



ESnet

ENERGY SCIENCES NETWORK

LHCONE Operations Update

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ESnet

Network Engineering

LHCOPN – LHCONE MEETING

CAMBRIDGE – (UK)

February 9-10, 2015



U.S. DEPARTMENT OF
ENERGY
Office of Science



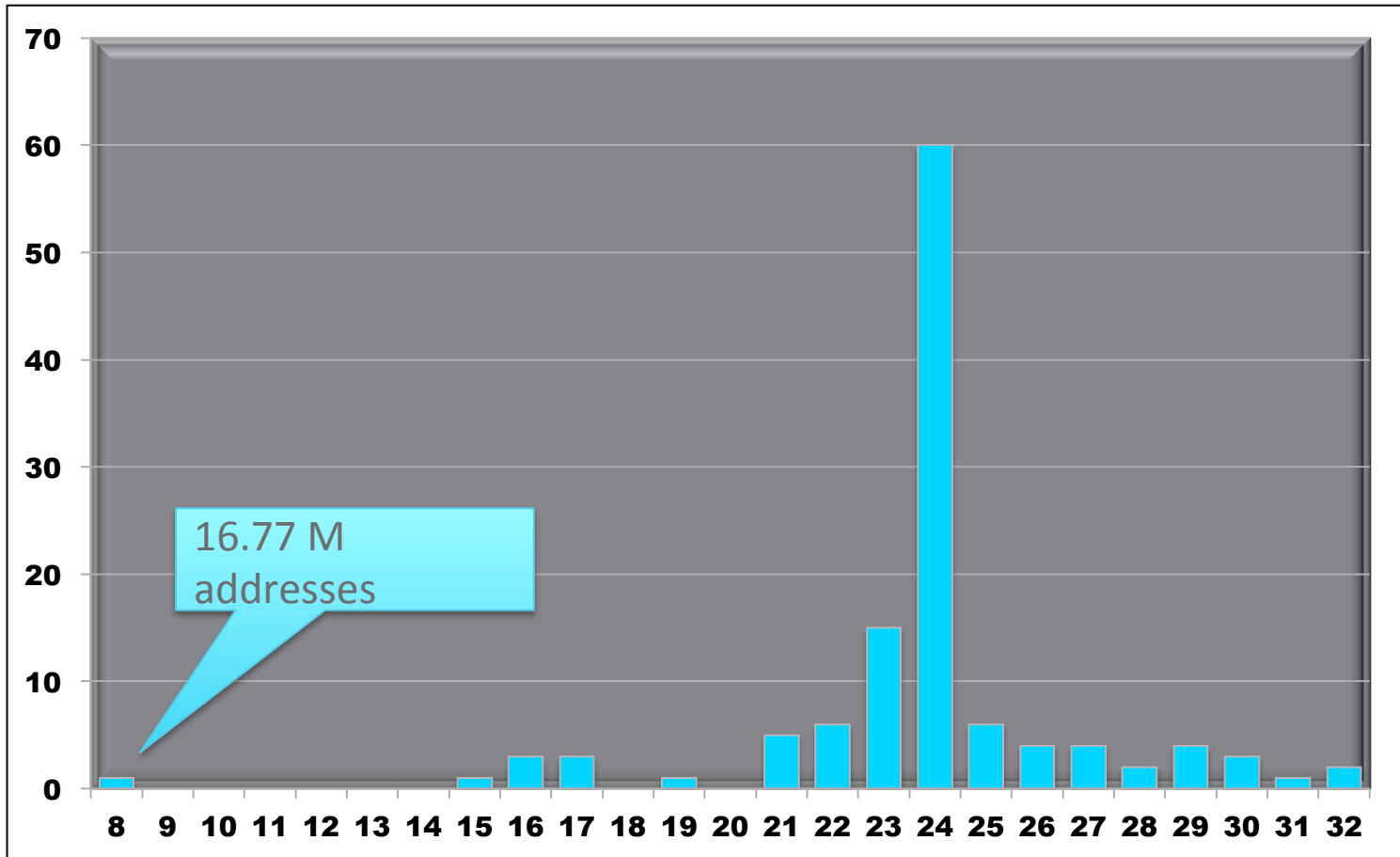
LHCONE Collaborating NSPs and Compute Centers 1/2015

