


The page contains presentations and tutorials Philip has developed and/or presented over the last decade or so. They are all sorted in descending of year. The most recent presentations/tutorials should be considered to be the most up to date versions of the relevant content. Please feel free to reuse these for your own training activities - and do let Philip know about any suggestions for improvements or enhancements to the most recent materials. All feedback is most welcome.

| Year | Event | Slideset |
|---|---|---|
| 2024 | LINX 123 | IXPs and developments in networking: A 30-year personal review |
| | Peering Asia 6.0 | The RouteViews Project: Update |
| | NANOG 92 | BGP Techniques for Network Operators |
| | | The RouteViews Project: Update |
| | mnNOG6 | The Internet Routing Table using RouteViews |
| | SGNOG 11 | The RouteViews Project: Update |
| | btNOG 11 | The Internet Routing Table using RouteViews |
| | PhNOG 2024 | Philippine Internet Routing Table Update: Using RouteViews |
| | PacNOG33 | Pacific Internet Routing Table Update: Using RouteViews |
| | ThaiNOG 6 | Thailand Internet Routing Table Update: Using RouteViews |
| | IETF 119/ISOC Policymaker Meeting | Overview of Routing & Interconnection |
| 2023 | PacNOG 32 | Global Routing Table Update |
| | Peering Asia 5.0 | RouteViews: BGP Global Monitoring Infrastructure and Services |
| | SANOG 40 | Global Routing Table Update |
| | PhNOG 2023 | RouteViews: Global BGP Collector for Operators and Research |
| | NANOG 88 | BGP Techniques for Network Operators Tutorial |
| | SANOG 39 | Global Routing Table Update |
| 2022 | APNIC 54 | Peering Toolbox |
| | SANOG 38 | Peering Toolbox |
| | | Global Routing Table Update |
| | PhNOG 2022 Hybr1d | Peering Toolbox |
| | ThaiNOG 4 | RPKI Operations |
| | BKNIX Peering Forum 2022 | Peering Toolbox |
| | TNC'22 | Global R&E Routing Report |
| | ICTP | Network Operator Groups |
| | AfNOG 2022 | Keynote: Post Pandemic NOG Evolution |
| | ThaiNOG 4 | RPKI Operations |

| Year | Event | Slideset |
|---|---|---|
| 2021 | mnNOG 3 | Keynote: Mongolia's Internet Journey: from bits to Gigabits |
| | btNOG 8 | Keynote: The Events Defining Bhutan's Internet |
| | APNIC Routing Security SIG Forum | Deploying RPKI and ROV at Cenpac |
| | SANOG 37 | Internet Routing Table Analysis Update |
| | LKNOG 5 | BGP Best Practices |
| | vPhNOG2.0 | R&E Routing Table Update |
| | AfNOG 2021 | Global BCP for Routing Policy & Security |
| | SANOG 36 | Internet Routing Table Analysis Update |
| 2020 | LINX Seminar | Rebuilding a Pacific ISP During the Pandemic |
| | PacNOG 26 | Network Monitoring: The Foundation of Campus Security |
| | APRICOT 2020 | APRICOT 2020 RPKI Deployathon Report |
| | SANOG 35 | Internet Routing Table Analysis Update |
| 2019 | PacNOG 25 | RouteViews: The BGP Collector for Today's Network Operator & Researcher |
| | | Campus Network Design & Operations Introduction |
| | LINX107 | IXPs in Asia & Pacific |
| | mnNOG 1 | RouteViews: The BGP Collector for Today's Network Operator & Researcher |
| | SANOG 34 | Internet Routing Table Analysis Update |
| | PhNOG 2019 Manila | RouteViews: The BGP Collector for Today's Network Operator & Researcher |
| | SGNOG7 | RouteViews: The BGP Collector for Today's Network Operator & Researcher |
| | PacNOG 24 | RouteViews: The BGP Collector for Today's Network Operator & Researcher |
| | | Campus Network Design & Operations Introduction |
| | btNOG 6 | RouteViews: The BGP Collector for Today's Network Operator & Researcher |
| | ThaiNOG 2 | RouteViews Evolves: Modernizing the BGP Collector for Today's Researcher |
| | SANOG33 | Internet Routing Table Analysis Update |
| | | Routing Security Tutorial |
| 2018 | PITA Telecoms Digital Strategy Forum | Modern Interconnects in the Internet Ecosystem |
| | SANOG32 | RouteViews: Enabling Research Through New and Innovative Infrastructure |
| | | Internet IPv4 Routing Table Analysis Update |
| | btNOG5 | Analysis of the Development of IXPs |
| | BKNIX Peering Forum | Analysis of the Development of IXPs |

