that provide the gateway for personalized video content and interactive media. This includes Linksys consumer products and the Scientific-Atlanta (S-A) family of IP STBs such as the IPN330HD IPTV STB, IPN430MC HD IPTV Media Center and the IPN603MCG IPTV Series Multi-Stream DVR Gateway. They deliver HD and SD content, PVR capabilities, security and the ability to stream content to multiple TV sets.

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Solution Elements

Element	Cisco IPTV Solution
Content Delivery Systems	Cisco - Content Delivery Systems
Content Security	Cisco - PowerVu Conditional Access
Head-end Systems/Encoders	Cisco - Scientific Atlanta IPTV Headend Solution
IPTV Middleware	Cisco - Middleware
STB Range and Interoperability	Cisco - Scientific Atlanta IPTV STBs

Element Definitions

Content Delivery Systems: Network video servers, primarily originated from VoD server roots, that support software developed and dedicated to IPTV applications such as VoD, ad insertion, and nPVR.

Content Security: The technology required to ensure the security and integrity of IP-based video applications such as IPTV. Specifically, this addresses digital rights management (DRM) and conditional access system (CAS) technologies.

Head-end Systems/Encoders: Part of network that concentrates video networking technologies required to deliver video over broadband. Specifically, this addresses platforms that support encoder capabilities and closely related capabilities such as content distribution.

IPTV Middleware: Software embedded in operator server and consumer CPE technologies (typically set-top boxes) that manage the user interface and the delivery of video to the TV such as IP-based video broadcast and video on-demand.

STB Range and Interoperability: The set-top box technology deployed at the consumer's residence to enable IPTV applications and services. This includes the diversity of STB options and the ability to interoperate with requisite video networking protocols such as MPEG4/H.264 encoding.

Product Descriptions

Cisco Content Delivery Systems

The Cisco Content Delivery System (CDS) addresses a broad range of interactive digital media and IPTV applications such as VoD, time-shift TV, barker channels, public access channels, Internet music and video, and user generated content services. The CDS consists of networked Cisco Content Delivery Engines, which can be grouped into arrays to perform as a single logical system to address tasks such as content ingest, storage, caching, and streaming. This includes the option of attaching additional engines for video storage and streaming capacity.

Cisco Content Delivery Applications (CDAs) are the software elements of the CDS and implement content processes on top of Cisco Content Delivery Engines, providing functions that include ingest, storage, caching, personalization, and streaming. Specifically, TV streaming CDAs include the Cisco CDS Manager, the Cisco Integrated Streamer-Vault Application, the Cisco TV Playout Application, the Cisco TV Stream Application, and the

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Cisco Vault Application. The Internet Streaming CDAs include the Cisco Internet Streamer Application, the Cisco Content Acquirer Application, and the Cisco Router Application.

Cisco PowerVu Conditional Access

The Cisco/Scientific Atlanta (S-A) PowerVu conditional access (CA) scheme is embedded in various platforms such as the recently released D9854 AVC decoder. It is worth noting, in addition to its own CA products, Cisco/S-A technology, such as decoders, support multiple, third-party CA and DRM systems to meet operator demands for content security flexibility. Cisco partners with third-party CA/DRM vendors such as Widevine to address operator content security needs according to operator preference.

Cisco/S-A set-top boxes (STBs) use Multi-Stream CableCARD technology to provide the conditional access portion of the cable operator's system security. The Multi-Stream CableCARD provides the required separable security in order to meet the FCC's July 1, 2007, separable security mandate. In addition, Cisco/S-A continues to develop alternative separable security solution known as Downloadable Conditional Access System (DCAS).

Cisco/S-A wields its own DRM and conditional access (CA) technology for the cable space, enabling Cisco to claim experience as both a licensor and licensee in the area of digital media content security.

Cisco Scientific Atlanta IPTV Headend Solution

The Cisco/S-A IPTV Headend Solution correlates to the "Define" element of Cisco's overall IPTV solution proposition. This element includes the Power Vu Model D9850 Program Receiver for the acquisition and conversion of video from multiple sources such as satellite, off-air, and fiber; the Cisco Digital Content Manager (DCM) for the processing of video signals, including grooming, multiplexing, transrating, and ad insertion; the Encoder Model 9304-S and Model 9054 HDTV Advanced Compression Encoder for the encoding of video into the MPEG4/H.264 format; and the ROSA EM, ROSA Digital Headend Backup, and ROSA Reporting for the management of the video headend. SciCare Integration services address the service support and integration aspects.

