

Distributed Signalling and Multiple Transport Layers

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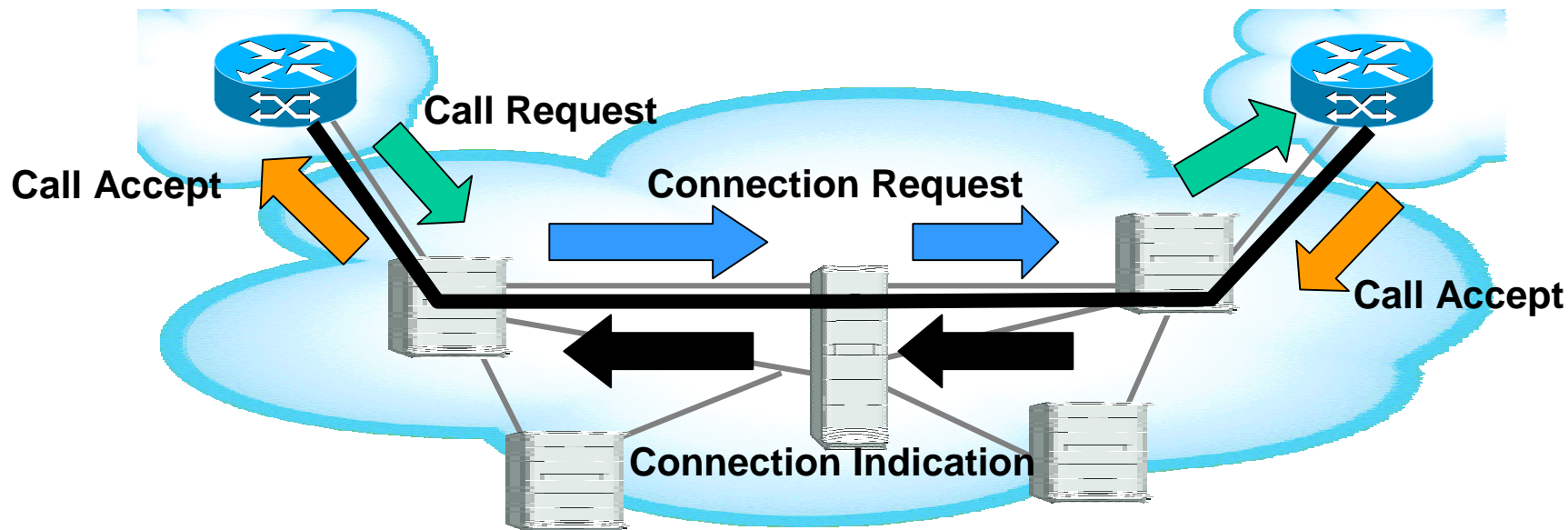
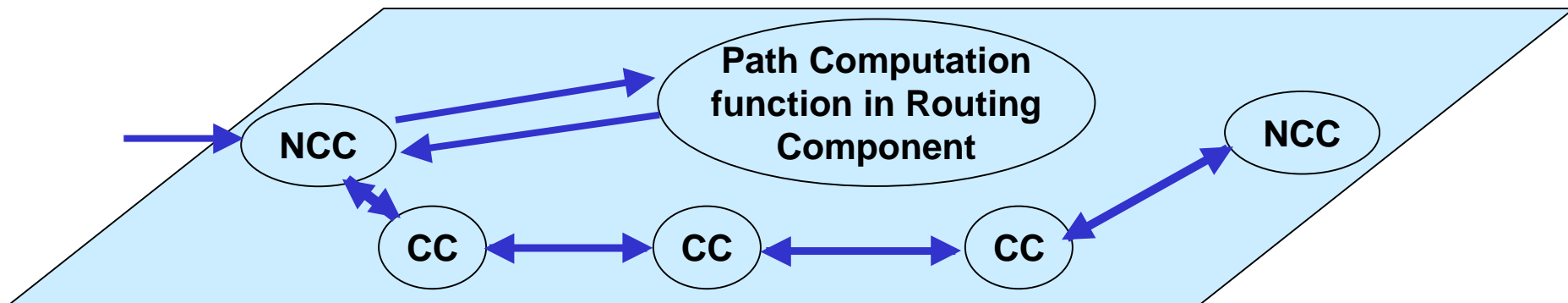
Standards and Control Plane Architecture, Nortel
Director, OIF board



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- o Distributed signalling for transport
- o Signalling standards and relationships
- o Recent signalling work
 - IETF - LSP Stitching
 - OIF - interop of Ethernet/Transport
 - ITU-T - ASON multi-layer multi-SCN

- o Signalling is a function that creates calls and connections.



