OFCnet – OFC 2024 Readout

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What is OFC?

- OFC is the Optical Fiber Communication Conference and Exhibition that has been held annually since 1975.
  - Administered by Optica (formerly the Optical Society of America).

- Started out primarily as a components tradeshow, now billed as the premier global event for optical networking and communications.

- Has evolved significantly over time to a comprehensive conference.
  - Research and marketplace
  - Components and systems
  - Technical program and exhibition

- Typically held in March in California
  - OFC 2024 held March 24-28, 2024 in San Diego.
  - ~12.5k attendees in 2024 from 74 countries
  - 630 exhibiting companies (23% increase from 2023)
  - 100s of sessions as part of the technical program, short courses, panels, plenaries, etc.

OFC 2024 Show Floor Map – San Diego Convention Center

What is OFCnet?

- After the 2019 conference, Optica was challenged by the OFC long-range planning committee to make the conference more relevant to networking.
  - One of the outcomes of this challenge was the idea of OFCnet.
- Primary goals of OFCnet:
  - Highlight the networking aspect of OFC.
  - Increase the Exhibits value proposition.
    - Allow current exhibitors to have live demonstrations possibly extending outside the CC.
    - Increase inter-booth collaboration
    - Reduce the barriers of live demonstrations
  - Draw new attendees and exhibitors.
    - Networking science
    - High Performance Networking applications
    - Emerging technologies
  - Bridge the technical and exhibits programs.
    - Demonstration of technical papers.
    - Activities that lead to new publications and awards.

How is OFCnet accomplished?

- Focus is primarily on providing the demonstration network by utilizing existing convention center infrastructure and OFCnet provided dark fiber connectivity to the outside world.

- Blurs the lines between infrastructure and demonstrations by incorporating demonstration equipment into the OFCnet NOC, and integrating demo kiosks into the main OFCnet booth.

- Relies on a volunteer team to plan and execute OFCnet with contributions of equipment and services from industry and academia.

- OFCnet <u>does not</u> provide general conference infrastructure such as:
  - General commodity internet connectivity for the convention center
  - Wireless or wired connectivity for meeting rooms or exhibit floor.
  - Floor fiber or dedicated aerial fiber.

- Relies on building infrastructure wherever possible.
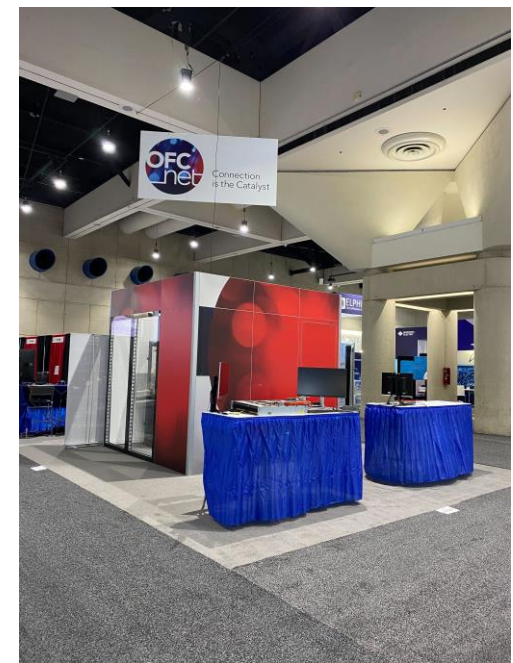
Modest Beginnings and Evolution

- Initial schedule was to have the first instantiation of OFCnet in 2020.

    - Delays getting fiber built into the convention center.

    - COVID-19!!!

    - OFCnet activity was cancelled for 2020.

- OFC 2021 conference was virtual only.

- OFCnet activity was reset for the 2022 conference.

    - Modest goals to provide "First Light" as proof of concept with a single demo.

        - Lumen/CENIC/Ciena/SDSC collaboration

- OFC 2023 was the pilot year of a full-fledged OFCnet activity.

    - 3 dark fiber pairs into the convention center split between data intensive classical communications, remote sensing, and quantum transmission.

