



COPS Usage for ODSI

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Outline

- ⌘ Introduction
- ⌘ ODSI Framework Overview
- ⌘ COPS Usage for ODSI
- ⌘ Conclusions
- ⌘ References

Introduction

⌘ COPS (Common Open Policy Service)

- Automated policy provisioning, client/server model
- Generic signaling, applicable in various scenarios

⌘ ODSI (Optical Domain Service Interconnect)

- Bridge between electronic and optical networks
- Automated optical circuit (bandwidth) provisioning

⌘ Proposal for optical networks

- Re-use COPS for ODSI policy provisioning
- Parallel proposal in ODSI Forum

ODSI Framework Overview

⌘ Architectural features

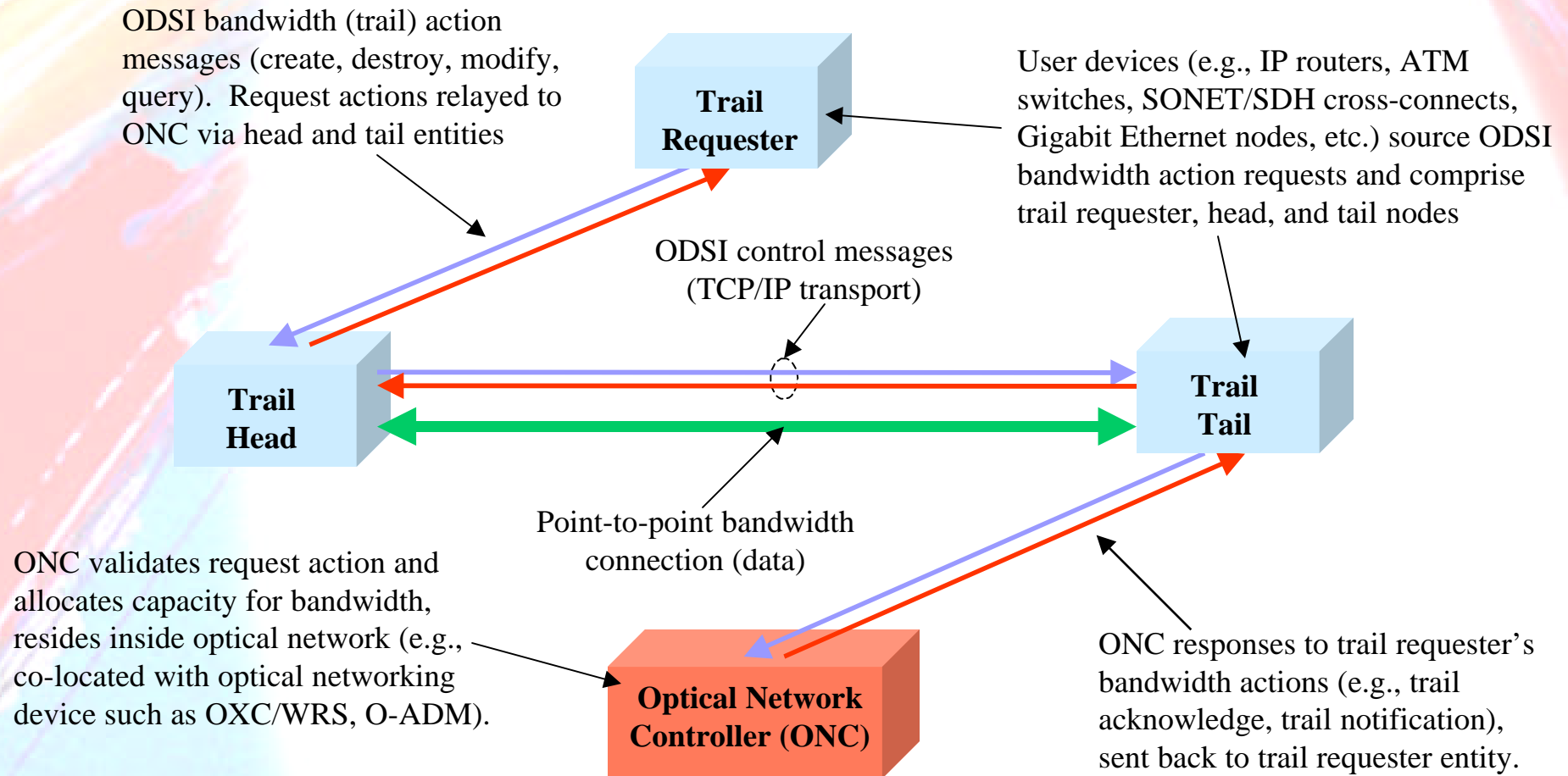
- Trail requester, trail head, and trail tail entities
- Optical network controller (ONC, network device)
- Third-party signaling performs transactions
E.g., create, destroy, modify, query, directory lookup
- User groups limit connectivity to members
- Service discovery, address registration via PPP

