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Show Tone and Thoughts

It's traditional for me to begin these reports with a little pontification. If you're looking for facts, skip to the next section.

High-end Products Encounter Price Competition

In the past, Quantel products were like the proverbial Rolls Royce. If you had to ask the price, you probably couldn't afford it. This show marked a new strategy for Quantel with the promotion of a low-priced secondary product line. Quantel has also decided to open their systems to third-party developers.

Discreet Logic, another vendor who used to discourage booth visitors unless they were with the "right" post house or studio, had PC vendors handing out price lists and catalogs in their booth this year.

DTV Format Decisions and HDTV

ABC announced just before the show that it was supporting 720p. This leaves us with the major networks evenly split between 720p and 1080i. Microsoft attempted to show a side-by-side demo of 720p vs. 1080I in their booth, but stated their content rights were pulled when it was learned the same material would be shown in both formats simultaneously.

HD encoders and simulcast packages were available this year, but there seemed to be no rush to HD production equipment. Somehow I was naively envisioning a very strong push for sales of HD equipment. Unfortunately, it seems no one is ready to buy it and no one has a lot of it to sell.

MPEG Analysis Software, Asset Management Products Saturated

These product categories were saturated with new firms this year. Expect a shakeout – every station and studio in the country is not going to buy one in the next year or two.

Venues

Sony completed their move out of the LVCC this year, leaving behind an empty booth with application demos and image-building displays. Shuttle service was provided every five minutes to Bally's, where their exhibit was slightly larger than last year. Admission was by invitation only, and I was actually challenged for one about half the time.

The Sands emerged as an equal to the LVCC in terms of attendance and reputation of exhibitors. The bottom floor of the Sands was opened this year to handle more exhibits. Traffic at the Sands was medium to heavy on Thursday, but very light at the LVCC.

The Usual Warning

Show intelligence such as NAB represents a valuable source of data on competitive products. However, because of the activity and personnel at exhibits, it's possible to collect incorrect information. The information in this report has been checked against printed literature where available, but has not been corroborated with any external source.

Also keep in mind this is a report, not an analysis. Except for a table at the end, this is raw data. If you find an inconsistency, let me know.

Video Servers

Model System

To investigate systems for the NVOD market, I arbitrarily specified a hypothetical NVOD server to benchmark competitor's products. This system would have two inputs of NTSC or D1 video, ten outputs either NTSC or multiplexed onto an ASI stream, and fifty hours of storage. Video quality was to be the equivalent of IBP MPEG-2 at 8 Mbs. Ten outputs was the minimum in my discussions with Harry, but quickly eliminated a few systems.

Fifty hours is about the middle of the storage range we discussed.

HP

HP's booth was devoted to the Broadcast Server and Disk Recorder Products, with an aisle for their MPEG test products. New this year was 4:2:2 encoding, a bundled spot playback system based on the Disk Recorder, and technology demos of satellite spot delivery, WAN file transfer, and a browse server from Montage.

Satellite spot delivery from Vyvx begins with spots being encoded on a HP server at the Vyvx headend. These are transmitted to a PC at each TV station. Vyvx provides the station hardware for $1. Spots are previewed on the PC and a local operator initiates a transfer to the HP server. I asked if an opening slate could be trimmed from the spot. The answer was yes – by the operator manually on the server. In the future, trims and automatic upload may be available. Vyvx polls each station over phone lines to insure reception of a spot. Transmission over the sat link is about ½ real time.

Secondary storage from StorageTek on the Timberwolf was shown. The cost is "$90-100K". Shuttle time to the end of the tape is about two minutes, then content is transferred at about 15Mbs. The system integrates with Louth automation.

Also shown was wide-area networking using FTP protocol to transfer. The maximum rate of transfer is "8Mbs" (7 on the data sheet), with a typical transfer at 6Mbs.

HP has no transport stream outputs. They claim to be working on a MPEG stream output for next NAB.

Storage is not shared on the HP unit. Drives are apparently internal SCSI and FC is used only for inter-box communication. A local copy of a file must be present to output a stream. Looking at one of their maintenance menus, the stripe block size is 128 blocks (presumably 512 bytes each)

"Multi-vender" (sic) file-transfers were claimed in the HP brochure. I was told twice that this is not possible. The HP file format is closed, consisting of a MPEG bitstream, a metadata portion, and a table of frame offsets into the file. Specifically, you cannot use another encoder, such as a Minerva, to encode material off-line.

It is possible to use a DiskRecorder as a local content encoding station and transfer files over FC or WAN to the server. A 1-in, 1-out recorder with 5 hrs. of 8 Mbs to do this is $65K. HP offers 6 channels of audio (AC-3?) or Musicam encoding and puts VBI data in data packets. Bitrates of content files may be mixed.

Another new product was AirDirect, a bundled ad insertion system. This system uses one DiskRecorder only with composite or D1 output. The operating software can't provide a GPI out to start a program VTR or join a network feed. There is a useful maintenance facility that logs disk errors, loss of genlock, etc. I questioned the booth staffer on how a user would know if a drive failed. He said either by noticing the drive LED has stopped flashing or hearing an audio alarm in the drive cabinet. There is no GPI, SNMP, or other means of integrating with a facility alarm.