| Year | Event | Slideset |
|---|---|---|
| 2017 | APNIC44 | IPv6 Transition Strategies |
| | LINX98 | IXPs around Asia |
| | | LINX 1994-1997 |
| | SANOG30 | Internet IPv4 Routing Table Analysis Update |
| | | External BGP Route Propagation Behaviour without Policies |
| | | IPv6 Deployment Planning |
| | | IXP Design Best Practices |
| | | RIPE Atlas Intro (on behalf of RIPE NCC) |
| | BhutanNOG 4 | Internet Futures in Bhutan |
| | SANOG29 | Internet IPv4 Routing Table Analysis Update |
| | | IPv6 Transition Strategies |
| | | IPv6 Deployment Planning |
| | | RIPE Atlas Intro (on behalf of RIPE NCC) |
| 2016 | BTNOG 3 | Internet IPv4 Routing Table Analysis Update |
| | APNIC 42 | IPv6 Transition Strategies |
| | | IXP Design Best Practices |
| | APRICOT 2016 | BGP Techniques for Network Operators |
| | | BGP Multihoming Techniques |
| | | Troubleshooting BGP |
| | | Virtualisation for Network Testing & Staff Training |
| | SANOG 27 | BGP Techniques for Network Operators |
| | | BGP Multihoming Techniques |
| | | Virtualisation for Testing & Staff Training |
| | | Internet IPv4 Routing Table Analysis Update |
| 2015 | APRICOT 2015 | IPv6 Transition Strategies |
| | | IPv6 Deployment Planning |
| | MENOG 15 | Internet IPv4 Routing Table Analysis Update |
| | PacNOG 17 | A Practical IPv6 Introduction |
| | SAFNOG 2 | Migrating from OSPF to IS-IS |
| | | Internet IPv4 Routing Table Analysis Update |
| | SANOG 25 | BGP Techniques for Internet Service Providers |
| | | BGP Multihoming Techniques |
| | | IPv6 Transition Strategies |
| | | IPv6 Deployment Planning |
| | | Internet IPv4 Routing Table Analysis Update |

| Year | Event | Slideset |
|---|---|---|
| 2014 | AfNOG 2014 | Routing Table Update |
| | APNIC 38 | IPv6 Transition Strategies |
| | | IPv6 Deployment Planning |
| | BDNOG 1 | BGP Techniques for Internet Service Providers |
| | | BGP Multihoming Techniques |
| | | Internet Development: Experiences & Lessons |
| | | Internet IPv4 Routing Table Analysis Update |
| | BTNOG 1 | Internet in Bhutan |
| | | DrukREN Technical Design |
| | | Internet IPv4 Routing Table Analysis Update |
| | MENOG 14 | IPv6 Transition Strategies |
| | | IPv6 Deployment Planning |
| | PacNOG 16 | Peering and IXPs |
| | SAFNOG 1 | BGP Best Current Practices |
| | SANOG 23 | BGP Techniques for Internet Service Providers |
| | | IPv6 Essentials |
| | | IPv6 Transition Planning |
| | | IPv6 Deployment Planning |
| 2013 | AfNOG 2013 | NOG Update |
| | APNIC 36 | BGP Techniques for Internet Service Providers |
| | | BGP Multihoming Technqiues |
| | | IPv6 Transition Strategies |
| | | IPv6 Deployment Planning |
| | APRICOT 2013 | IPv6 Introduction |
| | | IPv6 Transition Technologies |
| | | IPv6 Deployment Planning |
| | | BGP Multihoming Techniques |
| | CaribNOG 5 | Internet Routing Table Analysis Update |
| | MENOG 13 | Peering, Transit and IXP Design |
| | | Internet Exchange Point Design |
| | | BGP Multihoming Techniques |
| | MyNOG 3 | IPv6 Transition Strategies |
| | | Migrating from OSPF to IS-IS |
| | SANOG 22 | Internet Routing Table Analysis Update |

