Internet2 Routing Integrity Update to the JET

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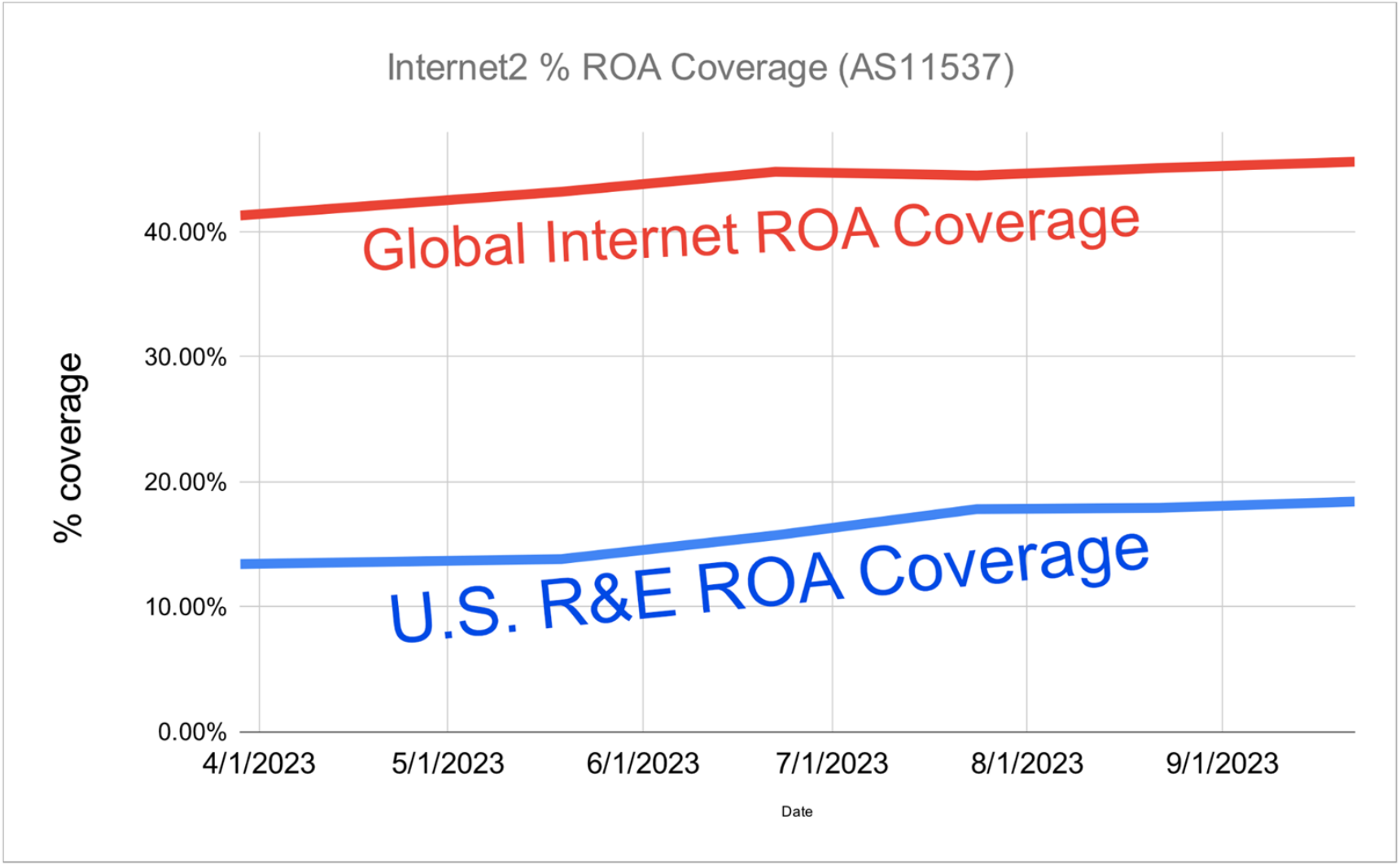
