Workshop 1: 5G Core Slicing

Introduction

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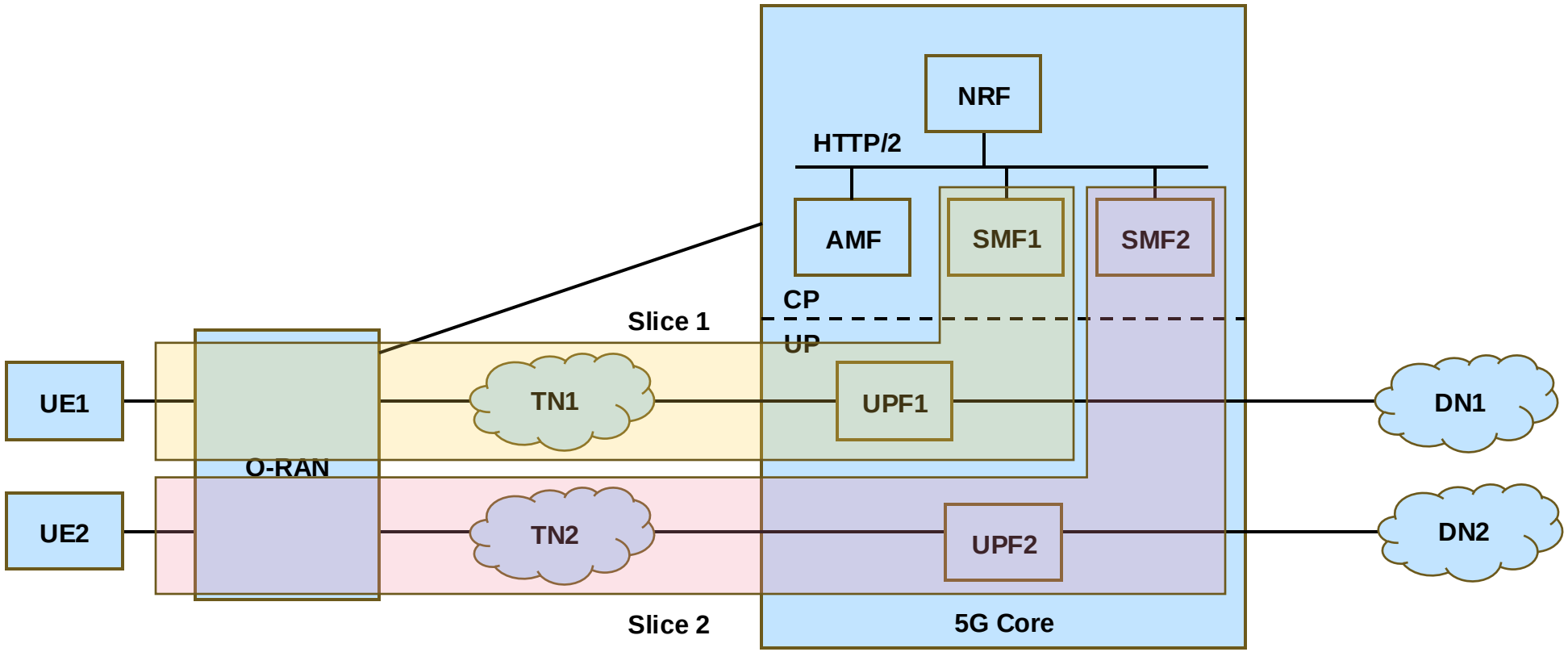
Outline

- Context: End-to-End Network Slicing
- Workshop Overview
- Workshop Agenda and Outcomes

