

JPEG-2000, 101 - Primer



Where video is moving

Incospec “Content to its Distribution 2010 Tour”

March 9th & 11th , 2010

Kevin Karch

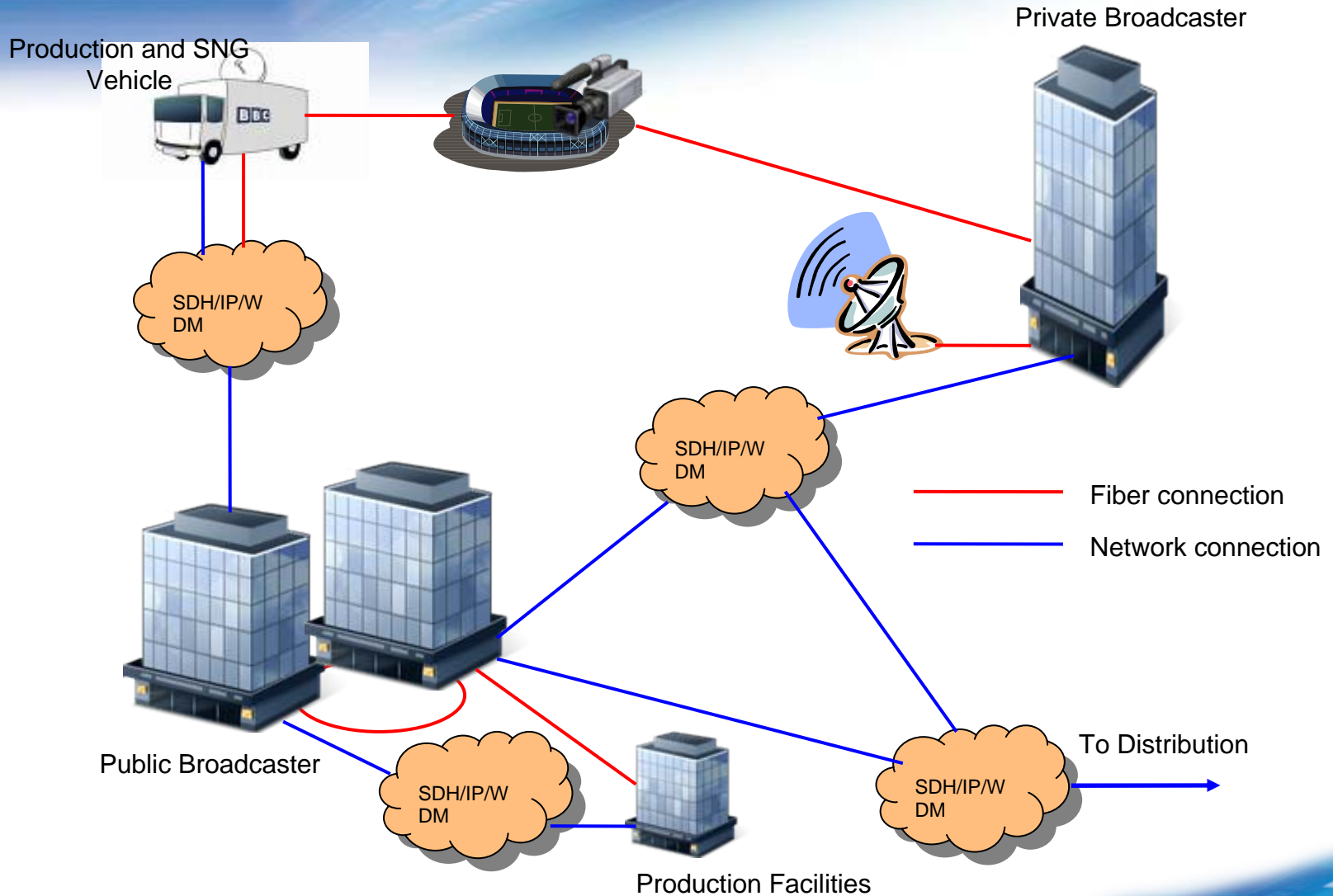
Network Specialist

Video Network Planning

- Maximize existing network profitability
 - Equipment
 - Space
 - Power
 - Operations
- Provide absolute carrier-class delivery
- Avoid risk while enhancing flexibility
 - Ramp up HD while supporting legacy
 - Meet changing customer requirements
 - Leverage new technology quickly
- Prepare for the unexpected