Pricing for the HP system is as follows:

E2524B	18 Hr. Mainframe	$115,000
Opt. 010	4:2:0 input with 4 ch. audio	16,000
Opt. 012	4:2:2 input with 4 ch. audio	20,000
Opt. 020	4:2:0 output with 4 ch. audio	8,000
Opt. 022	4:2:2 output with 4 ch. audio	10,000
Opt. 030	Fibre Channel Networking	10,000
Opt. 041	Add 18 hrs. additional storage	50,000

My model system required two E2524B's, two 010's, ten 020's, two 030's and one 041. This results in a system price of $412,000.

HP's reference accounts, among others, were MTV and RFO Paris, a "showcase installation"

HP showed a browse function developed by Montage. It was a technology demo "one year from delivery". Works using Java on a Web Browser.

Seachange

Seachange showed the new Broadcast MediaCluster, a station automation product using 4:2:2 encoding. The system appears to be an upgrade of the existing Movie System product with 4:2:2 encoders and interfaces to station automation. Unlike the Movie System product, which uses Optivision encoders and Vela Research decoders, the MediaCluster employs Seachange

encoder and decoder boards using IBM chip sets. The system has uncompressed audio and a jog/shuttle knob controller. Currently, VBI data is encoded? may be later passed through as user data.

There is a playlist build on the BOSS local system controller for use during automation failure. Error logs are provided to show number of disk errors, genlock loss, control faults, etc. There is a pager function to summon repair personnel. There is a separate automation interface to each node for redundancy.

The system is configured as rack-mount PCs interconnected in a star network using proprietary protocols over 100bT ethernet. Seachange is looking at possible Gigabit ethernet connections in the future. A separate ethernet bus connects all the nodes to external devices for secondary storage or file transfers.

A 5-node system which provides 96 hours of 8 Mbs video (5 x 12 9GB drives) was shown at $370K. This system has one encoder and three decoders in each node. It's unclear from my notes, but I believe my model system in 4:2:2 would be $270K. There is no stream splicing or GOP editing on this system, but content duration may be specified to frame accuracy at encode time. The system is currently in alpha test at a European customer, with another in Japan soon.

The system works with Louth, Sundance, or AVS/Omnibus automation. Transport stream outputs were not mentioned.

A StorageTek Timberwolf will be available in June 98 for secondary storage.

The MovieSystem product uses 4:2:0 encoding by Optivision. The system was demoed feeding a transport stream to a Tandberg DVB decoder. The DVB output uses the Viewgraphics card. Seachange plans to integrate their transport stream output into SA and GI system hardware before the end of 1998.

In the booth, I listened in on questions from an engineer from the Spice Channel. He currently uses a DEC server to play 75 titles per month at 6 Mbs. The saleswoman, Susan George, mentioned that Montage Group had taken over the DEC product and might be showing it on an Intel platform at the "next trade show"

I asked about controlling or uploading the server remotely. This has been done using a Radient networking product which provides 100bT ethernet over a dark fiber.

Encoding is done in 15 minute segments in case a segment needs to be re-encoded. The user interface allows files to be dragged onto a multi-channel playlist There are commands to automatically set up repeat playback and staggered starts for NVOD. A mirrored copy of the "Microsoft SQL" playlist is maintained. A standby output may be switched in if the normal output fails. 5 D1 outputs or 24 NTSC outputs may be obtained from each box.

I obtained a ballpark quote of $250-300K for the model system. This would have six outputs in each of three nodes and would provide 270 GB of protected storage. This is 1.5 times the raw storage needed to allow for 2+1 striping on the three units. A single node of this system with 10 9GB drives is $50K. This node has an output bandwidth of 24 8 Mbs streams. The operating software is another $40K. A board for four NTSC outputs is $10K. Based on my knowledge of pricing of Optivision encoders, I would itemize the model system as follows:

Thin Node Storage and Mainframe Units			
	$50,000	x3	$150,000
Operating Software			40,000
Encoders	$30,000*	x2	60,000
Output Boards	10,000	x3	30,000
Dual Output Boards	5,000*	x3	15,000
			$295,000

* - price imputed

Files may be transferred to the server array over any windows NT protocol and adapter. A "backbone" LAN connects all nodes in the array. This is separate from the 100bT star network which connects the array nodes to each other using a proprietary protocol which reduces the transmission latency and overhead.

Also on display was their traditional cable ad insertion product and a Sundance broadcast spot insertion system. The Sundance FastBreak system stores 8 hours of spots for $90K with a 10-channel playback license.

ASC/Leitch

ASC showed their broadcast server based on a FC network of VR300 Virtual Recorder boxes. Each box provides two I/O channels. Storage is provided by external FCR300 JBOD drive trays (actually Clariion units) which contain storage for 7.5 hours of 24Mbs JPEG video. There are 10 FC drives in 9+1 configuration. Each box is $37K without storage. External 7.5 hour storage boxes are $39.5K.

