Routing Protocol Overview

Feature Status

N/A - Feature not yet available

OK - Initial tests successful

NOK - initial tests not successful

Highlight Colors:

- Yellow - partially working
- Green - Working
- Red - Not working at the moment

Feature	v7.1	v7.2	v7.3	v7.6	v7.10	v7.12	v7.14	v7.15
Winbox								
BGP support								
OSPF support								
RIP support								
Router ID support								
Routing filter support								
Generic								
/31 address support	N/A		Routed traffic does not work to odd address.					
Convert route rules after upgrade from v6.x								
Static IPv6 upgrade from ROS v6								
IPv4 Route Rules								
IPv6 Route Rules								
ECMP flags								
dst@table								
gateway@table								
gateway%interface								
recursive route over ipv6 LL address								
3 level recursive gateway with ECMP								
IPV6 ECMP								
IPv6 connected ECMP								
Addresses from same subnet to multiple interfaces	N/A							
Show time when route was last updated	N/A							
Check Gateway	BFD not ready							
Scope and target scope								
IPv4 Mangle routing-mark								

IPv6 Mangle routing-mark								
Packet SRC address	Does not work correctly with /32 addresses							
Routing-table parameter for ping and telnet								
Show if route is hardware accelerated	Shows if route is candidate for HW acceleration							
Custom route selection policy								
IPv4 with IPv6 nexthops for RFC5549								
Routing id								
VRF								
Management services support for VRFs	telnet, ssh, api, www services can be set to listen on specific VRF							
Some kind of mechanism to import/export routes from one vrf to another within same router	N/A							
BFD	N/A				Initial support			
OSPF								
Convert OSPF config from v6 to v7 after upgrade	Known conversion problems: • NBMA neighbors place in backbone • ospf-v2 networks + interface may have issues • dynamic interfaces may have issues • MPLS PE CE features are not converted							
OSPF neighbors in NSSA Area								
OSPF in broadcast network								
OSPF with routing filters								
OSPF Virtual Link								
OPSF input filtering								
HMAC-SHA auth RFC5709	N/A			Initial support				
OSPF SNMP monitoring	N/A							
BGP SNMP monitoring					For ipv4 sessions			
IS-IS								
IPv4						Initial suppo rt		
IPv6								
Traffic Engineering								
BGP								
Convert BGP config from v6 to v7 after upgrade								
BGP Templates and dynamic peers								
BGP connect listen on a network								
BGP guess remote.as								
Show from which peer route received	OK (/routing/route/print detail --> belongs-to)							
BGP Address Families								

BGP input.accept-*								
eBGP nexthop self								
Input Filter								
Output Filter								
BGP Local address auto selection								
BGP route reflect								
BGP route server								
BGP Roles https://datatracker.ietf.org/doc/draft-ietf-idr-bgp-open-policy/?include_text=1	rfc roles not fully implemented							
BGP session uptime in "established" state								
BGP session last established time								
BGP Flow Spec	Flow spec attributes are forwarded							
BGP Selection								
BGP Selection (Multipath)	N/A							
BGP Confederation								
BGP Aggregation	N/A							
BGP ORF	N/A							
Discard prefix RTBH RFC 6666	N/A							
AS-wide Unique BGP Identifier RFC 6286	N/A							
Exported PDU PCAP saver								
Exported PDU PCAP loader								
BGP Advertisement monitoring		Initial implementation by dumping to pcap		Advertisements rework				
BGP Prefix limit			Initial support					
BGP advertise IPv4 prefix with IPv6 nexthop (RFC5549)								
BGP VPNv6 support					Prerequisites are made, need to add actual BGP Afi			
MPLS								
Static label mapping								
Static mapping upgrade from v6								
LDP IPv4 mapping								
LDP IPv6 mapping								
LDP signaled VPLS								
LDP config upgrade from v6								
LDP Dual Stack								
TE								
TE Config upgrade from v6								
VPLS Encap to TE								
BGP signaled VPLS								
VPLS config upgrade from v6								
Fast reroute								
MPLS ECMP								
One label per VRF								
Ability to use MPLS EXP-bit in Queues	N/A							