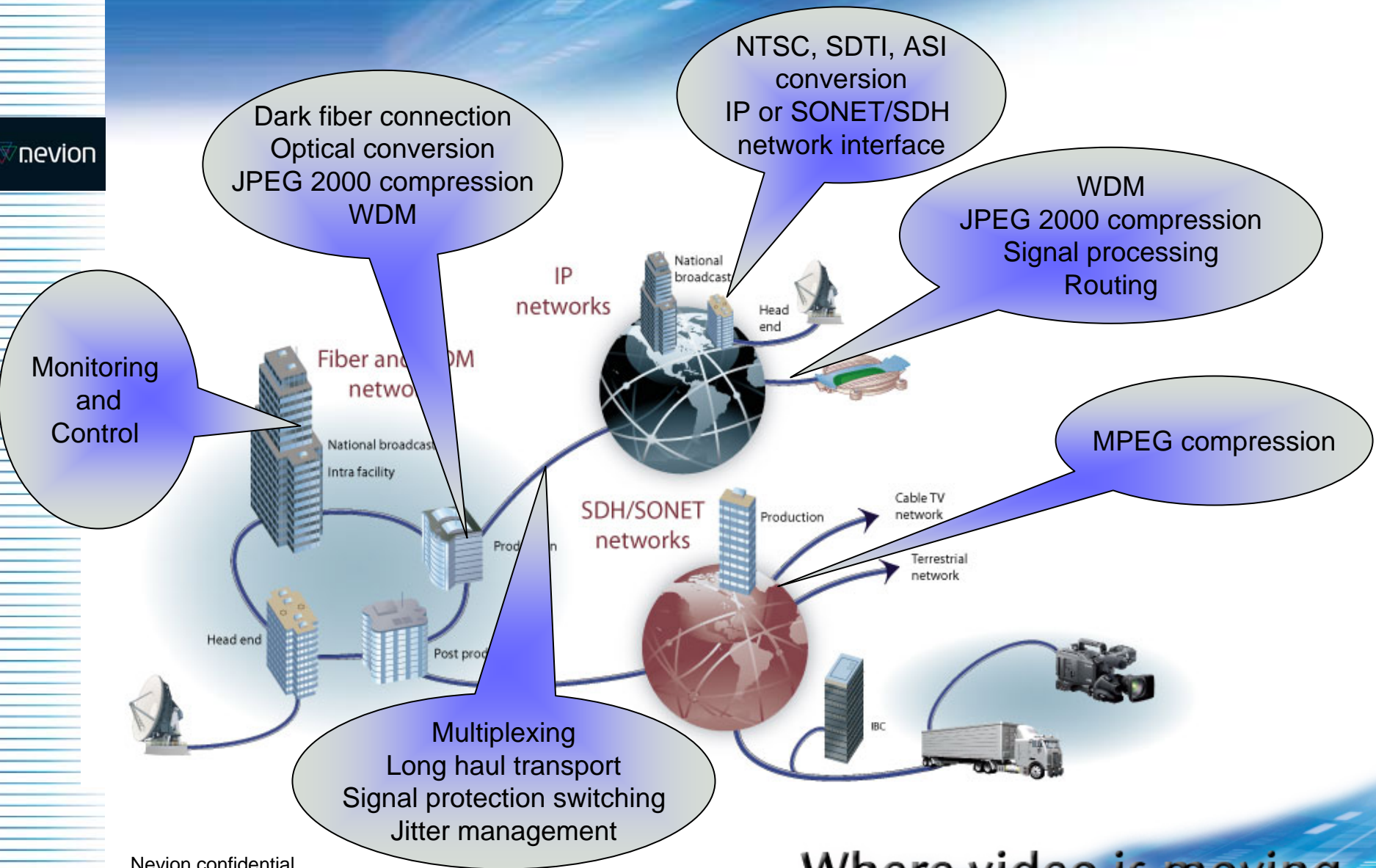


Various Video Content Contribution Needs



Where video is moving

Various Video Transport Solutions



Video Compression



- Types of compression available:
- MPEG-2
- MPEG-4
- JPEG 2000
- ATSC 19.4Mbps (SMPTE 310M)
- ASI 270 Mbps

JPEG2000 Comparison



	MPEG2	MPEG4	H.264	JPEG2000
Max Bitrate	100Mb/s	5Mb/s ⁺	80 Mbps	360+Mb/s
Sampling	4:2:2	4:2:2	4:2:2	4:2:2
Pixel depth	8bit ^ψ	8bit ^ψ	8bit	10bit
Latency	~500ms	~300ms	~800ms	~45ms ^φ
Power	60W	14W [*]	80W	9W [*]
Size	1 in 1RU	1 in 1RU	1 in 1RU	3 in 1RU
Quality rank	4	2	3	1

