

Broadband Networks, Integrated Management & Standardization

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Broadband Networks and Services

- Network Technologies -

• Home Network →

Residential Gateway Centric
Ether network base

• Access network →

10Mbps-100Mbps Access
BPON, DSL base

• Transport network →

10Gbps Link, IP routers
GMPLS enabled OTN

• Server network →

Cluster Network,
GbFC,iSCSI, 10G standard

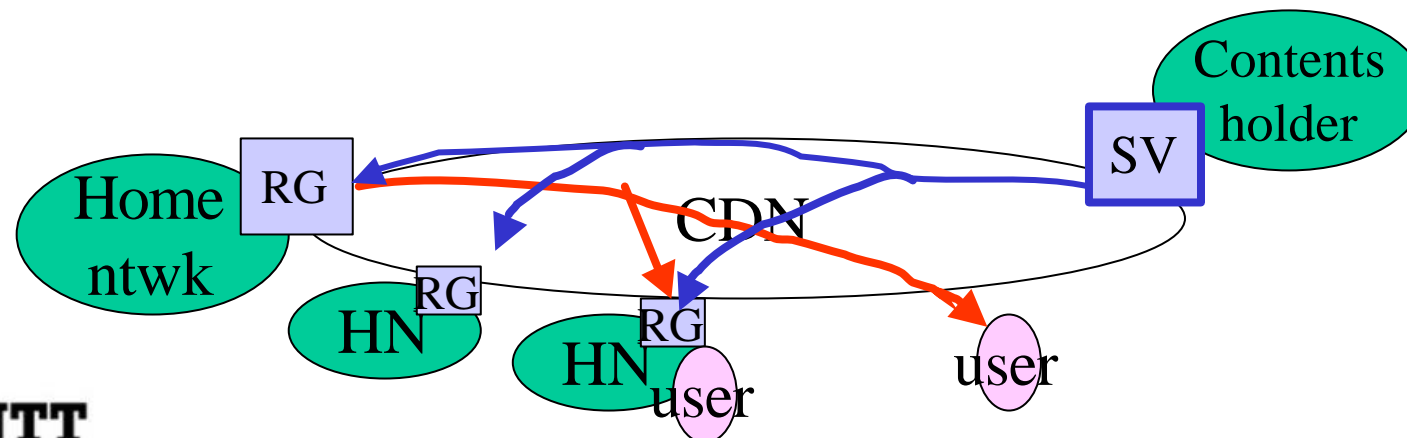
• IP network →

IP routing
Multicast, Diffserve, etc.

