

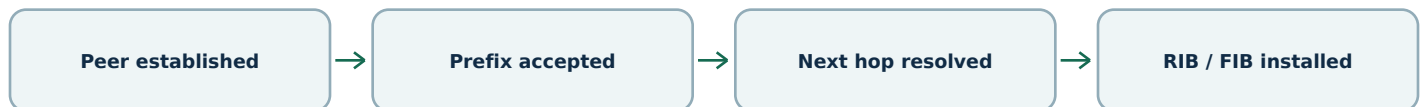
ROUTING | REV 2.0 | REVIEWED 2026-10-10

BGP established, but no usable route

01 / Quick reference and concepts

Separate peer health, received paths, policy acceptance, best-path selection, installation and advertisement.

IPv4 BGP examples in IOS XE and Junos. Address-family, VRF, next-hop and release differences matter; this is not a universal best-path ordering chart.



Inspect each stage separately. A route can be received but hidden, lose selection or fail next-hop resolution.

Stage	Question	Evidence
Transport	Can peers communicate?	TCP 179; source and peer context
Established	Is BGP exchanging messages?	State / uptime / prefix count
Received	Did this peer send the prefix?	Received route view / retention
Accepted	Did import policy allow it?	Policy and hidden/rejected reason
Selected	Is a usable path eligible?	Attributes and next-hop resolution
Installed	Did it reach RIB and FIB?	Route and forwarding entry
Advertised	Did export policy send it?	Neighbor-specific advertisement

What to understand first

- BGP uses TCP and a finite-state machine: Idle, Connect, Active, OpenSent, OpenConfirm and Established. Active means an attempt to establish transport, not a healthy forwarding session.
- Import/export policy is directional. A neighbor being established says nothing about whether the required prefix is permitted in the right address family.
- Best-path rules include attributes and implementation-specific behavior. Cisco weight is local to the device; LOCAL_PREF is normally carried within the AS. Neither replaces next-hop reachability.
- Received route visibility depends on retention and command semantics. Absence from one display can require checking policy, refresh capability and the sender before drawing conclusions.

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02 / Commands and worked example

Replace documentation addresses, example interfaces and every <PLACEHOLDER>. Check command help for your model/release and routing context. Examples are documentation-reviewed, not executed on customer equipment.

Cisco IOS XE

Read-only EXEC

```
show ip bgp summary
show ip bgp 192.0.2.0
show ip bgp neighbors 198.51.100.1 advertised-routes
show ip route 192.0.2.10
show ip cef 192.0.2.10
```

Inspect: Inspect the actual prefix, attributes and next hop; compare advertisement with installed forwarding.

Junos

Read-only operational

```
show bgp summary
show route receive-protocol bgp 198.51.100.1
show route 192.0.2.0/24 detail
show route advertising-protocol bgp 198.51.100.1
```

Inspect: Compare receipt, activity and export. Use hidden-route inspection and instance-specific tables when needed.

Illustrative missing-route evidence

Illustrative teaching example, not captured device output.

```
Neighbor: Established
Wanted prefix: 192.0.2.0/24 received
BGP next hop: 198.51.100.9
Route to next hop: missing
```

- Peer transport can work while the received path has an unresolved next hop. Check the intended underlay or next-hop policy.
- Changing LOCAL_PREF will not repair missing next-hop reachability. These observations are deliberately simplified.

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03 / Troubleshooting and acceptance

1. Confirm peer/source addresses, ASNs, TCP reachability and address family.
2. Ask whether the sender advertises the exact prefix, then inspect receipt at this peer.
3. Check import policy and next-hop resolution before debating path preference.
4. Compare selected BGP path with the RIB and FIB in the affected VRF/instance.
5. Inspect export to the next neighbor and test forward and reverse application traffic.

Common mistakes

- Resetting all peers to refresh one route without an approved plan.
- Confusing received, accepted and active routes.
- Assuming one vendor best-path list applies unchanged to another.

Acceptance checks

- Required prefixes are accepted, installed and exported as intended.
- Unwanted routes remain rejected; counters and policy evidence support it.
- Application paths and planned peer-loss behavior meet the target.

Primary references

[RFC 4271: BGP-4](#)[Cisco IOS XE BGP](#)[Junos BGP troubleshooting](#)

Original Wolex diagrams, scenarios and troubleshooting sequences. Vendor names identify platform scope; no affiliation is implied.

[Read the full web guide and supporting references](#)

[Deployment and migration help](#) | [Network security review](#) from Wolex