BGP, some Python, and a DB

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BSides Winnipeg 2015-11-15

Slides

Reveal.js slides
ciscodude.net/presentations/bsideswpg2015-mb-bgplogger
Beamer PDF slides
ciscodude.net/presentations/bsideswpg2015-mb-bgplogger.pdf

exabgp-logger daemon project at
github.com/tbaschak/exabgp-logger

Who Is Theo?

- Network Architect @ Daemon Defense Systems
- Avid Open Source Software user/fanatic, and contributor
- Obsessed with network monitoring and routing
- Involved with several nonprofits in Winnipeg
  1. Board of the Manitoba Internet Exchange (MBIX)
  2. Board of Coldhak
     - Coldhak is a nonprofit dedicated to furthering privacy, security and freedom of speech

Overview

- Inspiration
- The idea
- Design
- Building the logger
- Running it
- Peering
- Manitoban Routing
- Scaling it up
- Scaling it futher
- Finding things
- Automating

Inspiration

- Talked about BGP hijacking in my BSidesWpg 2013 talk
- Dyn Research blogs, formerly Renesys Corporation:
  - 2 days after BSidesWpg 2013, November 19 2013, Targeted Internet Traffic Misdirection
  - March 2015, UK traffic diverted through Ukraine
- BGPmon & BGP Stream

Lightbulb

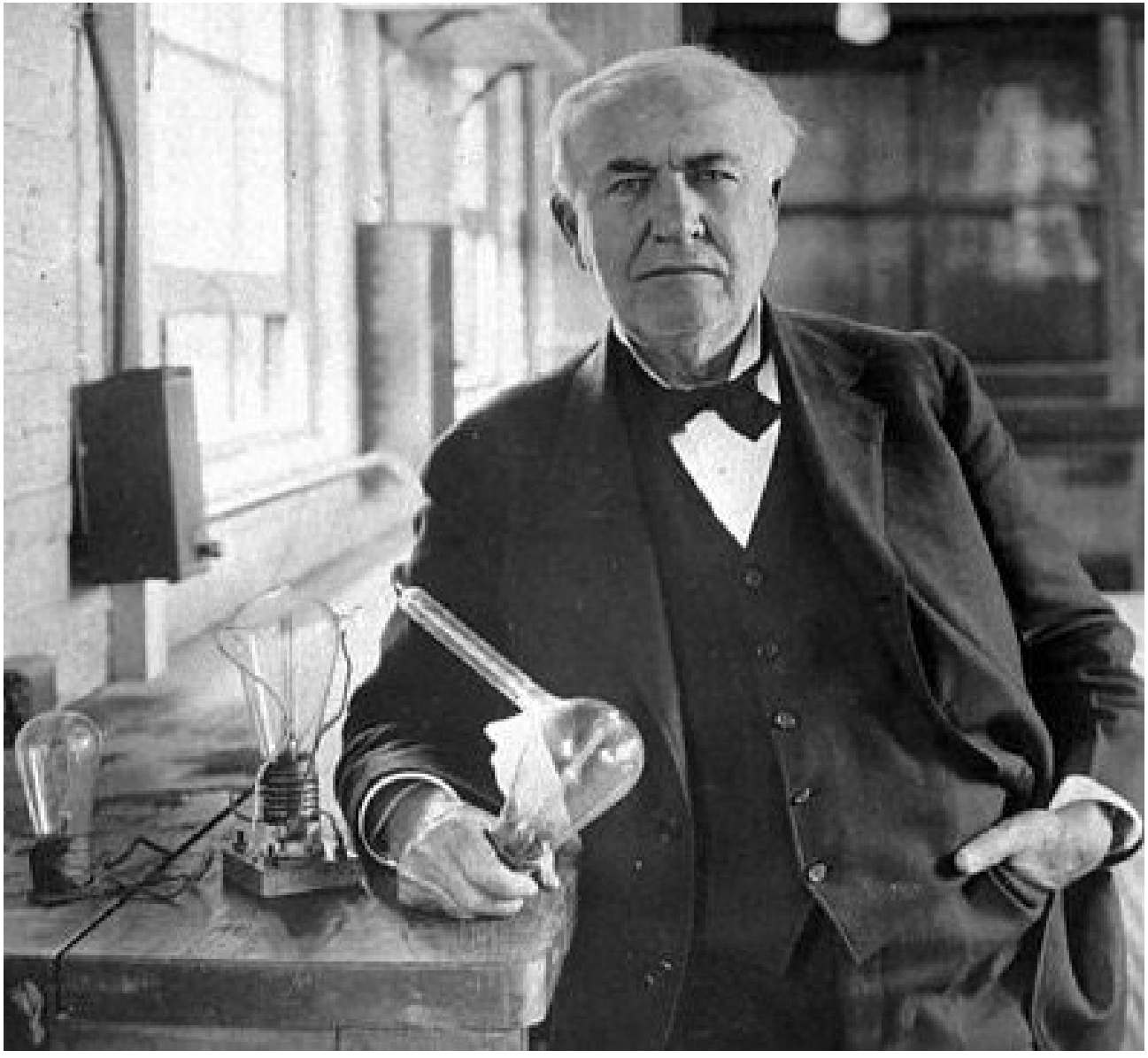

Figure 1:Edison electric light

The Idea

- To log BGP updates from various Manitoban sources
  - exabgp seemed like a good starting place
  - a mailing list post w/ a simple shell collector script
- To examine routes for peering relationships between Manitoban ASNs
- To look at the effects of BGP leaks on Manitoban routing

Design

- Exabgp (the BGP, and the Python)
  - one process, per AF, per peer (v4 and v6 separate)
  - outputs BGP updates as JSON
- Couchdb (the DB)
  - stores JSON objects
  - one database per peer (v4 and v6 combined)
  - replicate each peer into common DB

Building

- Uses exabgp
  - Exabgp config defines actions for route input and output
  - Just input in this case, not advertising
  - Bash while loop to read line by line and POST to couchdb

Running

- Able to run without a peer for basic config checks
- Need a live BGP peer to start viewing BGP update record format
- First tests
  - MFNERC, alpha testing only – 1 million records
  - First version just cat appended the JSON to a file so I could look at the records
- Growing Pains

Peering

1. MERLIN – Gracious statement of support on MBIX-Tech list as well
2. 3T Systems
3. Les.net
4. Swift High Speed Internet

MB Routing

- Many common carriers
- Some less common picked up in Toronto, Alberta and Chicago

Scaling Up

- Moved VM
- Offsite replication
- Increased size of VM and went 64bit

Finding things

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Automating

- Create a RIB for each peer & AF
- Need to compare updates with RIB
  - Prefix length
  - AS-PATH
- Ability to replay BGP updates from couchdb

The End

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