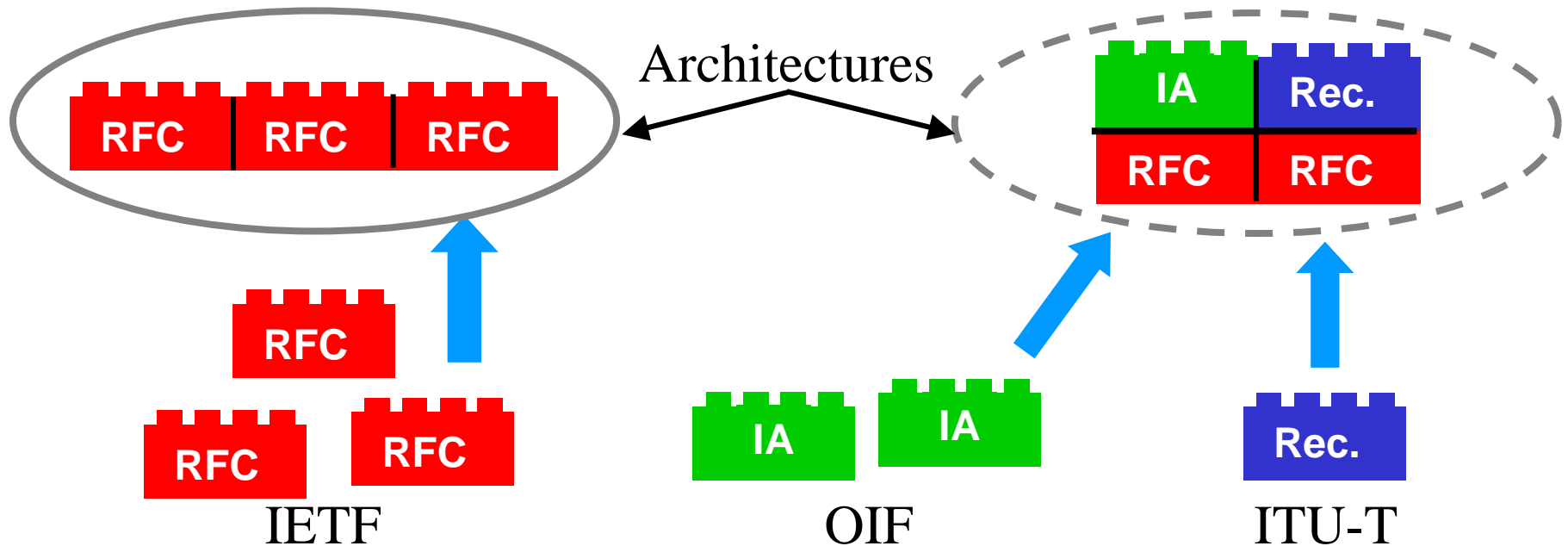


Signalling in Transport Networks

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- Signalling has existed for many years in telephony, ISDN, ATM, and MPLS.
- Signalling is extended for transport networks due to
 - Fixed granularities - defined multiplexing hierarchy
 - Protection functions in the data plane
 - Separation of data plane from control and management planes
 - Addressing/Naming - Separation of spaces between data plane and control plane
- “Connection” centric rather than “Protocol” centric
 - Connection exists even if control plane ceases

- Signalling capabilities are implemented in protocols, whose pieces can be combined according to different architectures.
- Different SDOs contribute pieces and architectures.





