Network Automation - Different Paths, Similar Results

Internet2, ESnet

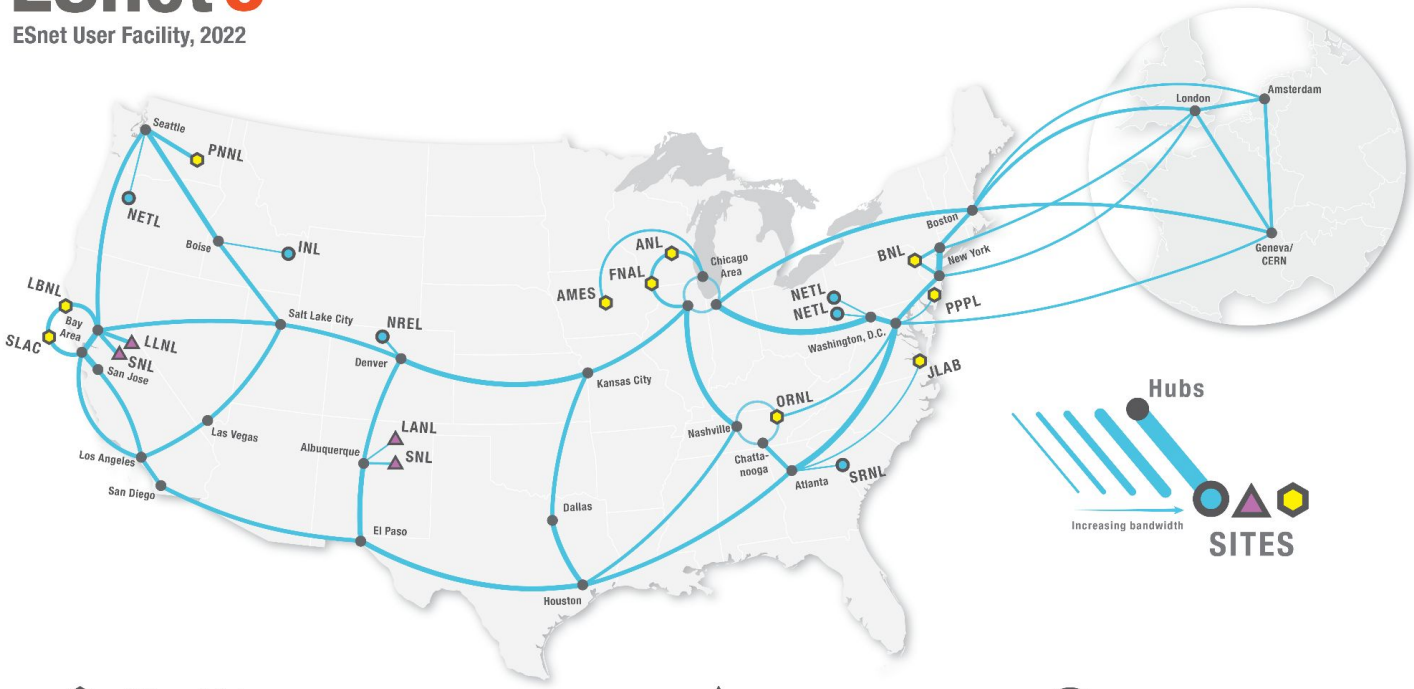
Karl Newell - Internet2
Marc Körner - ESnet

TNC 2024

Rennes, France
June 2024

ESnet6

ESnet User Facility, 2022



Office of Science National Laboratories

AMES	Ames Laboratory (Ames, IA)
ANL	Argonne National Laboratory (Argonne, IL)
BNL	Brookhaven National Laboratory (Upton, NY)
FNAL	Fermi National Accelerator Laboratory (Batavia, IL)
JLAB	Thomas Jefferson National Accelerator Facility (Newport News, VA)
LBNL	Lawrence Berkeley National Laboratory (Berkeley, CA)
ORNL	Oak Ridge National Laboratory (Oak Ridge, TN)
PNNL	Pacific Northwest National Laboratory (Richland, WA)
PPPL	Princeton Plasma Physics Laboratory (Princeton, NJ)
SLAC	SLAC National Accelerator Laboratory (Menlo Park, CA)

NNSA Laboratories

LANL	Los Alamos National Laboratory (Los Alamos, NM)
LLNL	Lawrence Livermore National Laboratory (Livermore, CA)
SNL	Sandia National Laboratory (Albuquerque, NM; Livermore, CA)

Other DOE Laboratories

INL	Idaho National Laboratory (Idaho Falls, ID)
NETL	National Energy Technology Laboratory (Morgantown, WV; Pittsburgh, PA; Albany, OR)
NREL	National Renewable Energy Laboratory (Golden, CO)
SRNL	Savannah River National Laboratory (Aiken, SC)

