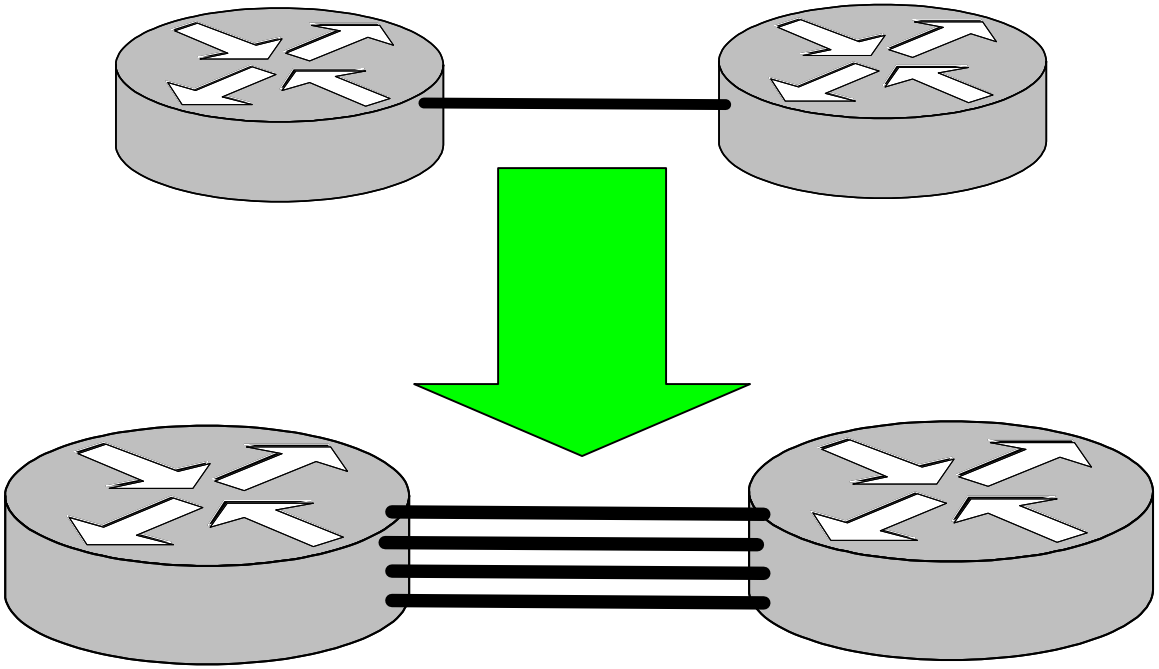
VPN Isolation



Limits

And

Links

Why am I giving this talk? IDR WG needs your input

- Presented by:

Susan Hares,
IDR co-chair

We need 3 sets of input

1. Do you think each work item is useful for your network? Is it critical?
2. Would any work item break your network?
3. On Maximum Prefix draft,
   - Do you want negotiated limits?
   - Do you want 3 limits: warning, ignore prefix limit, and drop connection?
   - Do you want this on all prefixes, a prefix length (/19), or on ORF Basis
   - Do you care about mechanisms: OPEN, ORF, or Dynamic Capabilities?

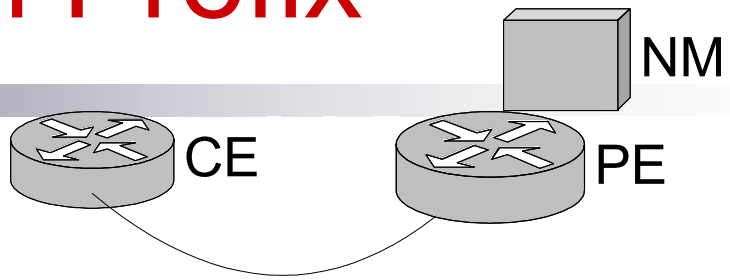
VPN Isolation work Items

- Maximum Prefix Draft
  - Alternative 1: (Chavali, Hares, Miri, Fang)
  - Alternative 2: Keyur Patel, John Scudder
- Multi-Session Attributes (multiple TCP)
  - authors: John Scudder, Channa Appanna
  - Status: Accepted
- Avoid Collision
  - authors: Enke Chen
- Soft Notify (logical on 1 TCP)
  - authors: Gargi Nalawade, Keyur Pate, John Scudder, David Ward
  - Current status: reject