    - Many different equipment contributors and demonstrators.
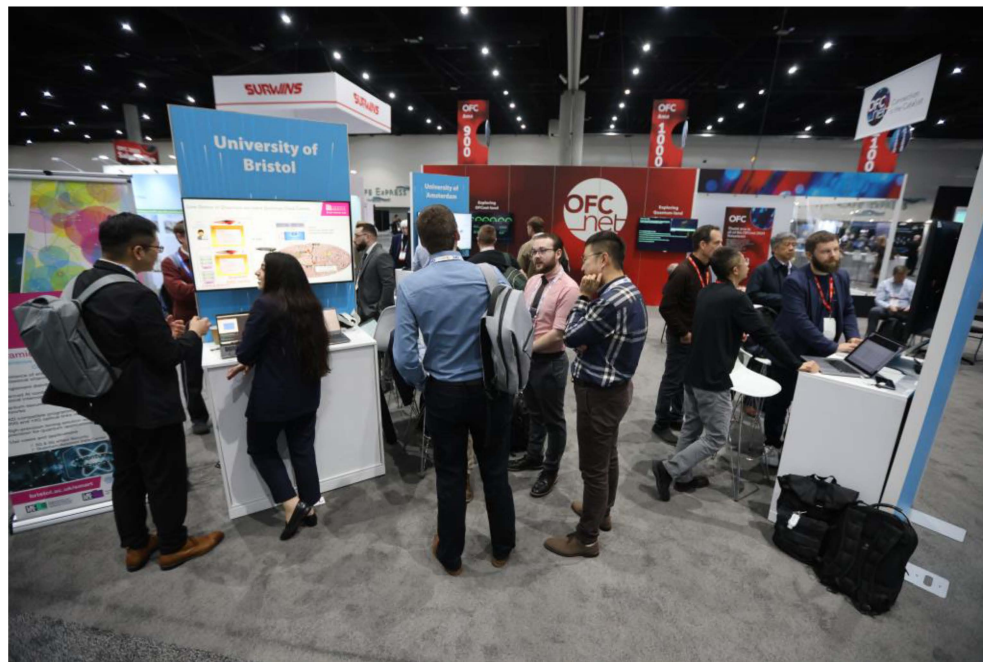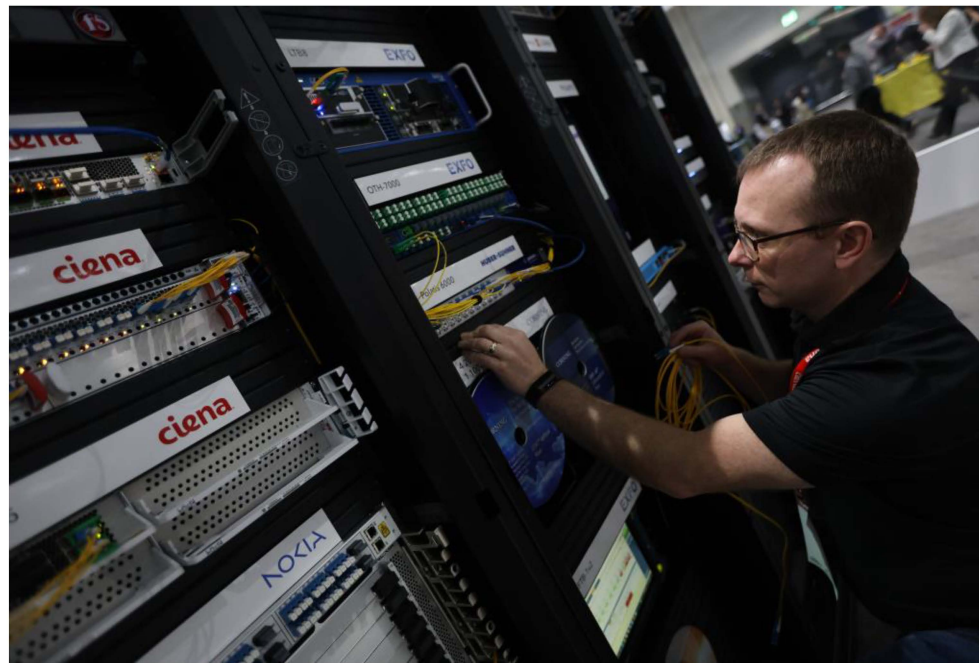
OFCnet 2022 and 2023 Photos

OFCnet 2023 Main Booth

OFCnet 2022 half-rack

OFCnet 2023 2nd Booth

OFCnet 2024

- 2024 built on the success of 2023

  - Larger team, increased diversity in equipment and service providers.