Thus my model system becomes:

VR300 Recorders	$37,000*	x6	$222,000
FCR300 Storage Arrays	39,500*	x7	276,500
			$498,500

Redundancy is provided only to the extent that storage is on a dual FC loop. A FUD comment from HP was that a failed node may lock a file before it dies.

A white paper in their brochure explains RAIDsoft, ASC's software RAID technique. The claim is made that this technique eliminates the hardware RAID controller as a single point of failure. It does offer flexibility in that parity protection may be varied from 1 drive for every 32 data drives to full Hamming ECC with hot spare drives. Additional papers point out the architectural flexibility and increased bandwidth of a FC drive array compared to a SCSI array server. Valid points, but neatly ignored is the need for a reliable distributed file system to access the data.

24 24 Mbs channels may share the same storage array, above that, replication is needed. This is a data bandwidth of 72 MB/s.

They plan to use a FC switch to interconnect loops in larger installations, which will cause the shared media concept to saturate in extreme cases, as any switched scheme will.

Their NewsFlash editor is available as a $15K upgrade to a VR300. The system must be rebooted to act as an editor or a server. There is a CMX-style keyboard for control as well as a modern GUI. The VR300 also offers RAIDelay – a very simple application to turn it into a video delay unit.

Also demoed was BrowseCutter, a MPEG-1 browser to be available at the end of the summer. It will be able to output an EDL. Possible pricing is $10-15K for 20 seats.

EMC

EMC's booth, in the rear corner of the Sands hall, employed a theatre with a vaudeville act as its central element. Unlike previous shows, they did have products on display. One was a multi-channel video server system showing seven programs multiplexed into a 36 Mbs DVB program stream using a software mux. The software mux is claimed to offer less cost than a hardware mux and supports a 50 Mbs stream. It inserts SI data and allows PIDs to be assigned/remapped. In this system, splicing consists of "program looping and switching", which basically means a frozen frame or black at a splice.

Another was a station automation system integrated by Roscor using Roscor's MegaCast/RAS automation system and a TCS/Sunup traffic system. An ATL products DLT tape vault was used for secondary storage. Outputs were ATM to an ATM switch and then to Lucent decoders. Claims were made for no file replication needed and RAID 3 or 5 available. This system was sold to a customer in Jakarta, Indonesia for 8 channels of NVOD and 16 channels of spot insertion or network feeds. Another NVOD customer referenced was Skyline America.

The Sunup software supports automatic setup of Staggered NVOD playlists, a region manager?, an airtime sales module, and a rating protection (no R movies on a PG channel) feature. It currently runs on a Sun and can be remoted using X-Windows. A NT platform system is currently being prototyped. EMC also integrates with Louth, Alamar, and Sony automation systems.

An additional display was a VOD system from O.Tel.O, a Swedish cable operator, using Nokia 9500 STBs. This was offered as a "Non-VOD application". This was explained as using clips of 20 minutes or less instead of feature-length material. The system worked with menus on a HTML browser built into the STB. There was no FF or Rew. Key claimed benefit was ease of content development since all code is HTML extensions.

A ballpark price for the model system was reluctantly quoted as $200K without encoders or decoders. This would use a single cabinet to hold the drive array and one or two "data mover" units. The drive array would contain 500 GB of storage in a RAID 1 configuration for an effective 250 GB. A full cabinet of drives alone would provide 6 TB of storage. EMC recommended the Tadrian decoders, said to be $1200 each. A Vela Research encoder was used in the booth. Lucent equipment was displayed in their rack. EMC advertised their partners as being Louth, Florical, Lucent, Roscor, Vela Research, and Sunup.

Compaq

Compaq showed a video server based on Microsoft's NetShow Theater Server. This is primarily an Intranet server to PC's using software MPEG players or Sigma Design's NetStream2 hardware decoder card. Compaq servers were selected for Sheraton hotel's in-room entertainment network. A system capable of serving 40-65 6 Mbs streams is $70K, not including the ATM switch required.

Tektronix

There is certain regret even for an enemy battleship torpedoed below the waterline; one hates to see it sink. Tek's booth was smaller than ever this year and there appeared to be few new products. T&M products had a 10' display. They did show a HD production switcher based on the GVG 110 and a HD DA. They were shipping "DTV Strategies" in volume. A HDTV strategy poster showed a 1.5 Gbs HD router. It's unclear how this fits with their previous mezzanine compression strategy.

The MPEG option for the Profile was demoed. It provided a bitrate of 4-50 Mbs and either 4:2:2 or 4:2:0 encoding. There is no MPEG stream I/O, but clips may be transferred to another Profile over FC. Editing may be performed on I frames only. I believe I heard that I frame only GOPs may be selected to enable this. Software in the Profile makes the splice. Audio may be "scrubbed" during the edit. Transitions may be triggered in a D1 switcher following the Profile.

There is no tape backup available for the MPEG product. I was told the user could connect an external product to the FC loop. I saw the DLS 20 Exabyte drive connected to the JPEG unit at the next station, so I'm not sure what this means. FC transfers are performed at 18 MB/s. Tek also offers a FC to ATM "video gateway" product. No mention was made of upgrading the Profiles internal disk to RAID protection, nor was their FTP issue discussed.

