Sales Guide

SGI Media Server™ for Broadcast

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1.0 SGI Media Server for Broadcast

1.1 Solution Overview

Introductory Note: At the time of this sales guide update (NAB 2002) the SGI Media Server for broadcast is in the middle of a transition from the SGI® Origin® 200 GIGAchannel™ configurations to the SGI® Origin® 300/PE-brick configurations. SGI will be shipping SGI Media Server models on both of these platforms throughout calendar year (CY) 2002. This sales guide contains information on both sets of SGI® Origin® server configurations.

SGI Media Server for broadcast combines the power of the SGI® server platform and digital media technology to create a completely integrated solution for serving video, audio, and data, with the flexibility of open standards-based video formats, data networking, file transfer, and storage technology.

SGI Media Server takes advantage of the revolutionary "distribute data, view video" approach. SGI Media Server enables video to be distributed over high-speed networks as data and facilitates file transfers of the actual content at much faster than real-time rates. When final output is required, SGI Media Server is able to playout the content in its native format—video. The distribute data, view video approach dramatically reduces the time and expense of producing, distributing, and managing content by making it very easy to share material among servers, editors, and archive systems. It also preserves the quality of the media asset, eliminating the need for consecutive encoding and decoding.

SGI Media Server for broadcast is a powerful solution for program acquisition, playout, commercial insertion, distribution of video assets within/between networked facilities, and serving digital news editing systems. The server can also interface with browsing and asset management systems, thereby streamlining the process of repurposing content for Web and broadband distribution.

SGI Media Server solutions leverage SGI's heritage in digital content creation, expertise in content delivery, and technical capability in storage, networking, and digital media to deliver content to air faster and more efficiently than the competition.

1.2 Software Versions

- Current version: 2.0.1
- In beta: 2.0.2 FCS June 2002
- In development: 2.1 FCS end of December 2002

1.3 Model Name Changes

Some SGI Media Server model names have recently been changed to communicate in a clear-cut manner the model's Origin server platform (Origin 200 or Origin 300), the model uses, and the maximum number of channels it supports (two to eight). Table 1 shows all models of SGI Media Server with the new naming convention and indicates the old name where appropriate. This table also shows the possible I/O configurations and the supported video compression format for each model.

Table 1. SGI Media Server Model Description

SGI Media Server Model	Origin Server	Max. I/O Channels	Video Compression
MS400	Origin 200	Up to 6	DVCPRO25 and uncompressed
MS800	Origin 200 GIGAchannel	Up to 12	DVCPRO25 and uncompressed
MSB 220 (formerly MSB 200)	Origin 200	Up to 2	MPEG-2
MSB 240 (formerly MSB 600)	Origin 200 GIGAchannel	Up to 4	MPEG-2
MSB 280 (formerly MSB 1000)	Origin 200 GIGAchannel	Up to 8	MPEG-2
MSB 320	Origin 300	Up to 2	MPEG-2
MSB 380	Origin 300 and PE-brick	Up to 8	MPEG-2

Prior to the release of version 2.1 (end of CY2002), DVCPRO will not be supported on the Origin 300 configurations of SGI Media Server. Only the Origin 200 models will be able to support DVCPRO™ compression before version 2.1. So, do not sell the combination of DVCPRO and Origin 300 until version 2.1 is available.

1.4 Product Specifics

In the sections below you will learn more about the features and configurations of SGI Media Server. Because this is a highly configurable system, it's important to understand the many individual aspects of the product. With this understanding your sales

efforts will be more effective because you can guide your customers through the possible configurations of the product and help them determine what is right for them.

1.4.1 Key Features and Benefits

Earlier generations of video servers rely on closed, proprietary filesystems to enable the bandwidth necessary to serve video. Unlike other media servers on the market, SGI Media Server is built to an open filesystem and the industry's most revered real-time UNIX® operating system, IRIX®. Its operation is based on industry standards for video, data networking, file transfer, and storage protocols. SGI Media Server for broadcast supports the most popular broadcast digital formats—MPEG-2 (GXF and MXF), DVCPRO, and uncompressed. It is a powerful and versatile solution for mission-critical applications including acquisition, play-to-air, commercial insertion, serving digital news editing systems, and distribution between and within facilities.

As the broadcasting business changes, broadcasters seek new technology that will help them operate with greater efficiency. A key trend in broadcasting is the move to centralize operations, or "centralcast." This trend drives the need to merge traditional video technology (video-centric) with computer technology (data-centric).

Today most broadcasters operate in a low-tech environment. Tapes are used for storage media, and are stored on shelves. Viewing media is a one-at-a-time operation done with a videotape recorder (VTR). Moving media is a real-time, linear process, and few operations take place without a lot of human/equipment interaction. We've all experienced advances like database search engines replacing card catalogs and the ability to view video clips over the Internet. In broadcasting, archive and asset management solutions will replace tape libraries, networks will replace satellite and microwave for distribution, and file-based servers will replace VTRs and linear-style video servers. SGI Media Server is positioned for broadcast operations and because of its unique features, is particularly valuable to broadcasters interested in centralcasting and the move to a data-centric environment.

Centralcasting is an exploding trend for broadcasters and involves driving multiple broadcast facilities from a central location. News, graphics, entertainment, and interstitials are examples of content that can be managed and distributed centrally. Key to the success of centralcasting is the convergence of data-centric technology with video-centric technology. SGI Media Server for broadcast is the cornerstone of SGI's deliver data, view video broadcast strategy: when file-based video is managed as data, it can be distributed over data networks with ease and efficiency. SGI Media Server is quickly becoming successful around the world by helping broadcasters become more efficient as they consolidate and centralize three key areas: transmission operations, news and local program production, and business operations.

SGI is bringing the true promise of the digital era to broadcasters, who are increasingly relying on SGI expertise to help architect strategic solutions to their core operations. SGI Media Server for broadcast is a next-generation server that excels at both reliable multichannel playout and fast, robust distribution of video as data.

Today's generation of video servers needs to work with asset management systems. The layer of the data-centric video workflow architecture above media servers is the asset management software that controls the transfer and archive of video files. SGI® StudioCentral™ Library is a digital asset management infrastructure that is globally scalable and built on open standards.

Asset management and broadcast serving must work hand-in-hand. This is why SGI StudioCentral Library 3.0 integrates with Media Server for broadcast and tape robotics for backup and archives. StudioCentral is engineered to seamlessly scale to global usage and harness the content-sharing power of fast wide area networks. Media Server for broadcast, StudioCentral, and SGI® Total Performance storage products provide the structural framework for third-party applications.

Listed in table 2 are some of the high-level features that distinguish SGI Media Server from the other video serving solutions available. Additional detail on SGI Media Server features will appear later in this sales guide.

