Clean-Slate Design of Next-Generation Optical Access

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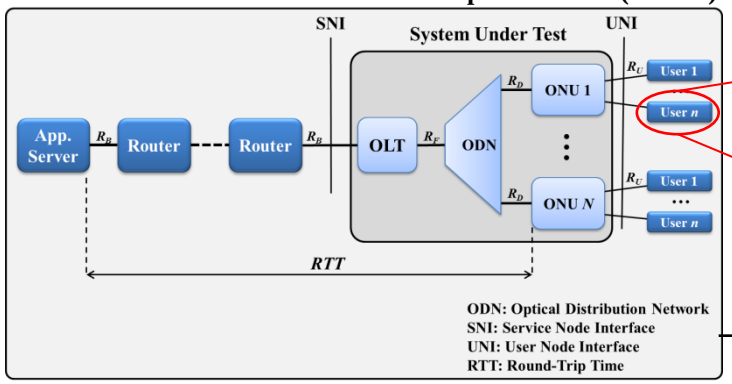
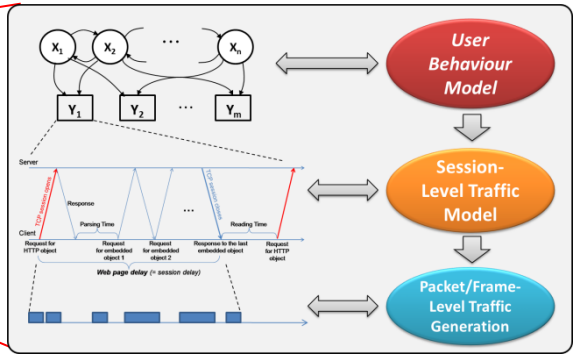
Virtual Test Bed for Next-Generation Optical Access (NGOA)



- The virtual test bed is implemented as simulation models for both systems under test (SUT) &supporting environments (i.e., application server, intermediate routers, user nodes) and run in a large-scale with the help of cloud computing (i.e., ***Amazon elastic compute cloud (Amazon EC2)****).
- It provides ***a common reference framework for experiments*** for researchers in both Academia and Industry in order to properly benchmark candidate NGOA systems and exchange their results.

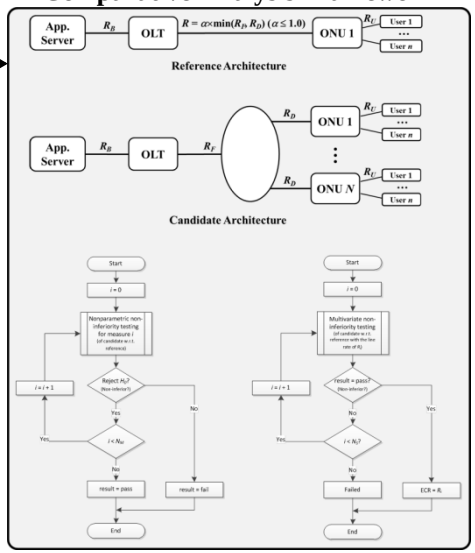
User Behaviour-Based Traffic Modelling/Generation



Generating ***realistic traffic*** through a complete protocol stack based on user behaviour models at application & session levels.

Quality of Experience (QoE)

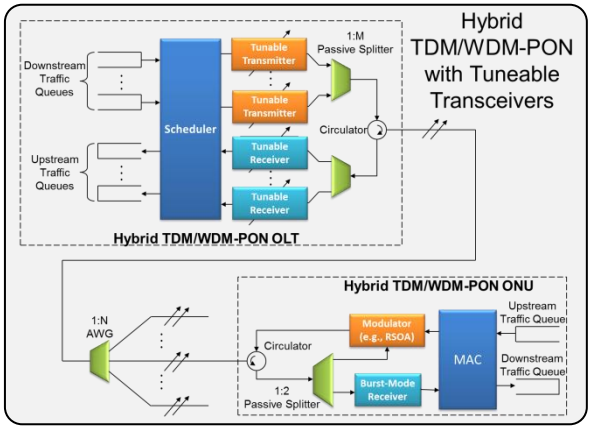
Comparative Analysis Framework



- A new comparative analysis framework for the user-perceived performances (as measures of QoE) of candidate NGOA systems.
- It is based on ***equivalent circuit rate (ECR)*** framework & ***multivariate non-inferiority testing*** procedure and able to take into account the *statistical variability in experimental data* and a *tolerance for the measure*.

New Research Framework for Clean-Slate Design of NGOA

Energy-Efficient and Elastic Components and Architectures



- Based on the proposed research framework, we will investigate from scratch the following major issues in components & architectures:
  - System capacity
  - Elasticity
  - Cost & energy efficiency
- We expect that the results from our study will be quite different from conventional ones and, therefore, have many implications on traffic engineering as well as architectural designs for the following reasons:
  - Realistic traffic models
  - Measures for user-perceived performances

* ***Supported by Amazon Web Services (AWS) in Education Research Grant.***