ESnet in numbers:

Thousands of miles of fiber cables, including transatlantic cables

380 locations with racks and equipment to track

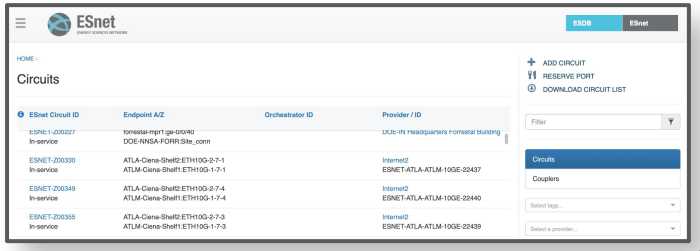
346 Core links between routers

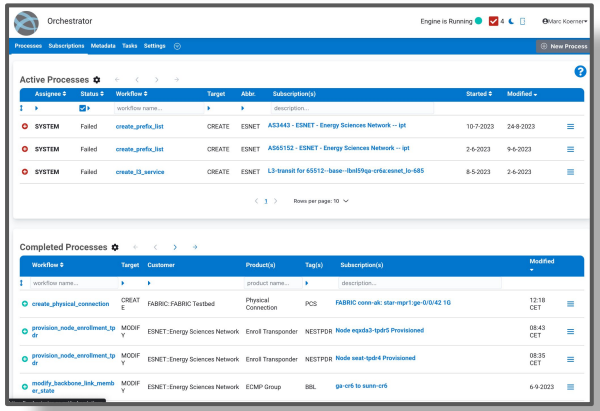
300 Customer facing Interfaces, 123 of which are 100G