It's possible to "transcode" from JPEG to MPEG encoding. This is done by decoding the video to uncompressed components inside the unit and routing it to the other encoder. There are 4 JPEG codecs on the disk controller cards, two of which are available for this transcoding operation. Transcoding allows the Profile's Var play mode to be used. The motherboard for the product was stated to be from Diversified Technologies, the FC card from Genroco, and the SCSI disk array was obviously a Clariion unit.

The product is offered with a playlist application that allows crude automation. The booth staffer said the product was in use for a time delay (NVOD?) application at HBO.

A 2 input, 4 output JPEG unit was quoted at $50K. MPEG cards for this unit were $10K for a decoder and $15K for an encoder/decoder. The MPEG cards were offered with a 30% show discount.

Pluto

Pluto showed three products, VideoSpace, an uncompressed 10-bit D1 recorder; AirSpace, a 10-channel DVCPRO video server; and HyperSpace, a HD recorder. HyperSpace records at 360 Mbs and may be used with the Panasonic D5 adapter. Multiple HyperSpace units may be also used to record uncompressed HD with an external demux unit.

AirSpace is priced at $200K for a full system with 20 36GB FC IBM drives offering 40 hours of DVCPRO-25 storage, 5 inputs or outputs and 5 outputs. A basic system with 2 I/O and 2 outputs, offering 5 hours of 25 Mbs storage is $69K. Delivery is "fall 98". Units may be interconnected with FC-AL networking and storage is shared. Storage on a given unit is limited to serving a maximum of 10 streams.

Panasonic

Panasonic offered a carrel display of an Origin 200 GIGAchannel server for their

newsBYTE nonlinear editing systems. A system with 6 hours of storage on a Ciprico 7000 RAID array was $120K. This system with the AJ-D780 VTR for 4X input was $150K. An Origin 200 server without disks was $25K. Files appear to be not edited directly on the server, but transferred at 2X real time to edit stations over 100bT ethernet.

Panasonic also offered a DVCPRO-100 demo in a suite. I didn't make it there, but I was told they will have a 480p DVCPRO-100 system for NAB '99. Also shown were a 720p VTR with a built-in downconverter for SD. An 1125i portable VTR using D5 tapes was also shown. The UFC-1800 Format Converter was also shown – it will convert any ATSC format to any other.

One display area was devoted to an exhibit of "DVCPRO Transmission Technology". This showed transmission over FireWire, SDTI, FC, and ATM.

A $4K HDM-3050 consumer HD monitor was shown with an ATSC STB. The monitors are in stock in an U.S. warehouse, but the STBs are technology demos only.

Carrels for Pluto and Sierra Design Labs disk recorders were set up in Panasonic's HD area to show HD recording using Panasonic's HD to D5 compression/adapter unit.

Montage

Montage had a small booth in the south corner of the LVCC, which was somehow shared with Spear Communications. Two servers were demoed; the Lynx edit server with 1 MBs MJPEG encoding and the Jaguar play-to-air server with MJPEG or MPEG encoding. The system demoed was purchased by Speer.

A visual browser was linked to the Lynx server and offered browsing over an internet connection. On a 100bT network in and out points could be scrubbed. Video quality is scaled to the data rate of the user's connection. Within thirty days they plan to have Net Show or Real Video capability. Currently, on a low-bandwidth line, the user gets a storyboard of key frames. The NewsWave system developed with HP was also mentioned.

Customer names mentioned were Capital Vision and Speer. The browse system is approximately $20K to get started.

Sony

Sony showed three video servers in the Bally's exhibit. The BitStream VideoStore was still shown as being a useful NVOD or Cable Ad Insertion product, although it's 5 Mbs MPEG-2 and about four years old. Also displayed was the STAS-10, which has 1 I/O and 3 Outputs, all serial D1 using internal 18 Mbs short GOP "Betacam SX" coding.

The BitStream VideoStore was priced as follows:

1 input, 1 or 2 outputs, 12 GB of storage (4:20 at 5Mbs):

using Sony AirTrans automation:	$95K
using Channelmatic automation:	$116K
using merlinNetxxx? automation:	$89K

Additional expansion box with 6

2GB drives VSH-1000:	$10K
4GB drives VSH-1000:	$15K
Two channel output card BKSR-102:	$1800
One channel output card BKSR-101:	$1800
Encoder VST-1000:	$25K

A system which meets the model system requirements except for bitrate would be:

Base System, Airtrans		95,000
Encoder VST-1000*		25,000
Dual Output Card BKSR-1021,800	x4	7,200
VSH-1000 4GB exp. box15,000	x5	75,000
		$202,200

*use of two encoders not verifed

Their new video server, the MAV-70**,** looks to be the replacement for these products. It offers 5 ports which may be filled with either I, O, or I/O boards. Coding may be intermixed MP or 422P at ML or HL at different bit rates. Next year, they will offer a board to change the output bit rate on the fly. They also offer transfers over SDTI or FTP over FC-AL. They are not compatible with Tektronix FC connections. With one set of RAID-3 drives, they can support 15 Mbs outputs. Additional sets of drives allow up to 60 Mbs recording.