- + Estimated based on information on datasheet.
- * Power values are for single slot cards only.
- φ Latency can be reduced further with optimization.

JPEG 2000 Features



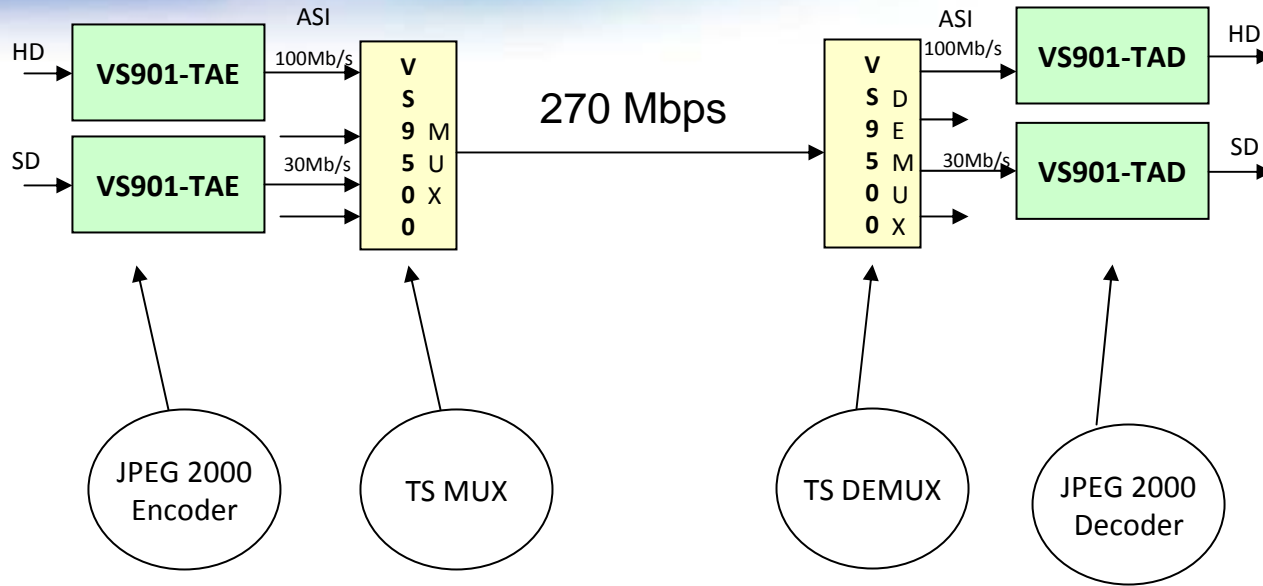
- Depending on the network bandwidth and the desired quality the video compression can be adjusted from a ratio of 2:1 down to as much as 15:1
- Latency <50ms
- Mathematically Lossless (Content Dependent) HD and Visually Lossless at Gig-E and OC12
- Visually Lossless (Content Dependent) SD at 100 BASE-T, OC3, and SDTI
- FEC incorporated 20% overhead additional