Multi Platform environment with lots of interoperability needs

ESnet | U.S. DEPARTMENT OF ENERGY | Office of Science

ESnet ENERGY SCIENCES NETWORK





Joe the Planner

Eric the Engineer

ESDB

Orch

NSO

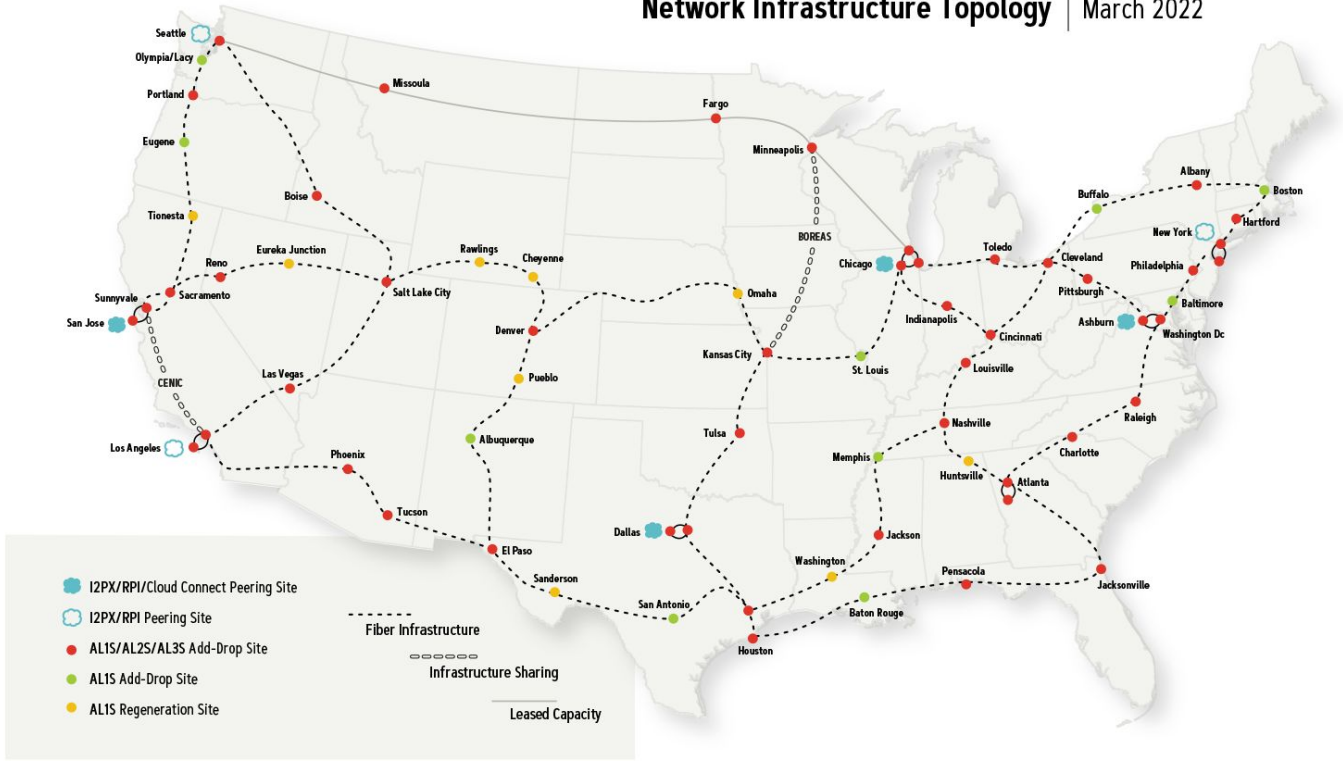
Stardust

ESnet Network

servicenow

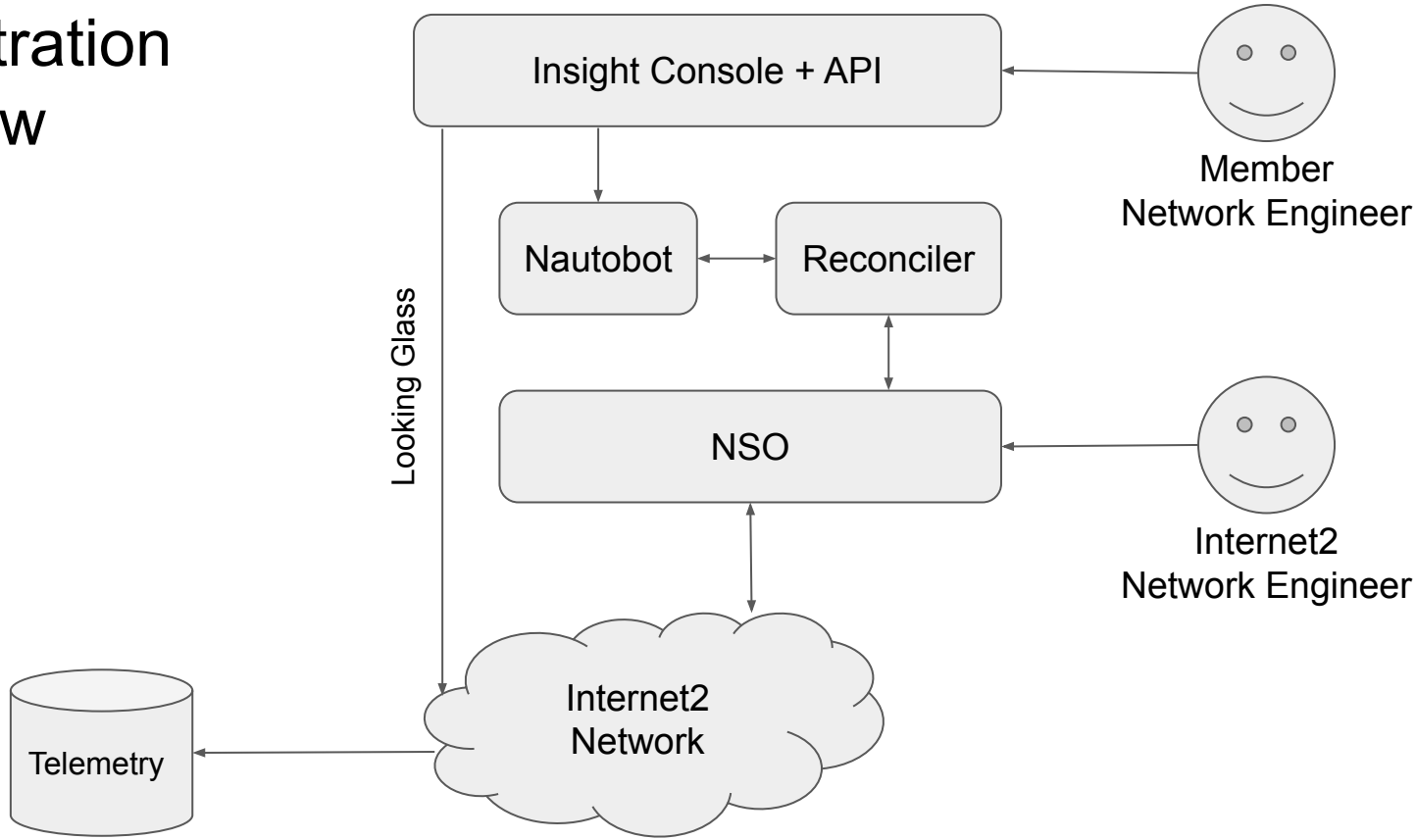
ESnet
ENERGY SCIENCES NETWORK

Network Infrastructure Topology | March 2022



INTERNET2®

Orchestration Workflow



Discussion & Questions…

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