



SMART

Multimedia Routing and Transport based on Service-Specific Overlay Networks

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SMART Objectives

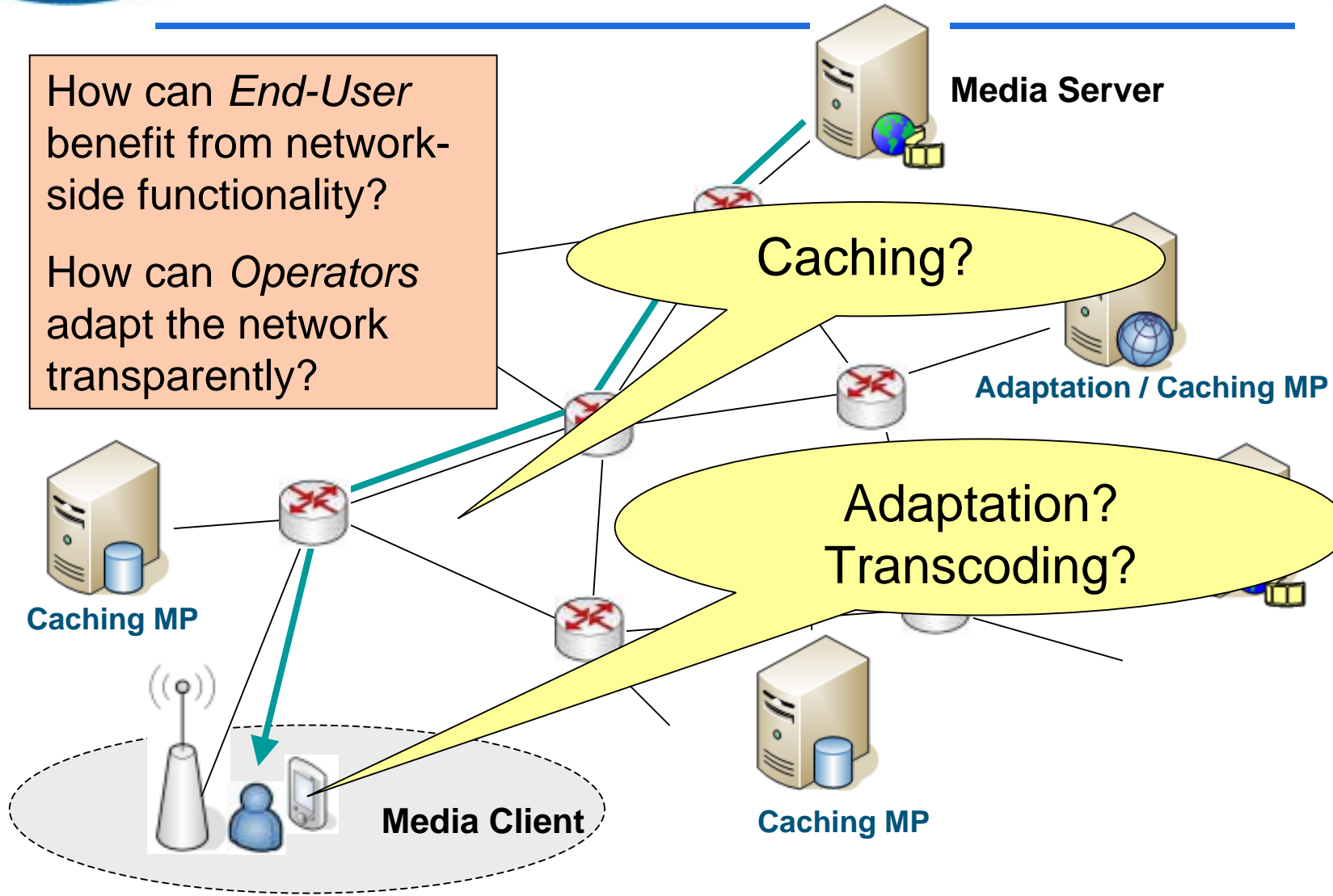


- ❖ Enable **network customization for services** over legacy networks
- ❖ Enhance media services by **taking advantage of network-side 'media processors'** (MediaPorts)
 - **caching, adaptation, synchronisation** and **media routing**
- ⇒ Development of **'smart' multimedia delivery** framework
 - Enable **transparent inclusion of MediaPorts** in end-to-end path
 - Take advantage of **value-added functions** inherent to ANs
 - Mobility management, context information, QoS support, etc.
 - Enable **flow routing** – flows of a single session can take different routes
 - Allow **adaptation** of media delivery service based on *network, user* and *service* context/policies

What's the Problem?

