Multi-Vendor Carrier Ethernet Interoperability Test 2008

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Agenda

- Participants and Testing Goals
- Growth Areas
- Interoperability Achieved
- Service Provider Feedback
  - Interested areas
  - Snapshot

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Participating Vendors

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Testing Goals

Progress Multi-Vendor interoperability of Carrier Ethernet Services

- Verify protocol implementations with other leading vendors
- Showcase the industry's current state and advances

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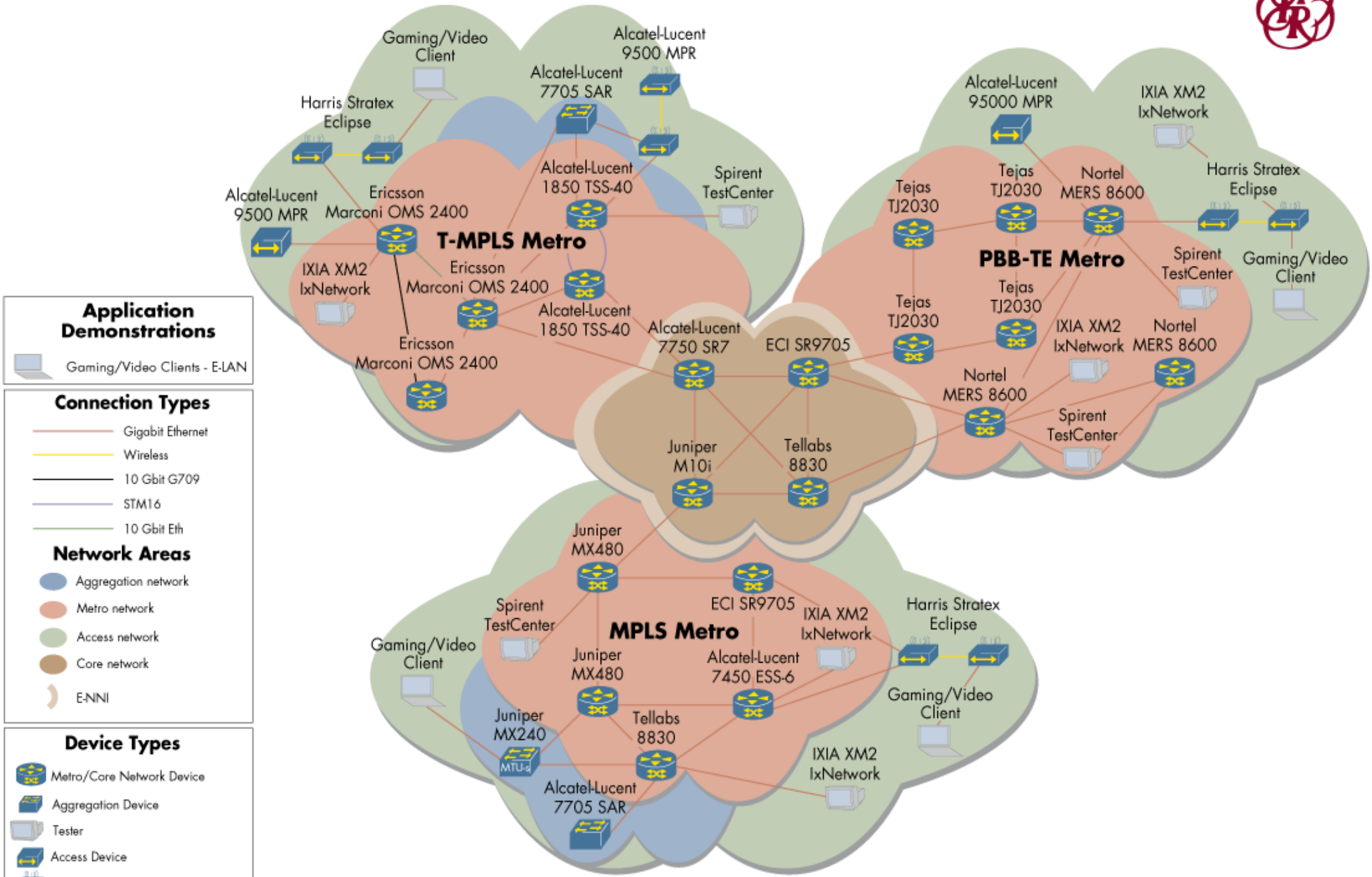
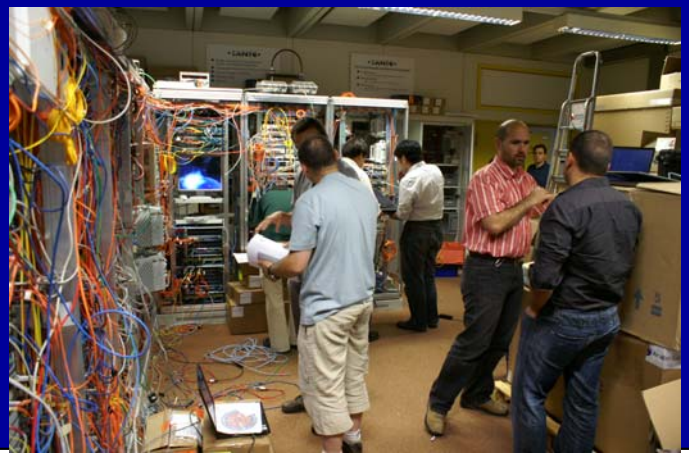
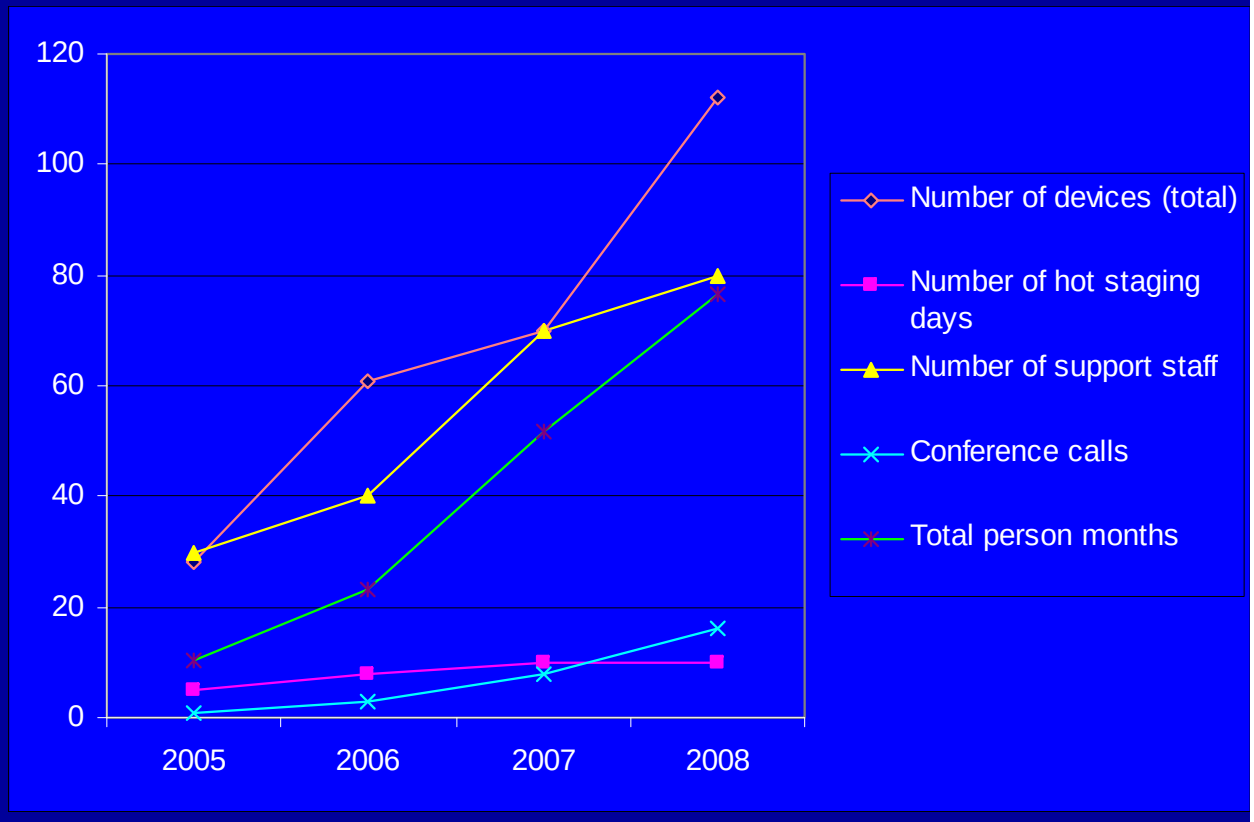
Multi-Vendor Carrier Ethernet Interoperability Event 2008



