**BGP Paper/Presentation Outline**

***Sections:***

**Abstract/Introduction:**

* Basic overview of what BGP is, what purpose it serves
* Popularity and effects on everyday information technology applications
* Examples of use-cases. (Eg. Advertising multiple routes to a company’s web service/application. If their primary provider goes down it will republish the routes using the other pipe)
* Benefits/advantages over alternatives

**Definitions/Frequently Used Terms:**

* EGP (Exterior Gateway Protocol)
* Autonomous System (AS)
* MBGP (Multiprotocol BGP)
* NLRI (Network Layer Reachability Information)
* BGP Identifier
* BGP speaker
* EBGP (External BGP)
  + External peer
* IBGP (Internal BGP)
  + Internal peer
* IGP (Interior Gateway Protocol)
* Route
  + Feasible route
  + Unfeasible route
* RIB (Routing Information Base)
  + Loc-RIB
  + Adj-RIB-In
  + Adj-RIB-Out

**Summary of Operation/Reasons for Implementation:**

* Sequence of steps for BGP
  + Best path selection algorithm
  + Differences/advantages versus alternatives (highlighting what makes it superior/more popular)

**Implementation of Standard:**

* Message Formats
* Route Updates?
* Path Attributes
* Error Handling
* Version Negotiation
* Timers
* Security

**Hardware/Software Requirements for BGP**

* Common Hardware/Software used for implementation
* Configurations?
  + Primary configurations
  + Workaround configurations without BGP

**Vulnerabilities/Issues/Concerns/Caveats:** Could be fun to talk about

* <http://www.kb.cert.org/vuls/id/929656>
* <http://www.exploit-db.com/exploits/31081/>
* <http://www.exploit-db.com/exploits/30506/>
* <http://www.exploit-db.com/exploits/30319/>
* <http://www.exploit-db.com/exploits/1037/>
* Routing table growth?
* Advertising all acceptable routes -> overcome by route filtering?
* Routes that frequently come and go?

**Future:**

* Updates/revisions to BGP
* Trends - Competing load balancing technologies

**References:**

* The standard released in 2006 for BGP 4: <http://tools.ietf.org/html/rfc4271>
* Good examples of implementation and easier to understand:
  + <http://avi.freedman.net/fromnetaxs/bgp/bgp.html>
  + <http://freedman.net/bgbgp.ppt>
* <http://freedman.net/bgp102.ppt>
* <http://www.cisco.com/c/en/us/support/docs/ip/border-gateway-protocol-bgp/26634-bgp-toc.html>
* <http://www.ixiacom.com/pdfs/library/white_papers/bgp.pdf>
* Open Source BGP - <http://www.openbgpd.org/index.html>
* Another one <http://www.nongnu.org/quagga/>
* Discussion of issues-solutions/vulnerabilities: <https://www.cs.purdue.edu/truselab/readings/td-5ugj33.pdf>
* Trends and Challenges: <http://lasr.cs.ucla.edu/afanasyev/data/files/Afanasyev/BGP%20Routing%20Table%20Trends%20and%20Challenges.pdf>