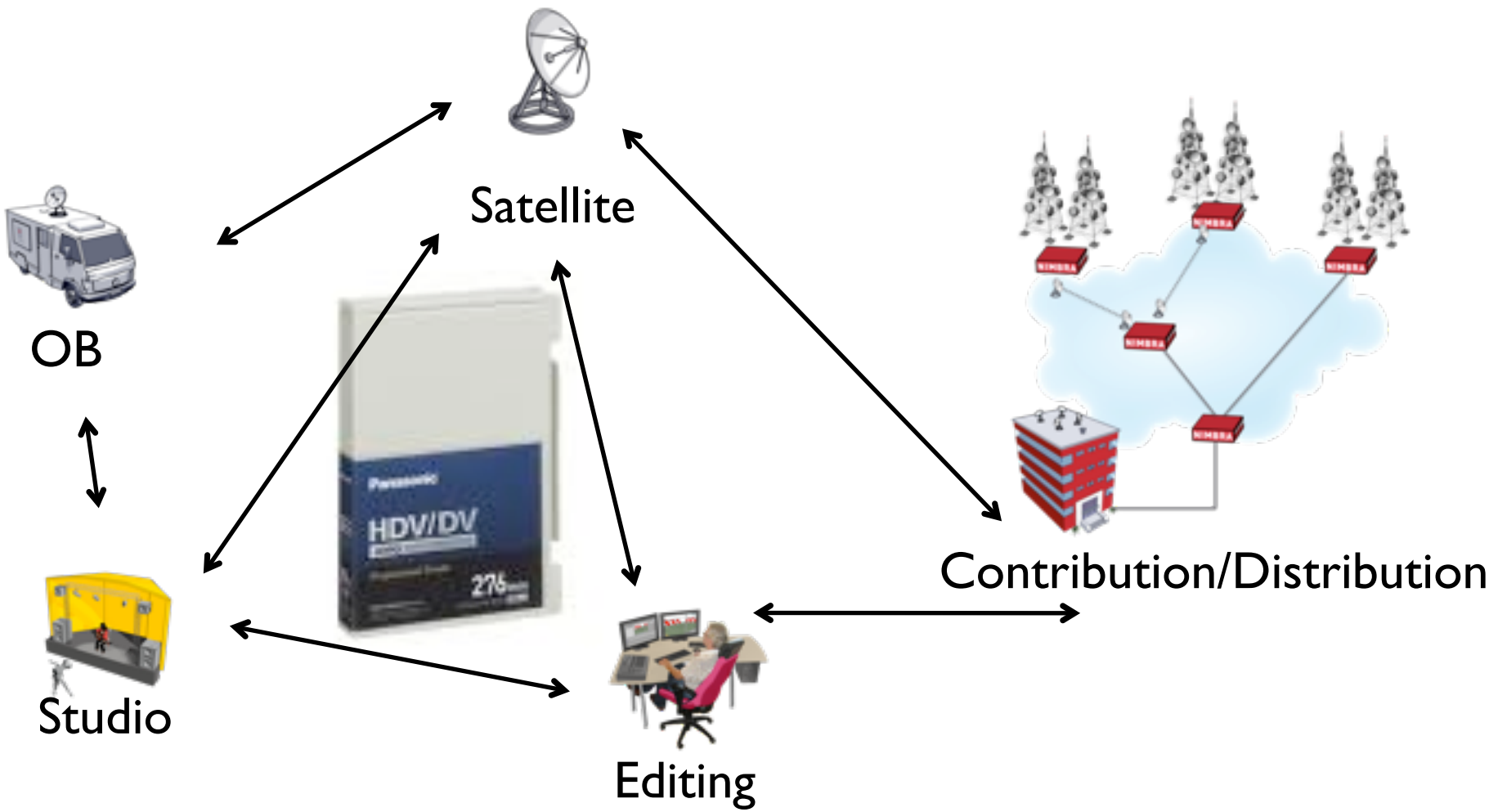
DTM Hybrid Video Networks

A smooth migration to the future by using the DTM network technology

Two clear trends

- Media companies are moving to a file-based environment
- Network providers are moving to an IP/ Ethernet infrastructure

Legacy Video Networks and Workflows



Future Video Network and Workflow

OB

Satellite

Mobile TV

Studio

Editing

TV

Obstacles to full digitalization

- Cost
  - Upgrading systems to IP/Data based is costly and often requires complete overhauls (the dreaded “forklift”)
- Relationships
  - Many customers/partners are still using legacy infrastructure

Obstacles to full digitalization

Guaranteeing IP QoS in the network

- Managed IP is expensive, both in house and outsourced due to manpower costs
- Technically difficult

Both new and old formats needs to be supported

	Legacy	Modern
Real Time	NTSC, ASI, SDI, HD-SDI, SMPTE 310M etc	IP streaming (UDP, RTP)
Non Real Time	VTR, HD-CAM etc	AVID, MXF, XDCAM, DV45 etc

Network infrastructure is also changing

- Leased line costs keeps dropping
- IP (L3) and Ethernet (L2) capacity is becoming more prevalent
- More alternatives available in the local loop
  - TV1/SDI loops used to be the only option
  - Metro Ethernet/Sonet services more prevalent due to the carriers expanding their footprint