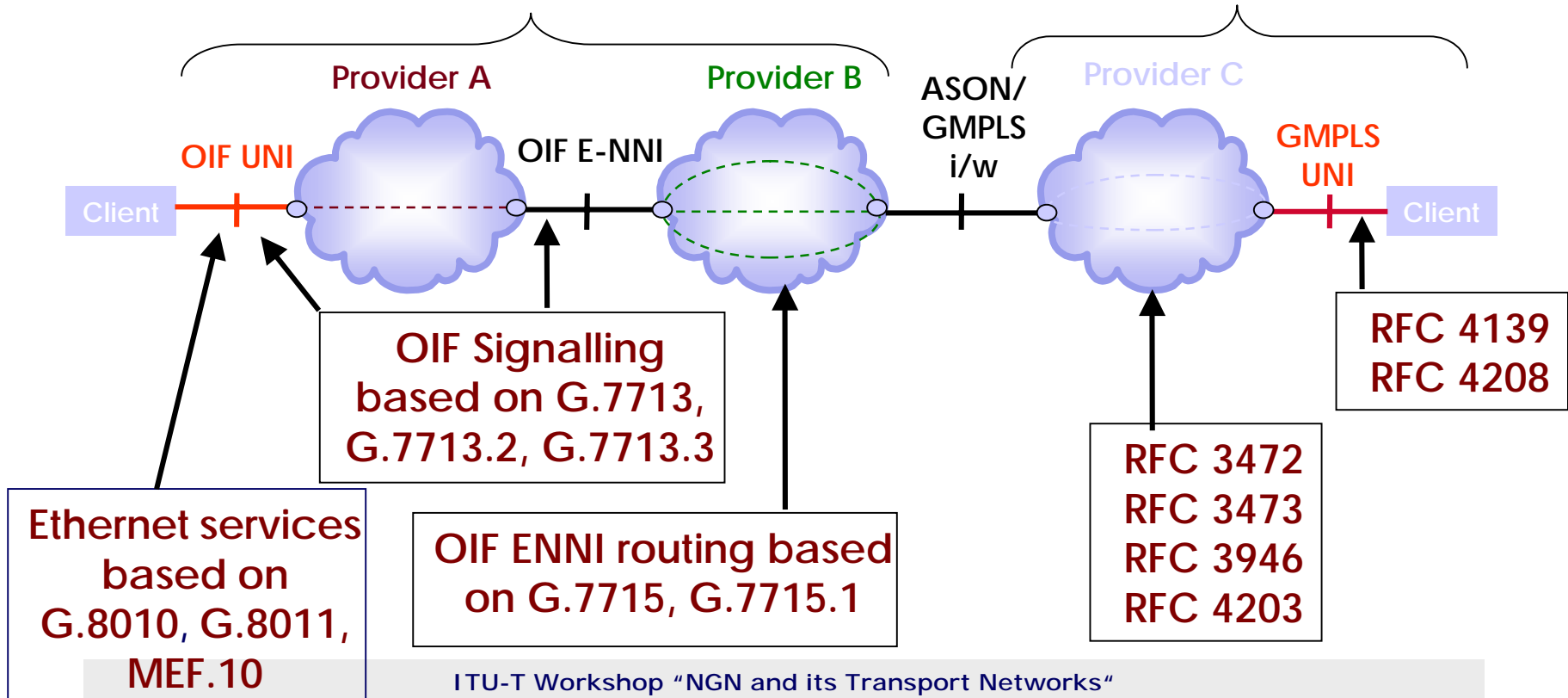
Signalling Standards

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- Dynamic signalling and routing control over OTN/SONET/SDH network.
- Dynamic signalling for Ethernet services using ASON Interlayer architecture