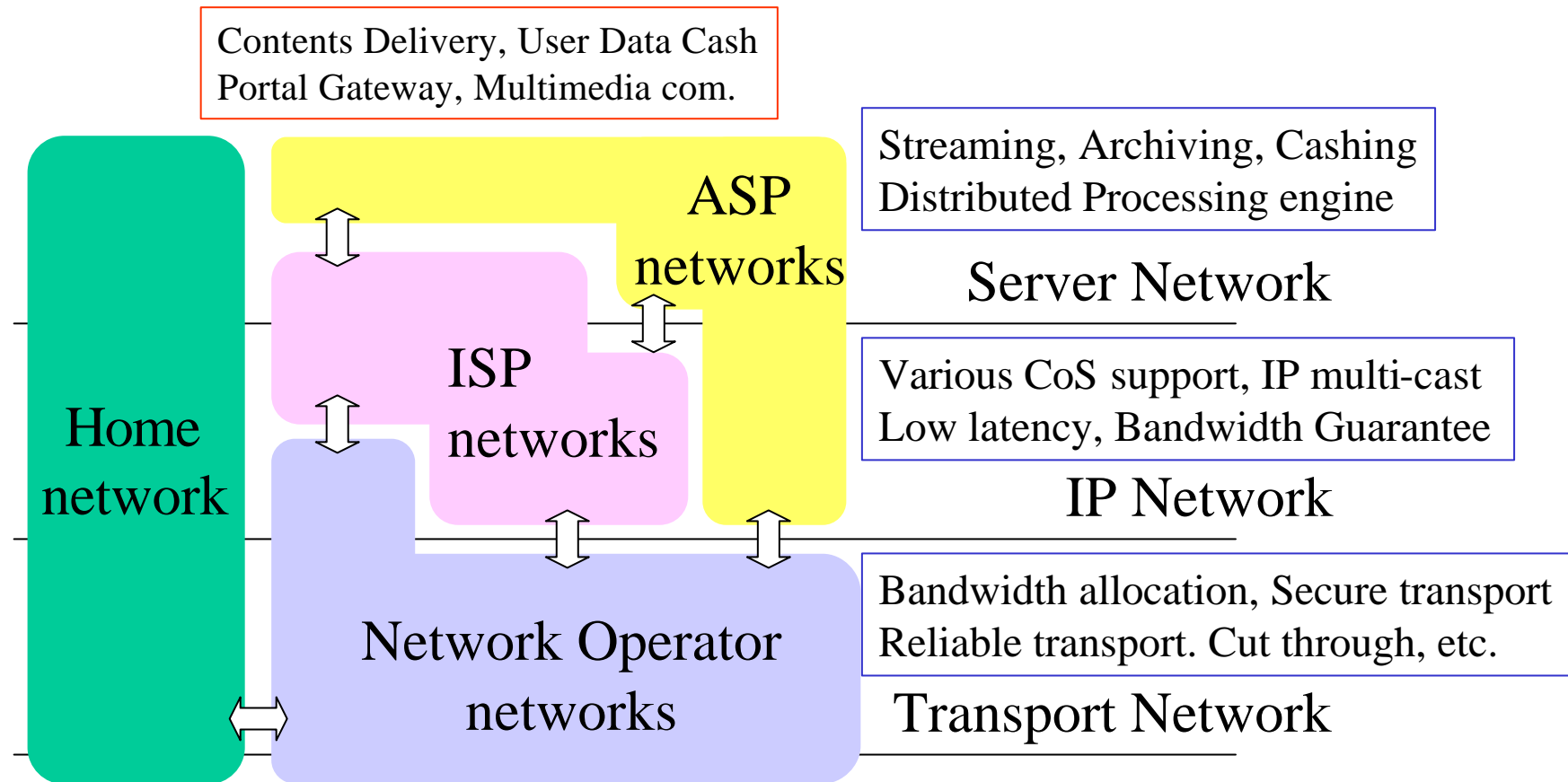


Broadband Services

- Contents Delivery Applications
 - Archived Contents (Point-to-point)
 - Streaming Contents (Multicast)
- Uni-directional to Bi-directional

