The BRIDGES Testbed

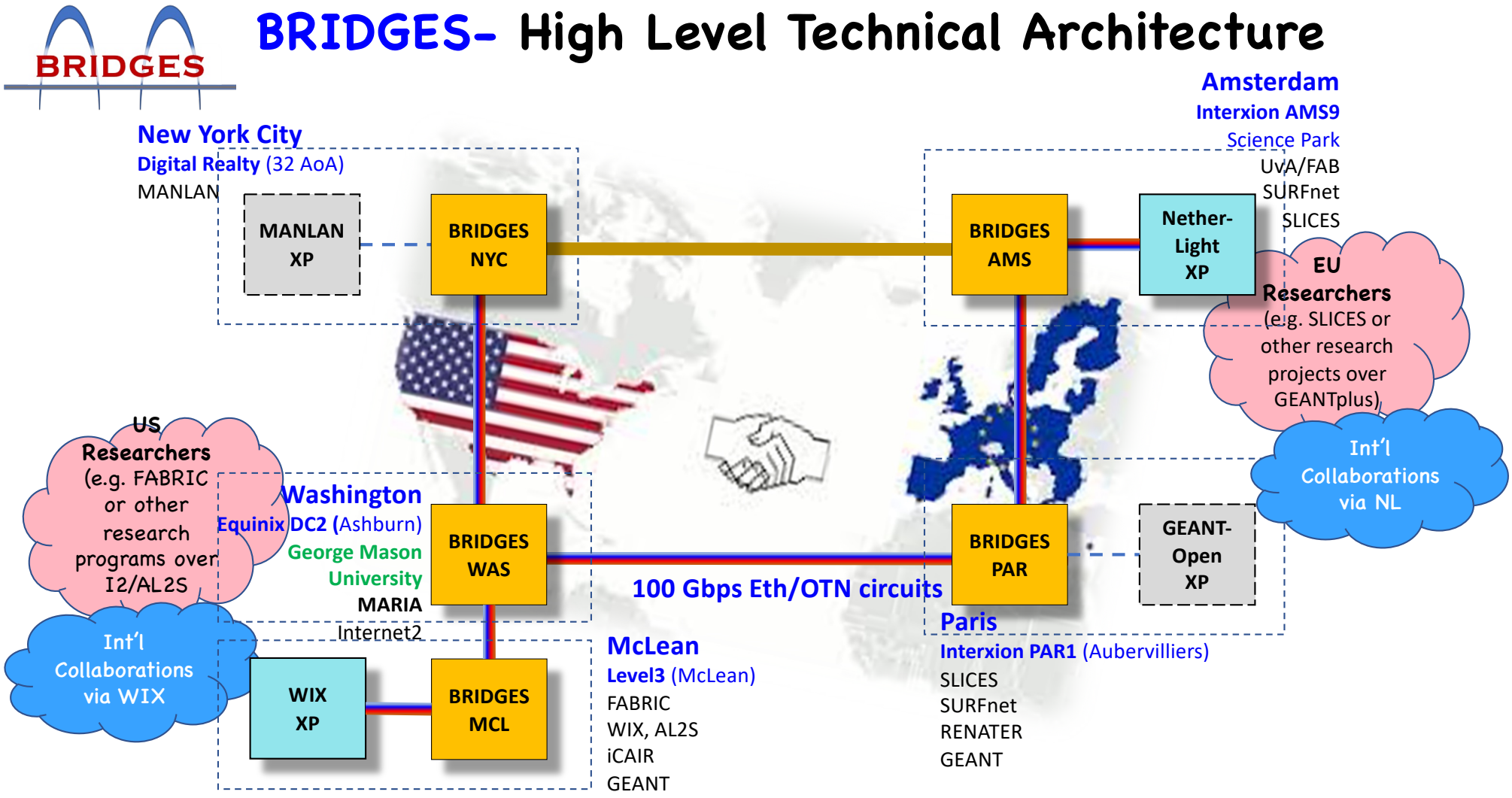
Network Status Update

Web site: **www.bridges-testbed.net**

BRIDGES Users Group Meeting

