# **TelcoTV** Networking



# Networking Strategies for TelcoTV Services



TelcoTV services will put an increasingly large load on the metro aggregation networks that connect the video headend systems in the middle of the metro network with the access systems that provide the access services to the subscribers. This report describes the technologies that are available along with strategies for applying them.

Video traffic will dominate these networks as more and more on demand and personalized services are added to them. The move from broadcast to video on demand to network PVR to personalized advertising will shift these networks from data transport networks to video transport networks.

This report finds that the current Layer 3 IP and Layer 2 Ethernet architectures work well in the initial phase when the TelcoTV is just starting. However, as on demand and personalized services come to dominate, it will be necessary to shift to a Layer I optical architecture in order to economically support the huge increase in video traffic that this change will require.

This report identifies the strengths and limitations of Layer 3 IP, Layer 2 Ethernet, and Layer I optical

architectures. It also defines which architecture is best as TelcoTV service providers move from broadcast to personalized on demand services.

In particular, this report addresses:

- □ How the TelcoTV service offerings are evolving from broadcast to on demand to network PVR to personalized advertising.
- □ How this TelcoTV service evolution will fundamentally change the traffic mixes on networks that support TelcoTV services.
- □ Which network architecture TelcoTV service providers should select based on their individual situation.
- The Layer 3 IP TelcoTV network architectures offered by Cisco Systems and Juniper Networks.
- □ The Layer 2 Ethernet TelcoTV network architectures offered by Alcatel-Lucent, ECI, Nortel Networks, and Nokia Siemens Networks.
- □ The Layer I optical TelcoTV network architectures offered by Ciena, Net Insight, and Sun Microsystems.

This report should be used by network planners, system architects, and investors as they consider network strategies for TelcoTV services. It will guide their choices based on both technical and business requirements based on the services provided as well as business strategies. It discusses both the approaches that should be applied when a TelcoTV service is introduced as well as when it matures with a personalized set of services and a large base of viewers.

# Who Should Buy This Report?

- Telcos
- Product managers
- TelcoTV Providers
- Network planners
- Engineering managers
- □ Systems manufacturers Company executives
- Marketing managers
- Venture capitalists □ Investors

# Where to Get More Information

You can get information on this report at www.telecomview.info. This 90-page report is available for \$1,495 for a single user license. Both departmental and corporate licenses are available.

The report can be purchased at www.telecomview.info or by emailing or faxing us a purchase order. There is also a Free Whitepaper available on our website that provides information about the TelcoTV networking strategies.

You can contact us at:

#### **TelecomView**

+44 162 683 4224 voice +1 415 259 5452 voice +1 415 242 1008 fax

www.telecomview.info info@telecomview.info

# Table of Contents

- I Executive Summary
  - Network Requirements 1.1
  - 1.2 Layer 3 IP Networking and TelcoTV
  - Layer 2 Ethernet Networking 1.3
  - Basics of Optical Networking 1.4
  - TelcoTV Network Traffic 1.5
  - Traffic Management on a TelcoTV Network 1.6
  - Layer 2 and Layer 3 TelcoTV Network Strategies 1.7
  - Layer | TelcoTV Network Strategies 1.8
  - 1.9 Building a TelcoTV Network
  - Evolving to Layer I Optical Architectures 1.10
- 2 Requirements for TelcoTV Networks
  - 2.1 Proliferation of TelcoTV Services
  - Evolution of TelcoTV Services 2.2
  - 2.3 The Changing Traffic Mix
  - Quality and Security in TelcoTV Networks 2.4
- 3 Layer 3 Technologies and Strategies
  - Basics of IP Networking 3.1
  - 3.2 Cisco
  - Juniper Networks 3.3
- 4 Layer 2 Technologies and Strategies

- 4.1 Basics of Ethernet Networking
- 4.2 Alcatel-Lucent
- 4.3 ECI Telecom
- 4.4 Nokia Siemens Networks
- 4.5 Nortel
- 5 Layer I Technologies and Strategies
- 5.1 Basics of Optical Networking
- 5.2 Ciena
- 5.3 Net Insight
- 5.4 Sun Microsystems
- 6 Networking Strategies
  - TelcoTV Network Traffic 6. I
  - Quality Requirements for TelcoTV 6.2
  - 6.3 Traffic Management for Multicast Traffic
  - 6.4 Video On Demand Network Strategies
  - 6.5 Layer 3 TelcoTV Network Strategies
  - Layer 2 TelcoTV Network Strategies 6.6
  - 6.7 Layer I TelcoTV Network Strategies
  - 6.8 Evolution to Layer | Optical Networks
- 7 Building a TelcoTV Network
  - 7.1 Classifying TelcoTV Networks
  - Building a Broadcast TelcoTV Network 7.2
  - Building a Low Penetration TelcoTV On Demand 7.3 Network
  - 7.4 Building a High Penetration TelcoTV On Demand Network
  - 7.5 Supporting NPVR Services
  - Supporting Advanced Advertising Services 7.6
- 8 Appendix I: Companies in this Report
- 9 Appendix II: Glossary

#### **Table of Figures**

Figure 1-1: Video Traffic Loading

- Figure 2-1: Global TelcoTV Subscriber Forecast
- Figure 2-2: Percent of Unicast for TelcoTV
- Figure 3-1: Layer 3: IP TelcoTV Network
- Figure 3-2: Cisco's TelcoTV Network Architecture
- Figure 3-3: Juniper's TelcoTV Network Architecture
- Figure 4-1: Layer 2: Ethernet TelcoTV Network
- Figure 4-2: Alcatel-Lucent's TPSDA Architecture
- Figure 4-3: TPSDA Per Subscriber & Per Service QoS
- Figure 4-4: Operation of TPSDA Network
- Figure 4-5: ECI's MPLS over SDH Architecture for TelcoTV
- Figure 4-6: Nokia Siemens TelcoTV Network Strategy
- Figure 4-7: Nokia Siemens RACS Architecture
- Figure 4-8: Nortel's PBT Based Network Architecture
- Figure 5-1: Layer 1: Optical TelcoTV Network
- Figure 5-2: Ciena's TelcoTV Architecture
- Figure 5-3: Hierarchical Metro Optical Network
- Figure 5-4: Impact of Packet Loss
- Figure 5-5: Net Insight Architecture
- Figure 5-6: Components of the Sun Streaming System
- Figure 5-7: Software Architecture of the Sun Streaming System
- Figure 5-8: Sun Streaming System Reference Implementation
- Figure 5-9: Sun Streaming System Network Architecture
- Figure 6-1: Video Traffic Loading
- Figure 6-2: Multicast Operation
- Figure 6-3: Video Traffic Loading with Distributed Video On **Demand System**

#### Table of Tables

Table 2-1: Top Ten TelcoTV Providers

Table 7-1: TelcoTV Network Strategies

Table 3-1: Companies Offering Layer 3 Approaches

Table 6-1: Network Traffic Quality Requirements

Table 8-1: Companies Consulted for this Report

Table 4-1: Companies Offering Layer 2 Approaches Table 5-1: Companies Offering Layer I Approaches