IRNC NOC

Dave Jent, PI

Luke Fowler, Co-PI

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ORGANIZATION

IRNC-NOC

- **Marianne Chitwood, Director of Operations**
- **Jon-Sherk, Manager, Operations Service**
- **Matt Robertson, Specialized Support Technician**

Performance Engagement Team (PET)

- **Caren Litvanyi, Performance Engagement Team Manager**
- **Jared Brown, PET Case Manager**
- **Zachary Catlin, PET Systems engineering**

IRNC-NOC

- IRNC ticket system, documentation system, monitoring system, email and telephone number.
- NOC monitoring systems to alert on problem indicators such as interface transitions, peering session status, performance monitoring thresholds, etc.
- Service desk is available 24x7x365 to serve as a single point of contact to report problems related to IRNC infrastructure projects
- Database of operational contact data and network status including planned and unplanned outages and vendor notifications
- Provide support for processes, notification, escalation, coordination and communications among the participants.

PERFORMANCE ENGAGEMENT TEAM

- ***Drive quick resolution of international inter-domain performance issues***
- ***Build a common performance troubleshooting playbook***
- ***Evolve perfSONAR as a tool for performance incident management***

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MOVING FORWARD

IRNC NOC

- Moving ticketing system to ServiceNow
- Testing disaster recovery processes
- Continue development of the RouteViews dashboard and Global Research Map

Performance Engagement Team

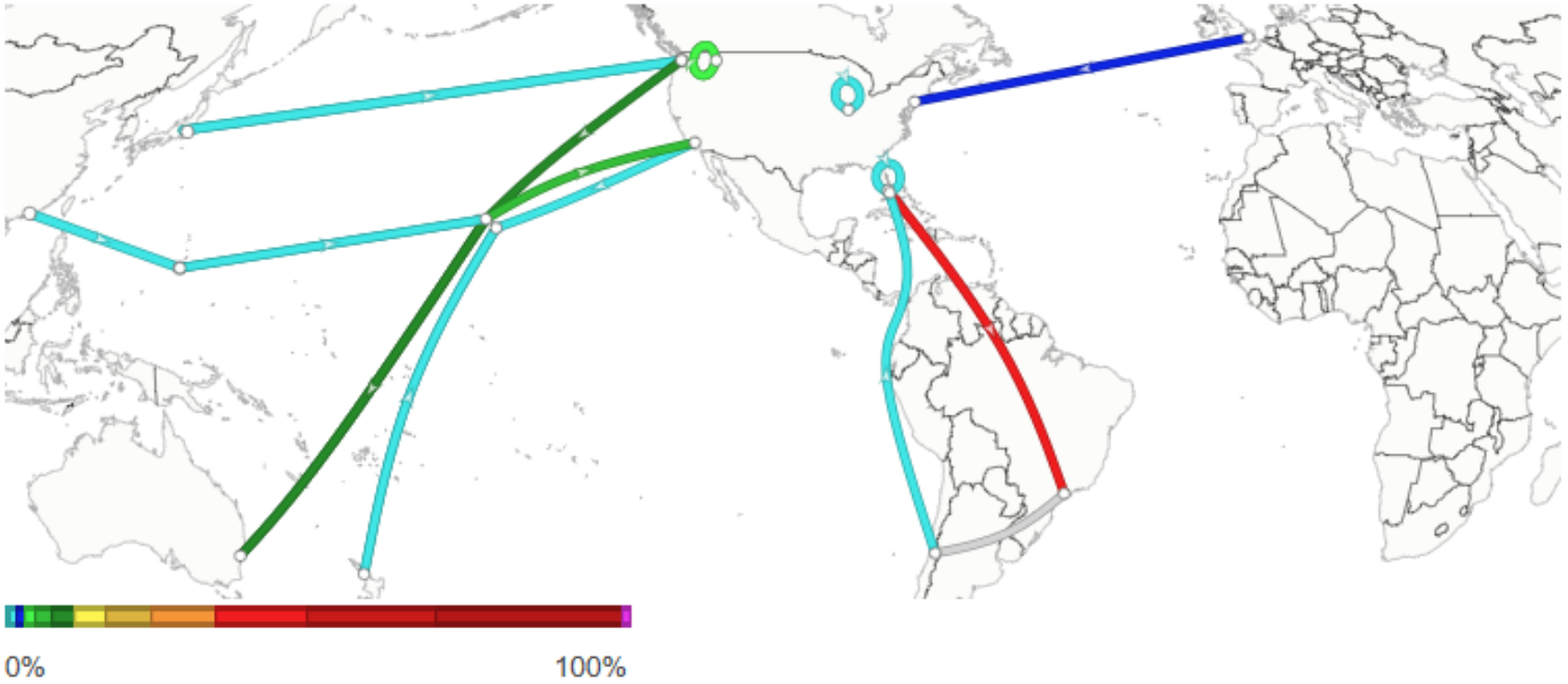
- Identify underserved research communities and reach out to them with offers of support
- Develop an online repository of case studies.
- Work with others in the community to jointly develop a centralized network troubleshooting playbook