Cost effective Transport using JPEG2000 Compression



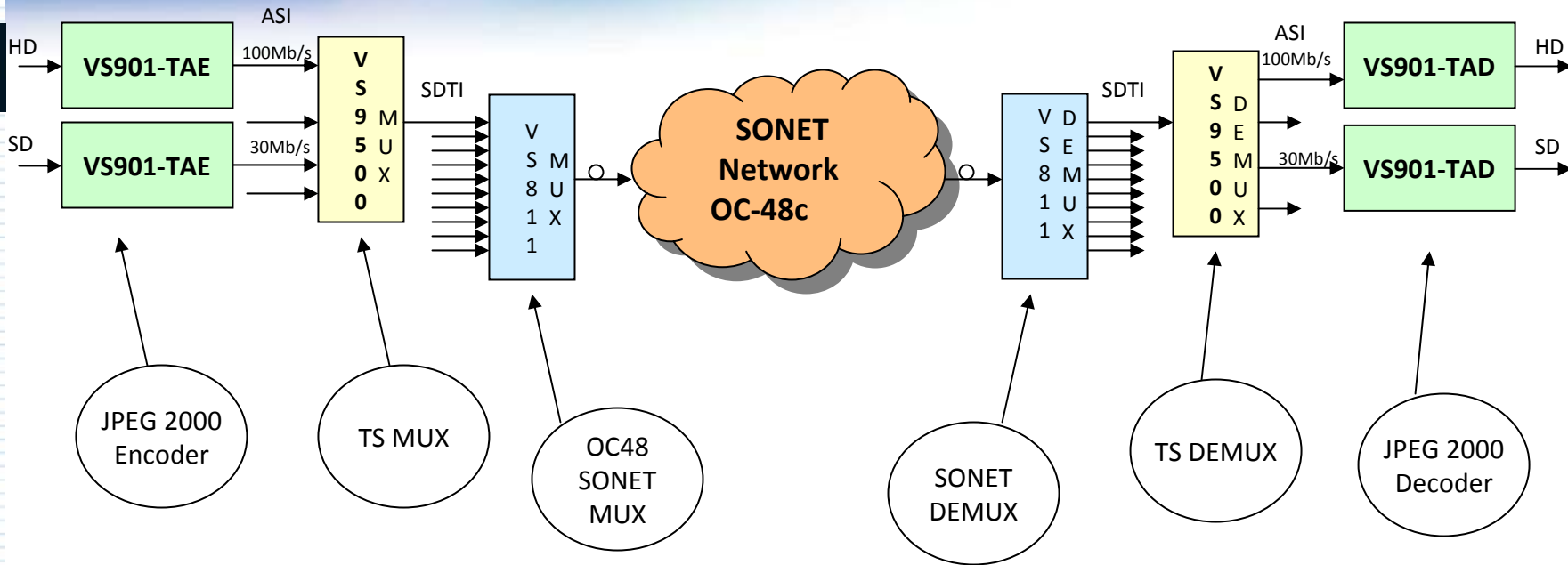
- Less expensive than MPEG and H.264 with much higher quality
- JPEG2000 uses less power and less space (2W/1sq inch compared to a 1RU box)
- Extremely lower latency compared to MPEG and H.264 (<50ms compared to several hundred ms)
- JPEG2000 combined with multiplexing will reduce your monthly recurring transport costs
- Input HD, SD-SDI and ASI and transport video over IP, SONET, or traditional 27