A Hybrid Media Network is required

IP/Ethernet

- Routed
- High granularity
- Mesh topology

Sonet/WDM

- Very low jitter
- Predictable delay
- Fast restoration

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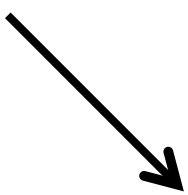
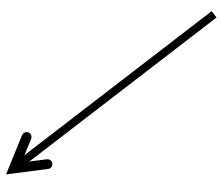
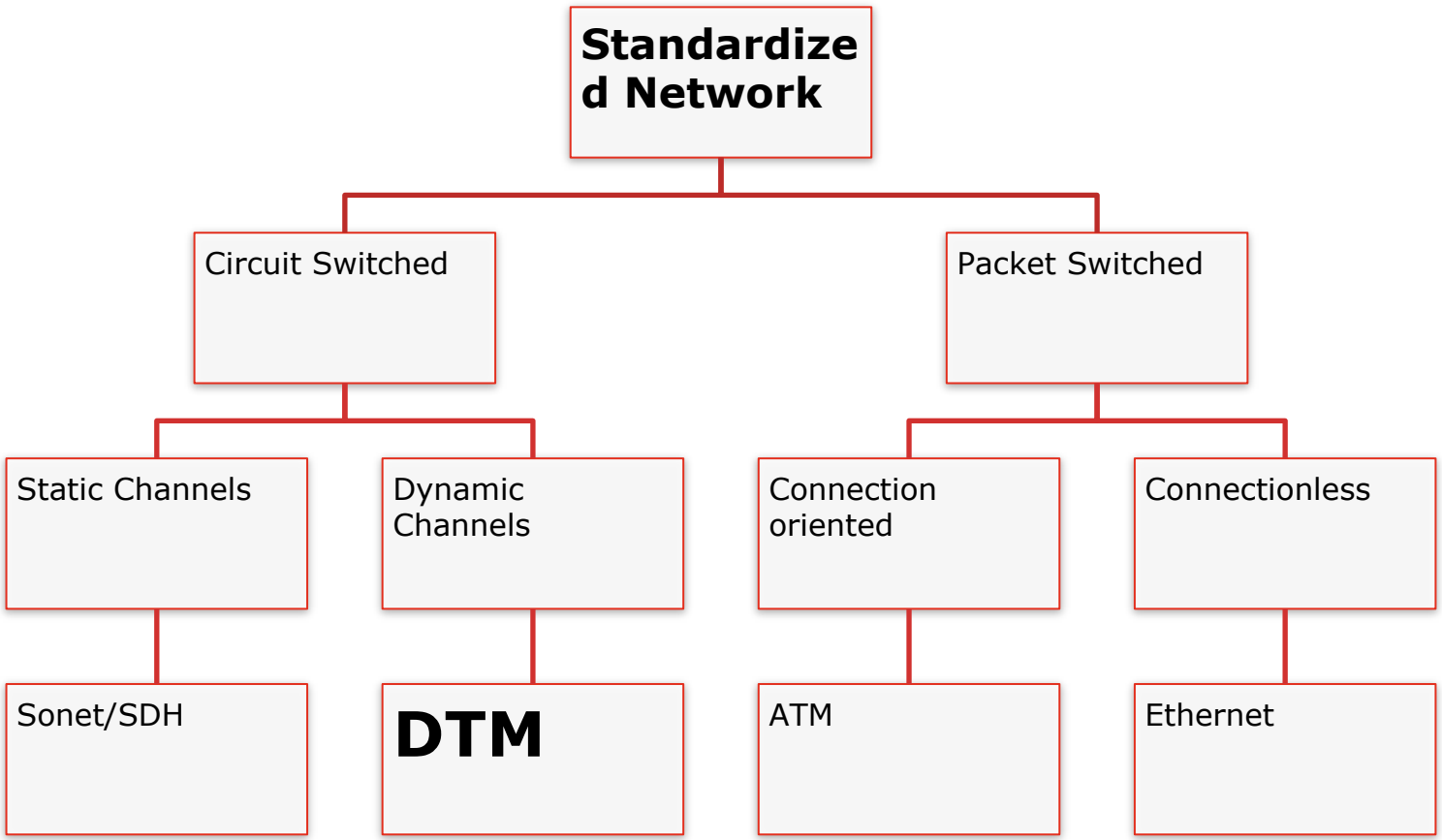




