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10/26/15

* THIS IS ALL AT THE NETWORK LAYER
* BGP
  + Border Gateway Protocol
  + 3 Types of Autonomous System
    - Stub
      * Things only go in or go out
      * Final Destination
      * Only a source or sync
    - Multihome
      * Nothing is routed
    - Transit
      * Traffic can enter into it with the intention of going somewhere else
      * Transition through it
* Multicasting
  + Not Multiple Unicasting
  + Video Conferencing
  + Gaming
  + Distributed Database/computing
  + Network Management
  + Class D - 224-239
    - 224.0.0.0/24 - Local Networks
    - 224.0.1.0/24 - Internetwork Control Block
    - 224.0.2.0/16^2 - AD-HOC
    - 232.0.0.0/8 - Source Specific Multicast
    - 239.0.0.0/8 - Admin
* Assigning Addresses
  + IANA / ICANN
    - Ip addresses that have been assigned by these group
    - Protocols
  + Administration
  + SSM
    - Anyone Can assign these out
* Data Link Layer
  + If it supports Multi-cast, then use it
  + Ethernet
    - 01:00:58:x:y:z
  + If it doesn’t
    - Use tunneling
    - Wrap it inside of a unicast packet
* IGMP
  + Local group management
  + To allow devices to either join or leave a group
* Multicast routing
  + Handle things globally
* Shortest Path Trees
  + Source based trees
    - M trees per router
    - m = number of groups
  + Group based trees
    - M trees per group of routers
* M-Bone
  + Multicast Back bone
* Transport Layer
  + Process to Process
  + Addresses
    - Port Numbers
      * 16-bit 0 - 65535
      * Socket Address (IP + Port)
      * 0-1023 Well-Known
      * 1024-49151 Registered Ports
      * 49152-65535 - Dynamic/private
      * 1024-65535
        + (ephemeral)
      * Client uses Ephemeral
      * Server uses well known
  + Encapsulation/Decapsulation
  + Multiplexing/Demultiplexing
  + Flow Control
  + Error Control
  + Congestion Control
  + Connection - Oriented
  + Connection
* Flow Control
  + Producer/Consumer
  + Push-pull
  + Pull - no need for flow control
  + Buffers will mitigate message passing
* Error Control
  + Corrupted Packets
  + Lost Packets
  + Duplicated Packet
  + Packet ordering