Table 2. SGI Media Server Features and Benefits

Feature	Benefit
Distribute data, view video Where most video servers have to transfer video from server to server as video, through video routing systems, SGI Media Server can move video as a file over a LAN or WAN. This eliminates the need to move files by decoding, streaming video, and then re-encoding.	It makes the transfer process simpler, faster, and more reliable, and maintains video quality by eliminating the need to decode and re-encode.
File-based video system SGI Media Server uses a true file-based system. Other video servers use a file partition. With file partition systems, the transfer of files doesn't take advantage of the error correction inherent in TCP/IP.	It leads to simpler and faster file exchange, with the added benefit of error correction.
Faster than real time Based on the capacity of the network, video files in SGI Media Server can be transferred at faster than real-time rates.	It saves time and money.
Central storage Users of SGI Media Server can access files through a central SAN environment. Central storage also provides video files directly to editing systems that are connected to the SAN.	It provides efficient distributed storage options.
Asset management system support StudioCentral Library can manage SGI Media Server files.	This enables complex data management for broadcasters.
Industry-standard control procotols SGI Media Server can be controlled by legacy automation systems through the Sony P2 serial control protocol or the Louth VDCP control protocol. For control via LAN/WAN connection, SGI Media Server supports MVCP, an advanced control protocol that enables broadcasters to accurately control SGI Media Server at virtually any distance.	This makes it easy to integrate SGI Media Server into existing broadcast systems. MVCP enables long-distance control mechanisms for centralcasting.
On-server edit list conforming Simple "cut" edit lists can be executed by SGI Media Server without the need for an editing system. (This does not imply EDL I/O.)	This enables story editing at a journalist's desktop.
Nonlinear editing (NLE) support SGI Media Server can share files directly with nonlinear editing systems.	It enables faster turnaround for news stories.
Clip transfer during ingest SGI Media Server can automatically transfer files to central storage during ingest.	No waiting is required to edit while footage is still being recorded.
DIF and GXF file support Many video servers are constrained by the inability to exchange files with other makes of server. SGI Media Server is able to exchange files with servers and editing systems that use GXF and DIF.	SGI Media Server is easy to integrate with legacy systems.

1.4.2 Video Storage

Storage options for SGI Media Server include the following types:

- Local storage (internal; only on Origin 200 models):
  This is video storage using the internal hard disk drives available on the Origin 200 server.
- Local storage (external):
  This is video storage using a direct attached disk system such as the Ciprico® 7000 RAID. These storage options are not plug-and-play. Engineering must certify each configuration of SGI Media Server and external primary storage before it can be quoted.
- Shared SAN storage:
  This means an SGI Total Performance storage system with CXFS™ that is connected via Fibre Channel to one or many SGI Media Server systems. These SAN storage options are not plug-and-play. Engineering must certify each configuration of SGI Media Server and SAN before it can be quoted.

1.4.3 Storage Qualification Plan

Table 3 illustrates the plan for certification of storage systems with SGI Media Server for broadcast. Certification will be completed in parallel with the development of SGI Media Server version 2.0.2 software. Official certification will be announced when version 2.0.2 software is ready for customer delivery. Do not sell any of the following configurations until certification is completed. SGI will not guarantee any of the functionality represented in this table until the certification process is finished.

Table 3. Certification of Storage Systems with SGI Media Server

Origin 200 Configurations		
Product	**Local Storage (External)**	**Shared-SAN CXFS (SGI Media Server File Share Only)**
SGI® TP9100 (JBOD)	Yes (SGI Media Server v. 2.0.2)	No
TP9100 (2GB version) (JBOD)	Yes (SGI Media Server v. 2.0.2)	No
Ciprico 7000 (RAID 3)	Yes SGI Media Server v. 2.0.2)	No
SGI® TP9400 (HW RAID)	No	Yes (in SGI Media Server v. 2.0.2)

Origin 300 Configurations		
Product	**Local Storage (External)**	**Shared-SAN Storage (SGI Media Server File Share Only)**
SGI® TP900 (JBOD)	Yes (SGI Media Server v. 2.0.2)	Not CXFS capable
TP9100 (1GB version) (JBOD)	Yes (SGI Media Server v. 2.0.2)	No
TP900 (2GB version) (JBOD)	Yes (SGI Media Server v. 2.0.2)	No
Ciprico 7000 (RAID 3)	Yes (SGI Media Server v. 2.0.2)	No
TP9400 (HW RAID)	No	Yes (in SGI Media Server v. 2.0.2)

Note: Base units include necessary hardware and media server software. Video-audio I/O and storage components must be ordered separately using separate marketing codes.

1.4.4 Video Storage Capacity

Customers are able to choose from among four different video storage products. Table 4 provides information about the hours of video (and other related data and audio) that each storage product will support. For the SGI TP900, SGI TP9100, and Ciprico, additional chassis can be connected together to increase the storage capacity.

Table 4. Storage Products and Relevant Data

Storage Product	DVCPRO25	MPEG @ 8 Mb/sec	Uncompressed
Local disk (P-S-36A) 4 x 36GB disks	12 hrs	36 hrs	N/A
TP900 JBOD 8 x 73GB disks	48 hrs 1 TP900 chassis	144 hrs 1 TP900 chassis	7 hrs 1 TP900 chassis
TP9100 JBOD 12 x 73GB disks	72 hrs 1 TP9100 chassis	192 hrs 1 TP9100 chassis	11 hrs 1 TP9100 chassis
Ciprico 7000 RAID (CIP7014RDI443A) 8 x 73GB disks	48 hrs 1 Ciprico chassis	144 hrs 1 Ciprico chassis	7 hrs 1 Ciprico chassis

Supported features of SAN and CXFS
(CXFS support with SGI Media Server version 2.0.2)

- All nodes on the SAN must be IRIX® 6.5.15f or greater
- Not for on-air or frame-accurate requirements
- Does not replace local real-time filesystem (local storage)
- Non-real-time support (not qualified for seamless video playout from the SAN)
- No GRIO (guaranteed rate input output) support

Features supported using CXFS:

- Copy clips from GRIO real-time filesystem (RTFS) to CXFS NON-RTFS with completed or ingesting clips
- Share clips with other systems on CXFS NON-RTFS with completed or ingesting clips
- Copy from CXFS NON-RTFS to GRIO RTFS and play-to-air from GRIO RTFS while transfer is still occurring
- Copy clip from GRIO RTFS to CXFS NON-RTFS while ingesting
- Review clip from CXFS NON-RTFS
- Items 4a-4c are happening simultaneously; some limitations apply

1.4.5 Video File Interchange and File Types

One of the advantages of SGI Media Server is its ability to interchange files with video servers from other manufacturers and nonlinear editing systems. In some cases file interchange is direct. For example, the MPEG version of SGI Media Server can play GXF files without converting the files. In other cases, file conversion through an offline utility is required. Table 5 provides information on SGI Media Server file interchange capabilities.

Table 5. SGI Media Server File Interchange Capabilities

Video File Interchange (Version 2.0.2)		
Source	**Destination**	**Method**
GVG Profile GXF file	SGI Media Server MPEG version	SGI Media Server plays GXF file—no conversion required
SGI Media Server MPEG file	GVG Profile	GXF-build offline SGI Media Server utility
SGI Media Server .DIF file	Avid Newscutter	Margate from Marquis or via utility
Avid NewsCutter	SGI Media Server .DIF file	Margate from Marquis or via utility
SGI Media Server .DIF file	Final Cut Pro or Liquid Purple NLE	No conversion required
SGI Media Server	SAN	Manual or automatic FTP push
SAN	SGI Media Server	Manual or automatic FTP pull
SGI Media Server	SGI Media Server	Manual or automatic FTP

Supported File Types (Version 2.0.2)				
	File Import	**Record Format**	**Play Format**	**File Export**
DVC	.DIF	.DIF	.DIF, clip defined by EDL**	.DIF
Uncompressed	Native uncompressed	Native uncompressed	Native uncompressed	Native uncompressed
MPEG	Native MPEG, GXF, MXF*	Native MPEG	Native MPEG, GXF, MXF, clip defined by EDL**	Native MPEG, GXF***
*MXF V8 spec only **Via offline utility (C-build) ***Only via offline utility (G-build)				

1.5 Partner Ecosystem

From a customer perspective, broadcast servers are a component of a much larger and very complex system. So the correct orientation for selling video servers includes the understanding that interoperability between the major components is a fundamental requirement. Specifically, video servers need to be integrated with broadcast automation systems, video editing systems, and media management and archive systems. Of course, in developing SGI Media Server, these integration requirements have always been understood and given high priority. What sales professionals need to keep in mind is the customer's concerns surrounding how the SGI video-serving products work with the other major system components the customer already has or is planning to purchase. One of the most important pieces of information a salesperson can get from a customer appointment is with what other equipment the customer expects SGI Media Server to be integrated. The answers to this question

define the ecosystem in which SGI Media Server has to work. SGI works with many other vendors to satisfy customer demands. Vendors of the many components of the broadcaster's overall system form the network that will either support success or prevent sales.