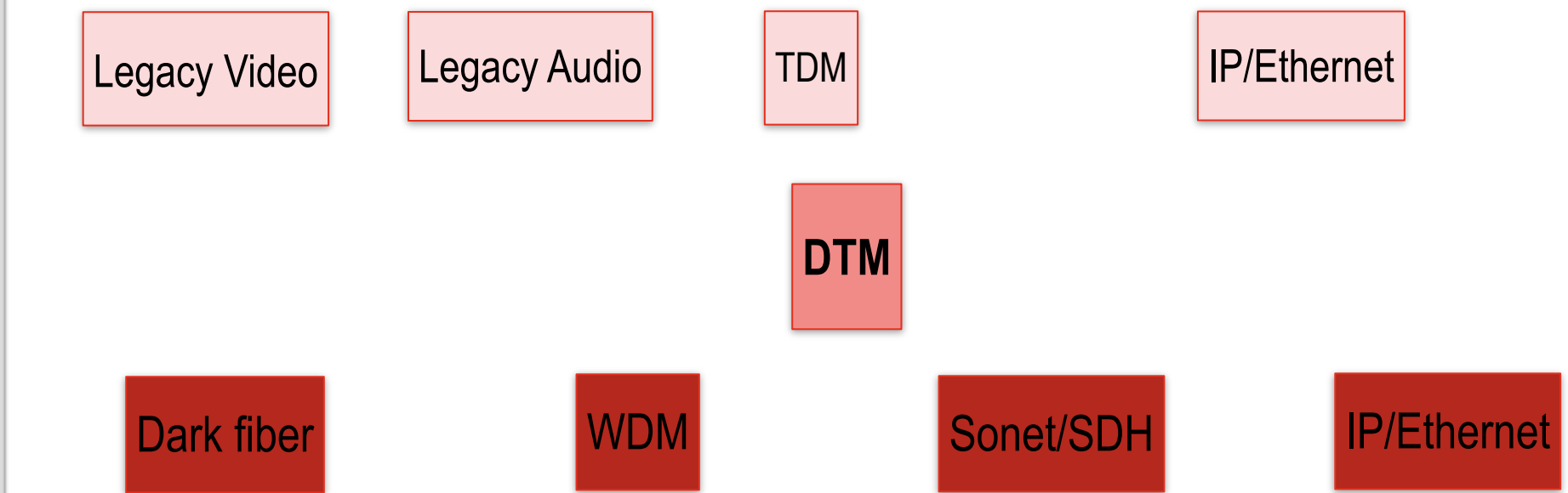
DTM combines best of both worlds


Standardized Network
Circuit Switched
Packet Switched
Static Channels
Dynamic Channels
Connection oriented
Connectionless
Sonet/SDH
DTM
ATM
Ethernet

Developed for media requirements

- Guaranteed bandwidth
- Very low jitter and predictable delay
- Distributed switching
- Topology independent
- Granular addressable bandwidth
- Standardized for Sonet and IP WAN
- Standardized for legacy video and IP inputs

DTM as the enabler



Guaranteeing QoS over IP

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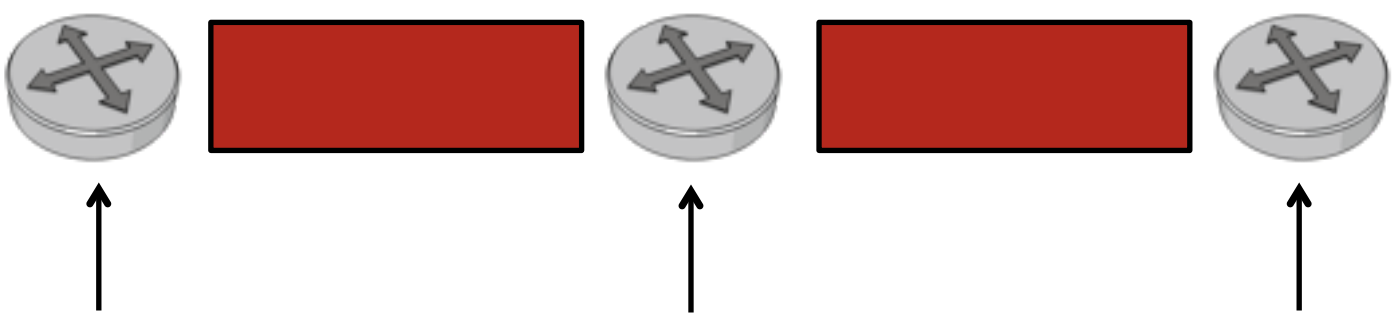
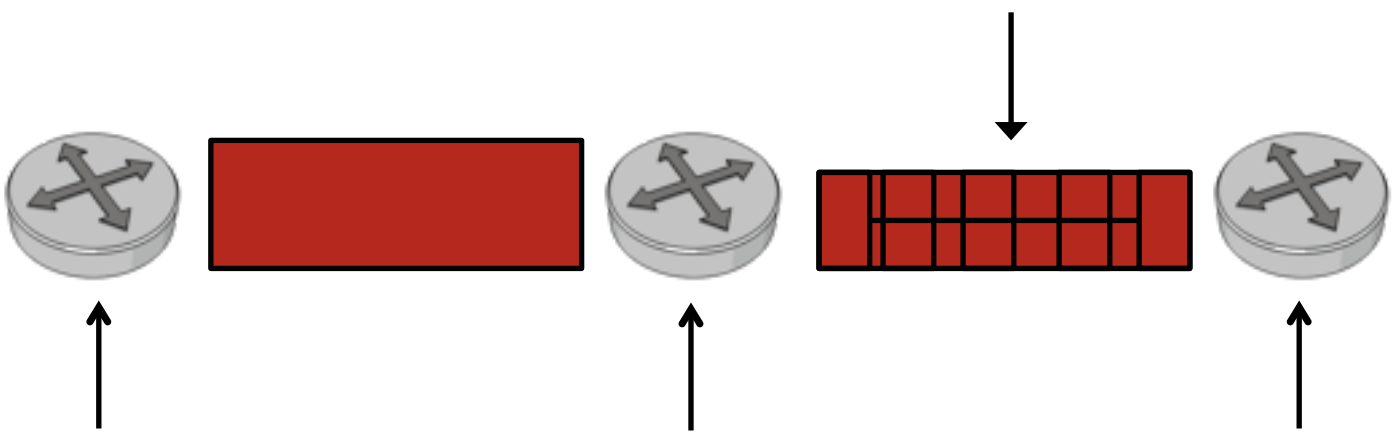
- TDM channel established over the IP link
- Re-synchronizing at every switch hop
- Constant load detects problems early