Nearline storage is provided using a $100K data tape cabinet which provides 200 hours of 8 Mbs storage. For more storage, the Sony Pedasite with 5TB to 1PB capacity is offered. According to the booth staffer, it takes about 5 minutes to retrieve a tape and begin a faster-than-real-time load.

Up to eight units can be added via Fibre Channel for more storage and higher bitrates. Five outputs are available in the base unit, with an additional five in an expansion box which connects via FC. There is a ten-output limitation no matter how many units are combined.

The system accepts input, output, or review (input and output) plug-in modules. Inputs and outputs may be either SDI with embedded audio or analog composite video and two channel analog audio. With AES or embedded audio inputs, four channels are available. Audio is locked to the video and may not be edited separately. Three video lines may be selected for uncompressed storage.

Trimming and cuts-only editing is possible at frame boundaries. The booth staffer discussed breaking a long network program into segments for spots to be inserted.

The server may be used as a cache for a Sony LMS. The server takes downloads from a traffic system and inputs any programs not in the server. This allows an LMS to effectively provide five channels of output. Programs may be marked as permanent for keeping ID's or promos on disk. An automatic time-shifting feature was included to delay a network feed. The MAV-70 is available Fall 1998.

The following configurations were quoted:

1 input, 1output, 1 review channel, 63GB storage (8.9 Hours at 8Mbs), Sony software, Sony DVS-1616 router, Sony BXC 100 versacart 422 controller (required by Sony software), two workstations: $116K

Above with 3 outputs, 2 inputs, 1 review: $170K.

Using Louth Automation instead, the MAV70 alone with 3 outputs, 2 inputs, 1 review: $92K.

I/O modules were priced as follows:

I/O review board:	$14K
Output board:	$4.7K
Input board:	$10.1K

xxx – need to get add'tl storage pricing for model system.

An interesting utility product was the BKSI-9100. This is a $10K monitoring device which displays 9 D-1 inputs in a checkerboard matrix on a NTSC monitor. It interfaces to Sony routers to caption each input with its source name.

Sony devoted a large area to Digital Newsroom Systems. These systems provide acquisition, editing, archiving, and on-air playback of news stories. Unlike other newsroom offerings, there is no integration with scripts, wire service feeds, or teleprompter rolls.

The NCS-300 NewsCache News Playback System was shown. This system is designed for a small newsroom and has one input and two outputs. Video is MPEG compressed and stored on a 30 or 64 GB disk array with 3 or 6 hours capacity. It has simple integrated software (BZN-300) which communicates with the system to log input video and prepare a playlist.

A system for larger news operations is the Sony Digital Electronic Newsroom. This uses the MAV-1000 server, which offers a maximum of 23 hours of 18 Mbs, 2-frame GOP 4:2:2 MPEG storage with up to six channels of I/O with an SDDI I/O channel. Eight channels of I/O may be installed without SDDI. Up to 4,000 files may e stored on the system. Split A/V edits are possible by playing different files to the audio and video decoder portion of an I/O card. The short GOP allows variable speed play, jog, and shuttle modes.

The MAV-1000 is integrated with BZN-2000, -3000, and –5000 software. This operates a Daily Server editing system, an On-Air Server system, and a combined Daily and On-Air system, respectively. All of these systems are separate from script or teleprompter roll editing. I spoke with Ron Bradley, a Sony salesman, who claimed he'd installed a $15M version of this system at WSB with 14 DNE-1000's and 11 hours of on-air storage. He stated Sony's plan is to allow an Avid or Tektronix program to run in a separate window on their NT workstations. Sony has a contract with Avid for "further development".

A technology demo for the Electronic Newsroom was the Clip Server and DNE-100

workstations. The Clip Server stores a low-resolution JPEG copy of video on the Daily Server. The DNE-100 can do cuts-only editing and has an interesting storyboard interface where each picture is a frame from a stored clip. Each clip can be browsed or jogged by moving a slider bar.

For more advanced editing, the DNE-1000 editor ($100K) operates directly on the 18 Mbs video stored on the MAV-1000. Up to six DNE-1000's can work directly with the MAV-1000. Additional 1000's can work with a local copy of video on their hard drives. All the standard switcher and DVE effects short of keyframe-based transitions are provided. Two useful features for news are a built-in harmonizer for disguising voices and a blur or mosaic wipe for obscuring faces which is positioned with the mouse.

Also shown in the Newsroom was the DNE-700 editor, which operates exclusively with the hard disk storage of the DNW-A100 BetacamSX hybrid recorder.

Sony showed asset management systems from Avalon Software and EDS. The Avalon system was part of the newsroom exhibit, while the EDS was in the Pedasite and Videostore area. The EDS system is installed in 5 sites, including a CNN trial. This uses the Versage object database and SGI or Oracle media servers for streaming content. Somehow Excalibur Visual RetreivalWare is used – perhaps as a key frame detector? There is no editing or EDL capability. EDS acts as a system integrator and competes with IBM. Their perceived strength is being hardware independent. A system for 5-10 users would be priced at $6K each.