ASON Architecture
G.8080 – control plane
G.805 – bearer plane

GMPLS Architecture
RFC 3945

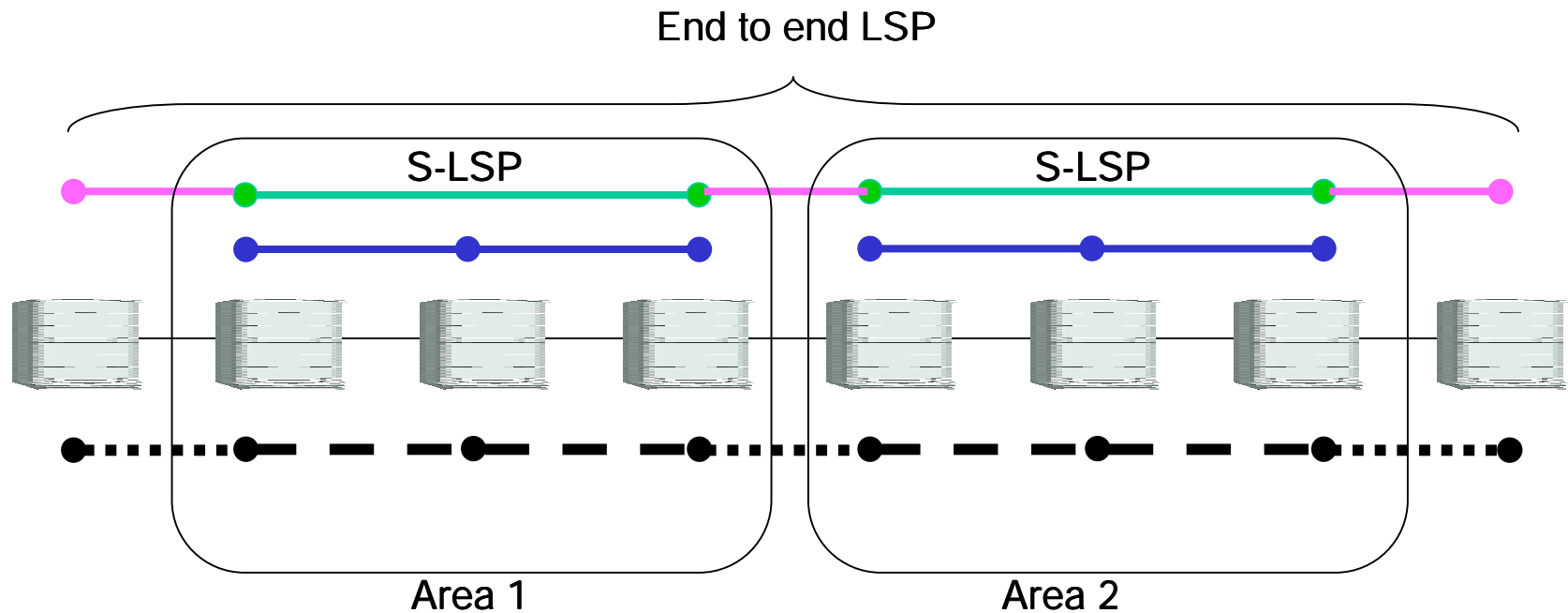




IETF CCAMP – LSP Stitching

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- A Label Switched Path (LSP) represents a data connection, and signalling state to support it.
- LSP Stitching allows an LSP to be treated as a single data/signalling link.