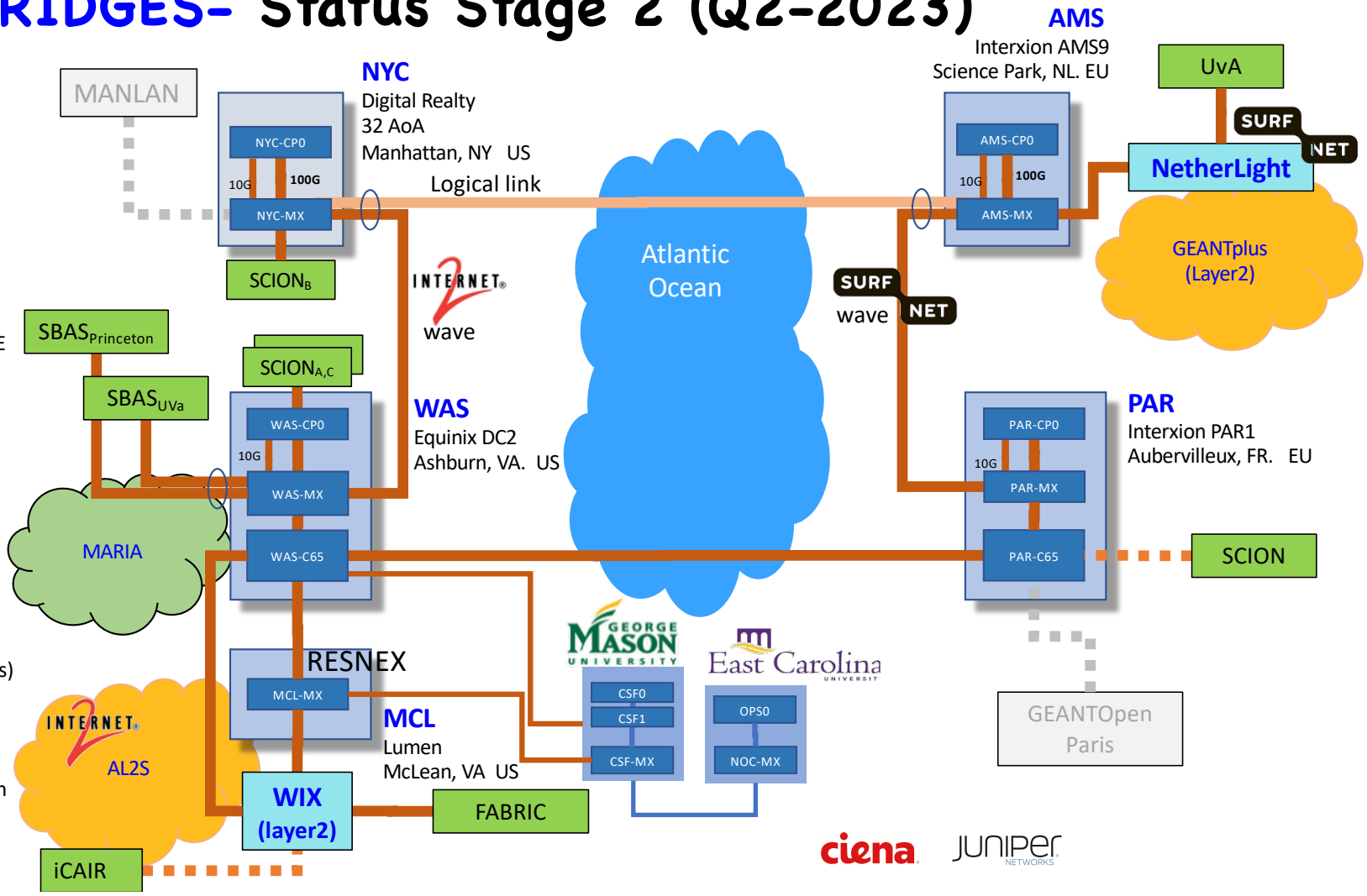
June 14, 2023

BRIDGES- High Level Technical Architecture



BRIDGES- Status Stage 2 (Q2-2023)

