UNIVERSITY
of DERBY

2nd International Conference on Advances in Peer-to-Peer Systems (AP2PS) 2010

Panel Discussion

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Does P2P matter?

- P2P provides protocols, techniques and architectures for organising, discovering and using resources that are distributed across large scale heterogeneous systems
- How does computing look like nowadays?
  - Pervasive
  - Social networks
  - Huge number of capable mobile devices, smart phones, handhelds, etc.
  - Need to share information and files with friends, contacts and colleagues while mobile
  - Online content distribution & web services
- Looks like there is an excellent match of the above characteristics to the contributions of P2P

P2P Evolution

➢ **P2P started as a file sharing technology**

➢ **Plethora of new and very different systems and architectures between 2001 to 2005**

➢ **Clear reduction of this activity in the past 5 years**

➢ **Emerging emphasis on situated P2P; use of P2P for specific applications such as VoIP, IPTV, VoD, etc.**
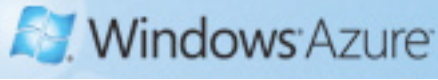
P2P Next State

- Is P2P a set of systems or a methodology for developing systems and/or components?
- Do you think that P2P can be used to interconnect different systems?
- Can P2P protocols influence the development of next generation network routing protocols?
- Does P2P have a place in the mashup of emerging technologies (clouds, ad-hoc networks, social resource sharing) or
- Is P2P dying fast (clear decline in interest)?

P2P & CLOUD COMPUTING WILL THERE BE A MERGE

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Introduction

- *Cloud computing* refers to a special kind of services where shared resources are provided on demand

- Different types of services:
  - Software as a Service (SaaS)
  - Platform as a Service (PaaS)
  - Infrastructure as a Service (IaaS)
  - Data as a Service (DaaS)...

Infrastructure as a Service

- Applications and data of users reside in *virtual machines* of sharing computers provided by service providers

- Three basic cloud models
  - Private cloud: used within an organization
  - Community cloud: across organizations
  - *Public cloud: pay-as-you-use*
  - Hybrid cloud: a mix between two different cloud models

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P2P and Cloud Computing

- P2P applications
  - Often free to use
  - Limited to file sharing systems
- Cloud computing
  - Pay to use
- Could we provide a *free cloud computing service* by combining P2P and cloud computing
  - Participants contribute resources

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Challenges

- Resource discovery
  - How to discover sharing resources

- Resource assignment
  - How to assign sharing resources to requests

- Fault tolerance
  - How to restore computing state at the failure

- Security
  - Protect host owners from attacks of users
  - Protect users from attacks of host owners

Passive Optical Networks: Performance Analysis and Evaluation

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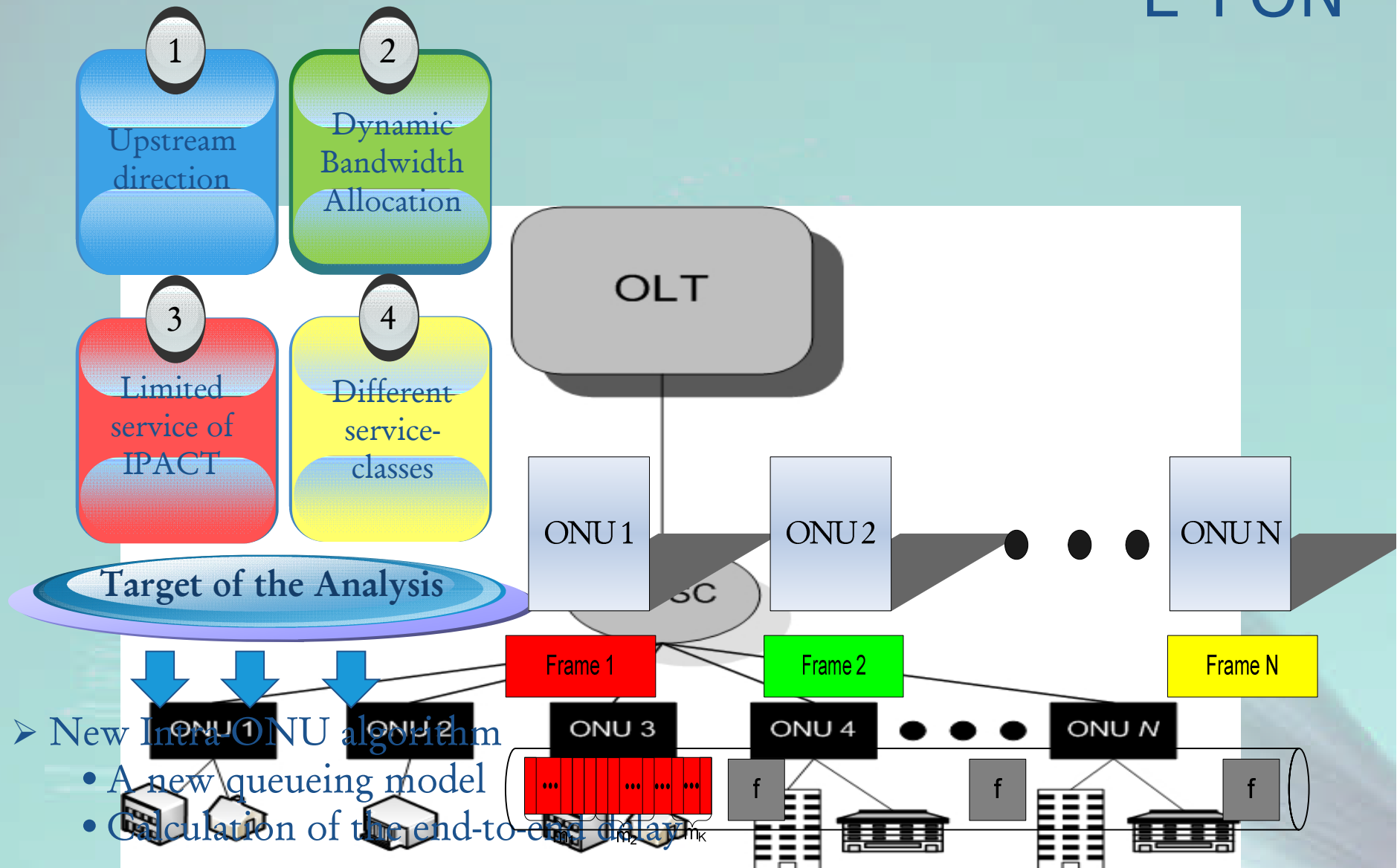
265 04 Patras, Greece.