Hot Staging

- 110+ devices, 16 racks, 80 engineers, total 6 person years
- Prepared since April
- Two weeks of testing at EANTC in August
- 330 single tests





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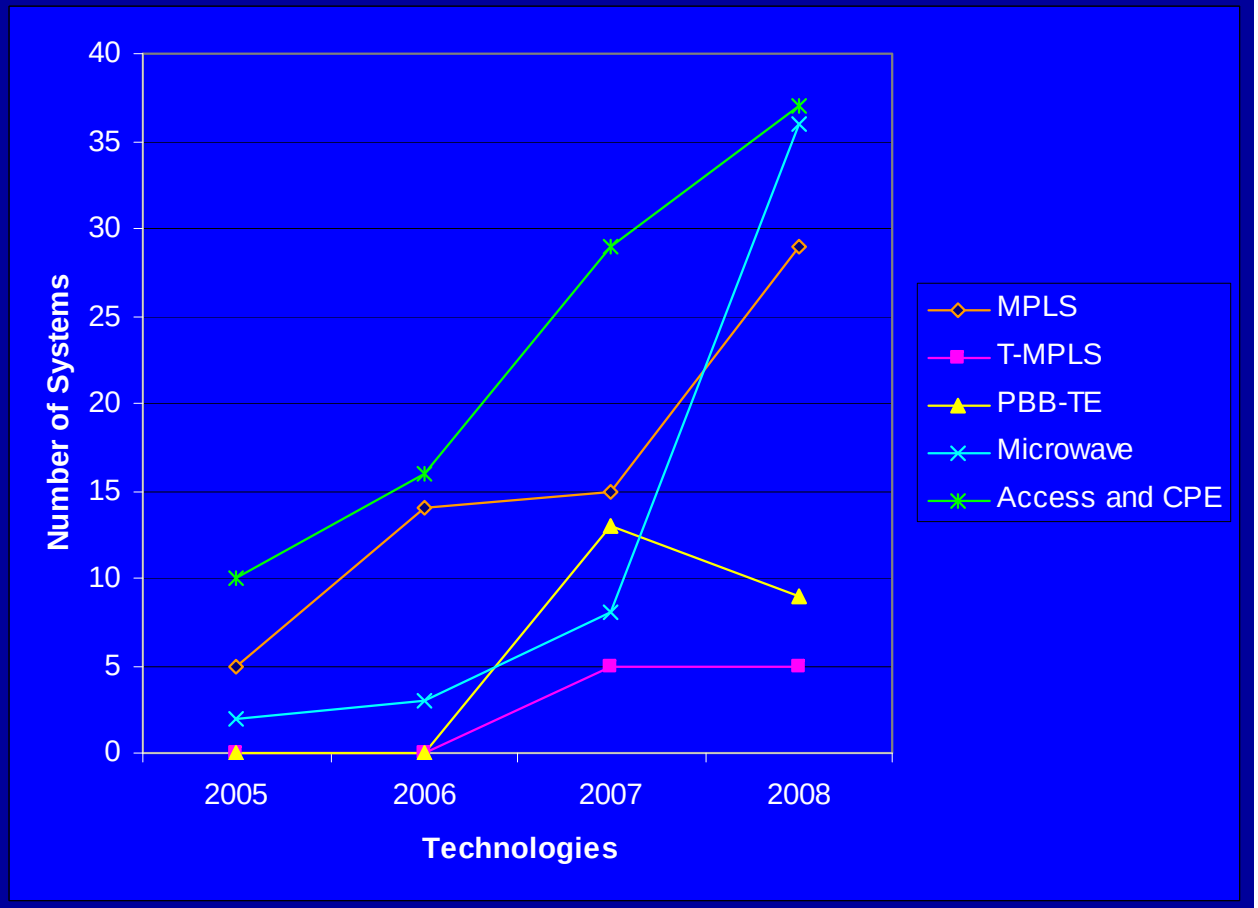
Carrier Ethernet Transport Technologies