North America	Europe
CANET(6509) <ul style="list-style-type: none"> • BCNET(271) • UTORONTO(239) • UVIC(16462) • MCGILL(15318) • TRIUMF(36391) • UALBERTA(3359) ESNET(293) <ul style="list-style-type: none"> • FNAL(3152) • BNL(43) • SLAC(3671) • PNNL(3428) I2(11537) <ul style="list-style-type: none"> • UIUC(38) • UNL(7896) • MIT(3) • AGLT2(229) • MICH-Z(230) • UOC(160) • CSUNET(2153) • ULTRALIGHT(32361) • VANDERBILT(39590) • OKLAHOMA(25776) INDIAN(19782) <ul style="list-style-type: none"> • IUPUI(10680) 	CERN-LHC1(20641) <ul style="list-style-type: none"> • CERN-WIGNER(61339) • CERN(513) DFN(680) <ul style="list-style-type: none"> • KIT(34878) • DESY(1754) GEANT(20965) <ul style="list-style-type: none"> • ROEDUNET(2614) • ASGARR(137) • ARNES-NET(2107) • CZECH-ACAD-SCI(2852) LHCONE-RENATER(2091) <ul style="list-style-type: none"> • IN2P3(789) • CEA-SACLAY(777) NORDUNET(2603) <ul style="list-style-type: none"> • NDGF(39590) REDIRIS(766) <ul style="list-style-type: none"> • PIC(43115) SURFSARA(1162) <ul style="list-style-type: none"> • NIKHEF(1104)

Additions Since 9/14

- **PNNL (Belle II)**
- **University of OKLAHOMA**

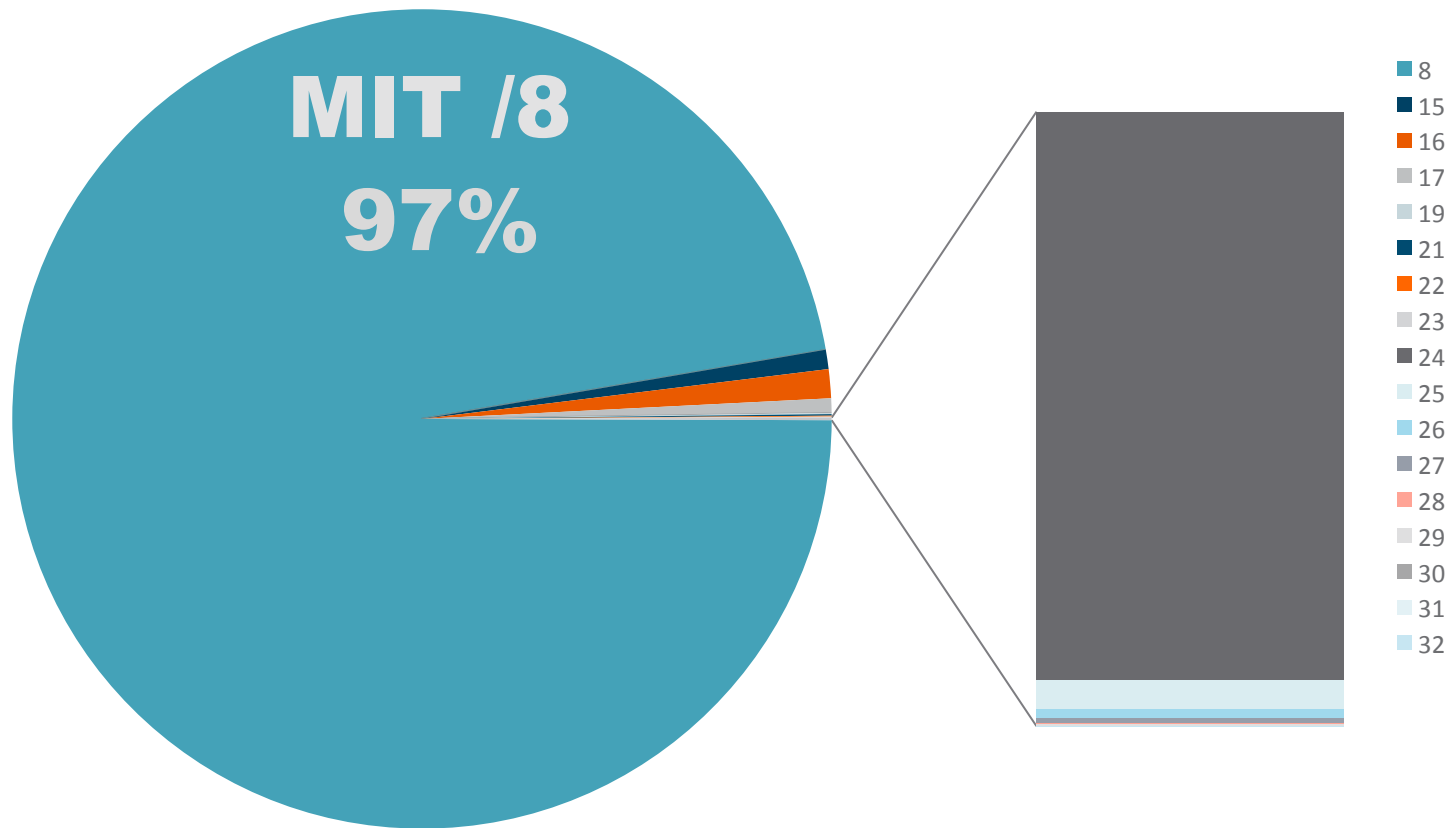
LHCONE Routing Table Total Prefixes by Length