Table 6 illustrates the partner ecosystems that have supported several major video server deals in EMEA. This information is helpful in generating an understanding of the partner products that have been successfully deployed with SGI Media Server.

Table 6. Partner Ecosystems

SGI Media Server Installation	Prime Contr.	Format	Ingest	Logging	Newsroom	News Auto.	News Playout	Browse	Browse	Editing	Archive SW	Archive HW	Graphics	Graphics Auto.
SVT		DVCPRO	Ardendo Dart	None	I-News	I-News	Custom	Ardendo Dart	Ardendo Pre Cut	Avid	Ardendo	IBM Robotics	VizRT	VizRT
DR		DVCPRO	Miranda	Virage	ENPS	Hawrys	Hawrys	Miranda	Miranda	Panasonic		SGI	VizRT	VizRT
France TV Publicite	SGI	DVCPRO MPEG-2	Customer App.				Harris	Customer App.			SGI DMF	Sony PetaSite		
France TV News	SGI	DVCPRO	SGT	SGT	AVID + SGT	SGT	SGT	SGT	SGT	AVID				
TFI	SGI	MPEG-2 4:2:2	SGT				SGT	SGT						
BR	T-Systems/SG				None					Avid	DMF	StorageTek		
SWR			ANN	None	ANN	ANN	ANN	Harris or SGT		Fast				
Plazamedia			TechMath	None		Probell	Probell			Avid	SGI DMF	SGI	VizRT	VizRT

Legend
Ardendo: Products include Dart, PreCut
Avstar: Products include I-News
SGT: Products for scheduled ingest, browse, and automation; strong in France

1.6 SGI Professional Services

SGI Media Server for broadcast has gained market share in EMEA by providing next-generation server features, solving broadcaster problems, making broadcast operations more efficient, and being integrated effectively through SGI Professional Services (PS). Broadcast server deals can span a variety of technical disciplines and require the experience of many different technical specialists. SGI Professional Services has achieved a wealth of experience in designing and deploying systems in the EMEA region. Other regions can take advantage of what they have learned as SGI gains sales around the world. The resources of SGI Professional Services in EMEA can be tapped to assist with deals in other regions. For more information on SGI PS and SGI Media Server, please see the technical resources cited in this sales guide.

1.7 System Planning and Installation Service

SGI Managed Services offers SGI Media Server Implementation Services to ensure proper setup and proper knowledge transfer to the end user. These services are highly recommended to ensure the customer receives all of the benefits SGI Media Server for broadcast has to offer. The implementation service includes:

- Customer qualification interview
- Site-planning assistance
- Hardware installation
- Configuration of network connectivity and peripheral devices
- SGI Media Server software configuration and testing

Documentation of the SGI Media Server for broadcast solution, including basic server administration and review of all configuration files and deliverables, is also provided.

SGI Consulting provides value-added services around SGI Media Server for broadcast for projects that require workflow tuning and customization.

SGI Media Server for broadcast is part of the Media Commerce™ solutions suite of products from SGI that enable customers to create, manage, deliver, and transact content over networks.

1.7.1 Additional Information

For additional information or recent updates about SGI Media Server for broadcast, refer to the SGI Media Server for broadcast datasheet for a complete listing of features and specifications. Please visit *http://sales.corp/industries/media/solutions/mediaserver_prod.html* for the datasheet and other sales tools.

2.0 Broadcasting Video Server Market

2.1 Defining the Broadcasting Video Server Market

Television broadcasters create and play content for entertainment, news, sports, and promos. For these professionals, VTRs and the first generation of video servers are among the traditional, video-centric technology used to store, edit, and deliver content. Today, broadcasters seek to increase efficiency in their daily activities by centralizing operations to enhance locally produced news by streamlining the production process. To remain competitive, television broadcasters must become more efficient, reduce the costs of moving video from facility to facility, repurpose content for other distribution channels (e.g., Web, broadband, satellite, cable), enhance their viewers' experience, and retain their value in the markets they serve. State-of-the-art video server technology is critical to meeting these goals.

The key benefits of moving from a video-centric environment to a data-centric environment are:

- Better ability to manage and distribute video material throughout the organization with less complexity, time investment, and expense
- Increased flexibility and speed in getting content to air
- Uniform access to video material, both online and near-line
- Maintenance cost reduction; the cost of operating and maintaining a number of tape decks versus a single server that performs the function of multiple VTRs is a key issue
- Enhanced ability to repurpose content

Customers are accustomed to purchasing "black boxes" that fulfill a specific task in a workflow rather than changing a workflow to fit a general-purpose computer model. The useful life of broadcast equipment is also longer (five to seven years) compared to computers (one and a half to three years). Broadcasters buy for long-term usage (three- to six-year cycle).

2.2 Defining the Business Opportunity

The size of the worldwide broadcasting video server market in CY2002 is about $175 million, with a growth rate of 21% (Frost & Sullivan, SGI internal adjusted estimates). Revenue estimates in compressed broadcast serving between 2002 and 2007 are approximately $1.8 billion.

The broadcasting video server market can be broken down into categories of compressed video servers (94% of the total market revenue) and uncompressed video servers (6% of the total market revenue). The compressed video server market is dominated by

MPEG-2 compression, at about 70% of market share. M-JPEG and DV (including DVCPRO25) represent the 30% remaining market share.

SGI addresses the compressed video server segment with the DVCPRO-25 and MPEG-2 models of SGI Media Server for broadcast. In this segment, the target applications for the SGI Media Server for broadcast are:
- Program acquisition and playout
- Commercial and spot insertion
- Distribution within/between networked facilities
- Serving digital news editing systems

2.3 Target Customers and Applications

Target customers for SGI Media Server are national, regional, and networked broadcast organizations in EMEA and ICON. In the NAFO market, the focus is on the station ownership groups and networks rather than individual "call letter" stations. A list of the major station groups appears in Appendix C.

The key decision makers in broadcast organizations are typically engineering management and CTOs. Decisions are motivated by the following criteria:
- Improved workflow efficiency
- Reduced maintenance costs
- Enhanced speed of getting content to air

In Appendix C are several lists that include the major broadcast organizations around the world. The lists include over 40 U.S. station ownership groups, the major U.S. broadcast networks, 200 U.S. cable/satellite networks, and the national/regional broadcasters in Canada, Central/South America, Asia-Pacific, and Europe.

2.3.1 Target Applications for SGI Media Server for Broadcast

- Feed recording and play-to-air: SGI Media Server is ideal for applications that require multiple input and output channels for feed recording and play-to-air. SGI Media Server is a powerful solution for acquisition and spot playback applications in a broadcast distribution facility. These applications are based on the production of a playlist. The material is used primarily in a "store and distribute" fashion. SGI Media Server systems have the flexibility and throughput to combine acquisition and playout in one package or can be used as separate servers.

- Commercial and spot insertion: SGI Media Server provides reliable instant access to commercials and spots. Unlike troublesome tape-based systems, SGI Media Server operates on an unattended basis, and any spot stored can be played in broadcast quality at any time on any channel.