Multiple HD or SD over 270Mbps



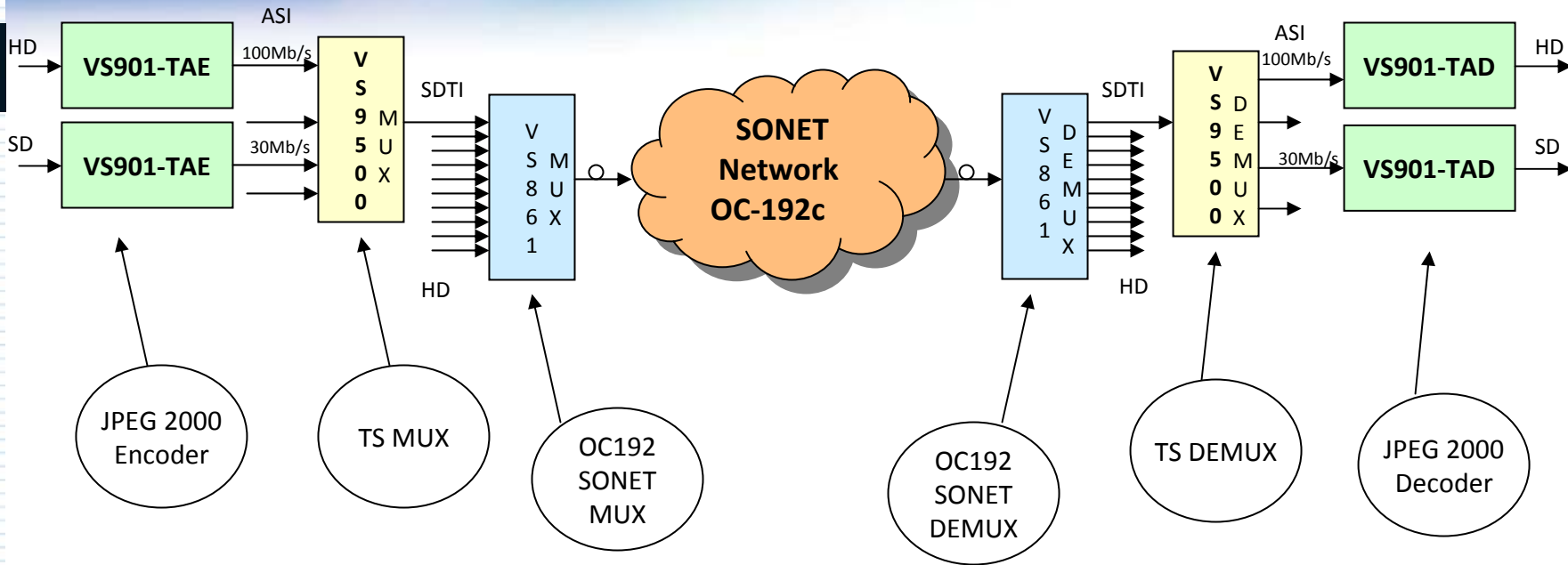
- Compress multiple HD or SDI signals and multiplex them onto existing 270Mbps infrastructure
- Reduce the monthly cost of 270Mbps circuits while maintaining highest quality