MPLS Fast-Path	N/A							
RPKI session								
RPKI possibility to view received info of specific prefix								
RPKI show connection status								
Filters								
Convert routing filters after upgrade from v6.x								
Syntax completion								
Routing filter chain drop by default without rules								
Routing filter prefix match								
Routing filter protocol match								
Routing filter append communities								
Routing filter append large community								
Routing filter set weight								
Routing filter set local pref								
Routing filter set MED								
Routing filter set origin								
Routing filter set igp metric from OSPF cost								
Routing filter match prefix with address list								
Routing filter match community/large community lists								
Routing filter add a prefix to address list	N/A							
Routing filter validate prefix with RPKI								
Multicast								
IGMP-Proxy								
PIM-SM	Initial support							

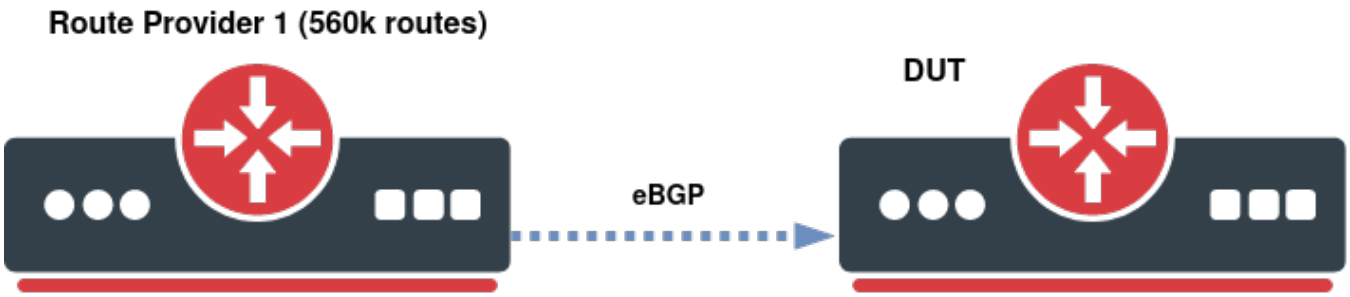
Performance Status

Used hardware:

- CCR1036, 16GB RAM (tile)
- CCR2004(arm64)
- CCR1100AHx4(arm)
- Intel(R) Core(TM) i7-4790 CPU @ 3.60GHz 32GB RAM (as a host for CHRs)

The simulated upstream peer is a CHR router running ROSv6 with a copy of the global IPv4 routing table (585K routes loaded from MRT dump).

