

### Problem

Manually configuring BGP routers is error prone Lack of high level languages and support for verification Network disruptions are generally followed by frantic calls among operators

#### **Proposed Solution**

Ontology based declarative framework for modeling routing policies Policies are automatically compiled into BGP level configurations Exploit Semantic Web techniques for reasoning and conflict resolution Argumentation Protocol for automated failure diagnosis and recovery



## **Correcting Routing Failures Using Declarative Policies and Argumentation** Palanivel Kodeswaran\*, Anupam Joshi\*, Tim Finin\* and Filip Perich<sup>+</sup> \* UMBC, + Shared Spectrum Company

#### **System Architecture**

#### **Argumentation Protocol**

Ask: Do you have a route to 12.1/16 Confirm: Yes Ask: Are you Denying Route Advt. for 12.1/16 Confirm: Yes

Challenge: Route Advt. Denial

Justify: I follow ValleyFree *Policy* that denies sharing Route Advt. for 12.1/16

Assert: *ReachabilityPolicy* supersedes ValleyFree and *Reachability Policy* allows sharing for 12.1/16

Confirm : Yes

# Local KB

We have implemented an initial prototype on a lab testbed and CBGP simulator Privacy of ISP Policies Negotiation phase Reconfiguration phase Perform studies on the Internet

AS level graph