Disclaimer

Using Author's words

Maximum Prefix



- What's the problem
  - Today's practice
    - Set BGP max prefix limit on PE
    - Warning may be sent from PE to provider NM system when warning threshold is triggered
    - Session will either be:
      - dropped by PE when over the drop limit, or
      - routes silently dropped.
    - Result: NOC runs a fire-drill to get the limits change
  - 2 types of failure: Just a little over or Erroneous Full Internet Routing Table
  - Issues about drop session/ignore routes when over limit:
    - Customer service interruption
    - Operation complexity and labor intensive for Providers
    - Possible finger pointing: provider needs to prove it is not caused by network failure.

Is something more is needed?

- How do we deal with it today ?
  - To avoid the complication, providers may simply choose not to use prefix limit when providing Internet Service.
  - But the same providers may have to use the prefix limit when offering MPLS VPN services, due to Router Resource Management needs
- Can we have a better way than simply drop session/routes to make both providers and customers life better?
  - Should we allow the limit to be negotiated via the BGP protocol?
  - Should we allow 1,2 or 3 limits:
    - warning limit that will give the NOC 1-2 weeks to fix a problem
    - Ignore prefix limit
    - Drop connection limit – to fight Full Route Table Drop

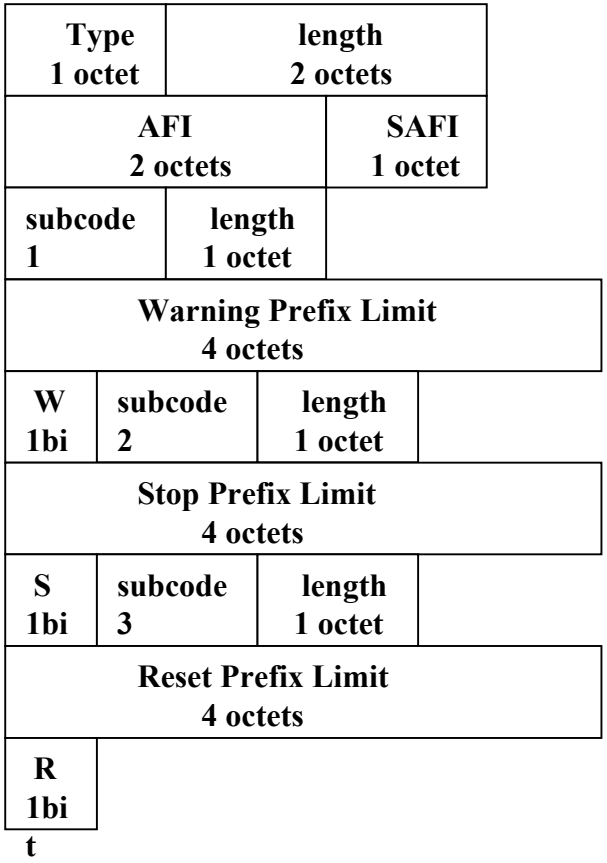
Remember we need to know

On Maximum Prefix draft,

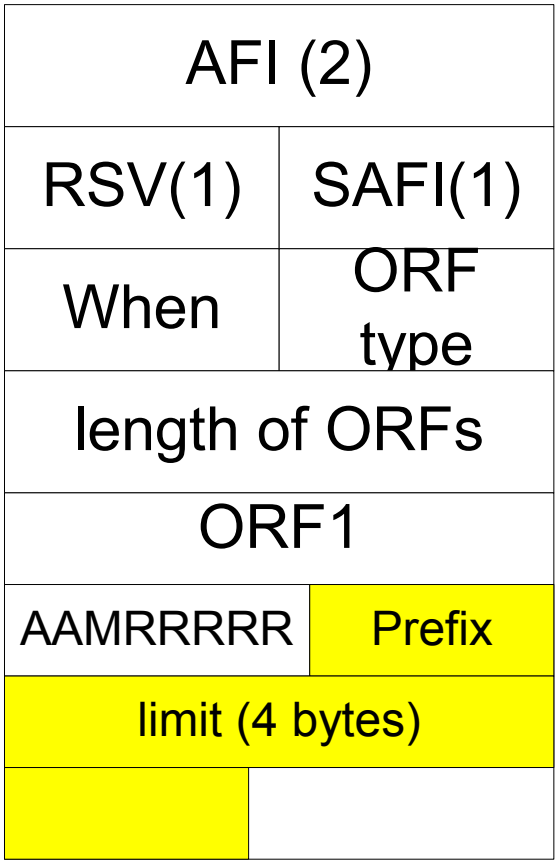
- Do you want negotiated limits?
- Do you want 3 limits: warning, ignore prefix limit, and drop connection?
- Do you want this on all prefixes, a prefix length (/19), or on ORF Basis
- Do you care about mechanisms: OPEN, ORF, or Dynamic Capabilities?