- Metro technologies MPLS, PBB-TE, T-MPLS compete and collaborate
- Steady growth of access/CPE solutions
- Rapid growth of Ethernet-based microwave solutions



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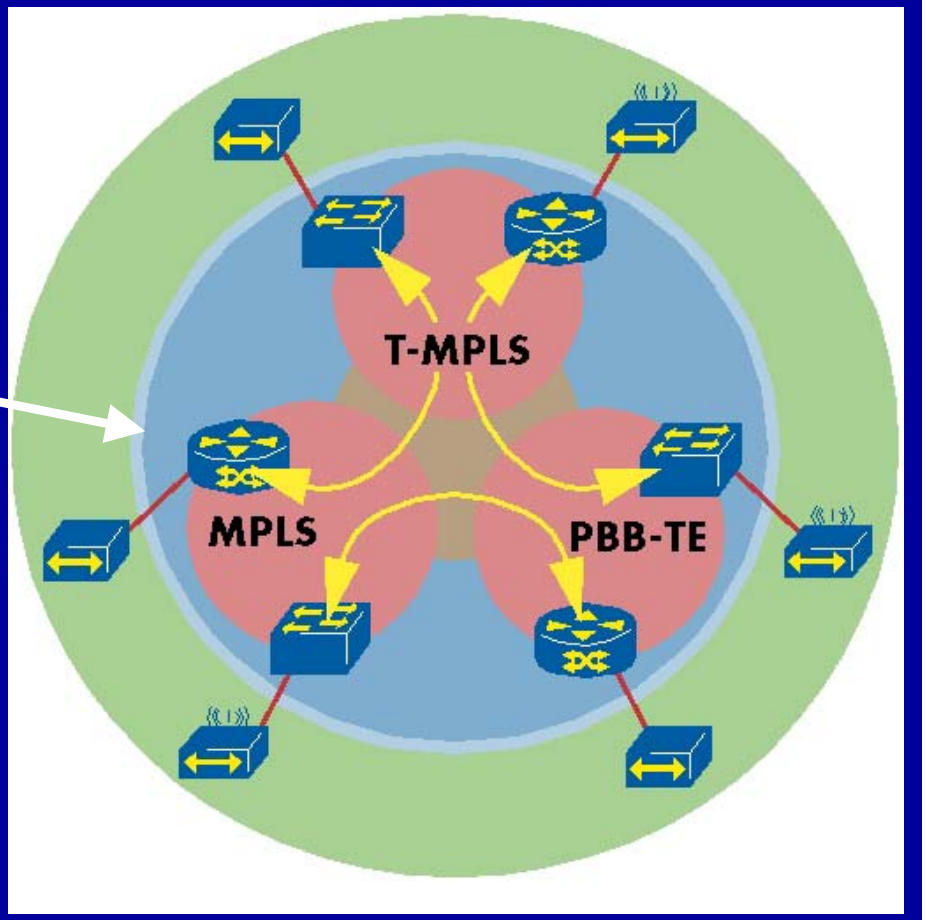
Test Network Design Philosophy