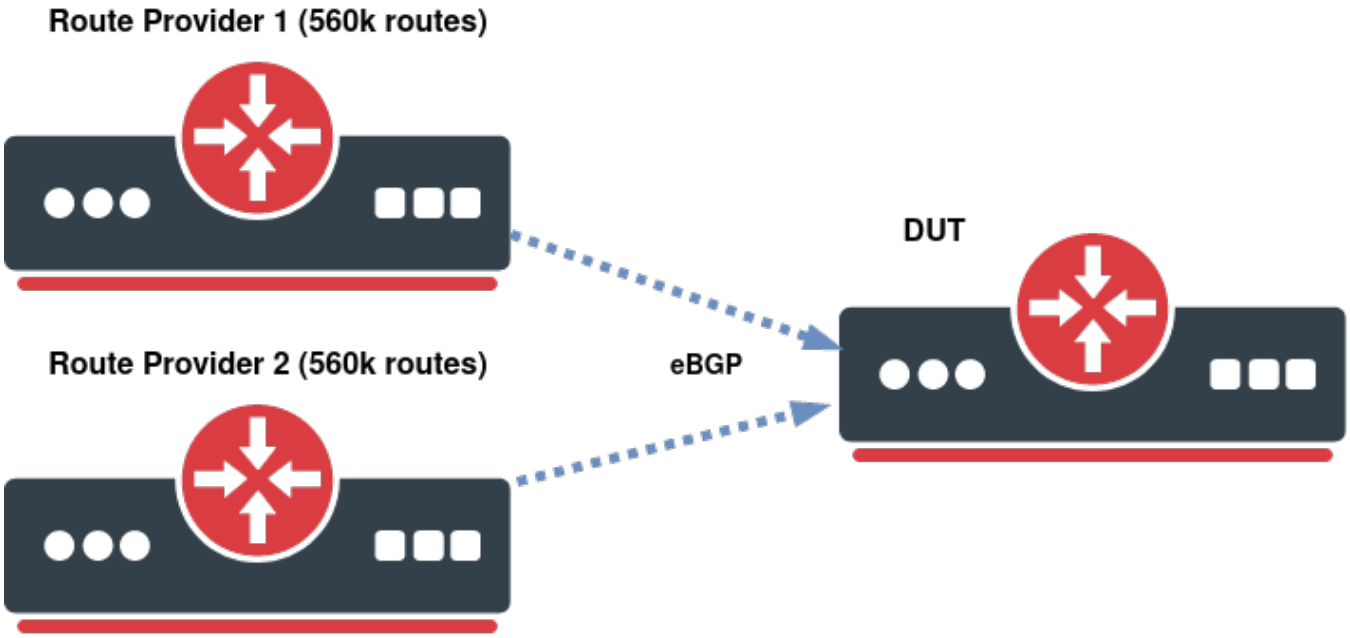
One Peer Receive Only



DUT establishes a connection to simulated upstream peers, receives routes, and installs them in FIB.

	v6.44	v7.1beta3	v7.1rc7
CCR	0:40 - 2:12	0:46	
RB1100x4 1.4GHz	0:32-0:38	0:23	
CCR2004	0:32	0:18	
x86 (CHR)	0:20		
RB450G (in/out affinity=alone)	after trying for 9min - ran out of memory at 558K routes	2:02 (121MB free)	
RB450G (in/out affinity=main)	-	1:54	
RB450G (affinity in=alone out=input)	-	2:12	

Two Peers Receive Only



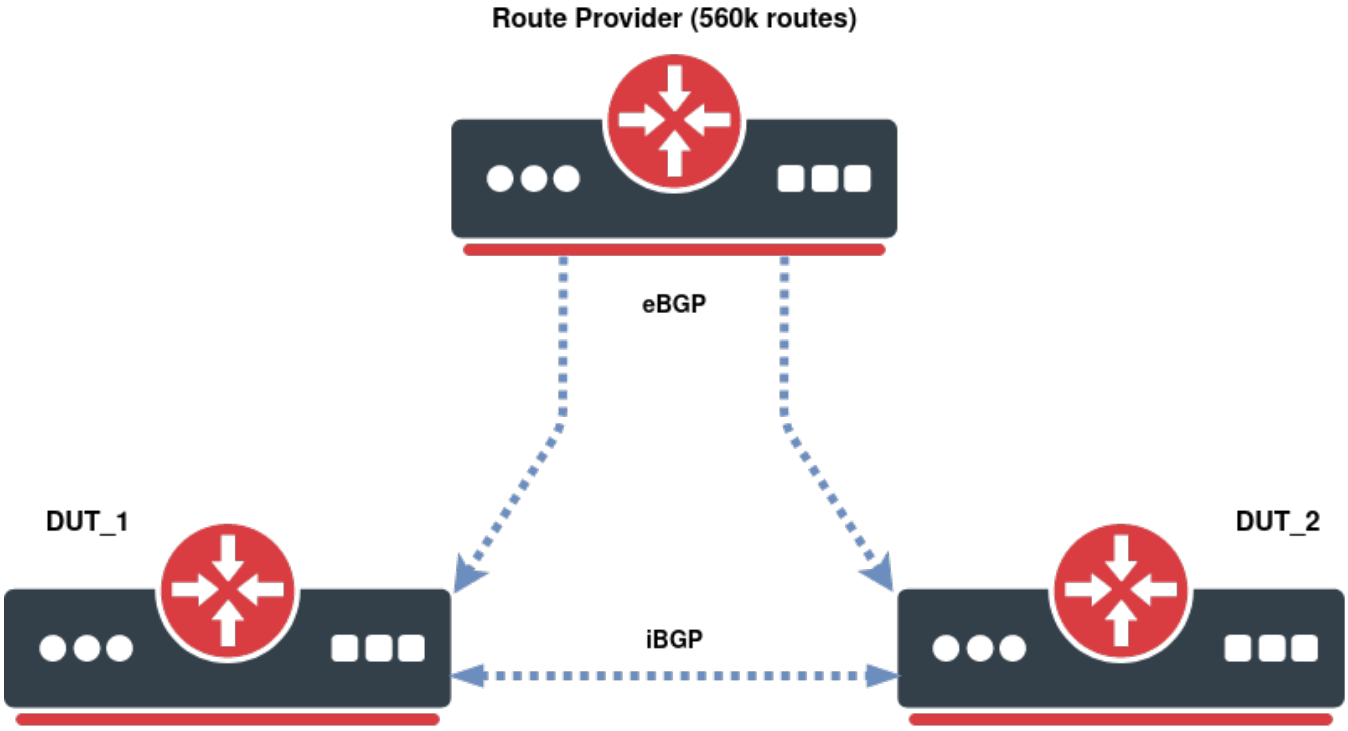
DUT establishes a connection to two simulated upstream peers, receives routes, picks the best route, and installs in FIB. On ROSv7 affinity settings are set to "alone".

