We2C-1 **13:15-13:30**

Analysis on Benefit of Introducing WDM into Inter-satellite All-optical Networks

Shoichiro Oda, Anthony Brasi, Yusuke Hirota, Hideaki Kotake, Satoshi Shinada, Hideaki Furukawa
National Institute of Information and Communications Technology

Using Starlink orbital-data-driven routing and OSNR modeling under fixed power of high-power amplifiers, we quantify WDM capacity gain in inter-satellite all-optical networks: total throughput over ten paths rises from 25 to 52 Tbps (~110% improvement).

We2C-2 **13:30-13:45**

Load-Balanced Routing and Access Selection with Wavelength Alignment Degree in LEO Satellite Optical Networks

Yu Sun[1], Zhiyuan Che[1], Yuneng Deng[1], Liulei Zhou[1], Bowen Chen[1,2]
Politecnico di Torino

In this paper, we propose a load-balanced routing algorithm based on wavelength alignment degree (WADR) and a load-balanced access satellite selection algorithm with maximum path wavelength alignment degree (MPWAS).

We2C-3 **13:45-14:00**

Demonstration of Rate-Adaptive, Multi-Rate Quality-of-Transmission Estimation in Inter-Satellite All-Optical Networks

Anthony Brasi, Shoichiro Oda, Yusuke Hirota, Hideaki Kotake, Satoshi Shinada, Hideaki Furukawa
National Institute of Information and Communications Technology

Using Starlink orbital data, we experimentally demonstrate multi-rate QoT estimation via 200-Gbps optical probing and rate-adaptation from 100 to 400 Gbps with ≤0.4 dB estimation error in an inter-satellite all-optical network testbed.

We2C-4 **14:00-14:15**

Temporal and Spatial Variation-Based Turbulence Adaptive Prediction for Reliable Satellite-Ground Optical Network

Zhe Niu[1], Hui Yang[1], Qiuyan Yao[1], Yuxuan Yan[1], Buzheng Wei[2], Jie Zhang[1]
[1]Beijing University of Posts and Telecommunications, [2]China Unicom Research institute

We propose a turbulence adaptive prediction model for satellite-to-ground optical networks, it is designed based on the neural architecture search and method of weighting the predicted results, prediction accuracy and network reliability are effectively improved.

We2C-5 **14:15-14:30**

DRL-STR: Penalty-Aware Topology Learning Optimization for Dynamic Satellite Optical Networks

Zhao Li, Hui Yang, Qiuyan Yao, Jingchao Mai, Jie Zhang
Beijing University of Posts and Telecommunications

We leverage hierarchical deep reinforcement learning (DRL) to optimize satellite network topology reconfiguration (STR), achieving penalty-aware autonomous learning of topology reconfiguration frequency and link adjustment strategies. Compared with traditional solutions, this solution reduces delay by 16.3%.

We2C-6 **14:30-14:45**

Mobile Orbital Domain-Based Hierarchical Routing with Joint Path and Gateway Selection

Zilong Ye[1,2], Philip N. Ji[1], Ting Wang[1]
[1]NEC Laboratories America, [2]California State University Los Angeles

We propose to jointly optimize path and gateway selection to achieve load balancing for mobile orbital domain-based hierarchical routing in satellite networks. The load at bottleneck gateway satellites can be reduced by 22% on average.