IRNC NOC advisory council

- Continue to seek input about how to improve on services provided by the IRNC NOC and PET. Include discussion on how to be more inclusive to other research communities, the Research map is one example

IRNC MAP

http://IRNCNOC.globalnoc.iu.edu/



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IRNC NOC Performance Engagement Team

Background

- As network technology becomes more complex and opaque, troubleshooting performance issues becomes more difficult for the layperson.
- Trends
  - Increased Layer2 infrastructure obscures network path
  - Heightened security removes public data metrics
  - Increased use of network firewalls at the campus level
  - Automated data transfer requires 24x7x365 support
- As infrastructure complexity increases, the researcher is left to determine how to solve performance issues

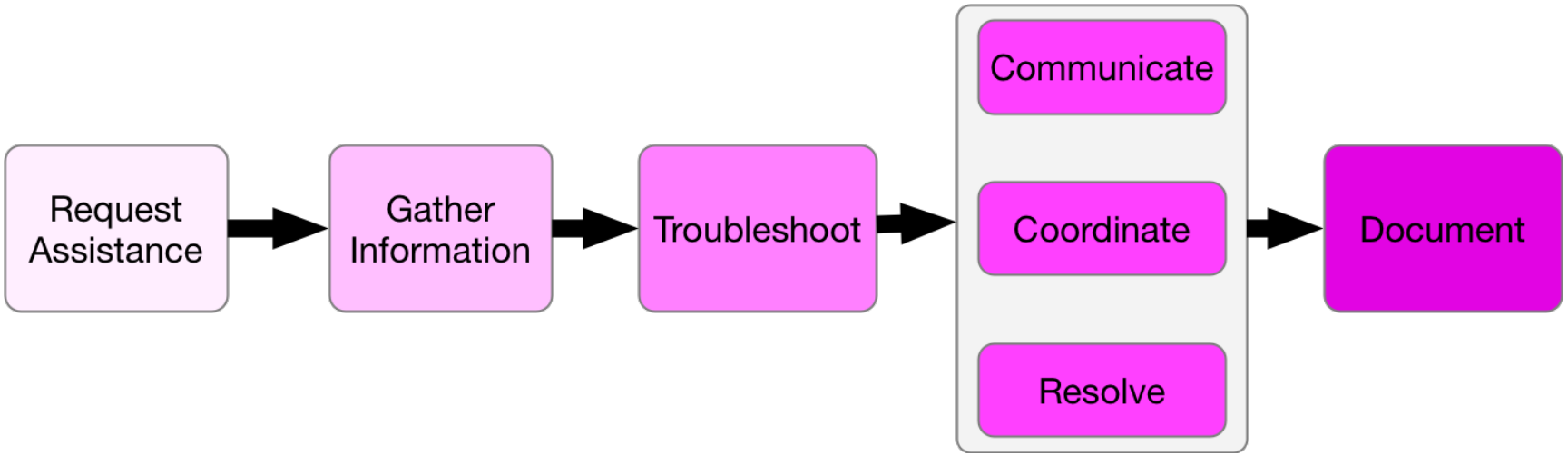
IRNC PET: Three Charges

1. *Drive quick resolution of international inter-domain performance issues*
2. *Build a common performance troubleshooting playbook*
3. *Evolve perfSONAR as a tool for performance incident management*

Drive resolution

- Centralized POC to request network troubleshooting assistance
- PET will
  - Identify path
  - Investigate with network contacts
  - Test with available measurement points
  - Resolve problems that are resolvable (and acknowledge problems that aren't)
- Researchers *and* network engineers can involve the PET
- Issues are tracked in a ticketing system -> creates accountability, metrics, and centralized contact tracking