- Distribution within/between networked facilities: SGI Media Server is able to transfer video as data between facilities using standard data networks. Supporting a comprehensive range of high-speed data networks (100Base-T and Gigabit Ethernet, Fibre Channel, ATM OC3), SGI Media Server leverages existing network infrastructures, either LAN or WAN, using them for video file transfer. It helps eliminate costly satellite transmission and tape transport. Transfer feeds using file transfers can be managed from a centralized location.

- Serving nonlinear editing systems: SGI Media Server acts as the high-resolution video gateway for online editing, using any .DIF (DVCPRO25)-compliant and MPEG-2 NLE systems. Users can retrieve source material for creating spots and promos as well as retrieving news footage for digital news production. Editing systems that use standards-based filesystems can pull files from SGI Media Server for use in editing, or some editors can use SGI Media Server files directly without the need to first transfer the file to local storage.

- Content server: SGI Media Server can interface with asset management applications to provide asset-management and content-archiving capabilities. For example, SGI StudioCentral Library can interface with SGI Media Server. A content server is configured through StudioCentral. SGI Media Server can then off-load its ingested video directly to this content server for archiving. At the same time, metadata that is specific to the archived video, including its location, is checked into StudioCentral. SGI Media Server can then query and retrieve archived video using this metadata, for playout or distribution.

3.0 Case Studies

3.1 Sveriges Television

A nationwide SGI Media Server network is helping Sveriges Television (SVT, or Swedish Television) revolutionize the production of its new 24-hour digital news channel (SVT24). The network is allowing programs to be transferred to SVT's Stockholm headquarters as digital computer files, replacing the traditional feeds over terrestrial microwave radio links. Receiving programs by this method has massively simplified the editing and broadcast processes, enabling SVT24 to keep its program content up to date and produce major time and cost savings.

Headquartered in Stockholm, SVT is the public broadcaster in Sweden with two channels, TV1 and TV2. SVT has divided Sweden into nine districts and each district produces its own programs, both local news

and programs for national broadcast. Government regulations mandate that no more than 50% of the content may originate from Stockholm.

SVT chose a 34Mb-per-second WAN infrastructure with 22 SGI Media Server systems connecting SVT24's nine centers across Sweden. Each server records the video signals locally as computer files and transfers them to the Stockholm headquarters. Editing and scheduling become very simple when the numerous files received can be edited or reordered as necessary and broadcast immediately. SGI Media Server has the flexibility to be used as a video machine to play-to-air. This is a revolutionary way to use such video technology—as a server that can work both as a computer connected to a network and a professional video machine.

3.2 France Télévision Publicité

France Télévision Publicité (FTP), the advertising production subsidiary of the national broadcaster France Télévision, receives between 40 and 120 advertising spots per workday for broadcast on France Télévision's public service networks (France 2, France 3, and La Cinquième) and six cable TV stations (Festival, Histoire, Mezzo, TV5, Equida, and Régions).

Each ad must be edited into a specific commercial break sequence, which depends on its broadcast slot as well as other factors such as whether there are any sports or news events that day, specific weather conditions, or peak-audience programs.

Over the past two years, France Télévision Publicité has acquired an all-digital platform based on SGI® Origin® 2000 servers, Sony Petasite robots, and GVG Profile encoding/decoding servers, enabling it to process, sequence, and edit ready-for-air footage on tape formats.

In addition, since January 2001, France Télévision Publicité has introduced an all-digital broadcasting architecture—from acquisition to playout—for the La Cinquième station, using four SGI Media Server systems.

So, how does the new facility function? First, the commercial versions are sent by advertisers in the form of half-inch Digital Betacam tapes to FTP's facilities. On arrival, they are transferred to a 530GB hard-drive rack, capable of storing 5,000 30-second clips in M-JPEG format. The rack is connected to an SGI Origin 2000 server that can instantaneously access each ad using SGI Fibre Channel technology. For capacity reasons, the SGI Origin 2000 server is used alongside a Sony Petasite robot with 13TB of storage, allowing around 30,000 clips to be stored.

Staff working at any of the production room's 10 workstations can call up each clip via a Fibre Channel network. Each time a request for a clip is entered into the system, the HSM hierarchical storage software by Veritas finds the corresponding file in either the SGI Origin 2000 server or the Petasite robot. The most frequently accessed commercials are stored on the SGI Origin 2000 server, while older clips are transferred to the Petasite.

Clips are edited from end to end using a software tool developed in-house by FTP and sequenced in the order requested by the client or the station's advertising team. During the editing process, the Digital Betacam files are converted to the M-JPEG format on the profile.

Once edited, clip sequences are transferred from the Profile servers to SGI Media Server. This server directly streams the clip sequences to a second SGI Media Server located in the La Cinquième station's facilities, at a distance of about 10 km, over an ATM OC3 network. The edited clip sequences are then ready for air. The two SGI Media Server systems have a redundant back-up SGI Media Server.

This tapeless solution not only saves considerable editing time, but the FTP also enables rapid reaction to any last-minute changes before on-air broadcast.

4.0 SGI Media Server for Broadcast Partner Solutions

4.1 Miranda MediaWorks

SGI Media Server for broadcast works with browsing and asset management partner Miranda to enable facility-wide solutions.

Miranda with MediaWorks (formerly from Keyvia) has created a solution that provides proxy browsing capability and asset tracking functions using SGI StudioCentral Library. This creates the infrastructure to simultaneously ingest and acquire high-resolution content and low-resolution frame-accurate content for preview. This asset management system provides the ability to use data networks for preview and make preliminary edit decisions to transfer the appropriate source material for online news and video editing. For more information about Miranda MediaWorks, see *www.Miranda.com/*.

Miranda MediaWorks is sold through SGI Professional Services. See *http://ps.csd.sgi.com/consulting/solutions/media_commerce/keyvia.html*.

4.2 Panasonic DNA/newsBYTE

SGI and Panasonic have collaborated in integrating the SGI Media Server for broadcast DVCPRO25 model as the central server platform for the DVCPRO25 News Automation (DNA) System. The DNA system, along with the Panasonic newsBYTE/QuickCutter editing systems, are designed specifically for digital news editing, storage, and server playout. For more information, see *www.panasonic.com/PBDS/subcat/Products/vidsvrs_editsys/f_newsBYTE_Digital.html*.

5.0 Sales Execution

5.1 Qualifying an SGI Media Server for Broadcast Opportunity

The steps for qualifying a SGI Media Server for broadcast opportunity are:

1. Gain an understanding of the big picture—what is the customer trying to achieve in the long term?
2. Gather the facts on the overall system and the partner ecosystem that makes up the environment in which SGI Media Server will work.
3. Determine if the complete solution requires asset management tool integration (e.g., SGI StudioCentral Library, Miranda MediaWorks) or digital editing tools integration (any .DIF-compliant NLE system, such as Panasonic newsBYTE/QuickCutter).
4. Identify the key decision makers.

Product configuration issues:

5. Identify the compression type required: MPEG-2, DVCPRO25, or uncompressed.
6. Determine the number of input and output channels required.
7. Determine the number of hours of storage required.
8. Determine the networking used.
9. Determine the method of server control. SGI Media Server for broadcast supports Louth VDCP protocol, Sony RS-422/P2, and SGI MVCP.
10. Determine the method of redundancy required. Complete system mirroring is recommended for ultimate redundancy.