Sony also showed two lines of MPEG encoders and decoders. The BDX series offers the D1000 decoder and E1000 4:2:0 encoder for $40K each, and the 4:2:2 encoder for $48K. The M1000 transport multiplexer is $47K and offers ATSC or DVB outputs. Stat Mux software is "in development". They will have the E2000 HD encoder in production by NAB '99. The DSM series is intended for field acquisition – the encoders have a built-in QPSK modulator.

The Farad uncompressed disk recorder, which was previewed last year, is now shipping. The unit has a minimum throughput delay of seven frames and can make continuous single-frame edits. Disks are not hot-swappable and there is a 1.5-minute power-up cycle. A75 minute, four-channel model is $150K. A 45-minute, one or two channel model is $75K. PC control software is available to set permissions to portions of the disk for multi-studio use.

Sierra Design Labs

Showed a HD disk recorder. Staffer stated "they are not pursuing the NVOD market"

Odetics

Showed "Bowser", a web-like browser. It was connected to a CacheBox server in the Quantel booth and was not working when viewed.

SGI

SGI had three demo carrels for video serving. One was showing the MediaPool NewsBreaker, another a spot download system, and the third a secondary server for Tektronix Profiles. The Profile system uses two Origin servers connected to a Clarion FC drive array for redundancy. The SGI engineer attending would not quote prices, but said they'd just installed a large system at KGO-TV. The max. capacity is 1.2TB or 60 hours of 25Mbs (675 GB)?

A related set of three carrels showed asset management applications. Due to time constraints, I didn't get to interview these vendors. The signs said "On-Line Video Browsing, Automated Video Cataloging, and Digital Media Management". There was also a HD playback demo. These demos together occupied about half the booth. The other half was demos of CGI, Animation, and Compositing software vendors.

Channelmatic

They showed integration with a Sony BitStream VideoStore and a SGI-based server of unknown origin. As a technology demo, software splicing of MPEG bitstreams at 2.5 GOP/second was shown. Traffic was very light.

Abekas

Their new product was the Replay M-JPEG server. It's a one-channel Mac-based server with an external RAID array and video I/O in a rack-mounting box. It offers 40 minutes of storage for $25K. It offers a playlist with shot bins, dissolves and wipes, but no slow motion.

While their Sphere series product were still strongly exhibited, I saw no other new products. They appear to be on the decline portion of the product life cycle for most of their line.

Quantel

CacheBox, a DVCPRO server was introduced at $122K for 4 I/O channels and 6 hours of 25 Mbs or 3 hours of 50 Mbs storage. It may be used alone or as a shadow server for their Clipbox. Clipnet, a "high-definition" network, allows transfers in or out of CacheBox on FC. Gigabit Ethernet will be offered at IBC. The brochure claims it's "ideally suited for the storage and distribution of programme material and commercials", as well as NVOD. As the Profile has occupied this spot for several years at half the price, I'm unsure of the CacheBox's appeal. There appears to be no special integration with ClipBox, their uncompressed server, other than using the Quantel Remote Control Protocol.

Monty, a HD 1080p workstation, was shown as a way for production houses to profit from DTV. It has a "high-quality" D1 to 1080 x 1920p upconverter employing "bi-cubic realtime interpolation". This didn't look to be real time, but the usual Quantel slight of hand was employed to obscure the matter.

Vela Research

Vela introduced Rapid Access, a software add-on product to their encoders. It converts an Argus encoder into a 1 I/O, 4 output server. The software is $5K, the encoder is $50K, the Quadstream decoder is $4K, and a board to do disk playback and GPI triggers is $10K. An option for a second quad decoder is mentioned in the data sheet, so it's possible this could be an eight-output unit. Looks as though they are aiming at the Profile or ASC market.

VOD Products

Celerity

I visited Celerity's suite at the LV Hilton and talked with their president. They will not be at NCTA, as they thought NAB would be a better show for them. (Unless they think they'll get more international visitors at NAB, this reveals the level of their marketing expertise.) They've just had an IPO, and their S-2 financials showed they're losing money and have declining sales. The current president came in Jan. 1997 and is apparently reorganizing them.

I got a demo of the VOD product in the suite. Latency was OK, but their navigator was similar to SRTC's 1994 stuff. They have FF and Rew, but that wasn't demo'ed to me. I'm told they can do FF & Rew on Samsung and Tatung boxes, but not on Acorn. Looks like they're not using a separate track. Video was quoted as MPEG2 at 3Mbs from a Minerva encoder.

The claim was that they had installed 3100 streams, including 4 HFC networks. All installations were in the Far East. They claim either 2000 or 7000 (my writing is bad) paying customers in Korea.

They have just hired a VP of Marketing, but have no sales force and will be setting up one organized by vertical application instead of territory. Applications include medical imaging, home shopping, etc. According to their press releases, they are working on a time-shifting feature.