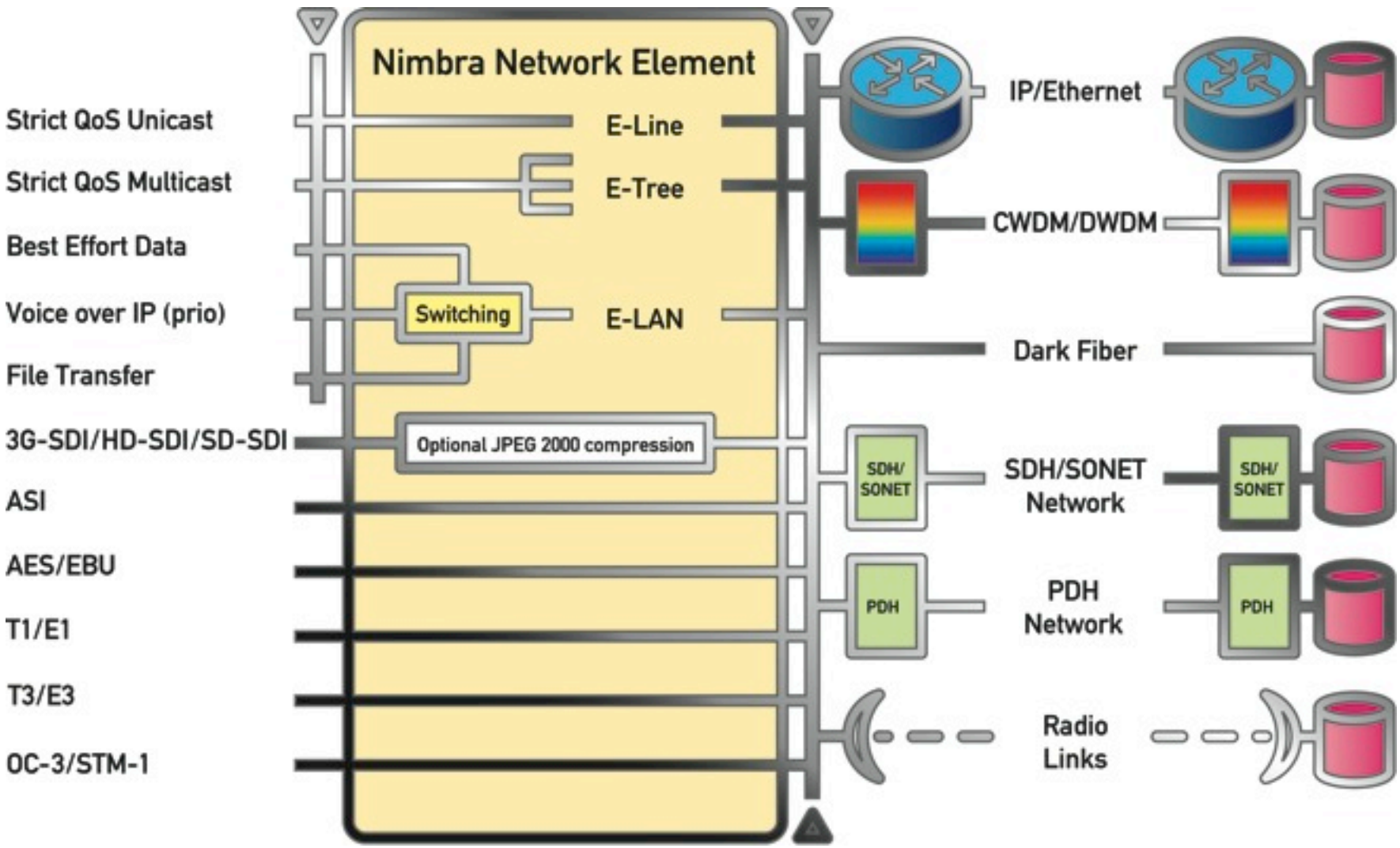
Common clock

Guaranteeing QoS over IP

- Utilize FEC only where necessary
- Only that segment of the network will be affected by delay and reduced bandwidth