End-to-End Network Slicing



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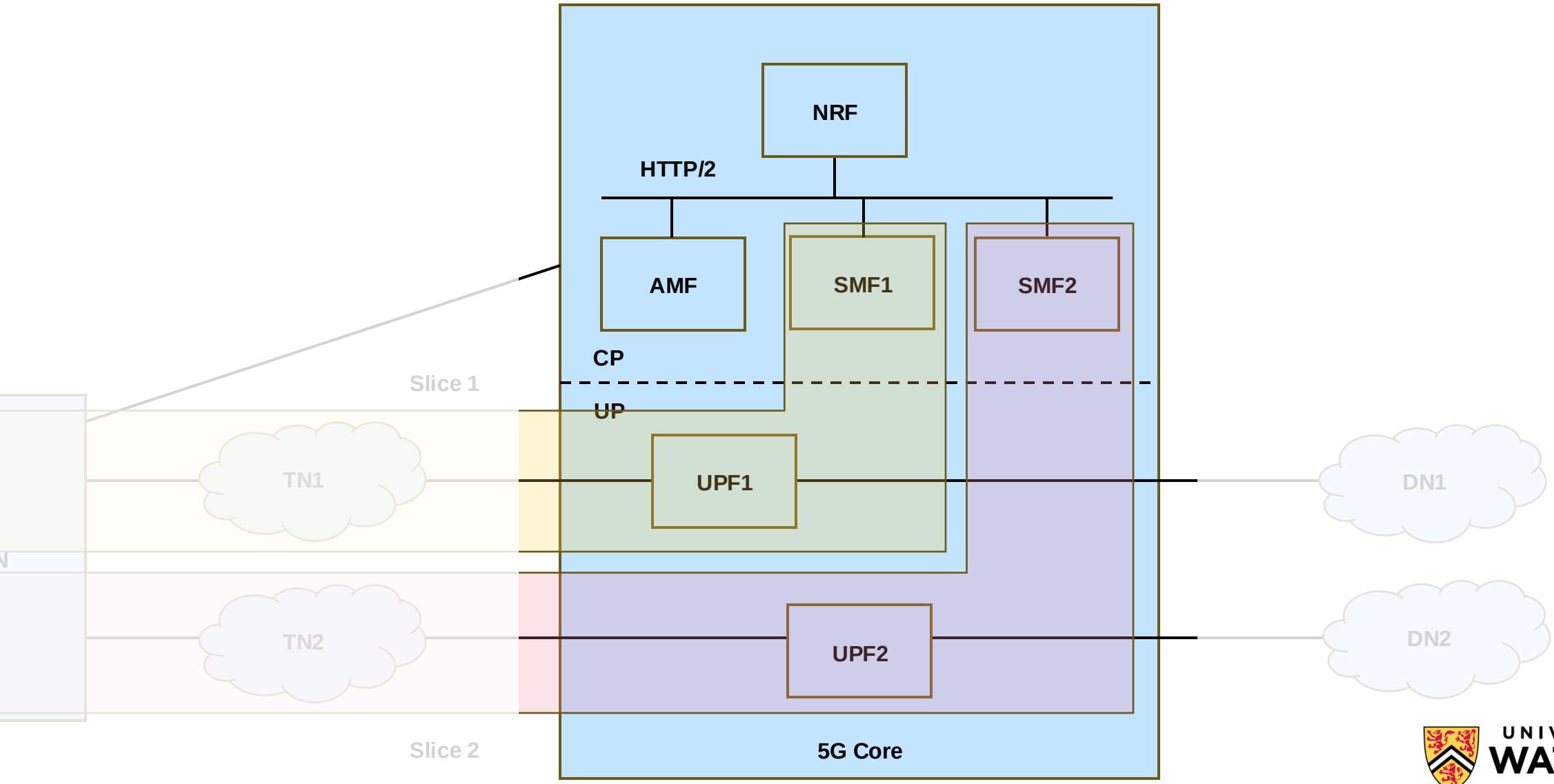
End-to-End Network Slicing



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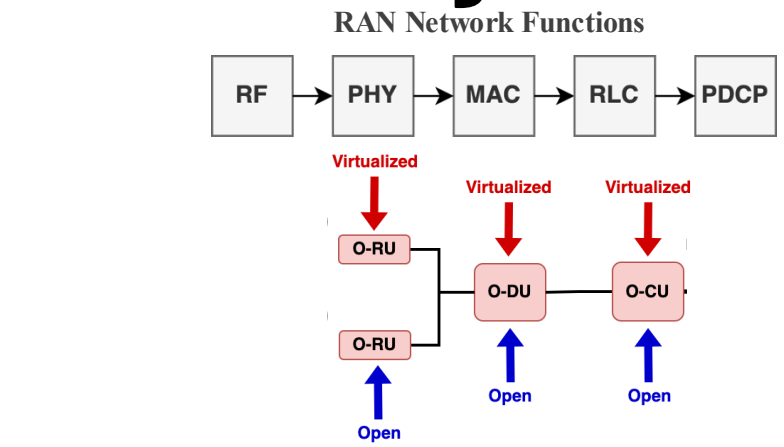
End-to-End Network Slicing