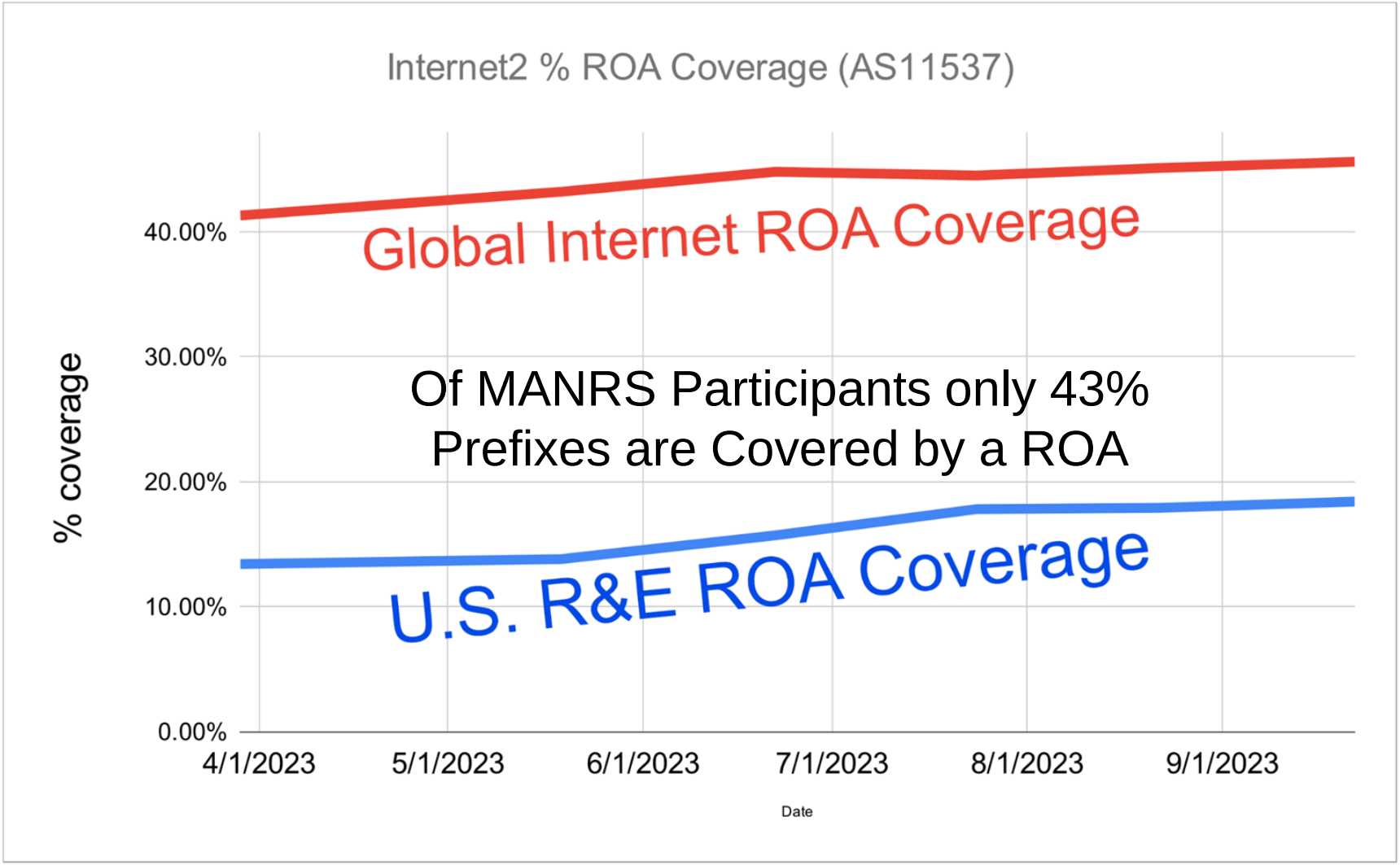