Cisco Middleware

Cisco/S-A currently lacks its own in-house IPTV middleware. Cisco works extensively with third-party IPTV middleware vendors to accommodate operator preferences for IPTV middleware technology, including players such as Microsoft TV, NSN/Myrio, Minerva, and ANT. Cisco/S-A possesses middleware technology for addressing cable broadcast services, but not IPTV services.

Cisco Scientific Atlanta IPTV STBs

Cisco/S-A offers its own purpose-built IPTV STBs, delivering high definition (HD) and standard definition (SD) content, personal video recording capabilities, advanced security solutions, and the ability to stream content to multiple TVs. The Cisco IPTV set-top box (STB) portfolio, along with related Linksys technology, correlates with the "Preserve" dimension of the Cisco IPTV solution set. The Cisco IPTV STB products include the IPN330HD IPTV Set-Top, the IPN430MC IPTV Media Center, and the IPN603MCG IPTV Series Multi-Stream DVR Gateway.

Specifically, features of the IPN330HD STB include use of System On Chip (SOC)

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technology to support a variety of operating systems, middleware platforms, and user applications; supports 100BaseT Ethernet and HPNA 3.0; supports up to 16 picture-in-picture (PIP) displays simultaneously; and remote DVR client functions for MultiRoom DVR applications. The IPN330HD STB uses a wide range of video codecs, including MPEG-2, MPEG-4 Part 10/H.264 and VC-1 in both SD and HD formats.

The IPN430MC IPTV STB uses SOC technology to support a variety of operating systems, middleware platforms, and user applications. Key features include Media Center support to enable content sharing between DVR host unit and multiple IP STBs within home; integrated DVR that records multiple video streams simultaneously; 160 GB DVR storage; and quiet DVR operation. The IPN330HD STB uses a wide range of video codecs, including MPEG-2, MPEG-4 Part 10/H.264 and VC-1 in both SD and HD formats as well as video output to the HDTV display in all available ATSC formats (including 1080i, 720p, 480i, 480p).

The IPN603MC IPTV Series Multi-Stream DVR Gateway comes available as a three-in-one home entertainment solution. It decodes three unique video streams simultaneously, which can be distributed to multiple television sets in the home over already-installed in-home coaxial wiring. The IPN603MC supports video output to the HDTV display in all available ATSC formats (including 1080i, 720p, 480i, 480p); records HD broadcast programming to analog VCRs; supports digital interfaces with applicable copy protection standards including High-Definition Multimedia Interface (HDMI) with High-Bandwidth Digital Copy Protection (HDCP); delivers 160 GB of DVR storage; quiet DVR operation; and uses a wide range of video codecs, including MPEG-2, MPEG-4 Part 10/H.264 and VC-1 in both SD and HD formats.

Summary

Current Perspective: Very Threatening

Cisco's IPTV solution set is very threatening to the IPTV solutions of rival vendors due to a wide variety of factors such as the possession of a three-dimensional in-house product portfolio that few if any rivals can match directly today without relying on multiple partners. The Cisco IPTV integrated solution includes the ability to "Define," "Preserve" and "Realize" the IPTV experience. The Define element includes the S-A HE technologies and the Cisco CDS, the Preserve element includes Cisco's IP NGN carrier routing platforms, and the Realize element includes CPE technology such as S-A STBs and Linksys home gateways. The Cisco IPTV integrated solution extensively leverages S-A's vast experience (i.e., over 55 years) and expertise within video networking that is difficult to duplicate.

However, Cisco still faces challenges within the realm of IPTV solution sales penetration efforts. Cisco continues to partner with Microsoft TV to address telco-based IPTV middleware needs. The pace of Microsoft TV IPTV middleware deployment efforts has witnessed some turbulence, which in turn has logically hampered Cisco's ability to sell more IPTV-related gear in the near-term. Cisco faces a wide array of savvy rivals for fulfilling telco IPTV service ambitions, and thus the jury is still out as to how extensively Cisco can emulate Scientific-Atlanta's historical and current success within the cable, satellite and broadcaster realms into the telco realm.