6.0 Marketing Codes, Configurations, and Pricing

6.1 Marketing Codes

When ordering SGI Media Server for broadcast, a customer must select the base unit. The base unit has all of the necessary hardware and software to support video and audio I/O and storage. **Video-audio I/O and storage must be ordered separately, using separate marketing codes**. Following are the marketing codes for the different base units:

- Base units for MPEG-2 support (Origin 200):
  - LI-MSB220MPEG—up to 2-channel server base unit
  - LI-MSB240MPEG—up to 4-channel server base unit
  - LI-MSB280MPEG—8-channel server base unit
- Base units for MPEG-2 support (Origin 300):
  - LI-MSB320MPEG—up to 2-channel server base unit
  - LI-MSB380MPEG—up to 8-channel server base unit
- Base units for DVCPRO25 and uncompressed support:
  - LI-MS400DVC-BIS—up to 6-channel server base unit
  - LI-MS800DVC-BIS—up to 12-channel server base unit

6.2 Video/Audio I/O

- Video/audio I/O for MPEG-2 support: PCI-VIDAUD-MSB

A special connector panel isnecessary to feed video and audio signals to the I/O boards. One MSB-REARPANEL is required for each 2 PCI-VIDAUD-MSB. Please keep this in mind when configuring a system.

One PCI-VIDAUD-MSB board can be configured as one input or one output. Input or output can be changed dynamically without restart of SGI Media Server. The customer may order configurations from one to two boards with the LI-MSB220MPEG base unit, from one to four boards with the LI-MSB240MPEG, and one to eight boards with the LI-MSB280MPEG base unit.

- Video/audio I/O for DVCPRO25, uncompressed support: XT-DVC-AUD-BIS

One XT-DVC-AUD-BIS board features one independent input and one independent output. The customer may order configurations from one to four boards, yielding up to four outputs and two inputs with the LI-MS400DVC-BIS base unit, and from one to eight boards, yielding up to eight outputs and four inputs, or six out and six in, with the LI-MS800DVC-BIS base unit.

6.3 Video Storage

Supported configurations and marketing codes for SGI TP900 and TP9100 will appear in the configurator once they are qualified with the SGI Media Server for broadcast.

Table 7. SGI Media Server File Interchange Capabilities

Storage Product	DVCPRO25	MPEG @ 8 Mb/sec	Uncompressed
Local disk (P-S-36A) 4 x 36GB disks	12 hrs	36 hrs	N/A
Ciprico 7000 RAID (CIP7014RDI443A) 8 x 73GB disks	48 hrs 1 Ciprico chassis	144 hrs 1 Ciprico chassis	7 hrs 1 Ciprico chassis
TP900 JBOD 8 x 73GB disks	48 hrs 1 TP900 chassis	144 hrs 1 TP900 chassis	7 hrs 1 TP900 chassis
TP9100 JBOD 12 x 73GB disks	72 hrs 1 TP9100 chassis	192 hrs 1 TP9100 chassis	11 hrs 1 TP9100 chassis

7.0 Models and Features

7.1 Origin 200 Models

7.1.1 Models MSB 220, MSB 240, and MSB 280

- MPEG-2 4:2:2 P@ ML from 8 to 50Mb/sec—I frame (Long GOP version 2.0.2)
- MPEG-2 4:2:0 MP@ ML from 3 to 15Mb/sec (Long GOP available version 2.0.2)
- Up to 2, 4, or 8 video channels supported, based on the appropriate MSB 220, MSB 240, or MSB 280 server configuration (any combination of in or out)
- SMPTE 259M, 270Mb/sec serial digital I/O
- Composite analog video and analog audio monitor output
- Support for up to 8 audio channels per video channel, from a choice of:
  – 8 embedded audio channels (SMPTE 272M) per video channel
  – 4 digital audio channels, via 2 AES/EBU inputs per video channel
- Support for 2 analog XLR audio inputs per video channel
- 16/20-bit AC-3/5.1 embedded and AES/EBU audio support
- Daughter-clip creation and parent-clip deletion
- Transfer entire or subclip with concurrent ingest
- Real-time 64-bit filesytem guarantees ingest and playout performance
- Dolby E—20-bit and AC-3/5.1—16-bit audio with embedded and AES/EBU audio support*
- Supports playout of MXF and GXF clips*

(*available in version 2.0.2)

Networking:
- 100Base-TX, 1000Base-TX (Gigabit Ethernet), and ATM OC3 networking support for faster than real-time transfer of video as data

Time code:
- VITC
- LTC

Control:
- Louth VDCP
- Sony P2 (RS-422)
- SGI MVCP

Storage interface:
- Fibre Channel
- Ultra3 SCSI

7.1.2 Models MS400 and MS800

- DVCPRO25 compression
- Uncompressed ITU-R BT.601-4 video
- 12 reconfigurable video channels
- A choice of 8 in and 8 out
- SMPTE 259M, 270Mb/sec serial digital I/O
- Up to 2 SDTI (SMPTE 305M) I/O for 1x or 4x real-time transfers (DVCPRO only)
- Support for 1 AES/EBU audio pair per DVCPRO25 channel
- Support for 2 AES/EBU audio pairs per uncompressed channel
- 525-line (NTSC) or 625-line (PAL) support
- On-server edit list conforming (cuts only, does not imply EDL import/export)
- Back-to-back playout and ingest
- Transfer clips concurrently with ingest
- Guaranteed ingest and playout performance
- StudioCentral DAM infrastructure support
- Real-time 64-bit filesystem

Networking:
- 100Base-TX, 1000Base-TX (Gigabit Ethernet), and ATM OC3 networking support for faster than real-time transfer of video as data

Time code:
- VITC

Control:
- Louth VDCP
- Sony P2 (RS-422)
- SGI MVCP

Storage interface and capacity:
- Fibre Channel
- Ultra SCSI

7.2 Origin 300 Models

7.2.1 Models MSB 320 and MSB 380 (FCS with Version 2.0.2)

- MPEG-2 4:2:2 P@ ML from 8 to 50Mb/sec (Long GOP and I-frame)
- MPEG-2 4:2:0 MP@ ML from 3 to 15Mb/sec (Long GOP only)
- Up to 8 video channels (any combination of in or out, dynamically reconfigurable)
- SMPTE 259M, 270Mb/sec serial digital I/O
- Composite analog video and analog audio monitor output
- Support for up to 8 audio channels per video channel from a choice of:
  - 8 embedded audio channels (SMPTE 272M) per video channel
  - 4 digital audio channels, via 2 AES/EBU inputs per video channel
- Support for 2 analog XLR audio inputs per video channel
- 16/20-bit AC-3/5.1 embedded and AES/EBU audio support
- Supports creation of daughter clips and deletion of parent clips
- Supports playout of MXF and GXF clips *
- Transfer entire or subclip with concurrent ingest
- Dolby E—20-bit and AC-3/5.1—16-bit audio with embedded and AES/EBU audio support *
- Real-time 64-bit filesytem guarantees ingest and playout performance
- GXF batch conversion utility (SGI Media Server native to GXF)*
- Back-to-back playout and ingest

(*Available in version 2.0.2)

Networking:
- 100Base-TX, 1000Base-TX (Gigabit Ethernet), and ATM OC3 networking support for faster than real-time transfer of video as data

Time code:
- VITC
- LTC

Control:
- Louth VDCP
- Sony P2 (RS-422)
- SGI MVCP

Storage interface:
- Fibre Channel
- Ultra3 SCSI

7.3 Configurations

Use the price book to check the marketing codes and the quote configurator tool to build the system.

Configuration example No. 1: A customer wants a DVCPRO25 server with two inputs and two outputs and 22 hours of storage.
- Qty 1, LI-MS400DVC-BIS—base unit
- Qty 2, XT-DVC-AUD-BIS—video/audio channels
- Qty 1, Ciprico 7000 with 36GB HDD—storage

Configuration example No. 2: A customer wants a MPEG-2 server with two inputs and two outputs and 36 hours of storage at 8MB per second.
- Qty 1, LI-MSB240MPEG—base unit
- Qty 4, PCI-VIDAUD-MERLIN—video/audio channels
- Qty 4, P-S-36A—storage
- Qty 2, MSB—REARPANEL

The price book and associated quote and configuration tools will be updated to support the new configurations of SGI Media Server in May 2002.

