


What is in a router's mind?

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Finding Root Cause of Routing Changes

- ♦ Need to pinpoint root cause
 - Diagnose a routing anomaly and fix it to make packets happy
- ♦ Current monitoring/measurement
 - Data plane
 - Active and passive traffic performance estimates
 - Control plane
 - Routing messages, table dumps



Why can't put all these pieces together to determine the root cause?

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Challenges

♦ Too much data

Event
(eg. fiber cut
or policy change)

→ Appear in multiple
sources of data

→ Appear in multiple
times in one dataset

♦ Not enough data

- Can't instrument all nodes in a large network
- Routing messages carry enough information to route, not to "explain" routing decisions

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How can routers help us?

- ♦ Annotate routing messages
 - All parameters evaluated in the BGP decision process should be in the updates
 - Monitoring sessions should view all alternative routes
- ♦ Expose state on routers
 - Log information that triggered a route change and export it periodically to monitors


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Would this be enough?

- ♦ Need to join information from multiple routers to trace back to the root cause
 - Which time frame makes sense?
- ♦ Need cooperation among different domains

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Why not take monitoring and measuring
into consideration when building routing
protocols?

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