
IETF ROUTING AREA UPDATE

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Contents

- > What happened within IETF RTG area in 2004
- > Where we are with standardization
 - Specs essential for SP operation
- > New efforts in IETF RTG area
- > Areas where provider feedback is needed

IETF RTG Area Stats

- > Currently 15 WGs
- > Dynamics since 2002:
 - Concluded: 4 (MSDP, RIP, BGMP, UDLR)
 - New: 4 (RPSEC, RTGWWG, BFD, PCE)
- > Document statistics in 2004:
 - 20 RFCs published (9 STD, 1 EXP)
 - 16 docs in RFC-Ed queue (8 STD, 2 EXP)

Recently approved

- > **IDR: The Base Spec update (!)**
- > **ISIS:** P2P-LAN, Ext-LSPs, Graceful restart, Interop, TE
- > **OSPF:** Flooding reduction, DN-bit, GR
- > **Mcast:** PIM-DM, BGMP
- > **RPSEC:** Generic threats analysis
- > **VRRP:** VRRPv2 (RFC3768)

Recently approved (cont.)

- > **MPLS**: FRR, LDP-MTU, MPLS in IP/GRE, MIBs
- > **CCAMP**: SONET/SDH, egress interface, LMP
- > **RTGWG**: TE IGP shortcut

In progress

- > **IDR**: Ext-comms, RR spec update, GR, Cease subcode, MP-BGP spec update
- > **ISIS**: Exp TLVs, IPv6, IPv6 TE, Admin tags, MIB
- > **OSPF**: MANET ext, MT-OSPF, AF support, MIB
- > **Mcast**: SSM arch, PIM-SM rev, PIM-Bidir, PIM-Anycast-RP, DVMRPv3
- > **RPSEC**: Generic rtg sec reqs, BGP sec reqs*
- > **MANET**: Starting STD-track proto specs
- > **VRRP**: VRRP for IPv6, MIB

In progress (cont.)

- > **MPLS**: OAM reqs, LSP Ping, P2MP LSP reqs, Multi-area/AS MPLS TE, BCP on MPLS load sharing
- > **CCAMP**: Inter-area/AS TE extensions, G.709, ASON

RPSEC: Feedback Needed

- > WG is discussing BGP security requirements
- > Main Q: what does "secure BGP" mean to you?
- > Current protocol usage practices
 - Manipulation of AS_PATH and other path attributes
 - Aggregation
 - Private AS'es
- > What properties of BGP data do we need secured?
- > ML: rpsec@ietf.org

NOW IS THE TIME !

New Work

- > BFD WG: to produce a STD specification for a Bidirectional Forwarding Detection Protocol
- > RTGWG: home for small rtg projects:
 - GTSM (Generalized TTL Security Mechanism)
 - TE shortcuts in IGP (RFC3906)
 - IP Fast Reroute*
- > PCE WG: to work on Path-Computation-Element based architecture for computation of inter-region [G]MPLS LSPs

BFD WG

- > A generic failure detection mechanism that
 - detects failures between adjacent forwarding engines...
- > And is:
 - Fairly fast (allows subsecond detection)
 - Media-independent
 - Low-overhead (for efficient HW implementation)
- > For more info see:
 - <http://www.ietf.org/html.charters/bfd-charter.html>
 - draft-ietf-bfd-*

IP FRR (RTGWWG)

- > Fast rerouting mechanism for pure-IP (non-MPLS) networks
 - Pre-calc back-up next hops and preinstall
 - After failure: switch to back-ups
 - Backups are safe even before convergence is completed
 - Avoid rerouting micro-loops

IP FRR (cont.)

> Basic IP FRR:

- Loop-free alternate: uses only redundancy in physical topology

> Advanced IP FRR:

- U-turn alternates: uses LFAs one hop away
- Tunnels: encapsulates packet to send it to the closest downstream neighbor

> For more info see:

- <http://www.ietf.org/html.charters/rtgwg-charter.html>
- draft-ietf-rtgwg-ipfrr-*

IP FRR: Feedback Needed

> Failure coverage:

- Basic FRR: ~60—95% (topo-dependent)
- Mgmt tools will identify what's not covered
- More topo redundancy will improve coverage

> Micro-loop coverage:

- Basic: ~90% of original micro-loops, follows failure coverage
- More topo redundancy will improve coverage

IPFRR: Feedback Needed (cont.)

> Advanced methods:

- Increase coverage
- Cost==increased complexity (both control and data plane) and network convergence time

> Questions to operators:

- Is limited coverage “good enough”, or should we push it higher?
- What’s acceptable network convergence time?

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PCE

- > PCE—an element assisting the head-end LSR in computing paths through parts of the network invisible to it
- > Framework document available
- > A design team is created to work on the PCE protocol
- > ML: pce@ietf.org

RTG Area: plans

- > Complete current PIM and SSM work
- > Start a WG on securing inter-domain routing
- > Close IDMR WG

Thank you!