| Year | Event | Slideset |
|---|---|---|
| 2012 | APRICOT 2012 | BGP Multihoming Techniques |
| | | Migrating from OSPF to IS-IS |
| | AfNOG 2012 | BGP Multihoming Techniques |
| | APNIC 34 | IPv6 Address Planning |
| | | ISP & IXP Design |
| | MENOG 10 | BGP Multihoming Techniques |
| | | Migrating from OSPF to IS-IS |
| | MENOG 11 | IPv6 Address Planning |
| | | ISP & IXP Design |
| | | Peering, Transit & IXPs |
| | MyNOG 2 | BGP Multihoming Techniques |
| | | IPv6 Address Planning |
| | | Internet Routing Table Analysis Update |
| | NZNOG 2012 | Migrating from OSPF to IS-IS |
| | PacNOG 12 | Peering, Transit and IXP Design |
| | SANOG 20 | Internet Routing Table Analysis Update |
| 2011 | APRICOT 2011 | BGP Techniques for Internet Service Providers |
| | | IPv6 Addressing & Routing Protocols |
| | AfNOG 2011 | Routing Table Update |
| | | BGP Techniques for Internet Service Providers |
| | | BGP Multihoming |
| | | Troubleshooting BGP |
| | PacNOG 9 | Towards an IPv6-only network |
| | PacNOG 10 | IPv6 Deployment Planning |
| | SANOG 17 | Internet Routing Table Analysis Update |
| | SANOG 18 | Internet Routing Table Analysis Update |
| 2010 | AfNOG 2010 | NOG Updates |
| | APAN 29 | The Next Three Years |
| | APRICOT 2010 | BGP Techniques for Internet Service Providers |
| | NANOG 50 | BGP Techniques for Internet Service Providers |
| | NZNOG 2010 | The Next Three Years: IPv6, IPv4 runout and 4-byte ASNs |
| | PacNOG 7 | Introduction to Cloud Computing |
| | PacNOG 8 | IPv6 and 4-byte ASN update |
| | RIPE NCC Regional Meeting Moscow | Network Operations Groups around the World |
| | SANOG 15 | Internet Routing Table Analysis Update |
| | SANOG 16 | Network Operations Groups around the World |
| | | Internet Routing Table Analysis Update |
| | | Troubleshooting BGP |

| Year | Event | Slideset |
|---|---|---|
| 2009 | AfNOG 2009 | Routing Table Update |
| | | NOG Updates |
| | APRICOT 2009 | BGP Techniques for Internet Service Providers |
| | | BGP Multihoming Techniques |
| | Australian Computer Society ACS2009 | The Next Three Years |
| | MENOG 5 | IPv6 Deployment Study |
| | | 32-bit ASNs |
| | | The Next Three Years: IPv4 runout and the motivation for IPv6 |
| | | Internet Routing Table Analysis Update |
| | | IPv6 Technical & Service Considerations |
| | RIPE 58 | 2008-06: Use of Final /8 (v2) |
| | | 2008-07:Ensuring efficient use of IPv4 resources (v2) |
| | SANOG 13 | BGP Aggregation & The Deaggregation Report |
| | SANOG 14 | 32-bit ASNs |
| | | BGP Multihoming Techniques |
| | | Troubleshooting BGP |
| | | Network Operations Groups |