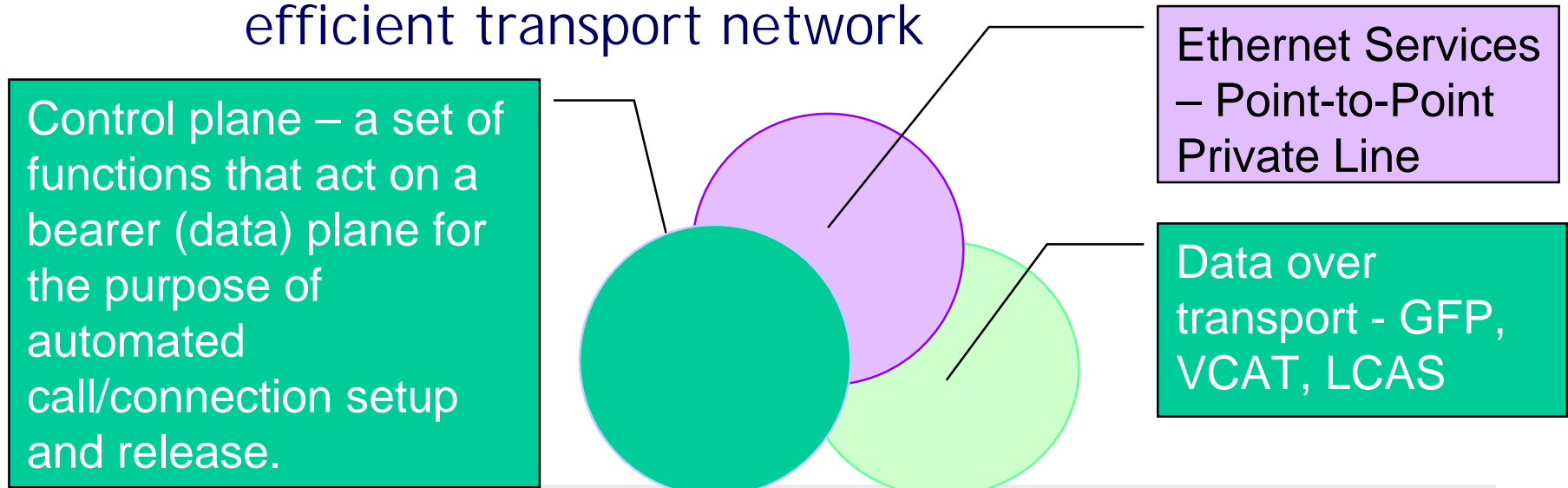


OIF Interop Demo Overview

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- o The OIF Worldwide Interoperability Demo combined:
 - Ethernet Services
 - Control plane
 - Flexible Transport Bandwidth functions

To provide dynamic Ethernet services over a bandwidth efficient transport network