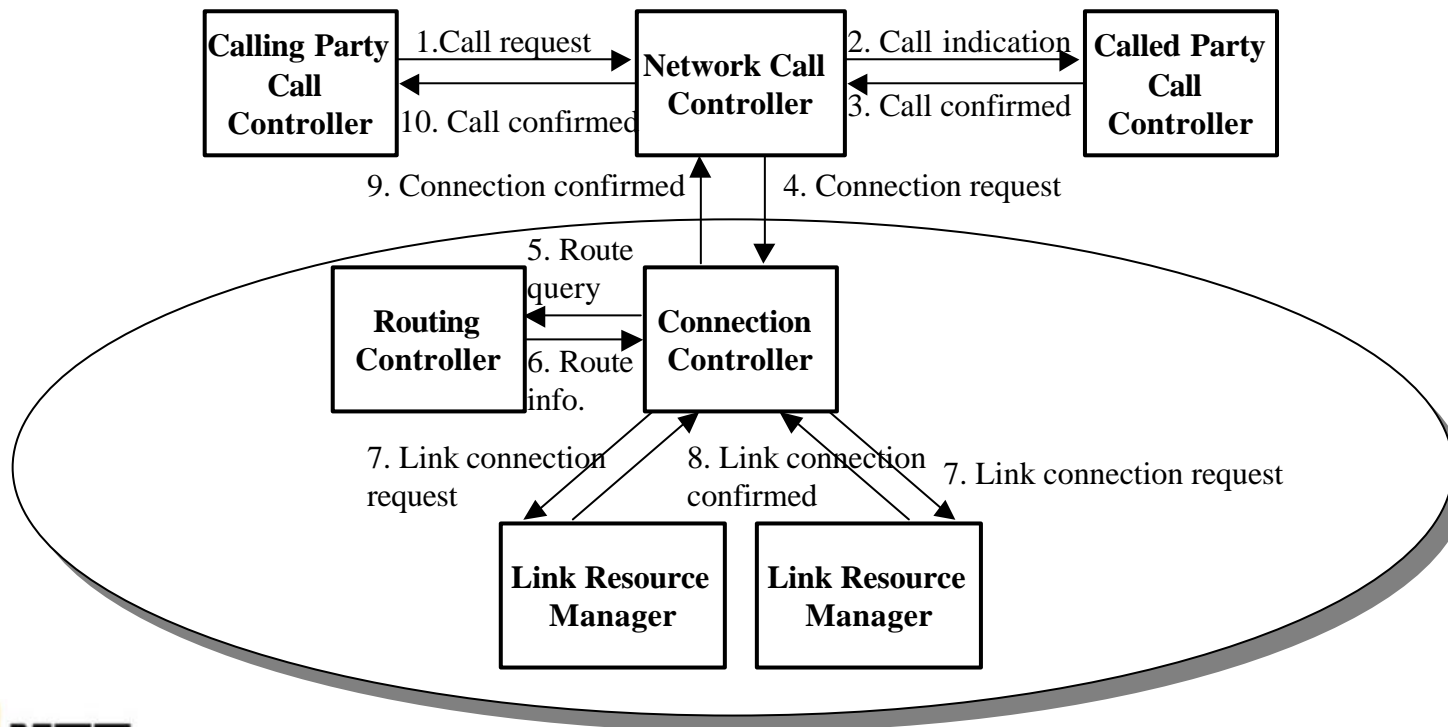


Broadband Network Architecture



End-to-end Management of Transport Network - connection control procedure-

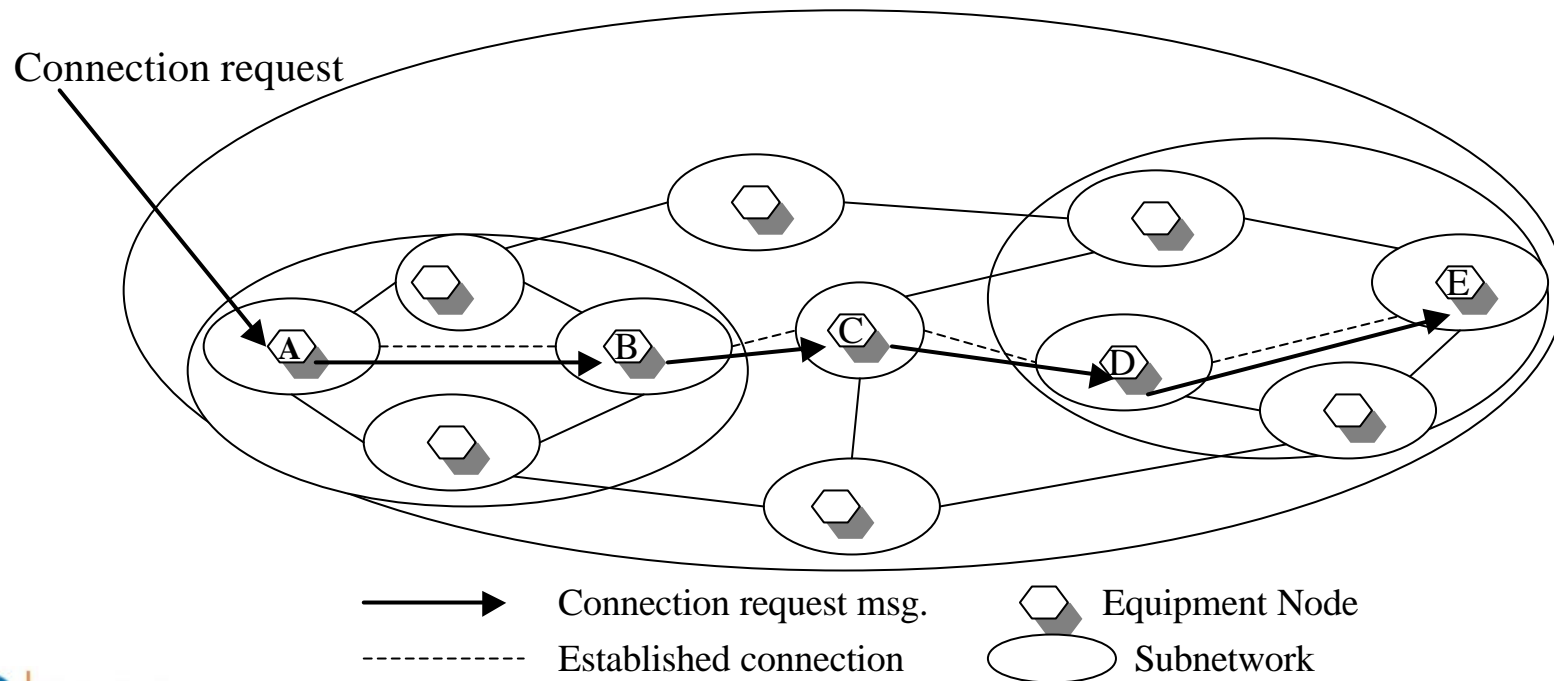
- Connection establishment component in ASON