121 route prefixes covering 17.25 M IPv4 addresses

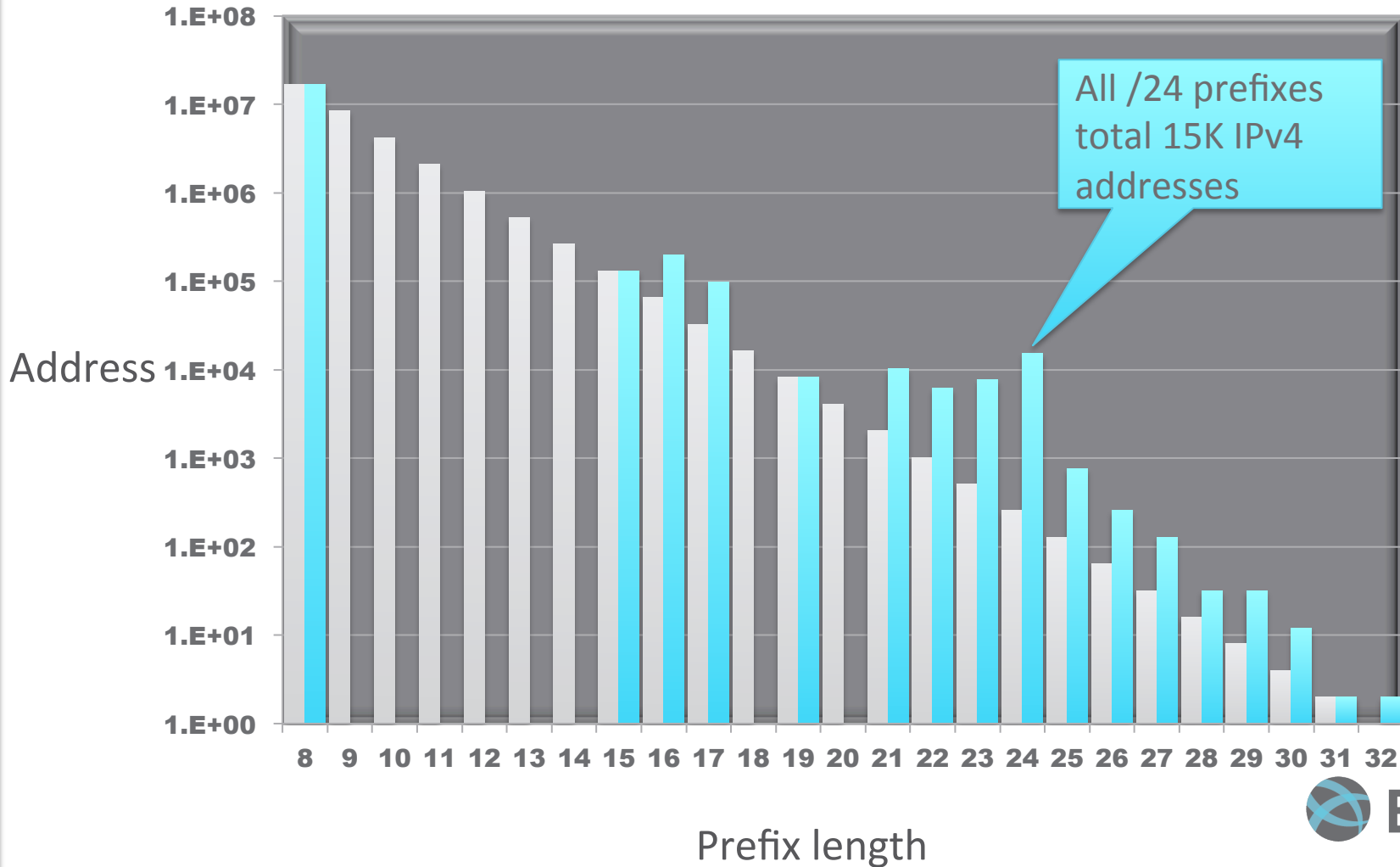
LHCONE Routing Table

Address Percentages by Prefix Length



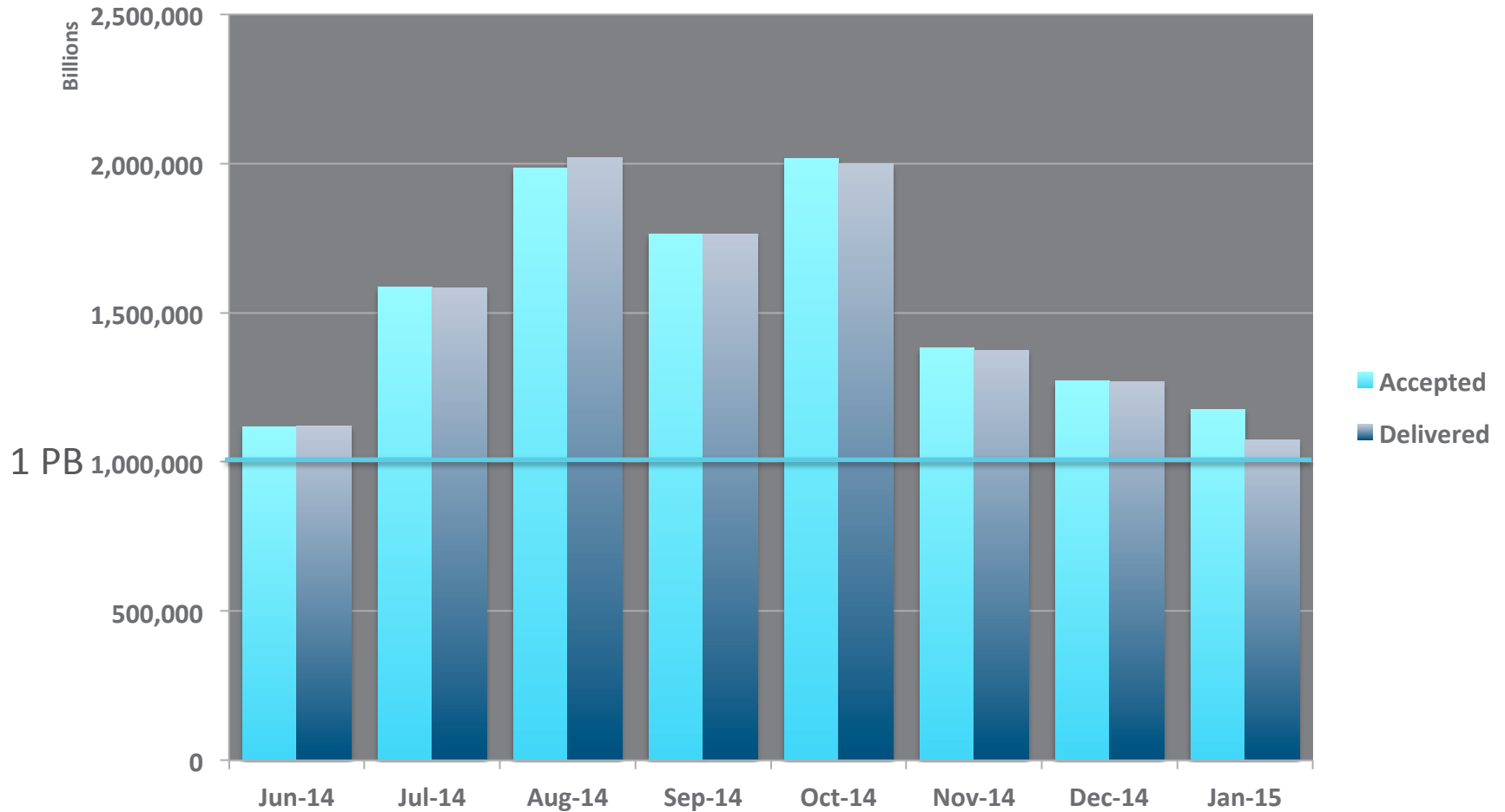
LHCONE Routing Table

Address Totals by Prefix Length



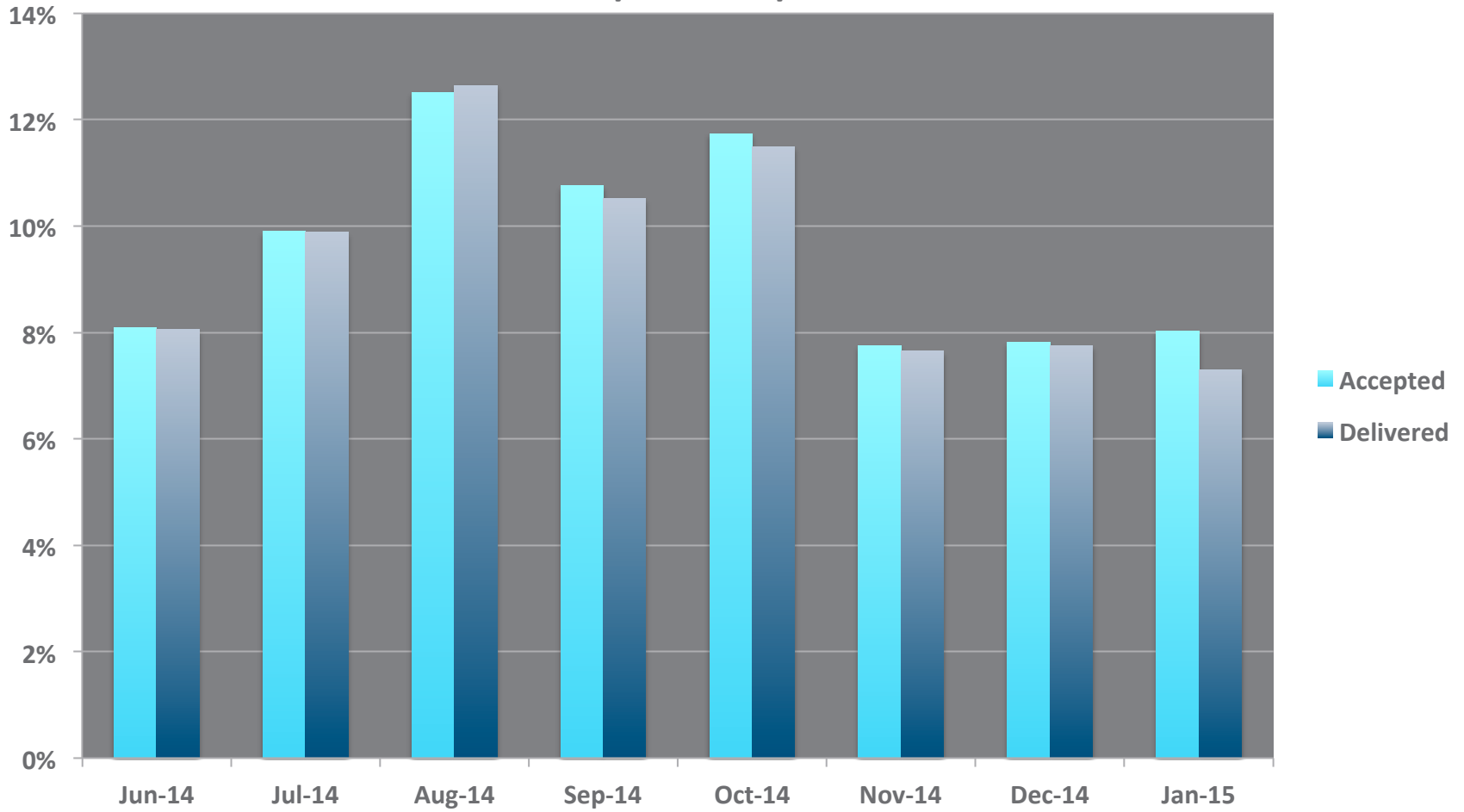
ESnet LHCONE Monthly Octets Rx/Tx

6/2014 – 12/2014



ESnet LHCONE Monthly Rx/Tx Percent of Total Traffic

6/2014 – 1/2015



LHCONE Operations Call Summary

- Sep. 15, 2014 BGP filtering service voted on and approved at the Ann Arbor LHCOPN/LHCONE meeting.
- Sep. 29, 2014 Cern, DANTE & Esnet agreed to implement all “Mandatory” BGP communities, pending the procedural documentation for sites and the investigation of the chosen range with respect to RFC4360. Representatives from CANARIE, I2 & NORDUNet were not present on this call but also committed to implement in later in email.
- Roy H. verified that the LHCONE community ranges did not conflict with existing type field bit flag specifications. (RFC 4260)
- Shawn M. reported on a new "mesh-configuration management" tool written by OSG to work with the latest PerfSONAR software V 3.4.1.
- Mike O’C, Bruno H, Edoardo M. volunteered to draft a test procedure to be used for verifying LHCONE BGP filtering functionality across network domains.

LHCONE BGP Filtering was a principal focus of the operations group during this period, achieving community approval and a wide deployment.



Thank You. Question, Discussion ?

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