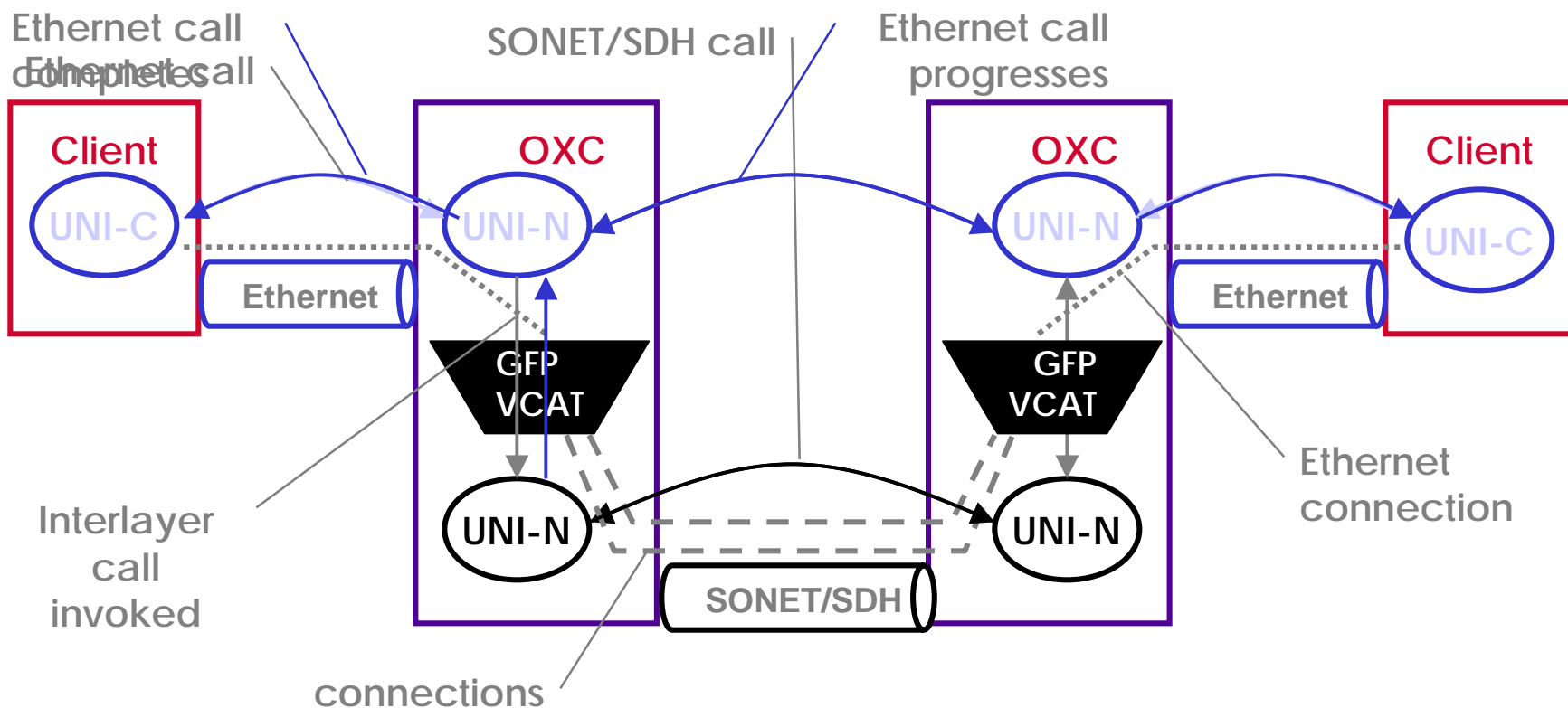




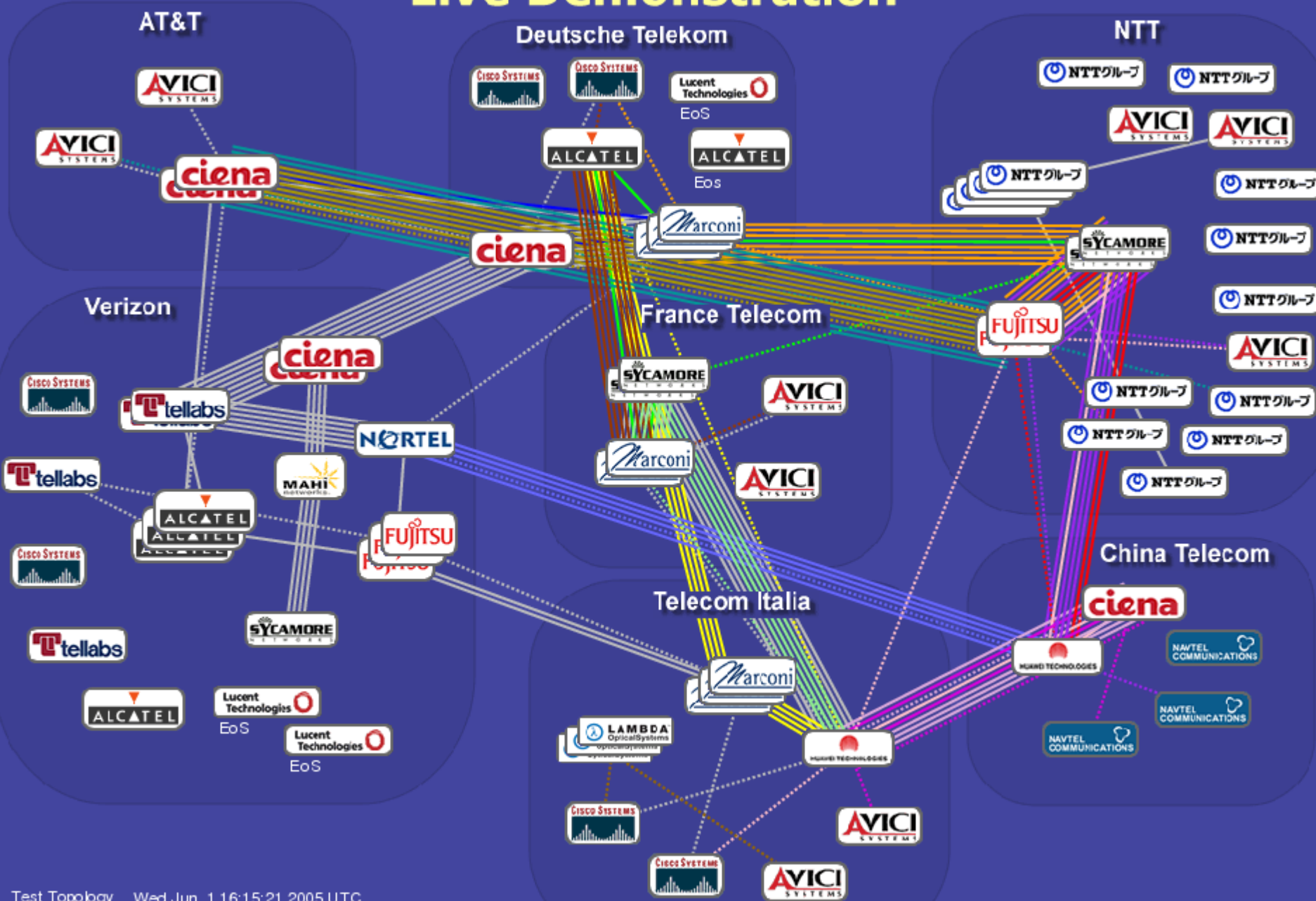
Interlayer Call Technology

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- Client makes an Ethernet call to destination
- Network triggers SONET/SDH calls to match Ethernet service request
- Control plane sets up Ethernet and SONET/SDH connections, and controls GFP/VCAT