End-to-end Management of Transport Network

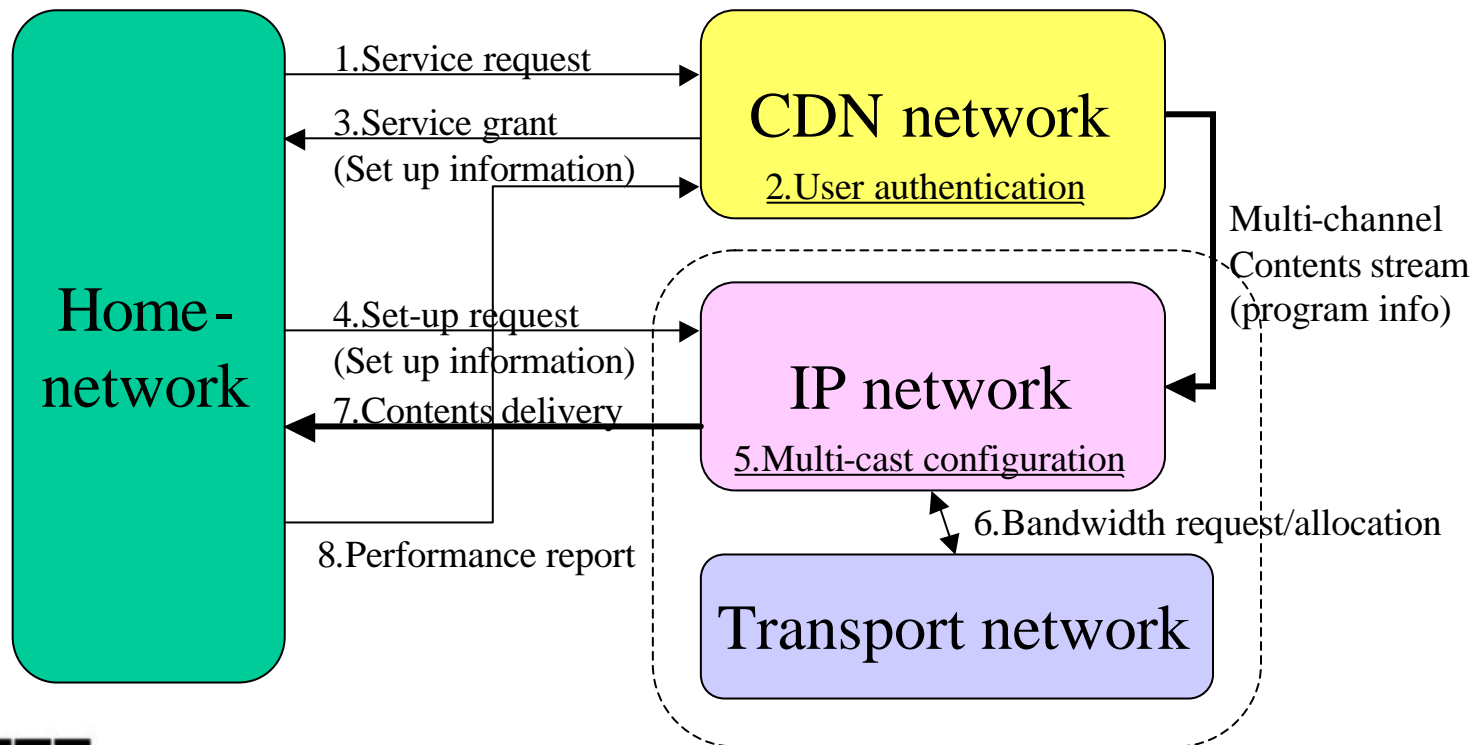
- routing aspect -

- Source and Step-By-Step Routing for ASON provides an end-to-end connections of the transport network. (alternative: Hierarchical routing)



Case study: CDN service management

- Scenario: User receives a stream contents from CDN network



Management of the broadband networks

- Goal: End-to-end management of sub-networks:
 - Service management rather than network management.
- Requirements for sub-networks:
 - Rapid service provisioning;
 - Autonomous service restoration;
 - QoS sensible application acceptance.
- Management areas of importance:
 - Configuration: service provisioning, autonomous systems configuration,
 - Performance: QoS report.