	v6.44	FRR	v7.1beta3	v7.1rc7 (846k routes per peer)
CCR	1:01 - 2:45		1:11	
RB1100x4 1.4GHz	0:51		0:30	
CCR2004	0:51		0:29	0:33

router x				0:40
x86 (CHR)	0:25			
x86 (virtual)		0:26(4cores)		
		0:46(2cores)		
		0:30(2cores no LDP)		

Multi-homing Sim

Two DUT devices establish eBGP sessions to simulated x86 upstream routers. Both DUTs are interconnected with the iBGP session. Each DUT receives routes from upstream and readvertises routes over iBGP. On ROSv7 affinity, settings are set to "alone" and early-cut disabled.



- Route Provider: CHR (ROSv6)
- DUT_1: CCR1036
- DUT_2: CCR1036

v7.1beta3	1:11
v7.1beta2	1:29
v6.xx	1:02 - 8:30

- Route Provider: CHR (ROSv6)
- DUT_1: CCR2004
- DUT_2: RB1100AHx2

v7.1beta3	0:36
v6.xx	0:59

Memory Usage:

```
Columns: TASKS, PRIVATE-MEM-BLOCKS, SHARED-MEM-BLOCKS, PSS, RSS, VMS, RETIRED, ID, PID, RPID, PROCESS-TIME,
KERNEL-TIME, CUR-BUSY, MAX-BU>
   #  TASKS                        PRIVATE-M  SHARED-M  P  R  V  RE  ID       PID  R  PROCESS-  KERNEL-  CUR
MAX-BUS  CUR  MAX-CALC
   0  routing tables               12.0MiB    30.2MiB   0  0  0  12  main     111  0  8s980ms   2s60ms   0ms
1s320ms  0ms  10s700ms

rib

      connected
networks

   1  fib                          2816.0KiB  0         0  0  0      fib      130  1  3s        4s660ms
7s220ms       7s220ms
   2  ospf                         512.0KiB   256.0KiB  0  0  0      ospf     137  1  1s220ms   130ms
980ms         1s40ms
      connected
networks

   3  fantasy                      256.0KiB   0         0  0  0      fantasy  138  1  60ms      80ms
40ms          40ms
   4  configuration and reporting  3840.0KiB  512.0KiB  0  0  0      static   139  1  1s270ms   110ms
260ms         260ms
   5  rip                          512.0KiB   0         0  0  0      rip      136  1  120ms     70ms
60ms          120ms
      connected
networks

   6  routing policy configuration 768.0KiB   768.0KiB  0  0  0      policy   133  1  2s290ms   3s170ms
80ms          80ms
   7  BGP service                  768.0KiB   0         0  0  0      bgp      134  1  2s760ms   5s480ms
20ms          60ms
      connected
networks

   8  BFD service                  512.0KiB   0         0  0  0      12       135  1  100ms     90ms
40ms          120ms
      connected
networks

   9  BGP Input 10.155.101.186     3072.0KiB  6.2MiB    0  0  0      20       183  1  1s350ms   1s190ms
20ms          20ms
  10  BGP Output 10.155.101.186    5.5MiB     0         0  0  0      21       184  1  5s400ms   500ms
3s880ms       3s880ms
  11  BGP Input 10.155.101.232     3072.0KiB  6.2MiB    0  0  0      22       187  1  970ms     740ms
20ms          20ms
  12  BGP Output 10.155.101.232    8.2MiB     0         0  0  0      23       188  1  10s830ms  960ms
7s            7s
  13  Global memory                           256.0KiB              global     0  0
```