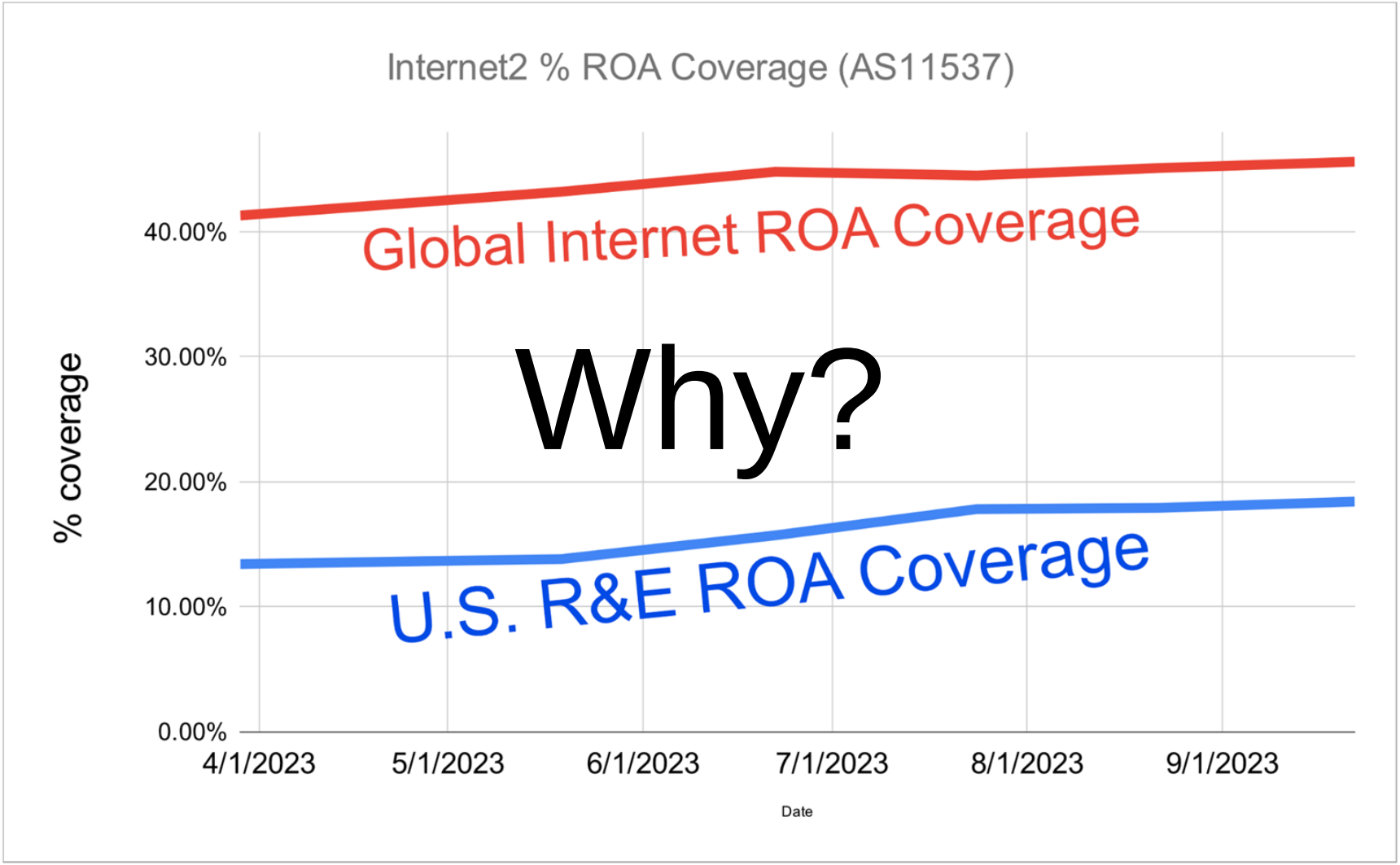
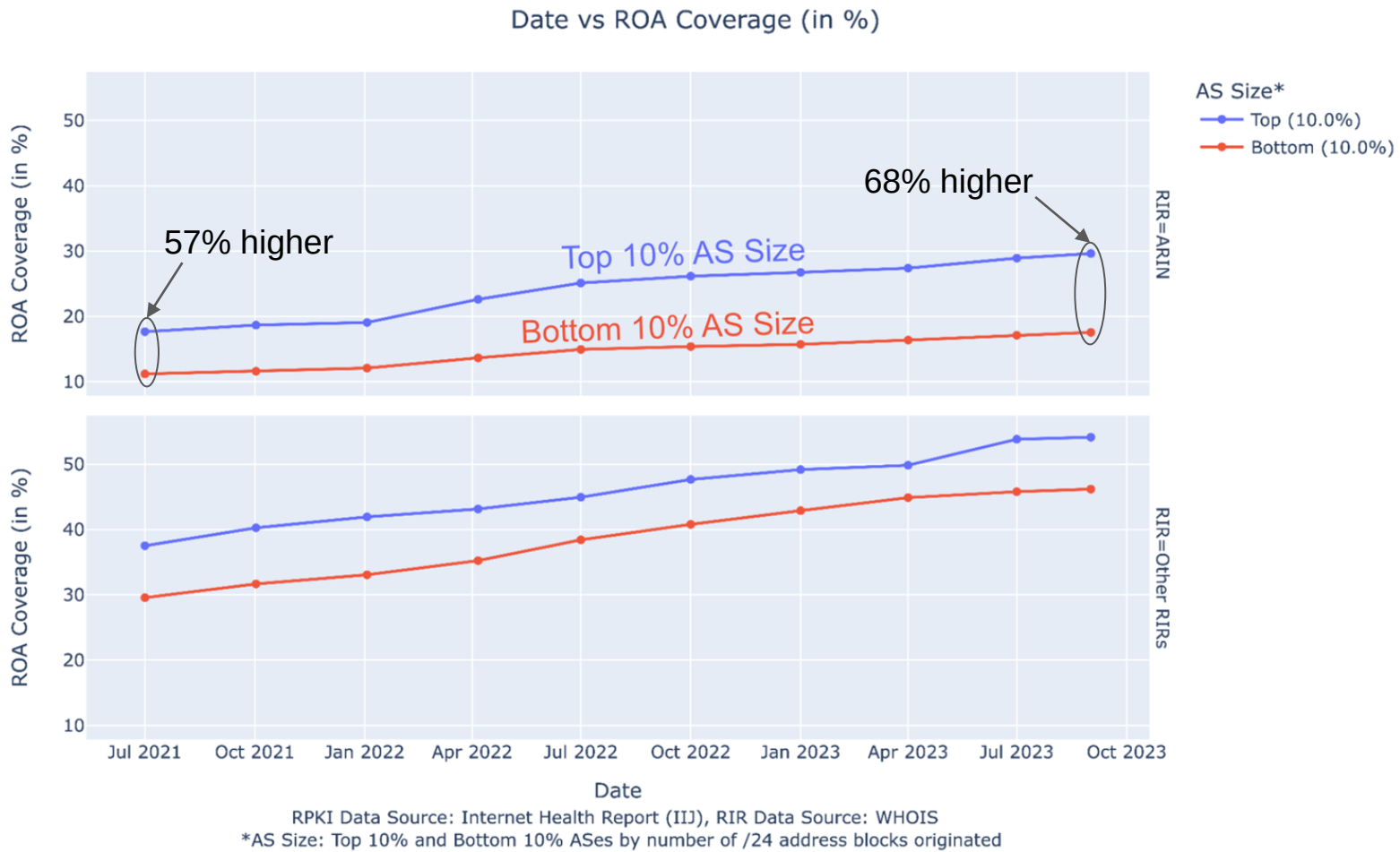

