Correcting Routing Failures Using Declarative Policies and Argumentation

Palanivel Kodeswaran*, Anupam Joshi*, Tim Finin* and Filip Perich+
* UMBC, + Shared Spectrum Company

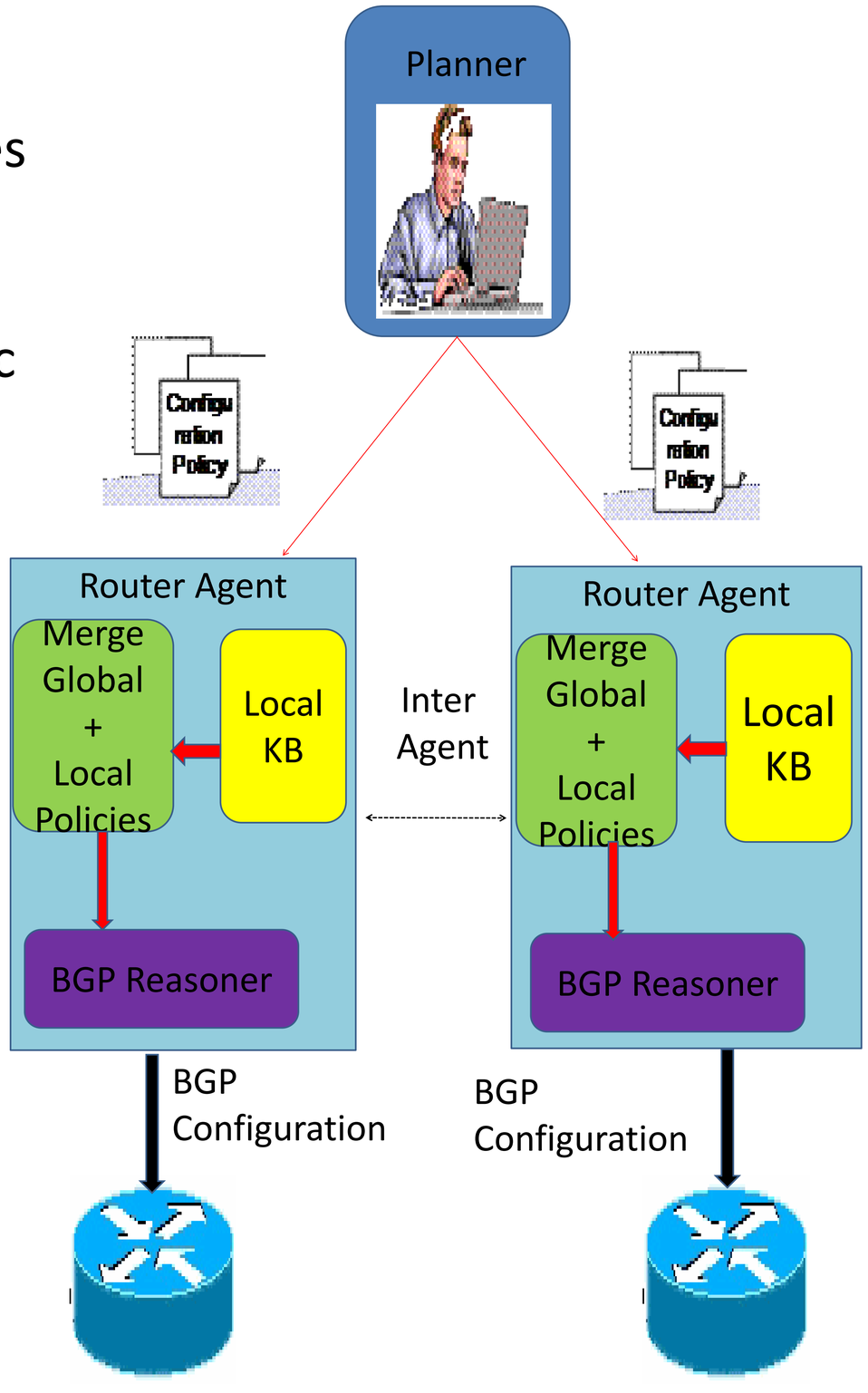
Problem

- 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

System Architecture



Argumentation Protocol

Current Status and Future Work

- 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