Concurrent Computer

A range of servers from corporate intranet to full-scale VOD were shown. A small system offering 9 hours of content on 20 3 Mbs streams was $20K. This streamed content to PCs running Telemedia Systems SW MPEG player. Another display was a unit offering 1000 3 Mbs streams, with ATM or DVB-ASI outputs and DSMCC return commands. I spoke with Del Kunert, their director of Interactive VOD. He stated this server was priced at $300/stream in a distributed server model and $500/stream in a centralized model. They have implemented time limits on content pause and play and have 15-minute leader tracks for covering secondary storage retrievals. They are integrated with CBIS and CableData traffic systems, and have a Royalty payment system? They will have an integration demo at NCTA with SA and GI equipment. Currently, they work with Samsung, Acorn, and Stellar STBs.

They claim to not use RAID hardware, but use software-based techniques. 200 streams may be played from the same copy of a title. If there is a need for more, dynamic replication is performed. The platform is PC motherboards running Unix. VBR streams may be served to their STBs.

Latency is 1-3 seconds, with pause always one second or less. FF and Rew introduce a small storage overhead. The technique was explained as using an index to I frames.

A 2000 stream, 500 title system was mentioned as a possible configuration, but hasn't been installed anywhere.

Other products

NDS showed several products. A MPEG Splicer/Transcoder offered "seamless, near-seamless, and non-seamless" splicing. It accepts two transport stream inputs and can splice between streams or in one stream. The near-seamless model will be available in 3 months with audio and data splicing as well as video for less than $50K. They also offer an ASI to PCI adapter card – I requested information.

NDS offered a HD encoder built using 6 SD encoders working in parallel to encode a 1080i signal. Four encoders are required for 720p. Their stat mux product is used to segment the input raster for each encoder. The total system for 1080i was quoted at $400K. The stat mux acting alone offers 6 channels of SD in a 19.3 Mbs stream with 1 frame latency.

NDS also showed the StreamServer PCpro, a "Digital Broadcasting Management System". It's a PC that stores and plays transport streams. It creates the EPG and inserts PSIP, and "manages stream configuration in real time". It also allows store and forward to a remote site at less that real time. A one channel system is available now, a two channel version by SMPTE.

Islip Media showed their content management software. It performs face recognition, speech to text conversion, voice recognition, closed caption decoding, keyframe detection, and manual text entry to log content. Content is processed on a DEC Alpha workstation at ¼ real time. Users may then browse content using an Islip application on windows or over dial-up lines using Netscape. Prices were not disclosed, but a system for 20 journalists was said to be less than 6 figures USD. Sony and Panasonic personnel were asking about the product when I visited.

Imedia had an unusual booth. It was 30x30 or 40x40 with two solid-walled conference rooms devoid of any external advertisements. Inside was a demo of their real-time stat. mux hardware. It appeared to work. I was told it will be available in September for $100K. This is the same month as quoted last year at NAB. The TCI lawsuit wasn't mentioned.

Viewgraphics demoed their MPEG splicer and transport mux. I spoke briefly with Jack Kruse, who said they have sold 400 Viewstores and will finally be replacing the Image Circuits I/O in a few months with a new version incorporating HD serial. Their splicer was designed by Hellel Gazit, who said it could currently do splicing only where the inserted material was local to the PC's disk or pre-processed beforehand. In points can be located at sequence headers (every GOP) only. An engineer from Maddox wearing a Philips shirt was questioning Gazit heavily. The splicer will be sold as an OEM product, with a development kit at $25K, and boards at $2500 for one and $600 in hundreds.

VG also offers the Dynamo MediaPump, a transport stream splicer. It's $8000 in single units and $5000 in quantity. Compared to Cogent Technology, it offers telephony and GI interfaces and claims to have IRIX support. Cogent has a clock input, a fault alarm output, and supports S-A interfaces.

Cogent Technology also offers stream splicer and transport mux products. I talked to Greg Baker, VP of S/M, about the M-8 Digital Remultiplexer, their transport mux unit. It's available at the end of May for $8500 for single units and offers a 155 Mbs transport stream rate. It has a "failover relay" which connects the input and output BNC's together if a watchdog timer expires. Prospects were overheard at the Viewgraphics booth inquiring about this feature, which VG doesn't offer yet. According to Baker, the VG product is "an add-on daughter card to a Cyclone board"

Their splicer product, the K-10 Digital Program Inserter, lists for $24.5K. It offers "near frame accurate" splicing without any pre-processing of bitstreams. The outpoint of a splice may be ±6 frames for IPB material. There is a maximum of 10 simultaneous insertions and 20 per second. The only working board was at the S-A booth. When I visited there, I met their president, who couldn't get the board to work. It was trying to splice video, but the transitions had frozen frames and frames from the previous scene.

Rebooting VxWorks didn't help. He said they'd have a demo in S-A's booth at NCTA.

WebTV showed an interactive shopping demo. Links to web pages were sent in the VBI of programs watched by viewers. By using the remote to click on an on-screen link while watching her infomercial, I was given the option of ordering some Victoria Principal cosmetics from their web page. One can also get a news rundown from local affiliate KRON or browse a program guide from TV Data. The program guide includes a VCR record link. WebTV claims 250,000 subs. The STB is $199 plus $24.95/month, $19.95 with MCI long distance service. It has a JPEG frame grabber and audio capture function. PPV purchases or other integration with interactive TV is not provided.