⌘ Current status

- Functional/signaling/MIB specifications being updated
- New access control and accounting specification



ODSI Framework Overview



ODSI Framework Overview

⌘ Messages sourced by trail requester

- **Trail Create Request:** Requests circuit setup, relayed to ONC
- **Trail Modify Request:** Requests circuit modify, relayed to ONC
- **Trail Query:** Check the status/parameters of an existing circuit
- **Trail Destroy Request:** Requests circuit teardown

⌘ Messages sourced by trail head

- **Trail Identity:** Identifies requester of trail ID, serves as keepalive msg

⌘ Messages sourced by ONC

- **Trail Create Acknowledge:** Indicates successful create request
- **Trail Modify Acknowledge:** Indicates successful modify request
- **Trail Query Response:** Returns status information for query request
- **Trail Destroy Acknowledge:** Indicates successful circuit teardown
- **Trail Notification:** Details unsuccessful create request



COPS Usage for ODSI

⌘ Propose outsourcing model interworking

- Most expeditious, allows simple interworking
- Similar model for other signaling protocols (RSVP)

⌘ ODSI PEP client

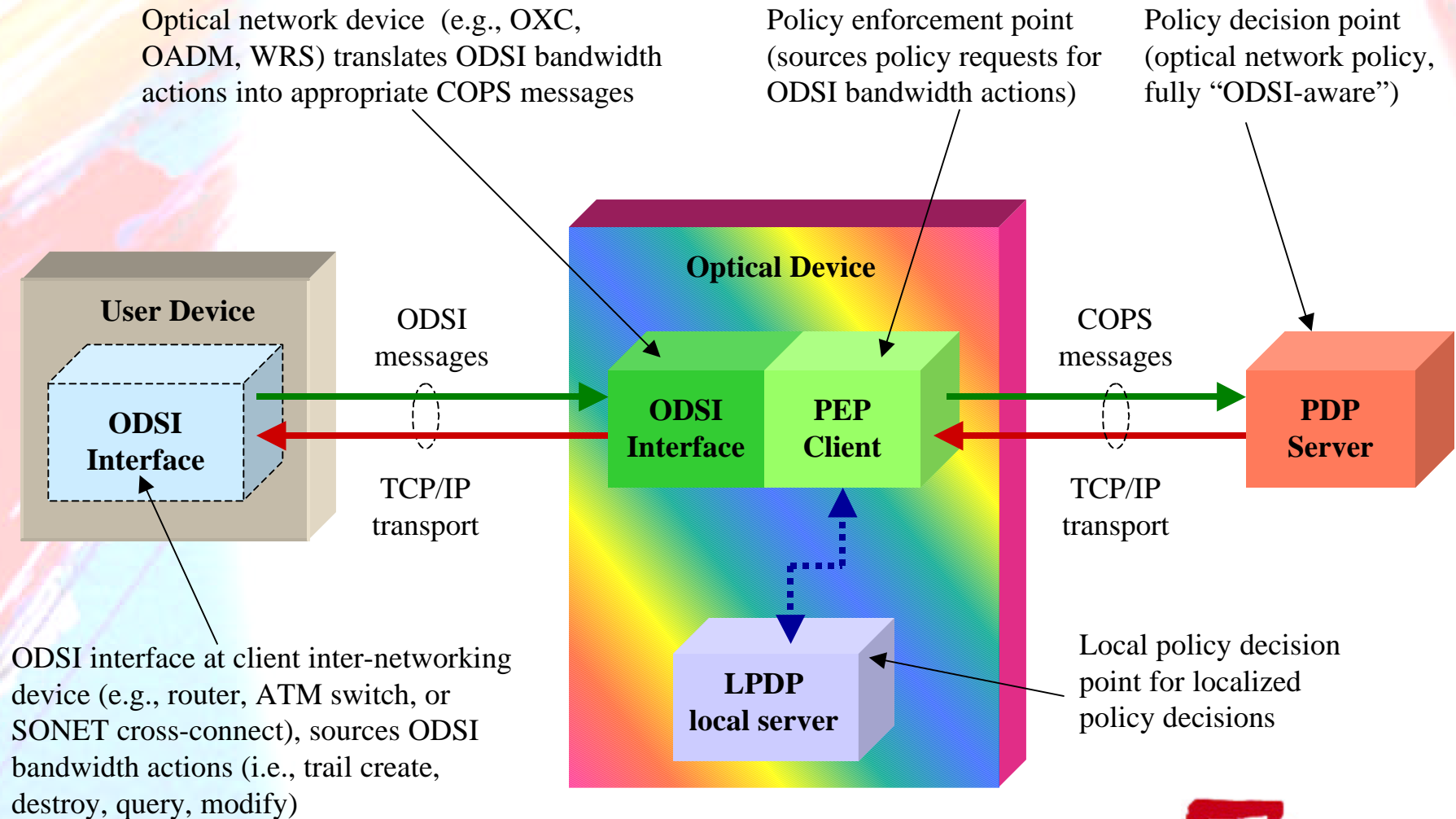
- Inter-works with optical device's ODSI entity
- Initiates PDP requests, relays ODSI messages
- Signaled client type (value 5)