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Strengths/Weaknesses

Strengths

- The Cisco Content Delivery System (CDS) uses a network-based approach to enable the scaling of distributed, personalized content via the use of vault arrays that are distributed at national, regional and local levels with local content correlating to more popular, in-demand content (i.e., located closer to the subscriber).
- The Cisco CDS approach de-couples vault/storage and streaming functions in order to achieve network scalability at two essential levels: (1) content; and (2) subscribers, as scaling video services requires scaling on these dual yet separate levels. The Cisco CDS uses closely interworked streamer arrays to enable personalized video via the pulling and caching of content from the vault arrays based on subscriber usage to reach new heights of scalability.
- The Cisco CDS possesses competitive headend flexibility in areas such as non-stop service availability, including resilient design and automotive failover, resource pooling and load leveling, and non-disruptive maintenance. This complements Cisco's marketing emphasis on Cisco CDS' future-proof aspects such as a software-centric design that enables new feature additions and upgrades without the need to conduct expensive HE forklifts.
- Cisco/Scientific-Atlanta's ROSA video management platform leverages S-A's vast experience in solving historical and current video management challenges such as the control and monitoring of third-party gear and the effective support of remote operations.
- Cisco/S-A commands the SciCare integration, consulting, and support services for video HE deployment with more than 55 years of experience in the media industry. This includes providing the service support package for over 1,000 digital HEs on a worldwide basis, including over 300 in North America, as well as the support of over 10,000 uplink channels on a worldwide basis.
- Cisco promotes its IPTV portfolio proposition within three distinct areas: (1) Define the IPTV Experience; (2) Preserve the IPTV Experience; and (3) Realize the IPTV Experience. This approach gives Cisco's integrated IPTV solution for wireline carriers and its overall IPTV portfolio a single-vendor cohesion and coherence that few rivals can match today.

Weaknesses

- Cisco, via its Scientific-Atlanta assets and related IP NGN assets primarily, possesses undeniable credibility within the cable space for scaling video applications and has already made strides within the telco and telco/satellite space in this regard. However, the jury is still out as to how much influence and significance Cisco will achieve within telco IPTV launch and scaling efforts vis-à-vis rivals.
- Cisco/Scientific-Atlanta still needs to show that its expertise and experience in video head-end technology will translate into its large IPTV customers, such as AT&T, being able to manage the massive scaling of multicast stream applications successfully.
- Cisco/Scientific-Atlanta must demonstrate that they can effectively work with third-party IPTV middleware partners in coordinating and integrating its HE and STB technology with partner middleware technology. In other words, Cisco's long-term success within the telco IPTV realm can be imprudently dependent on the ability of partners, such as Microsoft TV, to resolve their own integration and scaling challenges.

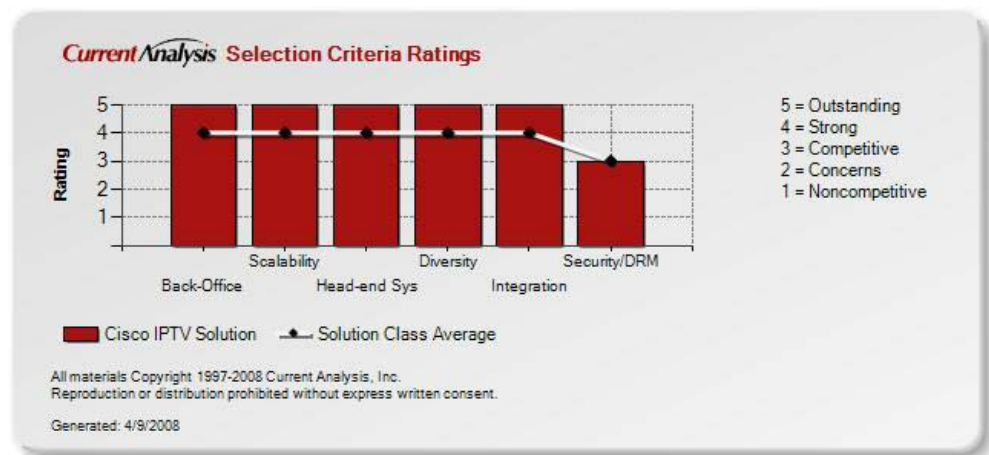
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- Cisco/Scientific-Atlanta may not reap the full marketing benefits of telco IPTV scaling and expansion efforts in the near-term, as the ROSA management platform is not present in the market-leading telco IPTV networks of the EMEA and APAC regions.
- Cisco/Scientific-Atlanta has not directly challenged the Alcatel-Lucent/Microsoft TV tandem in the area of IPTV middleware, particularly for telco networks. Thus far, Cisco has opted not to leverage Scientific-Atlanta's vast middleware experience directly in the MSO space to challenge Microsoft TV head-on in this regard. Will Cisco regret this approach down the line should Microsoft TV leverage its IPTV middleware more effectively to drive multi-play development opportunities its way at the expense of Cisco?