7.4 Sales Tools

See sales tools on the Sales.corp internal Web site at *http://sales.corp/industries/media/solutions/mediaserver_prod.html*. These tools include:
- Datasheets
- White papers
- Sales guide
- Success stories
- Customer presentation

Key Contact Information

Sales/marketing questions:
- Greg Smith, market development manager, *smithg@sgi.com*
  Direct: (650) 933-7022, VNET: 933-7022
- Aldon Caron, product manager, *aldonc@sgi.com*
  Direct: (650) 933-4421, VNET: 933-4421
- Louise Ledeen, senior marketing development manager, *louisel@sgi.com*
  Direct: (650) 933-6425, VNET: 933-6425

Technical questions:

- Jason Mancebo, technical marketing manager, *mancebo@sgi.com*
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- Matthew Rehrer, technical marketing engineer, *mrehrer@engr.sgi.com*
  Direct: (650) 933-4364, VNET: 933-4364
- Kees Vos, solutions architect, *kees@sgi.com*
  Direct: 31 (306) 696 720, VNET: 955-6720

See Web sites:
http://sales.corp/industries/media/solutions/mediaserver_prod.html.

8.0 Appendix A: Glossary

Automation system—A computer system that integrates network feeds with local program origination and local spot insertion for single-channel and multichannel broadcast. It controls VTRs, videotape archives, and video server resources to manage content as well as routing switchers, master control switchers, and logo generators. A common database is used for all applications, from media management to on-air presentation. A playlist application takes the traffic schedule (schedule of what spots are supposed to run) and converts it to events necessary to control the video server as well as other resources in the station.

Compression—Reduction of the size of digital data files by removing redundant information (lossless) or removing noncritical data (lossy).

Asset management system—A system for storing, managing, and distributing digital multimedia data.

DVE®—Digital video effects. A registered trademark of Nippon Electric Company. Refers to video equipment that performs digital effects such as compression and transformation.

EDL—Edit decision list. A list of the decisions, which describe a series of edits; often recorded on a floppy disk. EDLs can be produced during an offline session and passed to the online suite to control the conforming of the final edit. In order to work across a range of equipment, there are some widely adopted standards such as CMX 3400 and 3600.

Louth VDCP—Video Disk Communication Protocol. Industry-standard protocol for controlling video servers.

Media—The aggregation of many delivery channels or conveyances for information (plural of medium) or the form of communication itself (text, images, video, etc.)

Metadata—A series of attributes that describe an asset. Metadata is stored in a database and is used to search for (or query) assets that meet specified criteria.

MVCP—Multiunit Video Computer Protocol. This is the SGI protocol used to drive SGI Media Server for production and broadcast. See the SGI Media Server technical documentation for more details.

newsBYTE editing workstation—The Panasonic newsBYTE nonlinear editing workstation has a unique internal 4x tape deck that allows transfer of material to or from tape faster than real time. Since this transfer is done with compressed video, there is no quality degradation. A built-in 4x real-time DVCPRO VTR allows ENG and EFP tapes to be loaded into the newsBYTE disk array and timeline at 4x real-time speed. It records and plays video and audio, performs effects and mixes in real time, and has an internal keyer/character generator. The application software provides a highly intuitive graphical user interface (GUI) and network connectivity using the Windows NT® operating system. A dedicated editorial control panel provides editors at every experience level with powerful and easily accessible features. As a part of the DNA system, the newsBYTE workstation:

- Records video, audio, and SMPTE time code onto the internal hard disk system through real-time live, real-time VTR, and 4x VTR interfaces
- Records metadata like DV Picture Link data from DVCPRO tape sources
- Records from videotape and live VO directly to the timeline
- Creates clip sequences including dual-channel special effects in real time, keys titles and video sources over backgrounds, and mixes audio
- Plays component video and audio locked to a reference through analog or SDI serial digital A/V outputs
- Transfers video, audio, and associated data to a server via faster than real-time data networks and/or to external devices through real-time connections
- Records video, audio, and time code back to tape at 4x to create a backup or archive

Note: newsBYTE is marketed by Panasonic as QuickCutter in certain countries.

NLE—Nonlinear editing; distinguishes editing operation from the linear methods used with tape. Nonlinear refers to not having to edit material in the sequence of the final program and does not involve copying to make edits. It allows any part of the edit to be accessed and modified without having to reedit or recopy the material that is already edited and follows that point. Nonlinear editing is also nondestructive—the video is not changed, but the list of how that video is played back is modified during editing.

Preview—A low-resolution thumbnail or image of a high-resolution source. Also the output of a channel from the video server before it goes to air.

Router switcher—A device that eliminates point-to-point connections by mapping a series of inputs and outputs to route video, audio, time code, and machine control. This allows the broadcaster to switch between multiple sources for output at frame boundaries or within the same frame. This also allows the facility to be shared.

SDI—Serial digital interface. Digital information that is transmitted in serial form. Often used informally to refer to serial digital television signals.

SDTI—Serial digital transport interface. Allows faster than real-time transfers between various servers and between acquisition tapes, disk-based editing systems and servers. Both 270Mb and 360Mb are supported.

Sony RS-422—A medium-range (typically up to 300 m/1000 ft. or more), balanced serial data transmission standard. Data is sent using an ECL signal on two twisted pairs for bidirectional operation. Full specification includes 9-way D-type connectors and optional additional signal lines. RS-422 is widely used for control links around production and post areas for a range of equipment.

Timing reference—Synchronization for several video and audio sources to provide proper color and smooth transitions according to event triggers.

VO—Voice over.

VTR—Video tape recorder.