- End-to-end Carrier Ethernet services
- Well-defined interfaces: UNI-N and UNI-C
- Metro/Aggregation
- Core backbone
- Core/Metro interfaces (Draft E-NNI)



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Interest in Interoperability Event at Carrier Ethernet World Congress

2007	2008
Larger crowd initially Interest subsided starting on second day Metro technology battle dominated – deployment questions rarely raised	Sustained, substantial interest over all 3 days Interop event covered by many conf. presentations Detailed questions – SPs are in POC tests / deployment, coming across interoperability challenges now

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Service Provider Questionnaire Responses

Algeria Telecom
Belgacom
Brazil Telecom
Broadband Infraco
British Telecom
Colt Telecom
GTS Novera
GVT
Orange UK
PT Prime
Swisscom
Telecom Italia
Telecom New Zealand
Turk Cell
T-Com / T-Systems
Telefonica
Versatel
Vodafone
(28 in total)

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Questionnaire

Relevance of Interoperability Areas

1. Ethernet OAM
2. Ethernet Service Types (E-Line, E-LAN, E-Tree) + Performance Monitoring and Reporting
3. Metro Transport (MPLS, MPLS-TP, PBB-TE)

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Results Highlights:
Ethernet OAM – Service OAM

Continuity Fault Management (IEEE 802.1ag)

- Widely supported
- Fully interoperable three functions
  - Continuity Check, Link Trace, Loopback
- Added Remote Defect Indication tests

Results Highlights:
Ethernet OAM – Link OAM

Ethernet in the First Mile (IEEE 802.3ah)

- Tremendous level of support
- Discovery, loopback generally interoperable
- Dying Gasp generation on CPE devices

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Results Highlights:
Ethernet OAM - Performance Monitoring

Can you trust your PM? (Y.1731)

- New area – first interoperability achieved
- Verify accuracy of reporting against configured impairment

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Applicability to UNI

UNI Type	Requirements	Status
1	VLAN Support	Tested
2.1	Service OAM, Enhanced UNI Attributes, L2CP	Tested
2.2	Service OAM, Link OAM Protection	Tested

Questionnaire

Relevance of Interoperability Areas (2)

4. Metro Ethernet Security (new)
5. Access Technologies
   + Carrier Ethernet for Business
   + Bandwidth Profile Service Attributes
6. E-NNI

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Results Highlights:
External Network to Network Interface (E-NNI)

Interface between administrative boundaries

- Remains critical, but no single solution standardized yet
- Peering effort high to date
- Simple yet static – Provider Bridging (Draft MEF E-NNI standard)
- Complex yet dynamic – MPLS Pseudowire Stitching (IETF)

Questionnaire

Least Relevant Interoperability Areas?

1. IEEE Resilience (Shortest Path Bridging)
2. Circuit Emulation and ATM Pseudowires
3. Carrier Ethernet for Residential Triple Play
4. Provisioning and Dynamic Control Plane

Interpretation:

- Service providers attending CEWC focus business services (not mobile backhaul, triple play) today
- Standardized resilience is an open question