- Capabilities:
  - Virtual Circuit(s)
    - up to 100gbps
    - E2E between any BRIDGES nodes
  - User access to Ubuntu Servers at each node
    - 24 core
    - 100GE and/or 10GE connected
  - Virtual Machine(s) – manually provisioned atm, Soon auto-provisioned
- Connectors:
  - NetherLight @100Gbps -> GEANT and other EU networks
  - WIX @ 100Gbps -> Internet2 and other US connectors
  - MARIA (Virginia at 100gbps)
  - SCION/SBAS program
    - SCION (Univ of Magdeburg), WAS
    - SBAS in Washington via MARIA (Univ of Virginia, Princeton)



BRIDGES Network Facilities Status:

- BRIDGES is operational.

  - Five network nodes: Washington, Paris, Amsterdam, New York City, McLean
    - Multi-core server at each node (except McLean – awaiting power upgrade)
    - IPv4 routing and NATP for external access (IPv6 on the ToDo list.)

  - Two Open Exchange Points connected: NetherLight and WIX
  - Virginia R&E Network: MARIA (early collaboration/support)
  - 100Gbps between all nodes -and to/from OXPs/RON
  - Software:
    - Dynamic Circuit Provisioning is operational
    - User/Project Database online

Projects coming online….

- Users and Projects are being turned up:
  - SCION – University of Magdeburg (DE) , Carnegie Mellon, ETH Zurich
  - SBAS – University of Virginia, Princeton University
  - FABRIC – RENCI (and many others)
  - Edgenet – Sorbonne University (Paris) and US
  - Global P4 Lab – RENATER and the GEANT consortium (also including US and SA partners)
  - Others we are working to get connected…(~10 prospective programs at this time)

- We are looking for more researchers who can leverage these resources for their research, and/or to bring their distributed teams “functionally and operationally” closer together in US (NA) and EU
  - Contact any of the PIs.

Some Acknowledgements:

- The **MARIA** network (and the VaTech support team) has been a key collaborator on the US side of the pond to link US researchers to BRIDGES via its Northern Virginia infrastructure and connectivity.
- The GVM Lifecyle API is modeled after and extends the **Network Service Interface** (NSI v2) API. This is recognition of the work done in the NSI Working Group (~2005 to ~2012) for multi-domain network circuit reservations and provisioning protocol – and the invested manpower and expertise by those participating organizations.
- BRIDGES is using the MEICAN circuit provisioning GUI developed by **RNP Brazil**.
- BRIDGES also uses the OpenNSA circuit provisioning software developed by **NORDUnet** as a reference implementation of the NSI protocol.
- *Tremendous support* has been provided by **Ciena** and **Juniper Networks** over the last two years of global volatility to make sure BRIDGES could deliver these facilities for the research community. This is REALLY an important acknowledgement of the critical help they have provided.
- And **Internet2** and **SURFnet** have been entirely supportive of BRIDGES in helping sort out hardware and telecom constraints and capabilities during the pandemic -> Especially our terrestrial waves and the OXP connectivity.

- And of course: The US **National Science Foundation**

BRIDGES information and access

- BRIDGES web site: **www.bridges-testbed.net**
  - Research Project registration – Projects wishing to use BRIDGES need to register and provide a PI and Technical Point of Contact.

…or send an email to one of us:

- Bijan Jabbari bjabbari@gmu.edu
- Chip Popoviciu popoviciuc18@ecu.edu
- Jerry Sobieski jsobiesk@gmu.edu or jerry@sobieski.net

- Web site: **www.bridges-testbed.net**