9.0 Appendix B: Competitive Information

	SGI	Grass Valley Group (Tektronix)	Leitch Technology (ASC)	Pinnacle (Hewlett-Packard)	SeaChange
Market Share*	8%	33%	22%	18%	8%
Annual Sales in Video Servers*	$18M*	$80M	$53M	$44M	$18M
Products and Formats	• SGI Media Server for broadcast 400/800 (DVCPRO25, uncompressed) • SGI Media Server for broadcast 200/600/1000 (MPEG-2) • *Based on DVCPRO server sales only	• Profile XP PVS1000 (MPEG-2 SD) • Profile XP PVS2000 (MPEG-2 HD) • Profile XP PDR200 (M-JPEG) • Profile XP PDR300 (MPEG-2) • Profile XP PDR400 (DVCPRO25) (DVCPRO50 future)	• VR420/440/ 4000 (MPEG-2) (DVCPRO25/ DVCPRO50 future?) • VR 300/3000 (M-JPEG, MPEG-2 upgradable) (DVCPRO25/ DVCPRO50 future?)	• MediaStream (MPEG-2) • Thunder (MPEG-2) (DVCPRO25/ DVCPRO50 future)	• Broadcast Media Server node (MPEG-2) • Broadcast Media Cluster node (MPEG-2)
Number of I/O Channels	MS400: 1–4 (in and out) MS800: 1–8 (in and out) MSB200: 1–2 (in or out) MSB600: 1–4 (in or out) MSB1000: 1–8 (in or out)	PVS1000: 4, 6, 8 (in or out) PDR200:2, 4 (in and out) PDR300: 3, 6, 7, 8 (in or out) PDR400: 4, 6 (in and out)	VR300: 2 (in or out) VR3000: 2, 4, 6, 8 (in or out) VR400: 2, 4 (in or out) VR4000: 2, 4, 6, 8 (in or out)	MediaStream: 0–16 (in or out) in 3 models (max. 3, max. 7, max. 16) Thunder: 2, 4 (in and out)	BMS node: 0–6 (in or out) in 3 models (max. 3, max. 4, max. 6) BMC node: 0–6 (in or out) in 2 models (max. 4, max. 6)
Networking	100Base-T EthernetGigabit Ethernet Fibre Channel ATM	100Base-T Ethernet Fibre Channel	100Base-T Ethernet Fibre Channel	100Base-T Ethernet Fibre Channel	100Base-T Ethernet Gigabit Ethernet
Storage	Internal Ultra SCSI JBOD or FC RAID 3 external storage From 6 to 176 hours in DVCPRO25 From 20 to 640 hrs in MPEG-2 at 8Mb/sec From 3 to 80 hrs in MPEG-2 at 50Mb/sec	Profile XP PVS1000: FC Disk Array 10 RAID 3 drives 1GB or 36GB (e.g. 10 x 1GB = 20 hrs @ 12 MB/sec) Possible extension with 1 or 2 sub-systems (5 or 10 disks each) Profile XP PDR: Ultra SCSI • Non-RAID internal 72GB, possible extension with 1 or 2 units of 144GB each (8 x 18 GB drives)(e.g. 144GB = 27.2 hrs @ 8 MB/sec, 19.75 hrs @ 12MB/sec, 14 hrs @ 18 MB/sec) • RAID 3 systems of 9GB or 18 GB drives > 1TB—Up to 96 hrs of storage	RAID 3 or ECC parity FC storage Shared storage up to 40 10 can access common storage N+1 software-based RAID solution 18 and 50GB drives max. drive 100 hubs and Fabric switch may be required >9 frames at high data rates	MediaStream: FC-based RAID 3 disks • Base storage: 12, 36, or 100 hrs @ 8MB/sec • FC disk expansion: 36 or 100 hrs @ 8MB/sec increments, for over 1,000 hours of online storage Thunder: FC-based disks • JBOD • RAID 5 144GB or 400GB, expandable to 1000s of hrs of storage SAN (future)	• 12 9GB disk drives, 86GB RAID 5 (standard) • 12 18GB disk drives, 172GB RAID 5 (option) • 12 36GB disk drives, 346GB RAID 5 (option) • 12 72GB disk drives 692GB RAID 5 (option)

9.0 Appendix B: Competitive Information (continued)

	SGI	Grass Valley Group (Tektronix)	Leitch Technology (ASC)	Pinnacle (Hewlett-Packard)	SeaChange
Control Interface	SGI MVCP Louth Sony Protocol RS422	Profile Louth Odetics Sony Protocol RS422	Leitch VR Louth Odetics Sony Protocol RS422 Omnibus	Louth Odetics	Louth Odetics Omnibus
U.S. List Price	SGI Media Server for broadcast, 1 input and 1 output, 40 hrs of storage in MPEG-2 at 8MB/sec: under $49,500 SGI Media Server for broadcast, 2 inputs and 2 outputs, 6 hrs of storage in DVCPRO-25: $61,200	Profile XP PVS1000, 2 inputs and 2 outputs, 180GB storage: $111,500 Profile XP PVS1000, 4 inputs and 4 outputs, 360GB storage: $151,500	VR420, 1 input and 1 output, 144GB storage: $54,500	MediaStream300, 1 input, 36GB storage: $38,000 MediaStream700: $55,000–$70,000 Thunder 4000: $77,500	Broadcast Media Server, 5 inputs or outputs, 90GB storage: $60,000 Broadcast Media Cluster, 12 channels: $120,000 Broadcast Media Cluster, 42 I/O, 120hrs @8Mb/sec: $650,000
Positioning	• Revolutionary distribute data, view video approach • Most comprehensive ranges of network protocols for an easier integration into existing LAN or WAN • Open system allowing upgrade of video formats, network protocols, file exchange formats, and storage solutions	• Reputation for quality and reliability in the broadcast industry • Supports comprehensive range of formats including M-JPEG, MPEG-2 SD, MPEG-2 HD, DVCPRO • Best-in-industry service and support • Numerous third-party applications available	• VR Technology's system architecture provides fast command-to-playout response • Reliable broadcast server	• Reputation for technology leadership in traditional broadcast environment • A practical low-cost and expandable solution for transitioning into an integrated, all-digital future	• Cost-effective solution for broadcast groups looking to network multiple stations
Strengths vs. SGI		• No. 1 installed base • Vertical sales force with excellent service and support • Wealth of third-party applications	• Aggressive sales and marketing (created a great deal of mind share out of nowhere in the last 3 years) • Excellent service and support • SAN strategy • Leitch	• Reputation for quality, reliability • Brand awareness in broadcast (5 Emmys for technical achievement) • 50% increase in sales	• End-to-end solution provider with vertical sales force • Very good for commercial insertion
Weaknesses vs. SGI		• Losing market share despite strong market acceptance • Not perceived as technically advanced	• Fewer networking options	• Not technical leader in any area • Small installed base	• Small company • Has been losing money

10.0 Appendix C: Broadcast Organizations—Global List

10.1 U.S. Television Station Ownership Groups

Name	City	Phone	Stations
United Television	Beverly Hills, Calif.	(310) 281-4844	5
Malrite Communications	Cleveland, Ohio	(216) 781-3010	6
Post-Newsweek Stations	Hartford, Conn.	(860) 493-6530	6
Renaissance Communications	Greenwich, Conn.	(203) 629-1888	6
Allbritton Communications	Washington, D.C.	(202) 789-2130	7
A. H. Belo Corp.	Dallas, Texas	(214) 977-8267	7
Cox Broadcasting	Atlanta, Ga.	(404) 843-5000	7
Hearst-Argyle Broadcasting	New York, N.Y.	(212) 649-2300	7
Meredith Broadcasting	Des Moines, Iowa	(515) 284-3331	7
Chris Craft Industries	New York, N.Y.	(212) 421-0200	8
Cosmos Broadcasting	Greenville, S.C.	(864) 609-4370	8
LIN Television Corp.	Providence, R.I.	(401) 454-2880	8
Le Sea Broadcasting	South Bend, Ind.	(219) 291-8200	8
Telemundo Group	Miami, Fla.	(305) 884-8200	8
Granite Broadcasting	New York, N.Y.	(212) 826-2530	9
Park Communications	Lexington, Ky.	(606) 293-1661	9
Pulitzer Broadcasting	St. Louis, Mo.	(314) 721-7335	9
Scripps Howard Broadcasting	Cincinnati, Ohio	(513) 977-3000	9
Tribune Broadcasting	Chicago, Ill.	(312) 222-3333	9
ABC, Inc.	New York, N.Y.	(212) 456-7777	10
New World Communications	Atlanta, Ga.	(770) 955-0045	10
NBC TV Stations Division	New York, N.Y.	(212) 664-4444	11
Paramount Stations Group	Los Angeles, Calif.	(213) 956-8100	11
Trinity Broadcasting	Tustin, Calif.	(714) 832-2950	11
Univision Communications	Los Angeles, Calif.	(310) 556-7600	11
Clear Channel Communications	San Antonio, Texas	(210) 822-2828	12
Silver King Broadcasting	Santa Monica, Calif.	(310) 247-7930	12
Fox Television Stations, Inc.	Los Angeles, Calif.	(310) 584-2000	13
Gannett Broadcasting	Arlington, Va.	(703) 284-6760	15
Lee Enterprises	Davenport, Iowa	(319) 383-2100	16
Young Broadcasting	New York, N.Y.	(212) 688-5100	16
CBS Station Group	New York, N.Y.	(212) 975-4321	17
Sinclair Broadcast Group	Baltimore, Md.	(410) 467-4545	23
Paxson Communications	W. Palm Beach, Fla.	(407) 659-4122	25
Raycom Media	Atlanta, Ga.	(334) 244-8067	29