HD/SD over SONET via SDTI



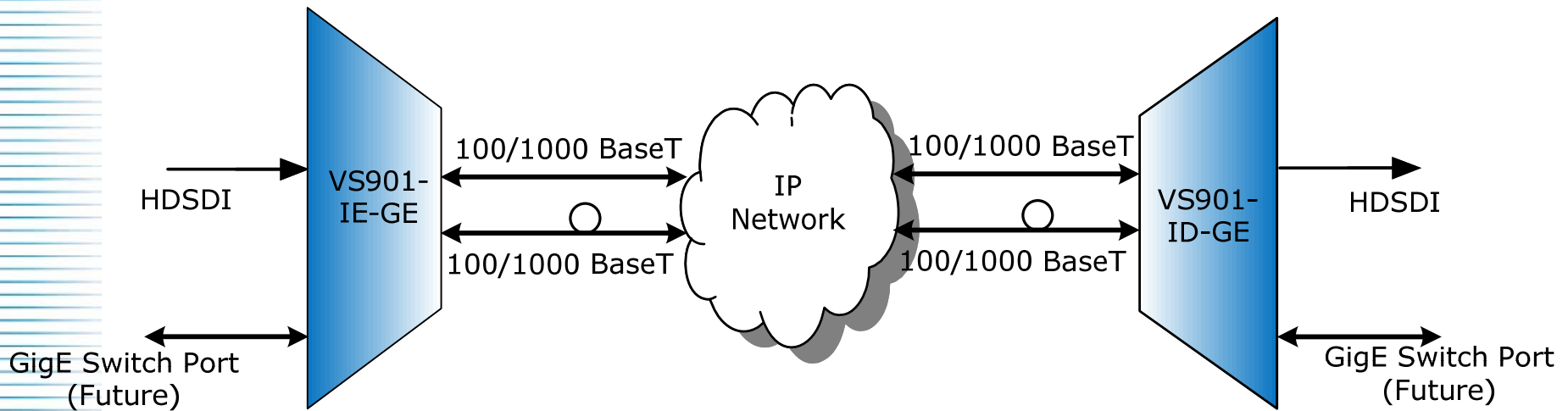
- Compress multiple HD or SDI signals and multiplex them onto existing 270Mbps infrastructure
- Reduce the monthly cost of 270Mbps circuits while maintaining highest quality

HD/SD over SONET Compressed and Multiplexed



- Compress multiple HD or SDI signals and multiplex them onto existing OC192 or Dark Fiber infrastructure
- Reduce the monthly cost of 270Mbps circuits while maintaining highest quality

HD/SD over IP Infrastructure



- Utilize existing IP infrastructure to transport broadcast quality video with minimum delay

Ventura: A Carrier-class system



- NEBS Level 3 compliant
- Field replaceable components
 - Redundant power supplies
 - Hot-swappable service modules
 - Optical components
- 19" or 23" rack-mountable
- Configure multi-channel modules for optical redundancy
- Comprehensive network management

VS103 Ventura Chassis – Part Numbers



- VS103-AC-IFA
- Dual redundant AC Power Supplies (i.e. 2) VS113 : 90 to 264vac, 200W
- FCS183-AEMS Card in slot 1
- VS111 1RU Heat Baffle
- VS113-DC-IFA
- Dual redundant DC Power Supplies (i.e. 2) VS123 : 35 to 72vdc, 200W

Additional Ventura Cards

- VS9345 ASI-MUX with DS3/E3 network interface
- VS9155 ASI-MUX with OC-3c network interface
- VS9500 ASI-MUX with SDTI/ASI network interface
- VS901-SX-12 HD/SD to OC-12c network mapper
- VS811-SH 8 channel SDI MUX into OC-48c with HD
- VS901-TE J2K compression engine for HD over 270
- VS861 HD/SD MUX with OC-192c interface
- VS908 8 channel ASI MUX into Gig-E with HD/SD
- VS901-IX-GE J2K compression engine for HD over Gig-E
- FCS-250/1000 (4 and 16 channel TIMS)

Nevion Facts



- **150 employees in Norway, US, Singapore, UK and Dubai**
- **World wide distribution network**
- **Group sales approx. 60 million USD**
- **Profitable and financially strong, AAA rating from D&B**
- **ISO 9001 Certified**
- **Over 20 years of consistent growth in video transport business**
- **Owned 70% by Herkules Capital, and industrial PE company**

JPEG-2000, 101 - Primer



JPEG 2000 Video Products

Kevin Karch

Network Specialist

847-833-8810

kevinkarch@vackinc.com