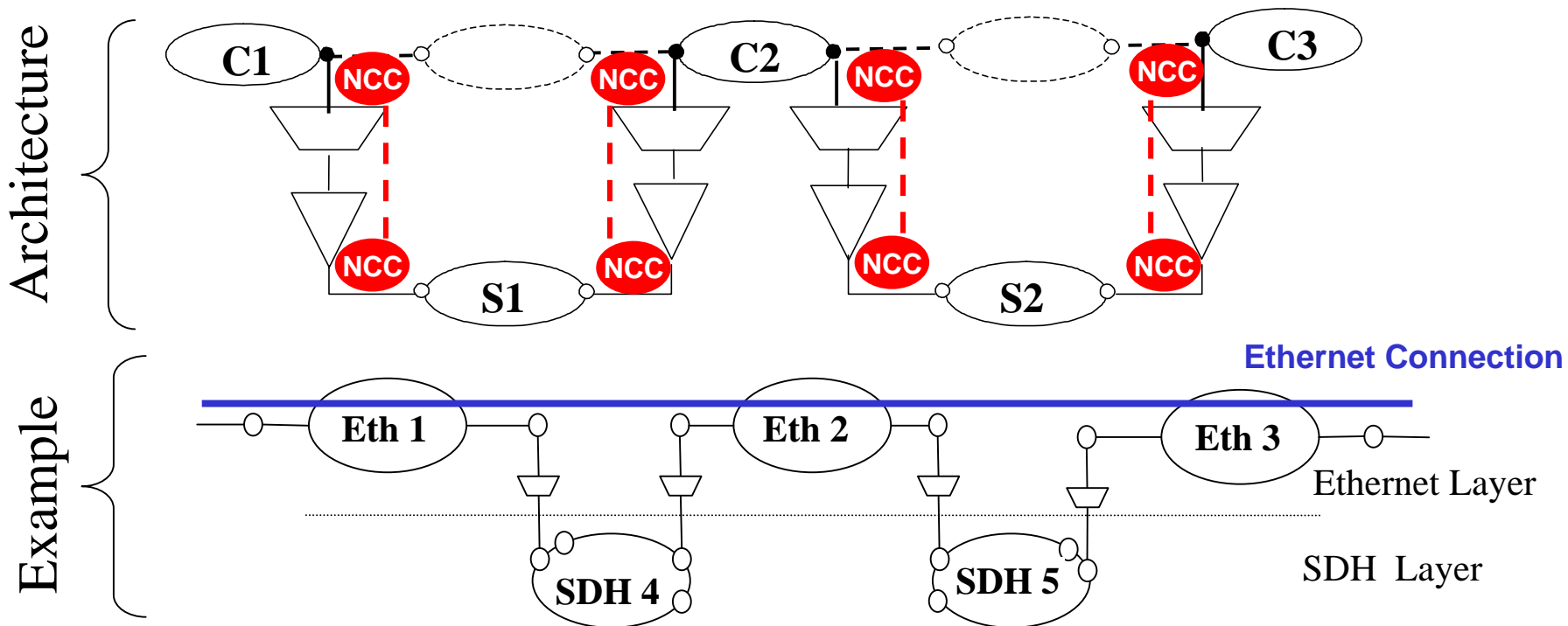


Live Demonstration

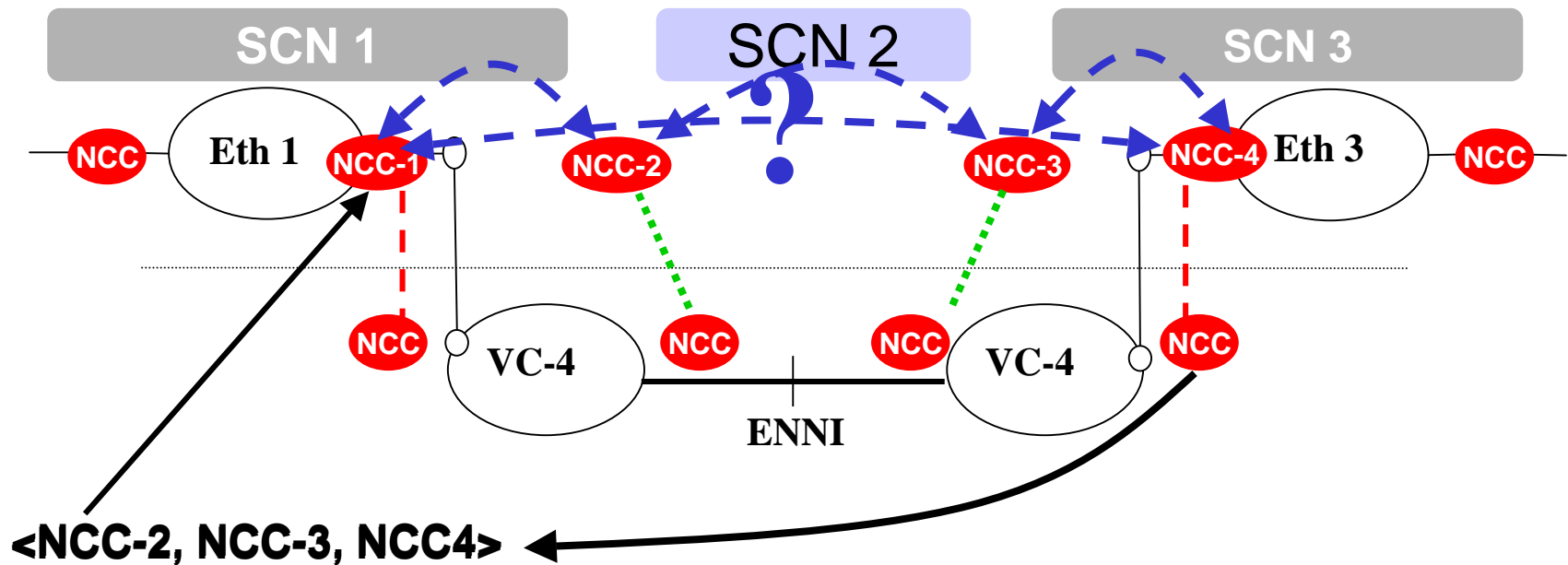


Test Topology Wed Jun 1 16:15:21 2005 UTC
Active Probes: ATT CT DT FT NTT TI VZ
Server restarted: Wed Jun 1 13:03:27 2005 UTC

- o G.8080 has defined an interlayer architecture called a “mapped server”. Examples of its use are:
 - Ethernet Private Line over SDH
 - VCAT layer
 - Multiple Ethernet Private Line over one server connection



- How do Client NCCs communicate when there are multiple Signalling Communication Networks present?
- One solution is to build a route of client NCCs while setting up the server layer.



Thank You