Contents

E-PONs

WDM-PONs

OCDMA-PONs

Integration of E-PON and WiMax

E-PON

1 Upstream direction

2 Dynamic Bandwidth Allocation

3 Limited service of IPACT

4 Different service-classes

Target of the Analysis

OLT

ONU 1 ONU 2 ••• ONU N

SC

Frame 1 Frame 2 Frame N

ONU 3 ONU 4 ••• ONU N

f f f

➤ New Intra-ONU algorithm
- A new queueing model
- Calculation of the end-to-end delay

WDM-PON

Call-level performance analysis of hybrid WDM-TDMA PON

Upstream direction

Different service classes

ON-OFF traffic

Dynamic Wavelength Allocation

Number of ONUs
>
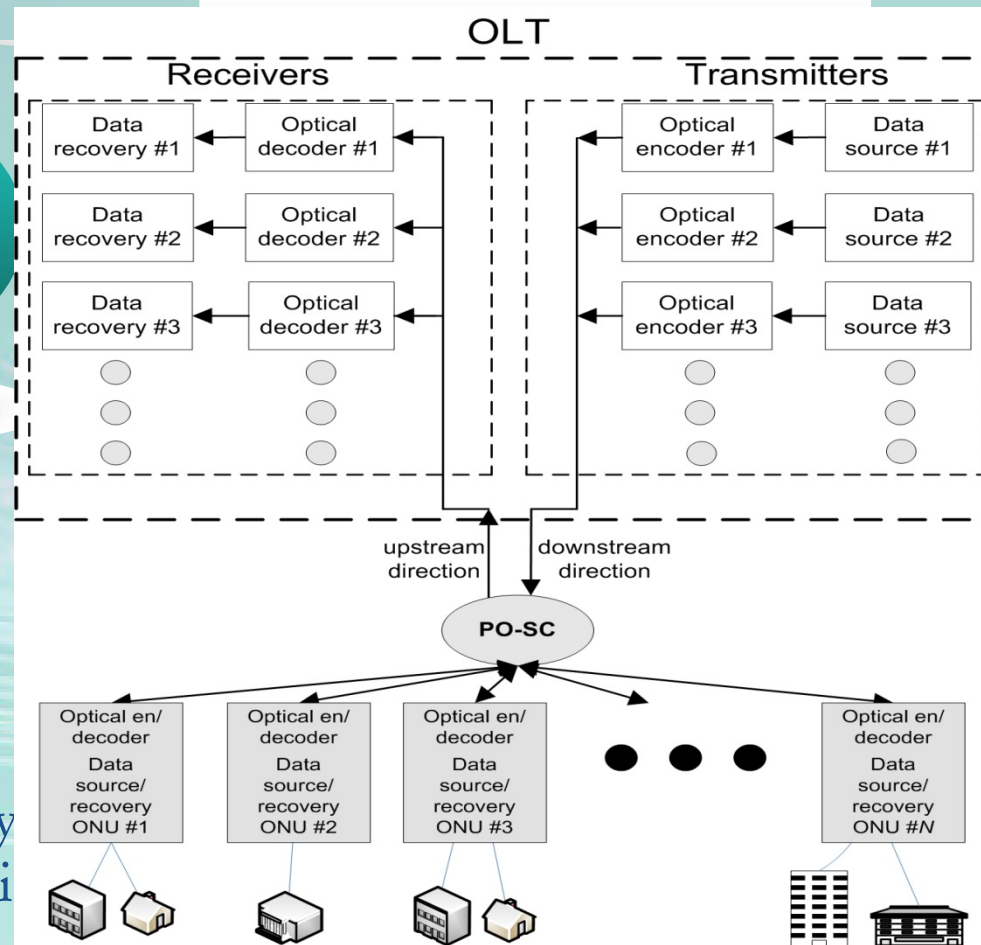Number of Wavelengths

Target of the Analysis

- ➢ DWA algorithms based on the bandwidth occupancy of a wavelength
- ➢ Loss Analysis: CBP and CFP
- ➢ Delay Analysis due to connection termination - reestablishment
- ➢ Other performance metrics: Mean number of calls that suffer delay

OCDMA-PON

Different service classes

Noise Sources

> Loss Analy
  - Occupi
  - CBP
- Study of different encoding schemes, based on the interference

Integration of E-PON and WiMax

Wireless Interface

Upstream direction
- Definition of the distribution of packets, arriving at the base station

Downstream direction
- Definition of the packet arrival procedure to the base station

Optical Interface

Upstream direction
- Definition of a intra-ONU algorithm

- Calculation of the end-to-end delay

Integrated

Upstream direction
- Calculation of the overall delay

Downstream direction
- Calculation of the PLP