Workshop Development Notes

Needs to cover the following topics.

Setting up IS-IS

- NSAP address plan
- setting metrics, level-2, wide metrics
- selecting DIS
- multi-topology
- point-to-point ethernets
- **Notes:**
  - **all done in existing IS-IS Lab**

Securing IS-IS (with OSPF side example)

- neighbour authentication
- no IS-IS outside ASN
- **Notes:**
  - **all done in existing IS-IS Lab**
  - **need to add OSPF footnote example**

Setting up BGP securely

- RFC8212 - filters in and out on eBGP
- passwords on eBGP and iBGP sessions
- RIR checks on assigned address space of customers - jwhois
- RFC6890 filtering of bogons & Team Cymru bogon BGP feed
- Notes:
  - **8212 needs to be explicitly mentioned in eBGP lab**
  - **the rest all covered in BGP Best Practices slide deck**

BGP scalability & stability features

- iBGP between loopbacks & next-hop-self
- route reflector
- deterministic-med
- BGP distance > IGP distance
- stable announcement of covering aggregates out of all eBGP peers

- **Notes:**
  - **All done in existing BGP materials & labs**

BGP security features

- maxas-limit
- max-prefix
- ttl-security aka GTSM
- community propagated for iBGP by default, eBGP selective
- strip private ASNs
- **Notes:**
  - **Needs a new lab “Securing BGP Lab”**

Setting up Communities for BGP scaling

- security feature → consistent policies across the ASN

Control plane security

- setting up SSH on routers
- protecting VTYs with access filters
- **Notes:**
  - **Needs a new lab “Control Plane Security”**

uRPF

- show how to set up on access interfaces
- **Notes:**
  - **Needs a new lab “uRPF”**

RTBH

- set up within an AS
- set up between ASNs
  - need to have done communities for this
  - **Notes:**
    - **Needs a new lab “Local RTBH”**
    - **Needs a new lab “Inter-AS RTBH”**

BGP SEC

- Creating ROAs (RIR dependent, but explain the process)
- Installing and operating NLnet Labs Routinator
  - **Note: need containers on VTP for this**
- Setting up RPKI support on a router

- Implementing route origin validation & related policies
  - **Note: Need address space that has been validated** - APNIC offered their blocks, but longer term we should have our own.
- propagating validation state across iBGP
  - **Question: standards which vendors aren't supporting, or DIY?**
  - **Notes:**
    - **Need Validator Cache lab (install Routinator on VM per group)**
    - **Need RPKI lab (set up router to talk to Cache)**
    - **Need ROV lab (propagating state, and acting on ROAs)**

Troubleshooting BGP Security Operations

- RouteViews: for analysis, monitoring, troubleshooting
- Looking Glasses supporting ROA/ROV
  - SEACOM
  - HE BGP Tool: bgp.he.net
- RIPE NCC: bgpplay
- **Notes:**
  - **Use Routeviews User presentation**
  - **Need Looking Glass lab - user experimentation only**
  - **Need Troubleshooting Security Presentation - distil out of Troubleshooting BGP tutorial perhaps?**

MANRS

- conclude with summary of MANRS and what it is about
- Notes:
  - Already exists as part of BGP Origin Validation presentation

Lab topology

- To Do:
  - Add a "customer PC" to the customer router in each group

Back to Home page

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