Maximum Prefix Capability Formats

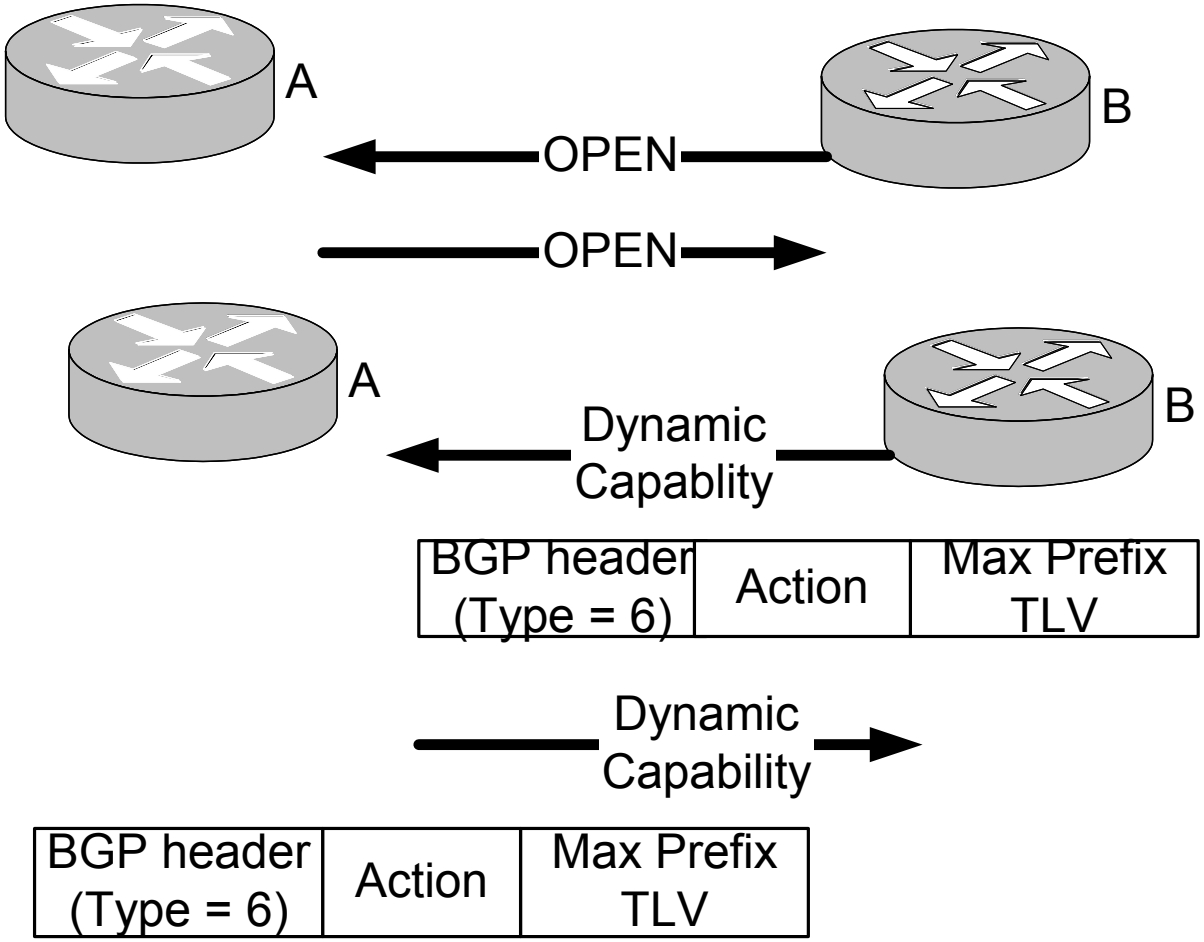
Chavali, et. al



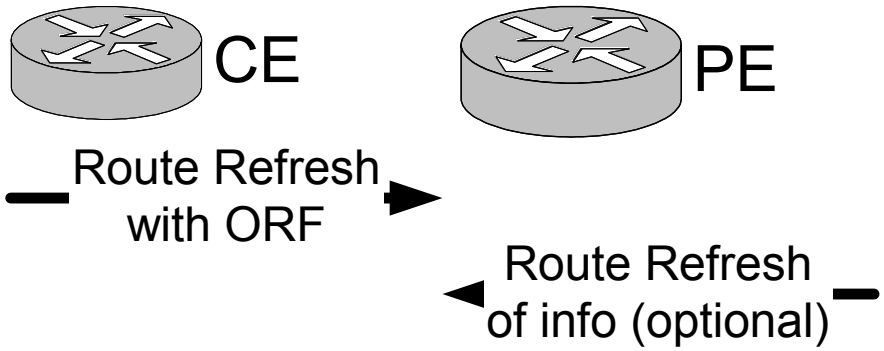
Patel, et. al



Maximum Prefix Operations



Maximum Prefix Operations



Multi-Session

- Run Differ AFI/SAFI over different session
- Can do today but need:
  - Multiple loopbacks, configuration!
- Want
  - Passive Peer to listen to remote peer's AFI/SAFI's and pick 1 (or 1 Group)
  - Multisession Capability = Gbit = Group
- 3 new Error Codes:
  - (1) No support for AFI/SAFI
  - (2) Group Conflict
  - (3) Grouping Required

Multi-Session

- Run Differ AFI/SAFI over different session
- Can do today but need:
  - Multiple loopbacks, configuration!
- Want
  - Passive Peer to listen to remote peer's AFI/SAFI's and pick 1 (or 1 Group)
  - Capability = Group bit,,0

Why BGP Avoidance

- BGP Identifier is allocated by the operator of an AS
  - Subject to change
  - Appears as a "random" number to another AS
- The last two steps of route selection involves comparing the BGP Identifiers
  - "random" when the comparison is between two external paths
- Network stability can be improved in certain cases by not transitioning the best path

BGP Avoidance Algorithm

- We can avoid changing the best path when:
  - There exists an old best path and a new best path based on the complete route selection algorithm.
  - Both paths are valid and are from external peers.
  - Neither path is eliminated by the route selection steps prior to the BGP identifier comparison.
- Exceptions
  - when either path is from a confederation peer
  - Do not apply the algorithm for parallel sessions.

All Feedback is Welcome!!