How can *End-User* benefit from network-side functionality?

How can *Operators* adapt the network transparently?



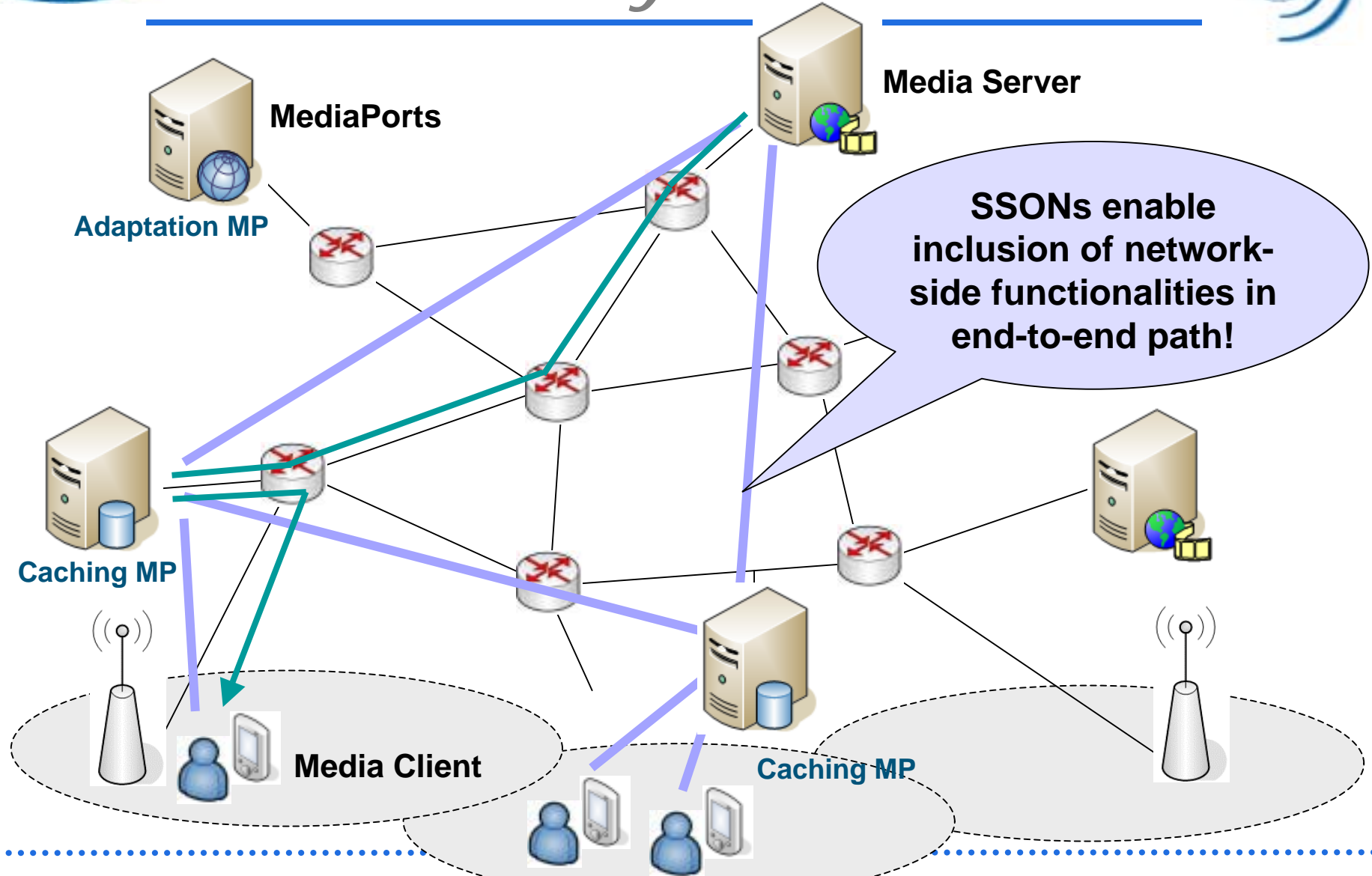


SMART Approach

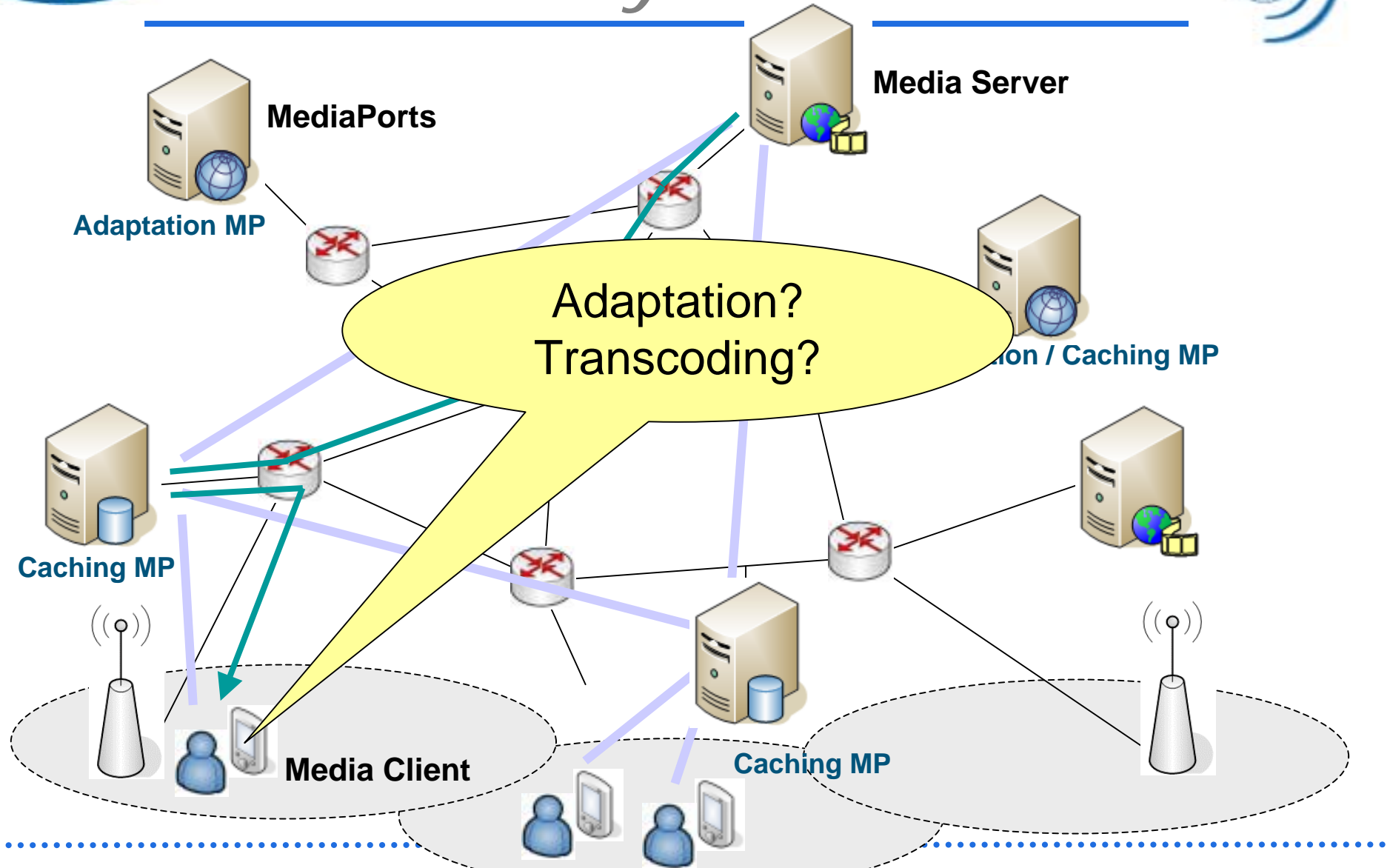


- ❖ Establishment of **Service-Specific Overlay Networks** (SSONs)
- ❖ SSONs are independent **virtual networks** for every media delivery service (or group of services)
- ❖ SSONs allow **tailoring the network** to the specific needs of a service
 - Topology
 - Addressing
 - Routing
 - QoS
 - Caching
 - Adaptation