DTM as the enabler

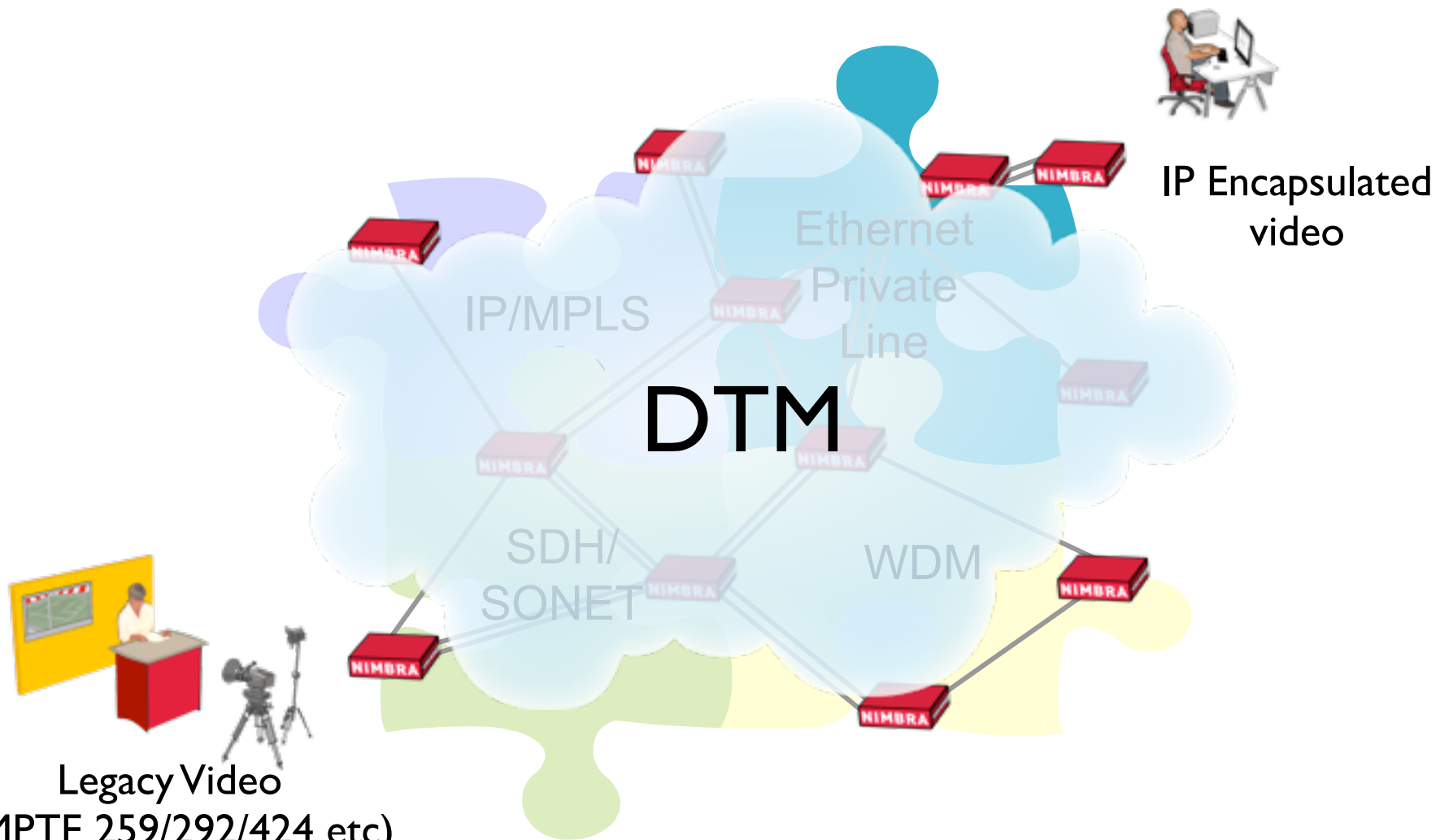


Network based compression and transcoding

- J2K compression inside the network
- IP encapsulating/decapsulating

