Path analytics service assurance

Path analytics and service assurance

Real-time path monitoring Path Analytics tracks every link-state change or metric update in real-time. By registering critical paths (such as those between primary data centers) for persistent monitoring, the system automatically notifies operators of path degradations or failures, reducing Mean Time to Repair (MTTR).

Path identification and registration The system identifies every path through a unique **PathKey**. To query or register a path, users must provide:

- **Source/destination router IDs**: Unique IP identifiers (IPv4 or IPv6).
- **Address family**: IPv4 or IPv6.
- **Constraint value (Flex-Algo)**: Standard or custom algorithms (0, 1, or 128-255).

API operations

- **REST API**: Used for managing the persistent monitoring list. External integrations must set the request_origin field to External.
- **gRPC API**: Designed for performance-intensive queries and live updates.
  - PAGetPathsRequest: For "one-shot" queries.
  - PASubscribeRequest: For persistent streams of updates.

Note All grpcurl Request and Response values must be Base64 encoded.

Important considerations and limitations

Protocol support: Path Analytics is limited to **ISIS only**; OSPF is not currently supported.

Scope: Supports single **Domain only**; inter-domain paths will not be computed.

Scale limits: Supports up to 25,000 devices, 300,000 links, and 1,000 unidirectional monitored paths.

Bulk actions: Paths must be registered individually; there is no support for bulk registration.

Topology sync: Users may notice a "phase lag" between Path Analytics and the standard Topology map due to different learning paths.

RBAC: Users can only compute or visualize paths involving devices for which they have explicit "Read" permissions.