  - Additional focus on network security, monitoring and analytics.

  - Higher integration of demonstrations with OFCnet with the inclusion of demo kiosks

- OFCnet provided the following for demonstrations for the OFC 2024 conference:

  - Space and power for demonstrators that did not otherwise have booth space to host their demos.

  - Fiber connectivity to the outside world including to FABRIC and NA-REX.

  - Discounted dark fiber connectivity within the convention center between booths.

  - Limited commodity internet access specific to OFCnet demonstrations at kiosks.

OFCnet 2024 Volunteers

- OFCnet was planned, built and maintained by ~ 30 volunteers from the following organizations:
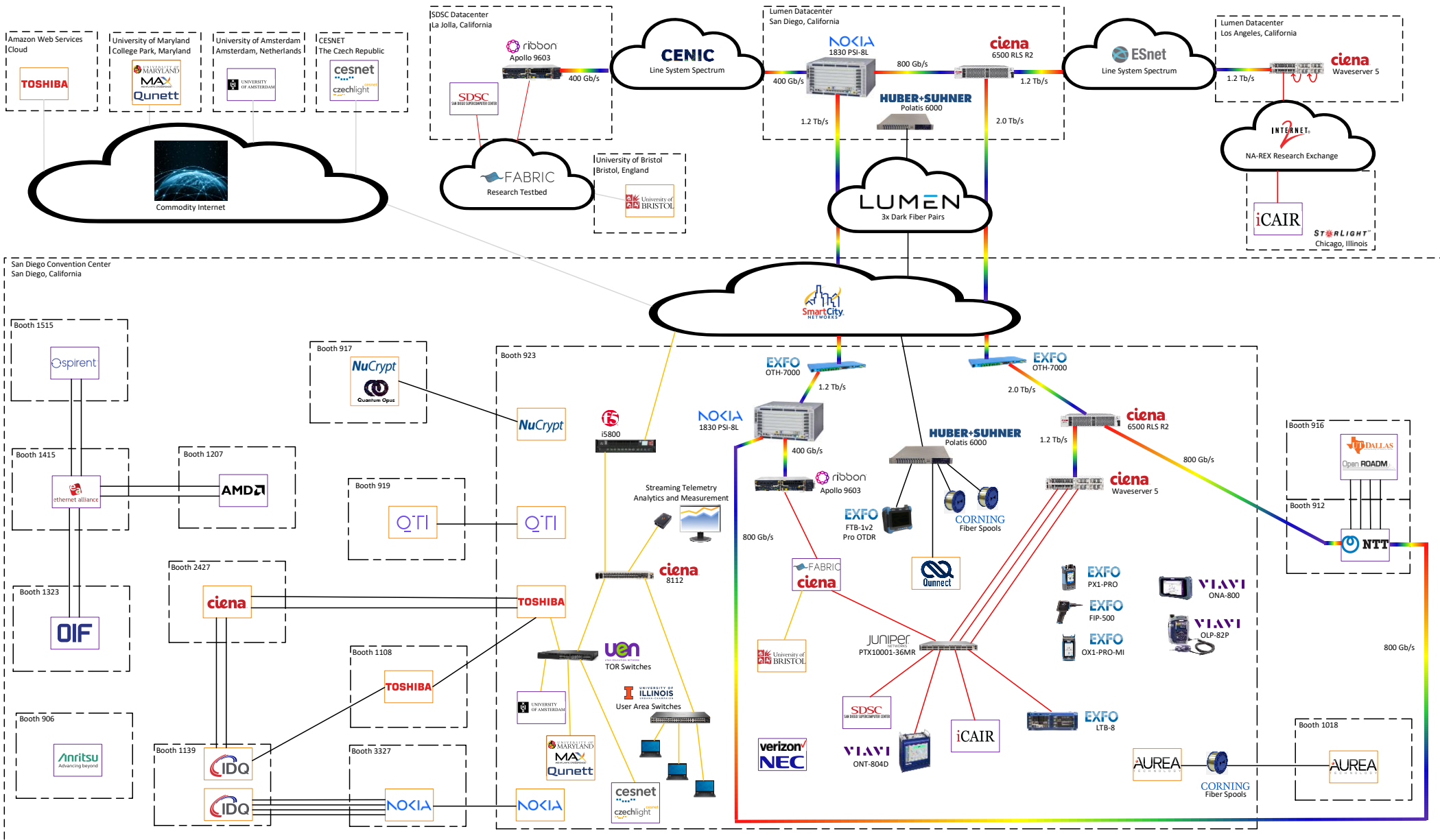
OFCnet Equipment and Services