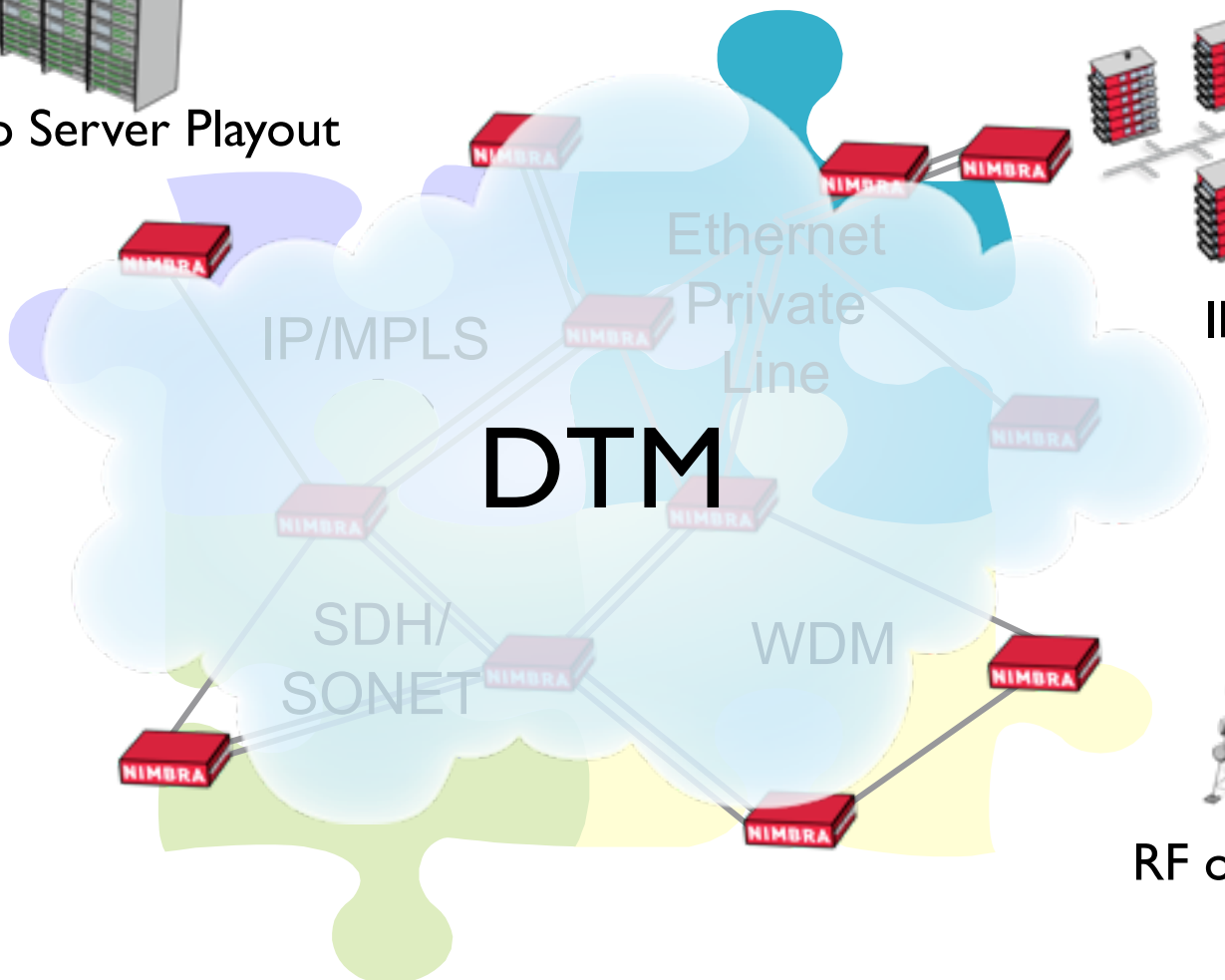
Use case examples

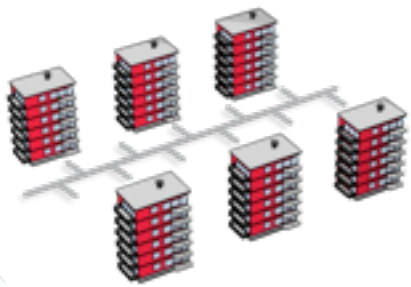
Network transcoding (contribution)



Network transcoding (distribution)