Key Selection Criteria



Content Delivery System Scalability: OUTSTANDING

- **Benefit** – The Cisco CDS approach emphasizes solving the centralized server dilemma which relies heavily on proprietary, single metro, centralized storage and streaming server implementations, which can prove difficult and expensive to scale for IPTV applications due to factors such as fixed capacities necessitating costly multipliers of duplication efforts and inherent bandwidth limitations. The Cisco CDS approach uses a network-based approach to enable the scaling of distributed, personalized content via the use of vault arrays that are distributed at national, regional, and local levels with local content correlating to more popular, in-demand content (i.e., located closer to the subscriber).
- **Benefit** – The Cisco CDS approach de-couples vault/storage and streaming functions in order to achieve network scalability at two essential levels: (1) content; and (2) subscribers, as scaling video services requires scaling on these dual yet separate levels. The Cisco CDS uses closely interworked streamer arrays to enable personalized video via the pulling and caching of content from the vault arrays based on subscriber usage to reach new heights of scalability.
- **Benefit** – The European Advanced Networking Test Center AG (EANTC)/LR test verified the distinct scalability characteristics of Cisco's end-to-end IPTV/triple-play solution set on an independent basis. The test used a Cisco-designed network for up to 1

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million subscribers, serving 60,000 emulated customers. The test yielded significant results such as sustained zero packet loss operation serving the 60,000 customers with 20 HD and 200 SD video channels, 22 Gbps of VoD traffic, Internet traffic and other unprecedented testing results.

- **Benefit** – Cisco technology, including Cisco IP NGN assets such as the CSR-1 and 7600, play an essential role in Comcast's ability to achieve new levels of scalability. During 2006, this included up to 8,000 programs and 180 million views per month (or six million views per day).
- **Benefit** – On a per virtual vault basis, the Cisco CDS scales up to 200 channels of MPEG2 or 400 channels of MPEG4. It can also store aggregate content up to 12 Tbps. Additionally, each streamer streams up to 5000 streams of MPEG4 SD content, which compares favorably to some streaming serving equivalents.
- **Benefit** – Cisco/S-A has already built and continues to support the two largest IPTV HEs in the world – AT&T and SES AMERICOM.
- **Issue** – Cisco, via its Scientific-Atlanta assets and related IP NGN assets primarily, possesses undeniable credibility within the cable space for scaling video applications and has already made strides within the telco and telco/satellite space in this regard. However, the jury is still out as to how much influence and significance Cisco will achieve within telco IPTV scaling efforts vis-à-vis rivals.

Head-end Systems Flexibility: OUTSTANDING

- **Benefit** – The Cisco CDS uses a distributed architecture with a single logical system to solve the limitations of a traditional centralized video server headend (HE) approach as well as extend innovative HE flexibility in areas such as independent implementation of ingest/storage networking elements and streaming networking elements.
- **Benefit** – The Cisco CDS possesses competitive headend flexibility in areas such as non-stop service availability, including resilient design and automotive failover, resource pooling and load leveling, and non-disruptive maintenance. This complements Cisco's marketing emphasis on Cisco CDS' future-proof aspects such as a software-centric design that enables new feature additions and upgrades without the need to conduct expensive HE forklifts.
- **Benefit** – The Cisco CDS leverages intelligent caching technology to extend flexible ingestion and storage of content at the local, regional, and national levels and thereby generate significant CapEx and OpEx savings for IPTV carriers. While this approach is not necessarily unique, Cisco can plausibly assert it is the pioneer and the most experienced in this area.
- **Benefit** – Cisco emphasizes Scientific-Atlanta's core competency in advanced encoding R&D efforts and portfolio realization, including areas such as MPEG4 AVC (H.264) innovation, clearly differentiated encoding quality, and bandwidth efficiency. This includes recent encoding HE wins based on encoding quality as a key differentiator and ongoing innovation in areas such as MPEG2-to-MPEG4 transrating, which promises to ease operator HE transitions and generate significant CapEx and OpEx savings.
- **Benefit** – Cisco extends headend flexibility in the area of single-slice ad insertion techniques which generate ad insertion/processing advantages over traditional multi-slicing ad techniques in the areas of improved admission control and rate control metrics and

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improved filtering and motion quality of ad insertion material. This is designed to reduce the bulkiness of traditional ad insertion techniques such as local ad blocks during national broadcast slots.

