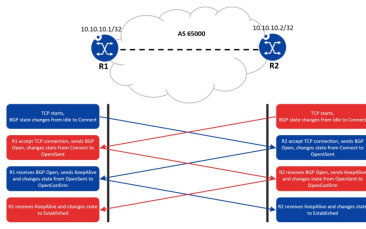


### BGP Operation

Phase 1 - TCP      Phase 2 - BGP  
 Capabilities Exchange

Both BGP routers attempt a TCP session on port 179. After the TCP Session is established - BGP Speakers exchange messages.

### Finite State Machine



### FSM

Phase	State Name	Next Successful State
TCP	Idle(Start)	Connect
TCP	Connect	OpenSent
TCP	Active(If TCP fails)	OpenSent
BGP	OpenSent	OpenConfirm
BGP	OpenConfirm	Established!

### BGP Messages

**Open** - Initial request for a BGP session

**Update** - Exchange NLRI between peers

**Notification** - Indicate an error and closes session

**KeepAlive** - Response to Open Messages & Maintains TCP session

**RouteRefresh** - Requests a BGP peer resend the routes it advertised at session establishment.

### Attributes

Attributes	Description
Origin	Origin telling you where the NLRI comes from (IGP, EGP, or Incomplete)
AS-Path	AS-Path telling you how many AS that have been traversed by the NLRI to the destination
Next-Hop	Next-Hop telling which protocol that can be used by the NLRI to reach the destination
Local-Pref	Local-Pref like metric in iBGP topology. The NLRI/prefix that have highest Loc-Pref is choose as active route in route table, default value Loc-Pref 100
Atomic-Aggregate	The purpose of the atomic-aggregate is to alert BGP speaker that route aggregation has been performed. Its set automatically to indicate a loss of AS path information when a router aggregate receive a set of prefix from other ASes
Aggregator	BGP speaker performing route aggregation may add the aggregator attribute to indicate its own ASN and router-ID.
Community	Community like a label for the NLRI/Prefix, its very useful when you want to grouping some prefix.
MED (Multi Exit Discriminator)	MED like metric in eBGP topology, the NLRI/prefix that have smallest MED value is choose active route in route table, by default no MED value configuration.
Originator-ID	The Originator ID is set to perform loop prevention when the router configure as a RR (Route Reflector), Originator-ID carries the router ID of the route originator in the local AS
Cluster-List	Cluster List carries a sequence of Cluster-ID that the route has traversed.

### Attributes

Well-Known Mandatory	Must be present in every BGP Update
Well-Known Discretionary	Recognized by all BGP implementations, but may or may not be present in the Update message

### BGP Timers

Connect Retry	120 seconds
Hold Time	90 seconds
Keep Alive	30 seconds



P Router

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Not published yet.  
 Last updated 30th June, 2019.  
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