Video Server Playout



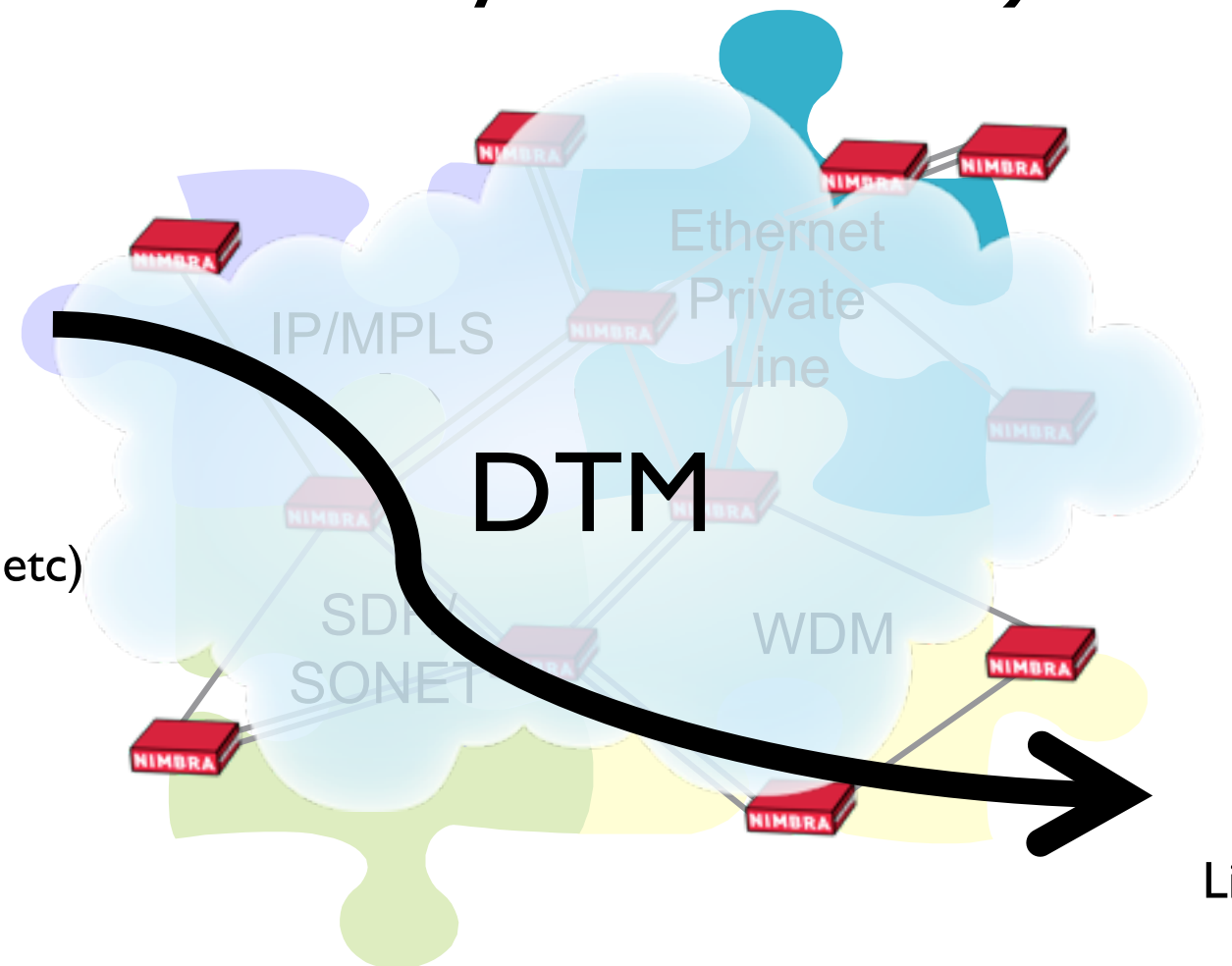


IPTV output

RF output

Network compression (redundancy scenario)

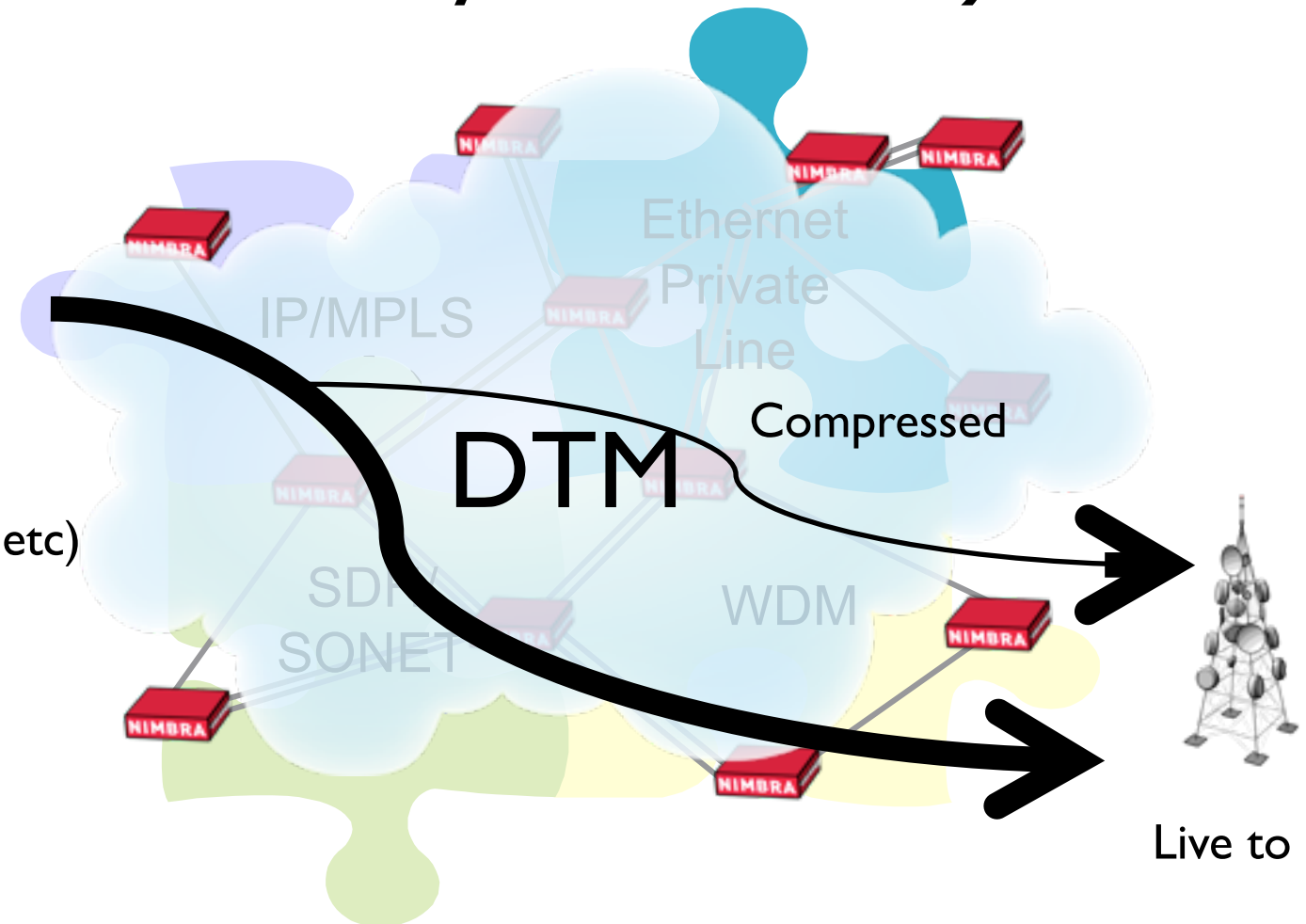
Legacy Video
(SMPTE 259/292/424 etc)