⌘ ODSI PDP server

- Policy decisions for “relayed” ODSI requests
- Logically “decoupled” from ONC entity



COPS Usage for ODSI



COPS Usage for ODSI

⌘ PEP policy request generation/response processing

- PEP generates initial COPS REQ message
E.g., only create, destroy, modify, query transactions
- PEP resolves user groups, endpoint IP addresses
- ODSI request completion depends on PDP response
- PEP installs PDP decision, sends RPT updates

⌘ PDP policy request processing

- PDP returns COPS DEC messages (install, remove)
- Decisions based on user group, IP addresses, SLAs
E.g., expiry quotas, time-of-day limits
- Can issue synchronize, unsolicited DEC



Conclusions

⌘ Optical network policy provisioning

- Policy control crucial for advanced optical networks
- COPS yields comprehensive, extendible solution

⌘ COPS-ODSI interworking

- Use COPS outsourcing (signaled client) model
- PEP client translates ODSI requests to PDP server
- “ODSI-aware” PDP server (message encapsulation)

⌘ Future work items

- New PIB and associated rules definitions?
- What about a provisioned model?



References

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Supplemental Slides

48th IETF Meeting, Pittsburgh, PA, August 1st, 2000



COPS Usage for ODSI

⌘ Request (REQ) message

- PEP *only* handles messages sourced by requester
E.g., (trail) create, modify, query, destroy

- Message format:

**<Request> ::= <Common Header>
<Client Handle>
<Context> [<ClientSI: Request ID,
All objects in ODSI trail requester message>
[<LPDPDecision(s)>] [<Integrity>]**

- Modify request must include start times

**<ClientSI>:: Request ID,
All objects in ODSI trail requester message,
<old starting time>
<new starting time>**



COPS Usage for ODSI

⌘ Decision (DEC) message

- PDP response to PEP “trail request” REQ msg

- Message format:

**<Decision> ::= <Common Header> <Client Handle>
<Decision> | <Error> [<Integrity>]**

where

**<Decision> ::= <Context><Decision: Command Code>
<Decision: ClientSI data>**

- Server responses in command code field:
Install (positive), remove (negative)
- Decision object explains negative decisions
E.g., resource unavailable



COPS Usage for ODSI

⌘ Report State (RPT) message

- PEP reports decision outcomes or failure conditions
- Message format:

**<Report State> ::= <Common Header> <Client Handle>
<Report Type> <ClientSI: Request ID>
[<Integrity>]**

⌘ Synchronize State Request (SSQ) message

- PDP sends SSQ message to “reset” state information
- Message format:

**<Synchronize State Request> ::= <Common Header>
<Client Handle>
<ClientSI: SSQ Scope>
[<Integrity>]**



COPS Usage for ODSI

⌘ Synchronize State Complete (SSC) message

- ODSI-COPS PEP sends synch. complete to PDP
- Indicates all “state re-build” REQ messages sent
- Message format:

**<Synchronize State Complete> ::= <Common Header>
<Client Handle>
<ClientSI: SSQ Scope>
[<Integrity>]**

⌘ Other COPS messages as per specification

- OPN, CAT, KA, CC: For session control/maintenance
- DRQ: To withdraw outstanding REQ message
E.g., if trail create acknowledge not yet issued