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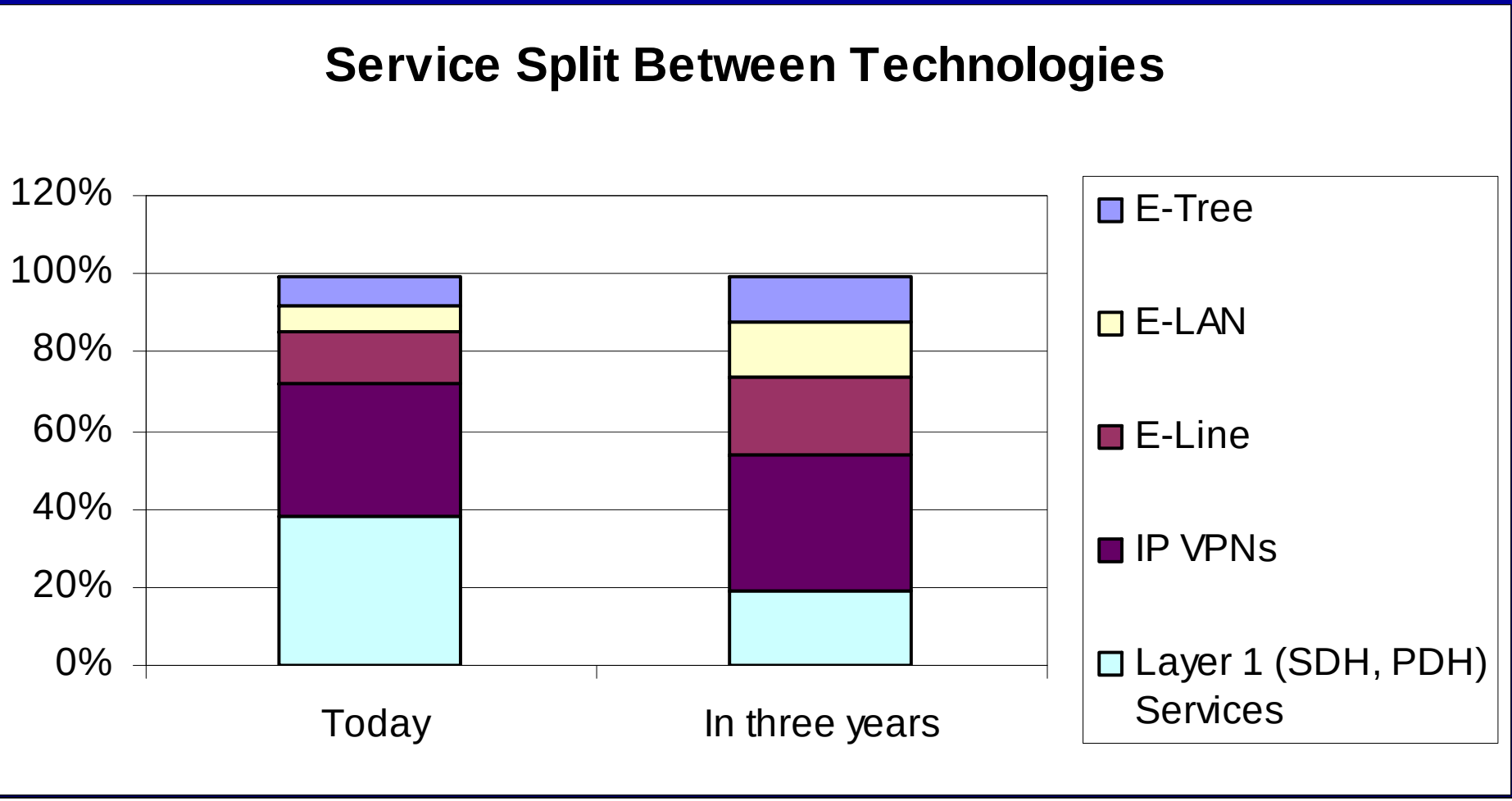
Questionnaire

Use of Carrier Ethernet Services



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Outlook – EANTC Interop Plans for ´09

- Plan to start migration testing of T-MPLS towards MPLS-TP in 02/2009
- Deep dive interoperability testing in Ethernet OAM
- Focus Carrier Ethernet access technologies for business customers – DSL, FTTx, Wimax, …
- Validate advances in OTN (Optical transport network) and its integration with switched/routed services
- Rigid multipoint / multicast service testing

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Further Information

EANTC edited a detailed, unbiased test report

- Paper copies available at the interop showcase here at the conference
- Available online: http://www.eantc.com/cew_apac2008

E-mail: cross@eantc.de

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