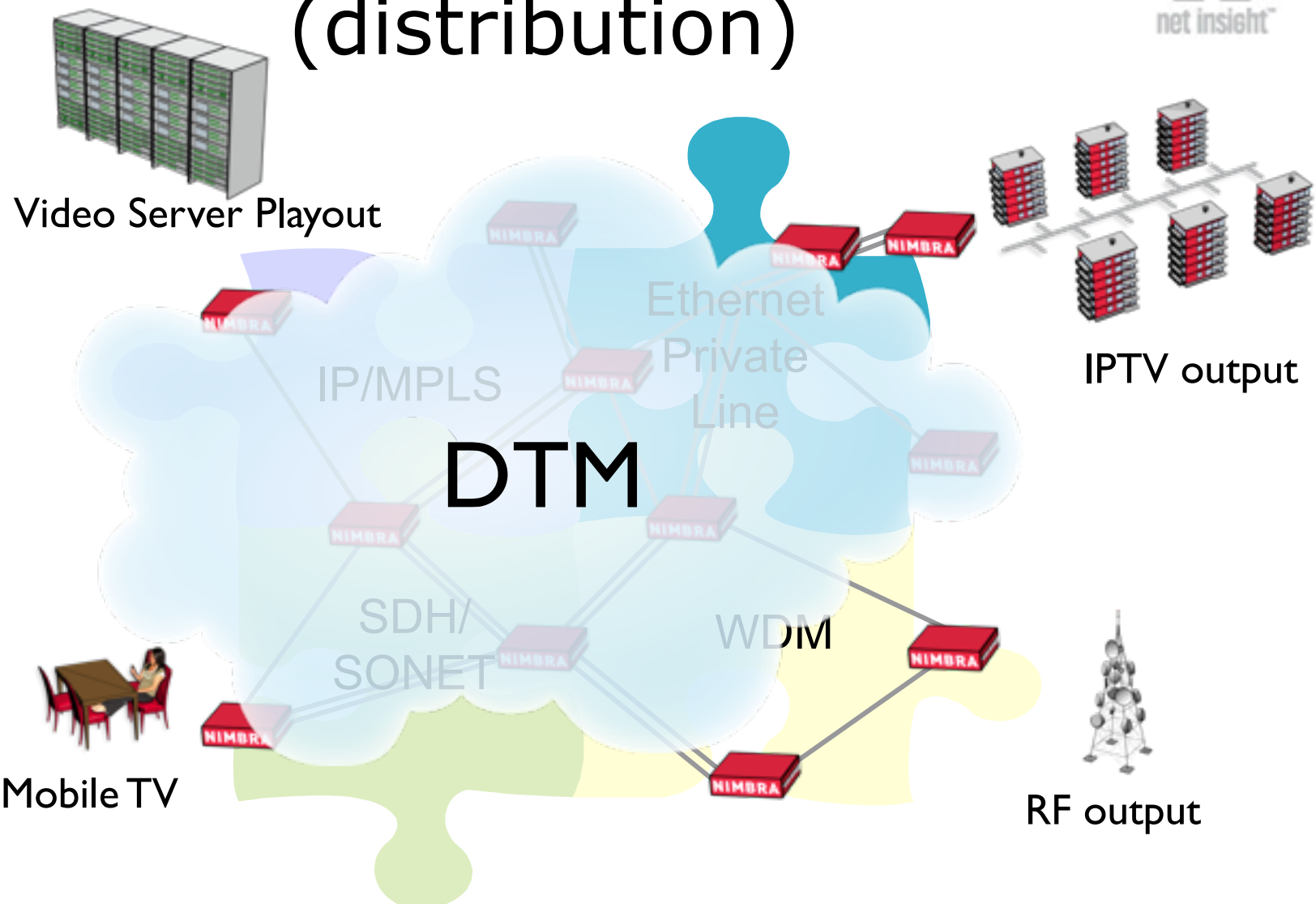
Live to air

Network compression (redundancy scenario)

Legacy Video
(SMPTE 259/292/424 etc)



Network compression (distribution)



The DTM protocol standard provides the glue

- Both legacy and new video formats
- Both legacy and new core infrastructure
- End to end management
- Performance monitoring
- Multicasting
- Network compression
- Network transcoding

Thanks for your time!

Erling Hedkvist

erling.hedkvist@netinsight.net