i2rs Usecases for BGP

draft-keyupate-i2rs-bgp-usecases-01.txt

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Motivation

- IRS provides an alternative way to control and interact with routing protocols
  - Protocol Operation
  - Route Manipulation
  - Protocol diagnosis
  - Protocol Events
  - Filtering of overlapping BGP Traffic Engineering Routes
- Control and Interaction through the use of well-known and standardized programmatic interfaces

Scope

i2rs

- Does NOT intend to replace any existing configuration mechanisms
- Does NOT intend to replace any existing protocol mechanisms

BGP

- Document community's understanding how i2rs can be used in context of BGP

Current Draft Status

- Version 1 has merged BGP use cases from draft-keyupate-i2rs-bgp-usecases-00 and draft-white-i2rs-use-cases-00 as per WG's feedback
- Version 1 has removed BGP Protocol Configuration and Policy Configuration as per WG's feedback
- Authors would like to request for WG adoption

BGP Use Cases – Version 01

- Registering BGP Protocol Operations
  - Error notifications for Internal BGP neighbors
- Performing BGP Route Manipulation
  - Customized Best Paths
  - Flowspec Routes
  - RT Constraint for Legacy routers
  - Optimized Exit Control
- Registering BGP protocol Events
  - Notification of Routing Events
  - Tracing of Dropped BGP Routes
  - BGP Protocol Statistics
- Identify and Remove overlapping (TE) routes

BGP Use Cases – BGP Protocol Operation

- Errors reported by BGP protocol within an AS
- Errors reported by any EBGP Peers

Current BGP protocol error reporting is done using router debugs and syslogs

i2rs Controllers provide centralize command control to report and react against BGP protocol Errors

BGP Use Cases – BGP Route Manipulation

- Customize Best Path Selection allows custom bestpath computations
  - Usually done using BGP cost communities
- Flowspec address family is used to disseminate the traffic flow specifications
- RT Constrain for legacy Routers
- Optimized Exit Control is used to provide route optimization and efficient load distribution

Current BGP Route manipulations are either done on routers or through some propietary orchestrators

i2rs Controllers provide centralize command and control to push appropriate cost communities, flowspec routes, RT Filter routes on behalf of legacy routers, manipulate route parameters

i2rs controllers can provide centralize monitoring for Flowspec routes and/or traffic flows

BGP Use Cases – BGP Protocol Events

- Monitoring announcements and withdrawals of high visibility BGP routes
- Monitoring dampening of high visibility BGP Routes
- Monitoring filtering of BGP prefixes by policies, errors, etc.
- Monitoring Protocol statistics
  - Neighbor based statistics
  - Route Statistics

Currently, BGP protocol events are tracked though router debugs on routers or using automated scripts

i2rs Controllers provide central command and control to monitor protocol events

BGP Use Cases – Removing Overlapping Routes

- Monitoring BGP ADJ-RIB-IN and identify overlapping routes that can be safely removed
- Insert filtering rules to remove or invalidate them

Currently, BGP protocol routes are either monitored manually or using automated scripts

i2rs Controllers provide central command and control to manipulate such BGP Routes

Questions?

BGP Use Cases – BGP Configuration

- Protocol Configuration
  - Local BGP protocol configuration
  - Local BGP neighbor configuration
- BGP Policy Configuration (Generic)
  - Avoid Unwanted Route Announcements (Generic Filters)
  - Facilitate Route Summarization
  - Defensive Security. Filter non-customer routers from stub customers

Current BGP configuration is done using CLI, XML or NETCONF

IRS Controllers provide centralize command control to push BGP Configurations