| Year | Event | Slideset |
|---|---|---|
| 2008 | AfNOG 2008 | NOG Updates |
| | AfriNIC 9 | How Cisco is preparing for IPv6 |
| | APRICOT 2008 | Troubleshooting BGP |
| | | BGP Aggregation & Deaggregation Report |
| | Cisco AU ISP Roadshow | Internet Status |
| | JANOG 22 | BGP Aggregation & The Deaggregation Report |
| | | Network Operations Groups |
| | MENOG 3 | BGP Techniques for Internet Service Providers |
| | | IPv6 Addressing & Routing Protocols |
| | MENOG 4 | IS-IS Tutorial |
| | | Network Operations Groups Update |
| | NANOG 42 | Introduction to IPv6 |
| | | Troubleshooting BGP |
| | NANOG 44 | BGP Techniques for Internet Service Providers |
| | | IPv6 Addressing & Routing Protocols |
| | Netnod IPv6 Conference | IPv6 @ NANOG, APRICOT and other places |
| | | IPv6 Address & Routing Protocols |
| | NZNOG 2008 | 32-bit ASNs |
| | | BGP Techniques for Internet Service Providers |
| | | BGP Aggregation & The Deaggregation Report |
| | OECD ITC 2008 | The State of the Internet Routing Infrastructure |
| | PacNOG 4 | BGP Aggregation & The Deaggregation Report |
| | | Network Operations Groups |
| | PhNOG 3 | IPv6 @ NANOG, APRICOT and other places |
| | RIPE 56 | Network Operations Groups |
| | RIPE 57 | Proposal 2008-06: Use of Final /8 |
| | | Proposal 2008-07: Ensuring efficient use of historical IPv4 resources |
| | SANOG 11 | 32-bit ASNs |
| | | BGP Techniques for Internet Service Providers |
| | | Improving the Internet Infrastructure |
| | | BGP Aggregation & The Deaggregation Report |
| | SANOG 12 | BGP Multihoming Techniques |
| | | Troubleshooting BGP |
| | | BGP Aggregation & The Deaggregation Report |

| Year | Event | Slideset |
|---|---|---|
| 2007 | AfNOG 2007 | Internet Routing & Deaggregation Report |
| | | 32-bit ASNs |
| | | Advanced Routing Workshop |
| | | BGP Multihoming Techniques |
| | AfriNIC 7 | 32-bit ASNs |
| | | IPv6 at Cisco |
| | APRICOT 2007 | BGP Aggregation & The Deaggregation Report |
| | | BGP Techniques for Internet Service Providers |
| | ARIN 20 | IPv6 Addressing & Routing Protocols |
| | MENOG 1 | BGP Aggregation & The Deaggregation Report |
| | | BGP Multihoming Techniques |
| | MENOG 2 | 32-bit ASNs |
| | | BGP Aggregation & The Deaggregation Report |
| | | IPv6 Routing Protocols: What has changed? |
| | | IPv6 Addressing & Routing Protocols |
| | | BGP Techniques for Internet Service Providers |
| | NANOG 39 | BGP Deaggregation Report |
| | | Troubleshooting BGP |
| | NANOG 40 | BGP Techniques for Internet Service Providers |
| | NANOG 41 | BGP Multihoming Techniques |
| | PacNOG 3 | BGP Aggregation & The Deaggregation Report |
| | PhNOG 1 | BGP Multihoming Techniques |
| | PhNOG 2 | Improving the Internet Infrastructure |
| | | BGP Route Aggregation Best Practices |
| | SANOG 9 | BGP Techniques for Internet Service Providers |
| | | BGP Multihoming Techniques |
| | | BGP Route Aggregation Best Practices |
| | | Internet Routing Table Analysis Update |
| | SANOG 10 | BGP Aggregation & The Deaggregation Report |
| | | BGP Multihoming Techniques |
| | UKNOF 8 | BGP Best Practices |
| | | BGP Aggregation & The Deaggregation Report |

| Year | Event | Slideset |
|---|---|---|
| 2006 | AfNOG 2006 | BGP Multihoming Techniques |
| | AfriNIC 5 | Aggregation Recommendations |
| | | IPv6: A Global Perspective |
| | | BGP Techniques for Internet Service Providers |
| | APNIC 22 | BGP Tutorial |
| | | BGP Multihoming Techniques |
| | | Troubleshooting BGP |
| | APRICOT 2006 | Deploying BGP |
| | | BGP Multihoming Techniques |
| | | Troubleshooting BGP |
| | NANOG 36 | Troubleshooting BGP |
| | NANOG 37 | BGP Techniques for Internet Service Providers |
| | NANOG 38 | BGP Multihoming Techniques |
| | NZNOG 2006 | Deploying BGP |
| | | BGP Multihoming Techniques |
| | | Troubleshooting BGP |
| | QUESTnet 2006 | BGP Techniques for Providers |
| | RIPE 52 | BGP Flap Damping: Deprecating RIPE-229 |
| | RIPE 53 | Route Aggregation Recommendations |
| | RIPE NCC Regional Meeting Bahrain | BGP Best Practices |
| | SANOG 7 | NGP Multihoming & Internet Exchange Points |
| | | Internet Routing Table Analysis Update |
| | SANOG 8 | Scaling IGPs in ISP Networks |
| | | BGP Multihoming Techniques |
| | | Internet Routing Table Analysis Update |
| 2005 | APNIC 20 | BGP Flap Damping: Where to now? |
| | APRICOT 2005 | Deploying BGP |
| | | Troubleshooting BGP |
| | NANOG 33 | Troubleshooting BGP |
| | NANOG 34 | BGP Techniques for Internet Service Providers |
| | NANOG 35 | BGP Multihoming Techniques |
| | RIPE 50 | Aggregation (?) |
| | | BGP Flap Damping |
| | RIPE 51 | BGP Flap Damping: Where to now? |
| | SANOG 5 | Internet Routing Table Analysis Update |
| | | IPv6 Tutorial |
| | SANOG 6 | Aggregation (?) |