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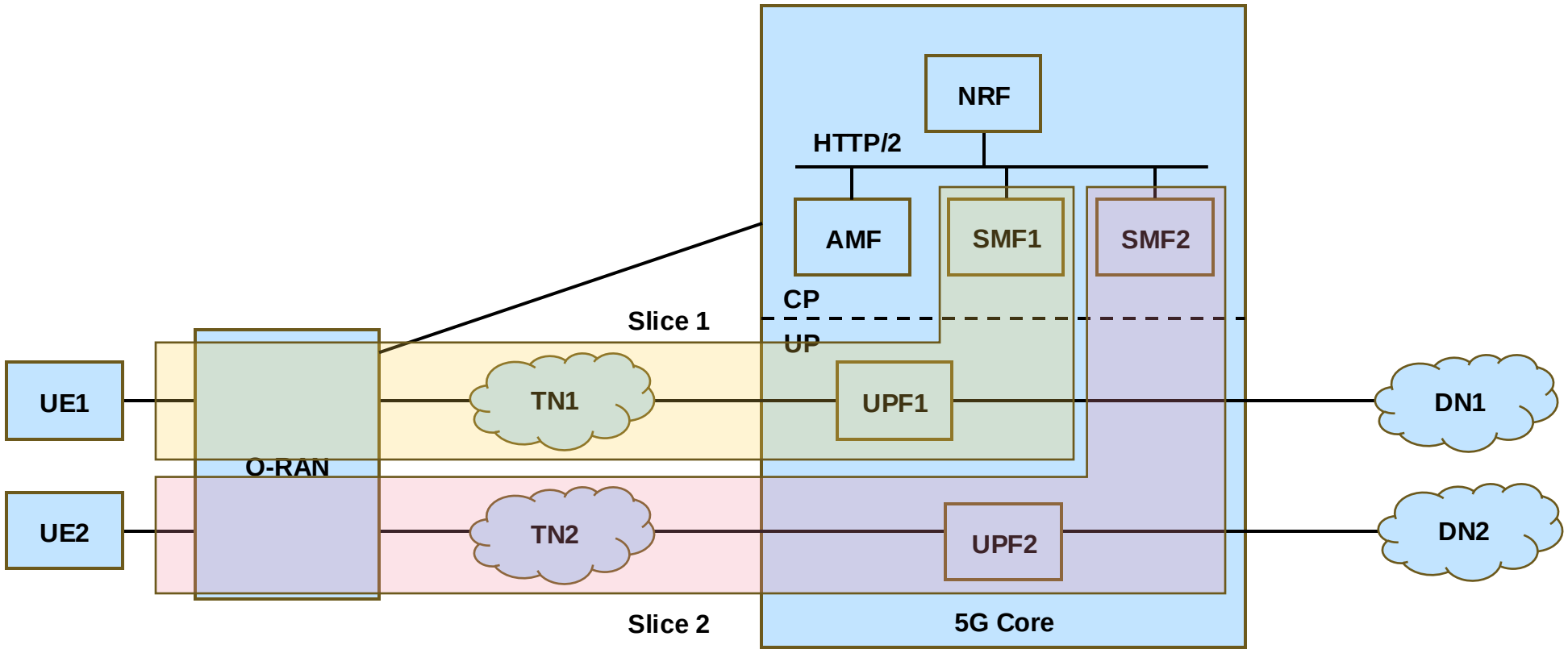
End-to-End Network Slicing



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Workshop 1: Overview

- Deploy and configure a 5G core network using open-source technologies, e.g., Kubernetes
- Create and manage 5G slices
- Monitor slice-specific KPIs from the network core using our Monarch framework
- Ingest, process and visualize monitored data using widely-employed technologies, e.g., NiFi, Kafka, and OpenSearch
- Leverage monitored data to train ML models for slice resource scaling using vNetRunner and MicroOpt frameworks

Day 1: 5G Core Network and Monitoring

- **Morning Session:** Deploying and managing 5G core network
  - Setup a Kubernetes cluster for deploying 5G VNFs
  - Deploy and configure a 5G core network, i.e., Open5GS, over Kubernetes
  - Gain hand-on experience in creating, configuring, and managing 5G network slices
- **Afternoon Session:** Monitoring 5G core network
  - Deploy and configure a monitoring architecture for network slices using Prometheus, Grafana, and our Monarch monitoring framework
  - Analyze 5G network slice KPIs

Day 2: Data Handling and Intelligent Algorithms

- **Morning Session:** Scalable data ingestion, processing and visualization
  - Learn the core components of a data pipeline and the commonly-used software for implementing data pipeline
  - Understand the challenges of building and maintaining a data processing pipeline
  - Deploy a highly-available data pipeline
  - Integrate data pipeline in the 5G core network
  - Utilize data from the pipeline to build dashboards

Day 2: Data Handling and Intelligent Algorithms

- **Afternoon Session:** Slice modeling and dynamic resource scaling
  - Examine and visualize the resource allocation dataset
  - Train ML-based models of 5G VNFs using the data and compose individual models to create a slice model, using our vNetRunner framework
  - Experiment with the slice model for dynamic resource scaling, using our MicroOpt framework

QUESTIONS

https://niloysh.github.io/rogers-workshop/