Internet2 % ROA Coverage (AS11537)
Global Internet ROA Coverage
U.S. R&E ROA Coverage
% coverage
40.00%
30.00%
20.00%
10.00%
0.00%
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
Date


Internet2 % ROA Coverage (AS11537)
Global Internet ROA Coverage
Of MANRS Participants only 43%
Prefixes are Covered by a ROA
U.S. R&E ROA Coverage
% coverage
40.00%
30.00%
20.00%
10.00%
0.00%
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
Date


Internet2 % ROA Coverage (AS11537)
Global Internet ROA Coverage
Why?
U.S. R&E ROA Coverage
% coverage
40.00%
30.00%
20.00%
10.00%
0.00%
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
Date

ROA Statistics from Deepak Gouda, Cecilia Testart - Georgia Institute of Technology



Global Adoption of RPKI-ROAs also Lags

The global NREN routing table

- 16K covering prefixes
- 3.4K of ROAs
- just over 20% ROA coverage

ARIN agreement progress

In February of 2023 we counted 700 Internet2-connected orignizations without ARIN agreements, as of this month that’s now 600.

Maintain a public spreadsheet to check on ARIN agreement status here.

As of October 10th, ARIN now maintains a updated list of agreement status for all IP assignments here.

New Features in Internet2 Route Reports

Each route's AS-Path, as well as the number of AS-Paths prepended.

Indication of routes for which there are more specifics in the global table.

Connector	BGP-Participant	AS-SET	Route	Origin	RPKI ROA	IRR Prefix Match
Northern Lights	AS57-NLIGHTS	AS-NLG-PARTICIPANTS	**129.176.0.0/16**	AS		129.176.32.0/19
Northern Lights	AS57-NLIGHTS	AS-NLG-PARTICIPANTS	**129.176.0.0/16**	AS		129.176.64.0/19
Northern Lights	AS57-NLIGHTS	AS-NLG-PARTICIPANTS	**129.176.0.0/16**	AS		129.176.224.0/19
Northern Lights	AS57-NLIGHTS	AS-NLG-PARTICIPANTS	**129.176.0.0/16**	AS		129.176.96.0/19
NOX	AS10578-NOX	AS10578:AS-ALL	**69.64.96.0/20**	AS		129.176.160.0/19
NOX	AS10578-NOX	AS10578:AS-ALL	**69.64.96.0/20**	AS		129.176.0.0/19
MCNC	AS81-MCNC	AS-NCREN	**152.36.0.0/17**	AS		129.176.192.0/19
MCNC	AS81-MCNC	AS-NCREN	**152.36.0.0/17**	AS		100% of IP addresses in more specific routes
MCNC	AS81-MCNC	AS-NCREN	**152.36.0.0/17**	AS		
Edge.Net Inc.	AS62532-EDGE	AS-NJEDGE-RE	**128.235.0.0/16**	AS		
Edge.Net Inc.	AS62532-EDGE	AS-NJEDGE-RE	**128.235.0.0/16**	AS		

cont.

Connector	Route	Network Name	AS-Path	AS prepend
Northern Lights	206.71.32.0/24	South Dakota State Gover	57 33189+33189+33189+33189+33189+33189+33189+33189+33189+33189	10

We’re going to build a probe….

Probe will be dual homed, one interface connected to AS11537 one connected to a commodity transit provider.

The probe will send challenge packets to a few hosts on all Internet2-connected networks. Still working on the proper challenge. Candidates include: http get, ping, traceroute, TCP open, etc.

The probe will record which interface received the response. Answering the question: did the network being probed prefer commodity or Internet2 for the return path.

Data on the preferred network will be made available via future router reports.

Questions?

"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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