| Year | Event | Slideset |
|---|---|---|
| 2004 | APRICOT 2004 | BGP Tutorial |
| | | BGP Multihoming |
| | NANOG 31 | BGP Techniques for Internet Service Providers |
| | NANOG 32 | BGP Multihoming Techniques |
| | NZNOG 2004 | Troubleshooting BGP |
| | RIPE NCC Regional Meeting Moscow | ripencc-moscow-routing.pdf |
| | SANOG 3 | BGP enhancements for IPv6 |
| | | IPv6 Multicast |
| | | BGP Multihoming Techniques |
| | | Internet Routing Table Analysis Update |
| | SANOG 4 | Internet Routing Table Analysis Update |
| 2003 | AfNOG 2003 | Troubleshooting BGP |
| | APNIC 16 | BGP Multihoming |
| | | Catching Worms at APNIC 16 |
| | APRICOT 2003 | Routing Table Update |
| | | BGP Tutorial |
| | | BGP Deployment Technqiues |
| | | BGP Multihoming |
| | | BGP Troubleshooting |
| | NANOG 27 | BGP for Internet Service Providers |
| | NANOG 28 | BGP Multihoming Techniques |
| | NANOG 29 | BGP Troubleshooting |
| | RIPE 44 | Internet Routing Table Analysis Update |
| | RIPE 45 | Day in the Life of a BGP Update in Cisco IOS |
| | RIPE NCC Regional Meeting Dubai | Introduction to Routing |
| | SANOG 1 | BGP for Internet Service Providers |
| | | BGP Multihoming Techniques |
| | SANOG 2 | ISP Essentials |
| | | BGP Multihoming Techniques |
| 2002 | AfNOG 2002 | BGP for Internet Service Providers |
| | APNIC 14 | BGP Multihoming |
| | APRICOT 2002 | Routing Table Update |
| | IEPG @ IETF54 | Routing Table Update |
| | KIOW 2002 | BGP for Internet Service Providers |
| | NANOG 25 | IXes in the AP Region |
| | | BGP for Internet Service Providers |
| | NANOG 26 | Troubleshooting BGP |
| | RIPE 41 | Internet Routing Table Analysis Update |
| | RIPE 42 | Internet Routing Table Analysis Update |

| Year | Event | Slideset |
|---|---|---|
| 2001 | APNIC 12 | Internet Routing Analysis |
| | APRICOT 2001 | Promoting Routability |
| | | BGP Multihoming |
| | ARIN 7 | Internet Routing Table Analysis Update |
| | AUUG 2001 | Router Security |
| | NANOG 22 | BGP Tutorial |
| | NANOG 23 | BGP Multihoming Techniques |
| | RIPE 38 | Internet Routing Table Analysis Update |
| | RIPE 39 | Revisions to RIPE 210: Coordinated Route Flap Damping Parameters |
| | RIPE 40 | BGP for Internet Service Providers |
| 2000 | IEPG@IETF49 | Internet Routing Table Analysis Update |
| | ISPCON 2K | Promoting Routability |
| | | BGP Multihoming |
| | RIPE 37 | Internet Routing Table Analysis Update |
| | | BGP Flap Damping |
| 1999 | APRICOT 99 | Promoting Routability |
| 1998 | APRICOT 98 | Promoting Routability |

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