- **Issue** – Cisco/Scientific-Atlanta still needs to show that its expertise and experience in video head-end technology will translate into its large IPTV customers, such as AT&T, being able to successfully manage the massive scaling of multicast stream applications.
- **Issue** – Cisco/Scientific-Atlanta must demonstrate that it can effectively work with third-party IPTV middleware partners in coordinating and integrating its HE and STB technology with partner middleware technology. In other words, Cisco's long-term success within the telco IPTV realm can be imprudently dependent on the ability of partners, such as Microsoft TV, to resolve their own integration and scaling challenges.
- **Issue** – Telco access dimensions such as the wide availability of VDSL2 and PON for addressing multi-HD set homes remain an issue for Cisco, as a single QoS/QoE-capable HD stream will require ~7 Mbps into the foreseeable future. As Cisco lacks direct portfolio assets in the telco access sector today (with the exception of Ethernet FTTH solutions), the company remains somewhat vulnerable to the pace of PON/VDSL2 deployment determining the sales progress of its overall IPTV solution proposition.

Back-Office Compatibility: OUTSTANDING

- **Benefit** – Cisco/Scientific-Atlanta's ROSA video management platform leverages S-A's vast experience in solving historical and current video management challenges such as the control and monitoring of third-party gear and the effective support of remote operations.
- **Benefit** – Cisco's ROSA platform supports over 725 devices via SNMP and proprietary protocols to ease overall back-office integration efforts as well as to demonstrate clear differentiation in the range of back-office compatibility options.
- **Benefit** – Cisco's ROSA management platform offers back-office benefits such as full and automatic redundancy capabilities, ensuring the integrity of the routing of each individual stream, user-friendly network displays and graphics, robust collection and recording of data performance data, and the monitoring and control of all S-A and third-party devices.
- **Issue** – Cisco/S-A may not reap the full marketing benefits of telco IPTV scaling and expansion efforts in the near-term, as the ROSA management platform is not present in the market-leading telco IPTV networks of the EMEA and APAC regions.

Security and Digital Rights Management (DRM) Efficacy: COMPETITIVE

- **Benefit** – Cisco/S-A possesses an extensive track record in executing the content security aspects of traditional cable content offerings. S-A STB technology has consistently proven adept at supporting the CA technology required by legal regulation and MSO network requirements to aid content security efforts.
- **Benefit** – Cisco/S-A wields its own DRM and conditional access (CA) technology for the cable space, yielding Cisco the competitive distinction and content security value add of being the only equipment vendor to have experience as both a licensor and licensee in this vital regard.
- **Benefit** – Cisco possesses an investment stake within DRM niche player Widevine, which

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already claims over 100 customers and is ranked the number two vendor worldwide in the DRM sector (behind Verimatrix, according to ABI Research). This allows Cisco to work closely with a DRM specialist to ease integration of open, standards-centric IPTV networks, which contrasts with the cable networks' traditional approach of closed, proprietary content security implementations.

- **Issue** – Cisco/S-A will encounter rival fear, uncertainty and doubt (FUD) directed at the company's long historical association with cable conditional access methods and the high-profile piracy and theft of cable content over the years (i.e., guilt by association). Such challenges will look to frame Cisco as being less nimble on IPTV security in relation to content security solutions that were purpose-built for IPTV applications in their origin.

IPTV Professional Service Integration Package: OUTSTANDING

- **Benefit** – Cisco/S-A commands the SciCare integration, consulting and support services for video HE deployment with more than 55 years of experience in the media industry. This includes providing the service support package for over 1,000 digital HEs on a worldwide basis, including over 300 in North America, as well as the support of over 10,000 uplink channels on a worldwide basis.

- **Benefit** – Cisco clearly differentiates its HE/IPTV service integration package in areas such as video acquisition, video processing, video encoding and video management building blocks that are essential for any successful video service. This includes, for example, video acquisition dimensions such as the physical location of satellite receivers, signal conversion, and off-air and fiber receiver capabilities that require years of video-specific experience to master.

- **Issue** – Cisco would still benefit more from lining up major telco endorsements of its SciCare integration packages as telco IPTV deployment efforts represent a significant, long-term revenue opportunity.

IPTV Portfolio Diversity and Depth: OUTSTANDING

- **Benefit** – Cisco promotes its IPTV portfolio proposition within three distinct areas: (1) Define the IPTV Experience; (2) Preserve the IPTV Experience; and (3) Realize the IPTV Experience. This approach gives Cisco's integrated IPTV solution for wireline carriers and its overall IPTV portfolio a single-vendor cohesion and coherence that few rivals can match today.