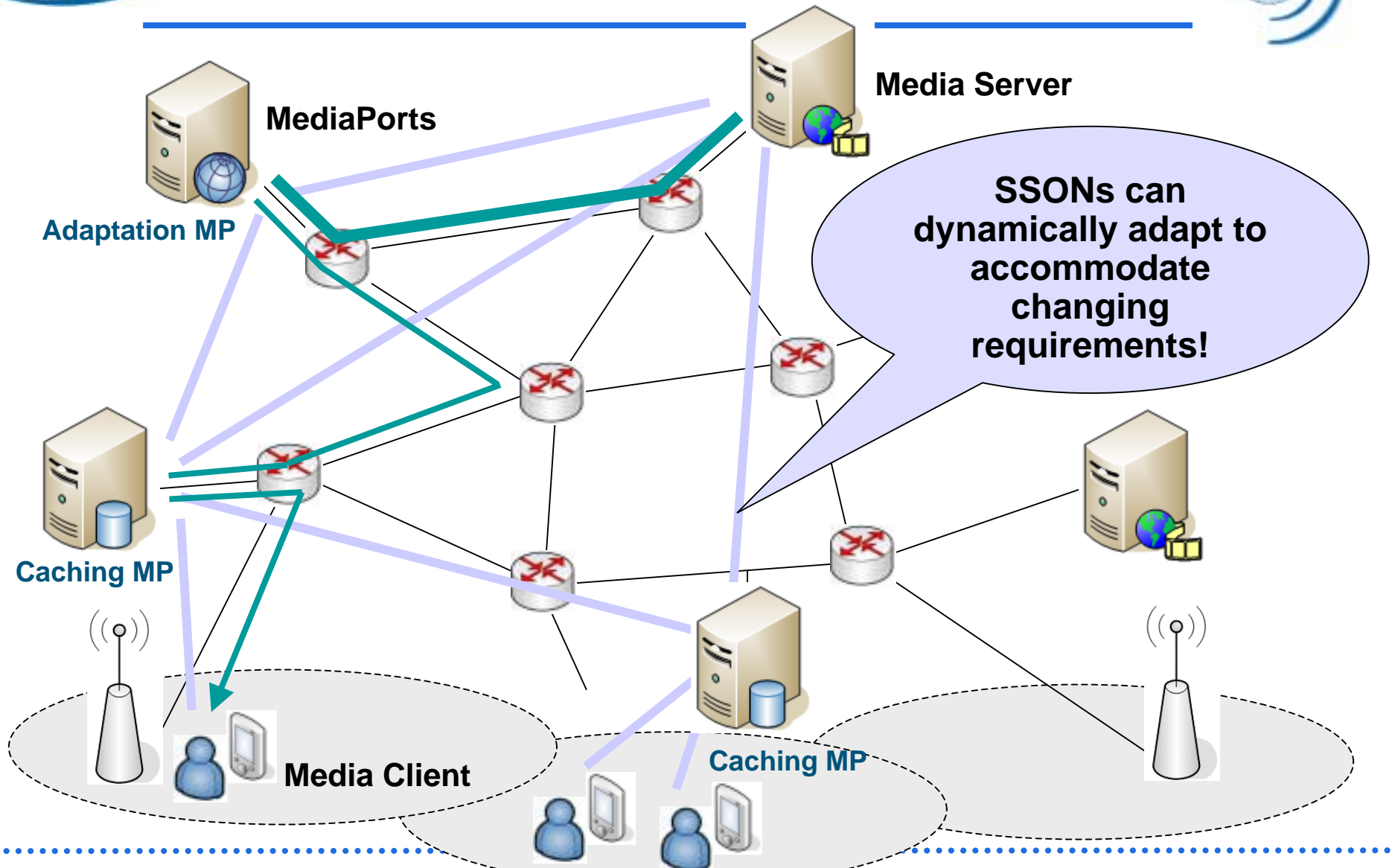
Service Specific Overlay Networks

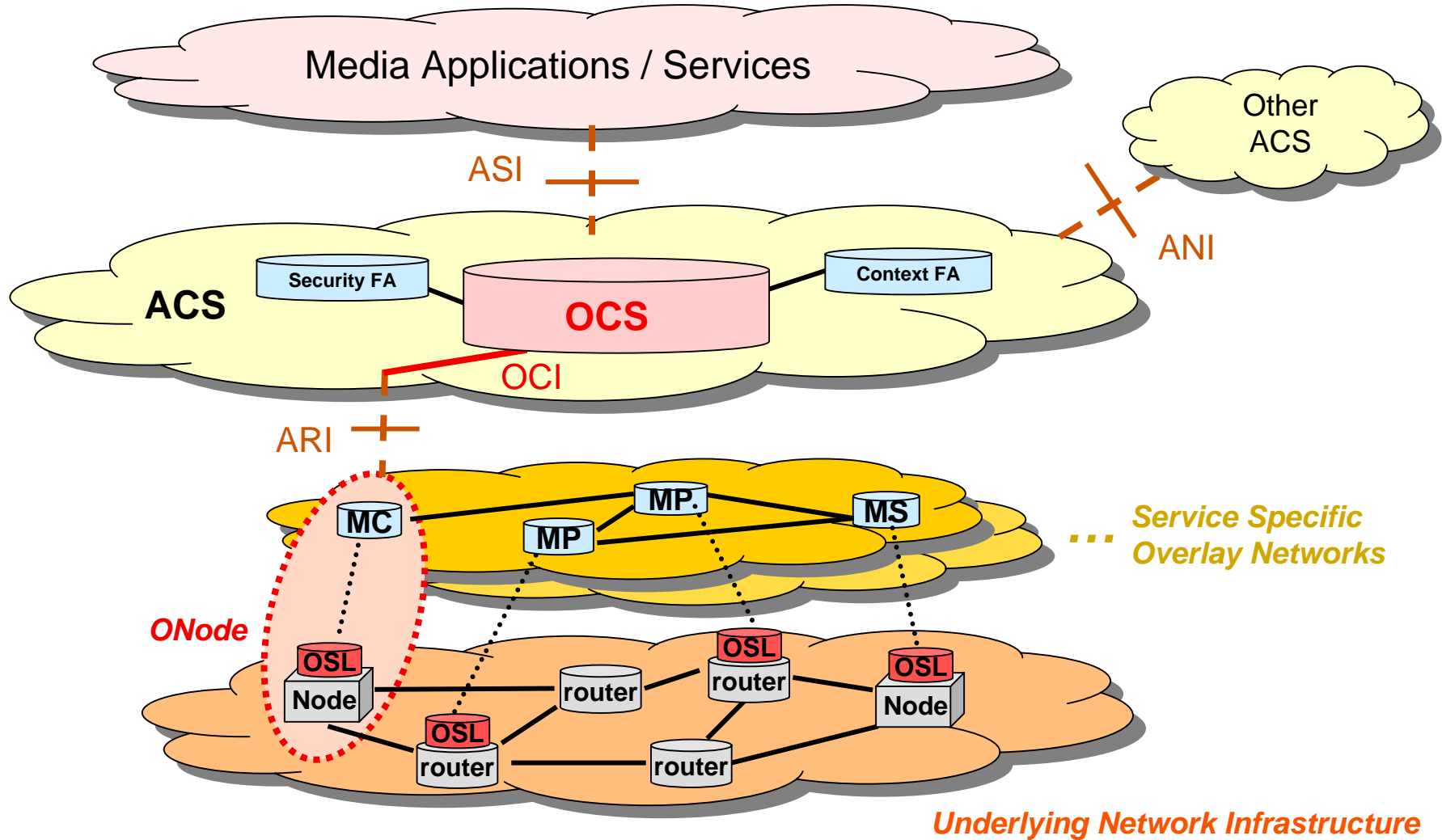


Service Specific Overlay Networks



SSON Adaptation







SMART Routing Logic



Routing decisions are taken on **2 levels**:

❖ **Underlying Network** (network layer)

❖ **Overlay Networks** (within SSONs)

■ **SSON Configuration**

- Defines the topology of the ‘virtual networks’
- Initial configuration: **setup time**
- SSON adaptation: **on-demand** (slow!)

■ **SSON-Level Routing**

- Routing at overlay level
- Potentially **highly re-active** or **even pro-active** (fast!)
- Basic mechanism for: fault tolerance, load balancing, etc.

❖ Status:

- Draft SMART architecture developed
- Basic routing logic available
 - Unicast
 - Multicast
 - CDNs & P2P Networks
- Simulation tool for SSON setup and adaptation available

❖ Next Steps:

- Prototype development of SMART architecture
- Full simulation of large scale SSONs
- Contribution to standardisation bodies