PET Troubleshooting Process



Current Status

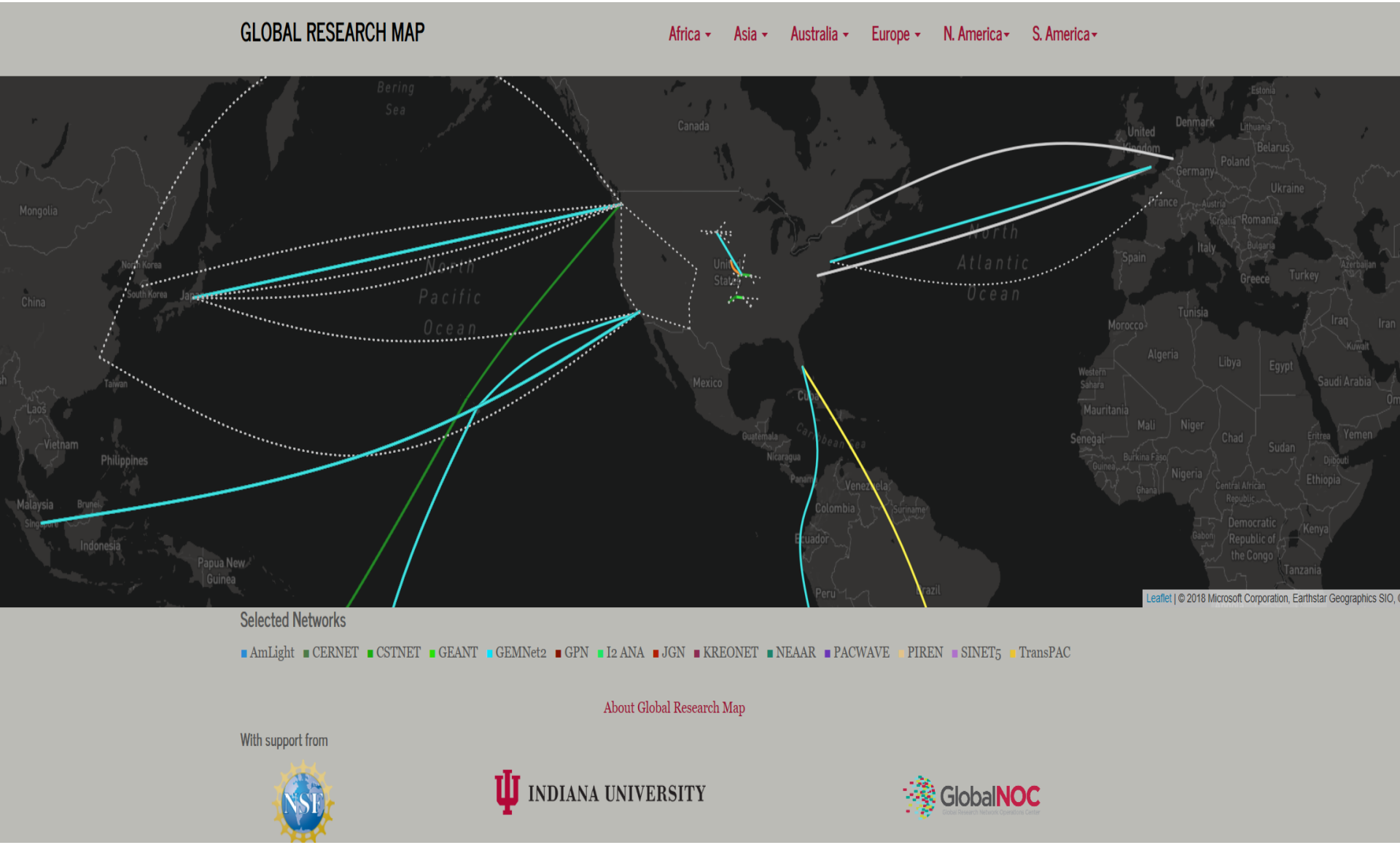
- https://irncnoc.globalnoc.iu.edu/
- Have worked 50+ performance issues to refine our internal process and understanding of where external collaboration is necessary
- Collaboration with similar performance-focused efforts (Netsage, eduPERT, Esnet, GEANT, etc.)