- **Benefit** - The "Define the IPTV Experience" aspect of the Cisco IPTV portfolio addresses the acquisition, processing, encoding, and management capabilities of the Cisco IPTV portfolio. Among Cisco's major IPTV solution rivals, only Ericsson and Motorola can start to match the depth and diversity of Cisco's S-A HE and CDS product mix with an in-house equivalent.

- **Benefit** - The "Preserve the IPTV Experience" aspect of the Cisco IPTV portfolio addresses the IP NGN video-aware elements of the Cisco IPTV portfolio. This includes carrier-class core and edge routing platforms such as CRS-1 and 7600 Series Routers. Among Cisco's IPTV solution rivals only Alcatel-Lucent (SR series) and Ericsson (Redback SE series) can match Cisco at the IP service provider edge, but not at the core.

- **Benefit** - The "Realize the IPTV Experience" aspect of the Cisco IPTV portfolio addresses

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the decoding, decrypting, and displaying of media content on Cisco CPE and STBs. This leverages the CPE/STB assets Cisco gained via the acquisitions of Linksys and S-A. Among Cisco's major IPTV solution rivals, only Motorola can directly counter this aspect of the Cisco IPTV portfolio.

• **Issue** – Cisco/Scientific-Atlanta has not directly challenged the Alcatel-Lucent/Microsoft TV tandem in the area of IPTV middleware, particularly for telco networks. Thus far, Cisco has opted not to leverage Scientific-Atlanta's vast middleware experience directly in the MSO space to challenge Microsoft TV head on in this regard. Will Cisco regret this approach down the line should Microsoft TV leverage its IPTV middleware to drive multi-play development and business opportunities its way at the expense of Cisco?

Go To Market

Solution Positioning

- Cisco views Alcatel-Lucent as its main IPTV solution rival, although Cisco works with Microsoft TV in a neutral manner. Cisco stresses its possession of in-house STB, CDS assets such as VoD vault and VoD streamer technology, and core routing assets as major differentiators against Alcatel-Lucent's IPTV solution proposition.
- The scalability of the Cisco CDS makes it uniquely capable of handling the video storage, personalization, and streaming requirements needed to meet subscribers' rising expectations. Video content delivery systems now must be able to respond to open-ended viewing patterns quickly and seamlessly, and address the trend toward social networking and user-generated content. Thus, Cisco meets burgeoning consumer determination to choose what they watch as well as when, how and where they watch it.
- The Cisco CDS not only bolsters the marketability and technical elegance of the overall IP NGN Service Exchange Framework, but also posits a three-element approach in the areas of defining, preserving and realizing the video experience to drive how operators can fulfill burgeoning consumer demand for personalized content capabilities such as long-tail content, time-shifted programming and user-generated content. In addition, it extends to carriers more effective tools for targeted ad-insertion in broadcast video and VoD.
- Phase 1 of VQE provides real-time video error repair, fast channel changes and diagnostic support. VQE minimizes any real-time video errors to improve the end user's quality of experience (QoE) in the case of a transmission error by re-transmitting dropped IP packets destined for the set top box. VQE also provides sub-100ms fast channel change support to meet user expectations. VQE also provides monitoring and reporting tools to find and isolate faults in DSL lines.
- The EANTC/LR test verified the overall efficacy of Cisco's end-to-end IPTV/triple-play solution set on an independent basis. The test yielded ground breaking results such as zero loss in 1:60 replication of multicast traffic at 99% load, proper QoS implementation even under full load with 70% real-time traffic in the low latency queue, as well as validating Cisco's positioning of its IPTV solution in the areas of performance and scalability, QoS, network resiliency, VQE and Connection Admission Control.

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Solution Traction

- Cisco/S-A possesses at least 55 years of experience in the video/media industry, including the video technology for the initial moon landing. Cisco can highlight that it provides the service support package for over 1,000 digital HEs on a worldwide basis, including over 300 in North America, as well as the support of over 10,000 uplink channels on a worldwide basis.
- Cisco Connected Home technologies are extensively deployed on a global basis, including over 30 million S-A STBs and over 6 million DVRs delivered, over 25 million Cisco/Linksys wireless routers deployed, over 25 million digital video subscribers supported within the cable space, and participation in over 50% of the IPTV ongoing trials (based on overall carrier subscriber count).