- OFCnet infrastructure equipment and networking services provided by the following organizations:

OFC 2024 - OFCnet Architecture

OFCnet 2024 Demonstrations

- OFCnet supported 20 different demonstrations on the show floor.

  - Demos hosted in kiosks at the OFCnet booth or at various booths on the show floor

  - Combination of classical and quantum demonstrations with the following involved organizations:

Some Demonstration Highlights

- QKD encryption solution demos
    - L2 MACsec QKD encryption
    - L1 OTN QKD encryption with trusted node
    - QKD encrypted video conferencing
- Next gen Quantum networking experiments
- Novel multipurpose hybrid fiber cables
- High Performance 400GE single flow transfers over a 9300 km WAN.
- Travelling FABRIC node
- High Luminosity LHC workflows
- Open Line System and Open transponder platforms
- Fiber longitudinal remote sensing using an 800G muxponder.
- 110 GHz Opto-electronic network analysis system
- Network security using microservices and in-band network telemetry

Other OFCnet Activities in 2024

- Workshop to discuss how best to expand and evolve OFCnet to serve the needs of the research community and promote innovation in optical networking.

- Practical Fiber Optic Network Testing in a Realistic Network Environment hands-on short course

  - Fiber and optical principles theory

  - Live manipulation of the OFCnet network and test equipment to facilitate fiber trouble-shooting and characterization

- Beyond the demonstrations on the show floor, OFCnet also hosted 7 different panel discussions in Theater III on the show floor

  - Telecom Fiber Networks as the Core of the Next Generation TerraScope

  - Software Defined Infrastructures

  - Optical Benchmarks

  - Optical Infrastructures and Services

  - Quantum Key Distribution High-Speed Optical-Layer Encryption

  - Quantum Entanglement and Quantum Memory for Next Generation Quantum Networks

  - Beyond Point-to-Point Quantum Key Distribution

What's Next for OFCnet

- OFCnet 2024 was another great success building off of the foundation of 2023.

  - Positive feedback from conference management, volunteers, demo participants, equipment and service contributors, and conference attendees.

- Looking forward to 2025

  - 2025 will be the first year that the conference changes the host city since OFCnet began.

    - A new host city will provide its own unique challenges in building OFCnet.

    - We are up to the challenge!

  - Looking to accelerate the call for demonstrations and submission of proposals to allow more time to work with contributors to meet the requirements.

  - Increased focus on technologies applicable to production networks in the short term.

  - Additional short course offerings

  - Increased diversity of demonstrations and contributors.

2025 OFC Conference Details

- 2025 OFC Conference

  - Muscone Center - San Francisco, California

  - Technical Conference: March 30 – April 3, 2025

  - Exhibition: April 1 – April 3, 2025

- OFCnet planning for 2025 is starting now!

  - Those interested in being part of OFCnet for 2025 in any capacity can contact the OFCnet chair: Sana Bellamine <sbellamine@cenic.org>

Q&A

Questions??

Thank You

"Any opinions, findings, conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Networking and Information Technology Research and Development Program."

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