Microsoft had a demonstration in their booth balcony of NTSC, 480p, 720p and 1080i video. On questioning, the staffer explained they were not allowed to show the same video simultaneously on the 720p and 1080i monitors. They also showed static displays of ATI Technologies graphic cards and STB designs to decode their HD0 format.

IBM showed their Digital Media Distributor product, developed for Warner Brothers. It's a spot distribution system created by Peter Lee's group. The IBM digital library was shown linked to Avid equipment. The staffer said browsing on a PC will be supported in the future.

Megadrive changed their name to Data Direct Networks. They showed inter-platform file sharing middleware which uses FC for data and ethernet for control. It will ship in July.

Divicom showed a HDTV encoder developed with JVC. They also showed their new MV40 dual-pass real-time encoder using the C-Cube E4 chipset. This encoder has internal noise reduction and decimation filtering. It offers "under one second" latency using the dual-pass technique. Price is about $65K.

I also discussed a transport mux. with a booth staffer. I made a note about a MV1G product for $50-55K and HSSI outputs being a Cisco standard for inverse T1 multiplexing. I may know what this means when the data sheets come.

Mountain Gate showed their Centra Vision file sharing and storage products. If a user doesn't have rights to a file, the system can send a pop-up message to the rights holder to ask for permission.

Sun had a booth similar to SGI's, with carrels for VARs or application developers. Shown there were the Oracle media server to an Online Media STB, a single-chip MPEG encoder from VisionTech, and the Motorola Hellcat STB reference design.

Thomson showed Nextore – a 4-channel video server for "20% less than the Profile."

Lucent showed their HDTV encoder, which is being sold by Harris.

Misubishi showed their HDTV encoder, which is being sold by Tektronix.

Faroudja showed an upconverter for 720p and 1080i from NTSC. It looked very nice, but you can't manufacture detail that's not there.

Glossary

100bT – 100 base-T Ethernet Networking

ATM – Asynchronous Transfer Mode communications.

DA – Distribution Amplifier

FC – Fibre Channel

FF – Fast Forward

FUD – Fear, Uncertainty, and Doubt – the 1960's IBM sales technique for quashing interest in competitive products.

GOP – Group of Pictures MPEG structure

HD- High Definition

HFC – Hybrid Fiber/Coax Cable TV Plant

JPEG – Joint Picture Expert Group ISO standard image compression

Mbs – Megabits per second

MBs, MB/s – Megabytes per second

MPEG – Moving Picture Expert Group ISO standard image compression

NVOD – Near-Video-on-Demand staggered-playback program-multiplex television service

RAID – Redundant Array of Inexpensive Disks technology

Rew – Rewind

SD – Standard Definition – NTSC or D1 video

stat mux – Statistical Multiplexer

STB – Set Top Box

VAR – Variable speed play or “slow motion”

VOD – Video-on-Demand interactive television

Firms Cited

Table 1. Server Comparison Chart

Company, Product	Compression	Sec. Storage	Architecture/ Redundancy	Editing	File Xfer/Networking	Browsing	DVB Outputs	Model System Price
SeaChange MovieSystem	MPEG 420	Timberwolf in June 98?	Two-level RAID on disks and nodes	No	"Any NT Protocol"	No	Yes, Viewgraphics Card	$295K
EMC	MPEG, external	ATL DLT tape vault	Large multi-port SCSI controller hardware, RAID levels selectable?	No		No	Yes, software mux	$200K
HP Broadcast Server	MPEG 422 or 420	Timberwolf, $90-100K	RAID-3 SCSI, FC interconnect between systems	HP dual-decoder "patented technology"	FC-AL between systems, WAN FTP 6 Mbs. File format closed	Montage Demo	Next NAB	$412K
ASC/Leitch VR300	M-JPEG	?	Disks on FC dual loop, possible ECC instead of parity	Yes, but limited unless you reboot system or perhaps add node	FC switch planned, no FTP shown?	MPEG-1 by end of summer, $10-15K for 20 users	No.	$498K
Sony MAV-70	MPEG 422	Sony Tape, $100K for 200 hrs.	RAID-3 SCSI, FC interconnect between nodes	Yes	SDTI, FTP over FC-AL	Future ClipServer	Future	
Sony BitStream VideoStore	MPEG 420	SCSI tape drive	RAID-3 SCSI	No – 4 Sec. Granularity, "no black between clips"	BKSR-103 Clip Exchange Board	No	No	5 Mbs only, perhaps 1 input only, $202K
Pluto	DVCPRO-25	Jukebox shown in	FC Raid 3 data disks, mirrored OS	?	FC-AL between units, file		No.	10 outputs

AirSpace		brochure	disk, modem		transfers to Avid News cutter.			only, 40 hrs, $200K
Tektronix Profile MPEG	MPEG 422	No? External Products may be connected to FC loop	No RAID unless external array is used.	I frames only	18 MB/s between profiles, FTP must complete before play?	No	No	
Compaq								
Montage								
Quantel Cachebox								
Vela Research RapidAccess								
Celerity								
Concurrent Computer								