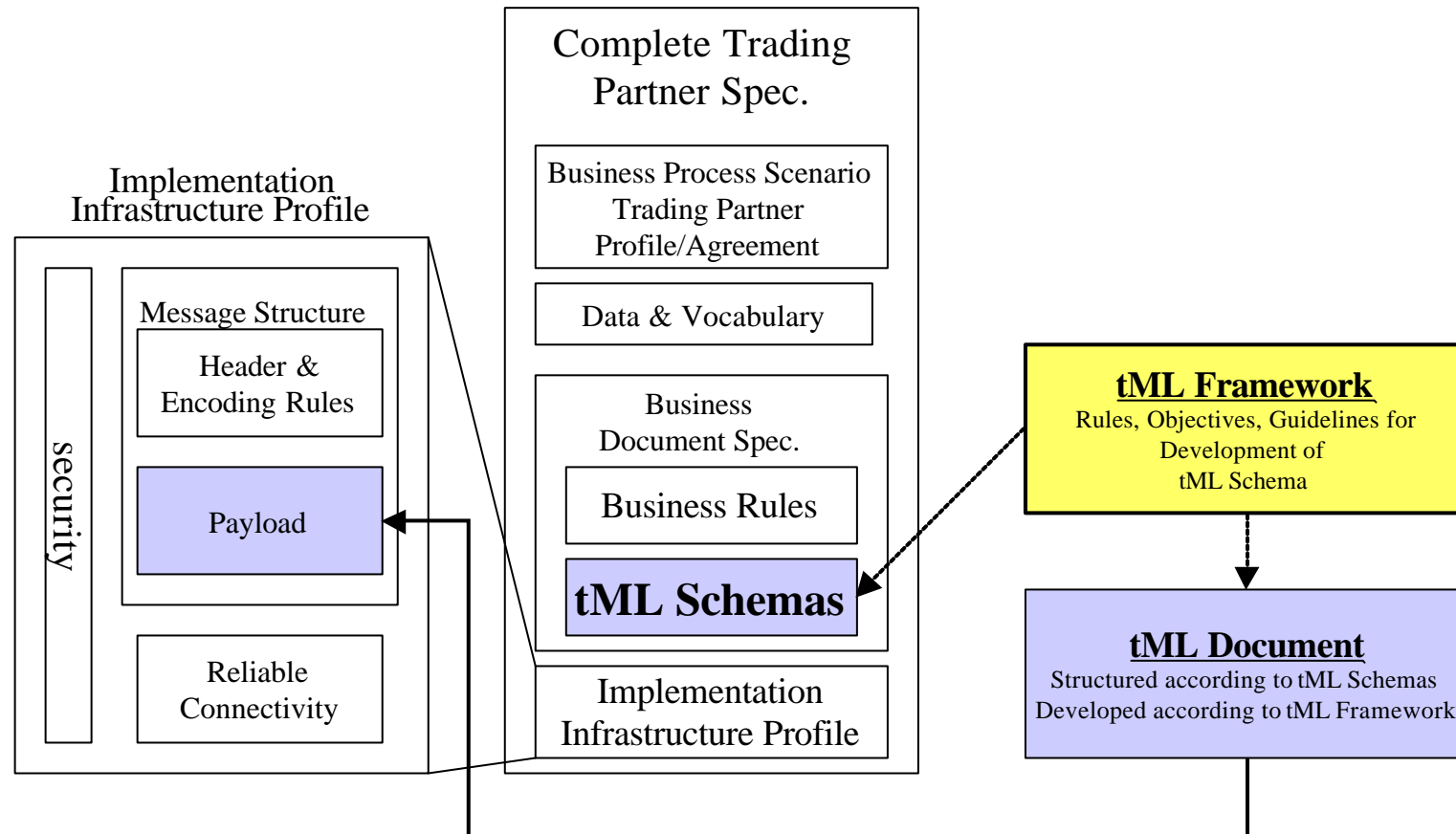
Design method for the broadband network management

- Conditions
 - Diversified(& ing) Management Protocols
 - SNMP, CORBA, CMIS/P, XML...
 - Diversified(& ing) SDOs
 - cf.SDO(Standard Development Organization)
- Approach
 - Protocol Independent Interface Design
 - Use of UML method
 - Electric document exchange between entities

Issues on the design method

- UML
 - What are the protocol independent common services, naming and addressing methods?
 - Conversion to SNMP, CORBA, GDMO models
- Use of XML for document exchange
 - What are Rules, Objectives and Guidelines of XML use?
 - Development of the GTDD
 - cf. Global Telecommunications Data Dictionary

tML Framework Scope



Conclusions

- The broadband network as integration of sub-networks:
 - Home network, ASP networks, ISP networks, and Operators networks.
- Vertical integration of the broadband network management:
- Protocol independent management interface design:
 - Naming, Addressing, Common Service issues need to be solved.
- There are standardization efforts in ITU-T:
 - ASON (Automatically switched optical network) Rec.G.8080/Y.1304
 - tML (Telecommunications Markup Language) Rec.M.3030
 - TMN methodology amendment Rec.M.3020