Findings and Challenges

- Early involvement in performance troubleshooting process – We're more effective the earlier we're brought in
  - This largely comes down to awareness of the IRNC NOC PET and its charge
- Perfsonar deployments into the campus
  - Issues tend to be local and the closer to the user the monitoring deployments, the more troubleshooting work the IRNC NOC PET can do without involving regional and campus resources
  - Visibility into network topology, traffic monitors and other data is sometimes restricted for security reasons
- Cooperation from peer and campus network engineering who may not see external user performance issues as a priority over their daily workload
  - We attempt to get around this by being squeaky wheels on behalf of the researchers, but still….
- Identifying "invisible" infrastructure (Layer2 switches and Firewalls)
- Personal relationships within the community is hugely important

2018 Goals

- Outreach to science communities and R&E networks to make them aware the IRNC NOC PET exists as a resource
- Collaborate with performance-focused efforts to co-develop materials that empower user-based troubleshooting



https://globalresearchmap.org/

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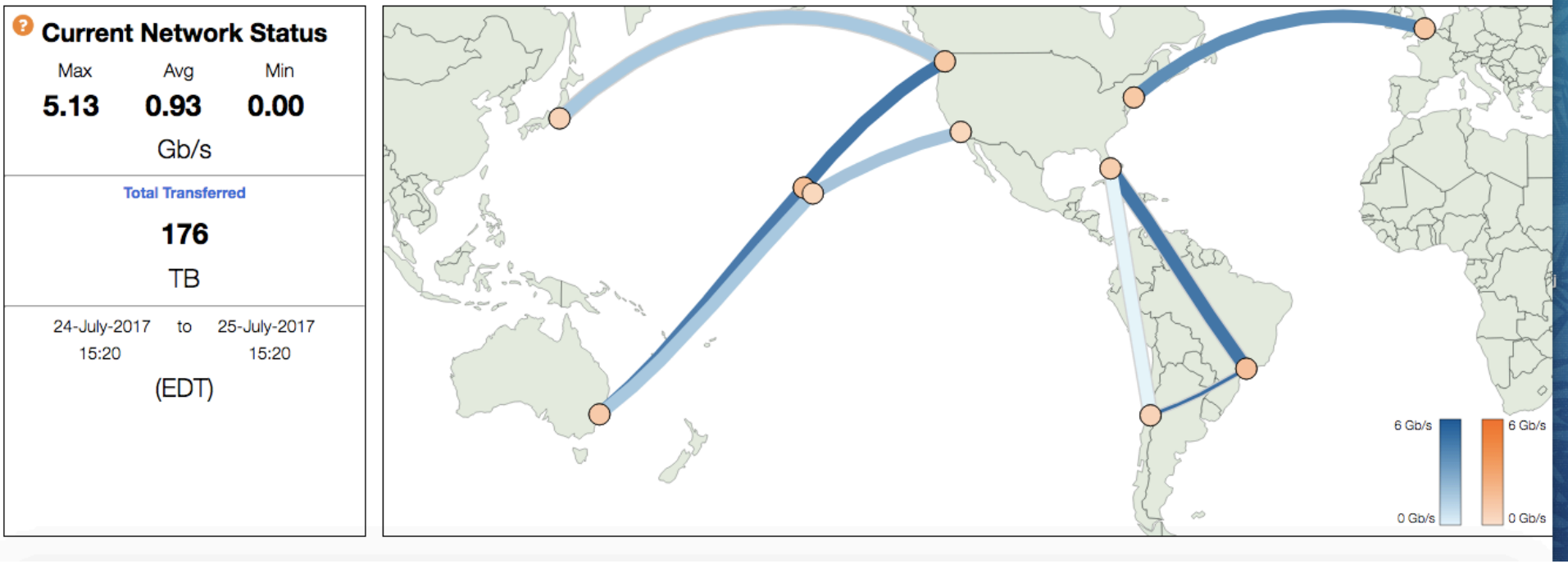
Questions?

IRNC NOC: irncnoc@globalnoc.iu.edu

Submit a Performance Issue: performance@globalnoc.iu.edu

NetSage: Network measurement, analysis, and visualization



http://portal.netsage.global

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- EPOC is an NSF-funded, under CC*, operations center to help scale engagement
  - Award #1826994, $3.5M over 3 years
- Joint project between Indiana University and Esnet
- Partnerships with regional, infrastructure, and science communities
- Roadside assistance and Deep dives
  - Ask for help: epoc@iu.edu
- Network Analysis (NetSage), Services “in a box”, Training

- More information: Jennifer Schopf, jmschopf@iu.edu

EPOC
Engagement and Performance Operations Center