10.2 U.S. Broadcast Networks

NBC
CBS
ABC
Fox Broadcasting Company
PAX Net
PBS
United Paramount Network
WB Television Network
America One Television
Family Net
Univision
Trinity Broadcast Network

10.3 U.S. Cable/Satellite Networks

Action Pay Per View
Adam & Eve Channel
Air and Space Network
All News Channel
America's Health Network
American Independent Network
American Legal Network
American Movie Classics
American West Network
America's Voice
ANA Television
Angel One
Animal Planet
Anthropology Prog & Ent
Applause Networks
AAN Arts and Antiques
A & E
Asian American Satellite TV
The Auto Channel
Automotive Television
BBC America
BET
Black Shopping Channel
Bloomberg Information TV
The Box
Bravo
Cable Direct PPV
CNN
CNN fn
CNNI
CNNSI
CNN En Espanol
C-SPAN
The California Channel
Channel Sur
Celticvision
Cartoon Network
Channel Earth
Children's Cable Network
CBN
Cine Latino
Classic Arts Showcase
Classic Sports Network
Comedy Central
CNBC
Consumer Resource Network
Country Music Television
Court TV
CMC Television Network
The Crime Channel
Cable Video Store
Cinemax
Deep Dish Network
The Discovery Channel
Discovery Civilization
Discovery Kids
Discovery Health
Discovery Wings
Discovery Science
The Disney Channel
E! Entertainment TV
The Ecology Channel
ESPN
ESPN II
ESPN News
Eternal World Television
Ethnic Broadcasting
Encore
Encore Thematic (2-8)
Enrichment Channel
Exxxxtacy Premier
Exxxxtacy II
CBS Eye on People
Family Channel
The Filipino Channel
Fish Network
Fit TV
The Food Network
Fx
Fox News
Fox Sports
Fox Sports Northwest
Free Speech TV
Flix
Galavision
Game Show Network
Gems Television
GETv Network
Global Channel
Good TV
The Golf Channel
Great American Country
Guthy-Renker Television
Hallmark
Headline News
The History Channel
Hobby Craft Network
Home & Garden TV
Home Improvement Network
Home Shopping Network
Home Shopping Spree
Home Team Sports
HBO Ole
Home Box Office
Hot Choice
The Idea Channel
Independent Film Channel
Inspirational Network
International Channel Network
Jewish Television Network
Jones Computer Network
Kaleidoscope
KTV
Knowledge TV
The Learning Channel
Leisure Time Network
Lifetime
Locomotion Channel
Love Network
Military Channel
MOR Galleria Network
MOR Music TV
MSNBC
MuchMusic
MTV
MTV Ritmo
MTV Indie
MTV Rocks
MTV Latino
Museum Channel
The Music Zone
The Movie Channel
National Jewish TV
NASA TV
The Nashville Network
Net
Network One
New Investment Channel
New Kid City
Newsworld International
Nickelodeon
Nick at Night
Nostalgia Network
Northwest Cable News
NYI
Oasis
The Outdoor Channel
Outdoor Life Network
Ovation
Parent Television
Prevue Channel
The People's Network
Planet Central Television
The Playboy Channel
Proto X Television
QVC
RAI USA
Real Estate Network
Recovery Network
Request PPV
Romance Classics
Sci-Fi
Seminar Television
Share Television
Showtime Networks
Singlevision
Space Television Network

Speedvision
Success Channel
Sundance Film Channel
Superstation TBS
Sega Channel
Showtime
Showtime Event
Spice
TechTV
The Travel Channel
Toon Disney
Trinity Broadcasting Net
Turner Broadcasting Sys
Turner Classic Movies
Turner Network Television
TV-5 French Channel
Univision
USA Network
Video Hits 1
VHI Soul
VHI Country
VHI Smooth
Video Seat
Viewer's Choice
Viva Television Network
The Weather Channel
WGN TV
Wingspan
WPIX TV
WWOR TV
Z Music

10.4 National and Regional Broadcasters—Canada

CBC
CTV
SRC
Alberta Access
ATV
BBS
Canwest Global
Knowledge Network
La Chaine Francaise de TV Ontario
Le Reseau de Television
MITV
NTV
Ontario Legislature Network
QNTV
RRQ
RDTV Alberta
TQc
TVA
TFO
TVNB
TQS
A-Channel

10.5 Major Broadcasters—Europe

(Based on membership of EBU)
Austria: ORF
Belgium: VRT, RTBF
Bosnia Herzegovina: RTVBH
Bulgaria: BNT
Croatia: HRT
Cyprus: CBC
Czech Republic: Ceská Televize
Denmark: DR, DK/TV2
Egypt: ERTU
Estonia: EE/ETV
Finland: FI/MTV, YLE
France: GRF, Europe 1, France Télévision
Germany: ARD, ZDF
Greece: ERT
Hungary: HU/MTV
Iceland: RUV
Ireland: RTE
Isreal: IBA
Italy: RAI
Jordan: JRTV
Lebanon: RL/TL
Lithuania: LRT
Luxembourg: CLT, ERSL
Macedonia: MKRTV
Malta: PBS/MBA
Moldova: TRM
Monaco: GRMC
Morocco: MA/RTM
Netherlands: NOS
Norway: NRK, NO/TV2
Poland: PRT
Portugal: RTP
Romania: RO/TVR
Russian Federation: ORT, RTR
San Marino: SMRTV
Slovakia: SK/STV
Slovenia: RTVSLO
Spain: RTVE, SER, COPE
Sweden: SVT
Switzerland: SSR
Tunisia: ERTT
Turkey: TRT
Ukraine: NTU
U.K.: BBC, UKIB
Vatican: RV
Yugoslavia: YRT

10.6 Major Broadcasters—Asia Pacific

Australia: ABC, SBSA, Nine Network, Seven Network, Network Ten
Bangladesh: BTV
Brunei Darussalam: RTB
China (PRC): RTPRC, ATV, TVB RTHK, HKCBC, Metro
Japan: TV Asahi, NHK1, NHK2 NTV, Fuji Network, TBSJ, TV Tokyo
India: AIR, DDI
Indonesia: TVRI, ANTEVE, TPI IVM, RCTI, SCTV
Korea: KBS, MBC, CBSK, EBS, SBSK
Malaysia: RTM, NTV7, TV3
New Zealand: TVNZ, Prime Television, TV3, TV4, FTN, CH7
Pakistan: PBC, PTV, STN
Philippines: PTNI, GMA
Singapore: Mediacorp, Star TV, STV12, Channel NewsAsia, Channel U, Singapore TV Twelve, Sports City TV, TV Works, TCS5, TCS8, MTV Singapore, SITV
Sri Lanka: EAP, ITN, MBC, MTV, TNL
Thailand: NBT, TPT
Vietnam: VTV

10.7 Major Broadcasters—Central and South America

Argentina: AM2, ATC, Azul TV, Canel 13, Telefe, OTE

Brazil: CNT, Rede Baneirantes, Rede Cultura, Rede Globo, Rede Manchete, Rede Record, Rede TV, SBT, NBR, TVE Brazil

Chile: Chilevision, La Red, Megavision, Telenorte, Teletrece, TVN Chile, UCV

Columbia: Cadena Uno, Canal A, Caracol TV, RCN TV Canal 4, Senal Columbia

Mexico: Azteca 7, Azteca Trece, Televisa Canal 2, Televisa Canal 5, Televisa Canal 9

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