

Policy-based Service Management

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draft-bi-supra-policy-model

draft-zaalouk-supra-vpn-service-management-model

Agenda

- **PBSM and Its Relation to SUPA**
- Policy Terminology
- Types of Policy Rules
- Use of Policy Rules by Different Actors
- SUPA Policy Service Management

What Is PBSM?

➤ Service Model

- Describes the service as a managed object
- Describes relationships to other managed objects, such as resources, configurations, customers, and SLAs

➤ Policy Model

- Defines rules for governing managed objects
- Defines representation for rules
- Can be used to ***govern service relationships***

➤ SUPA

- Defines how policy rules are used to manage service behavior

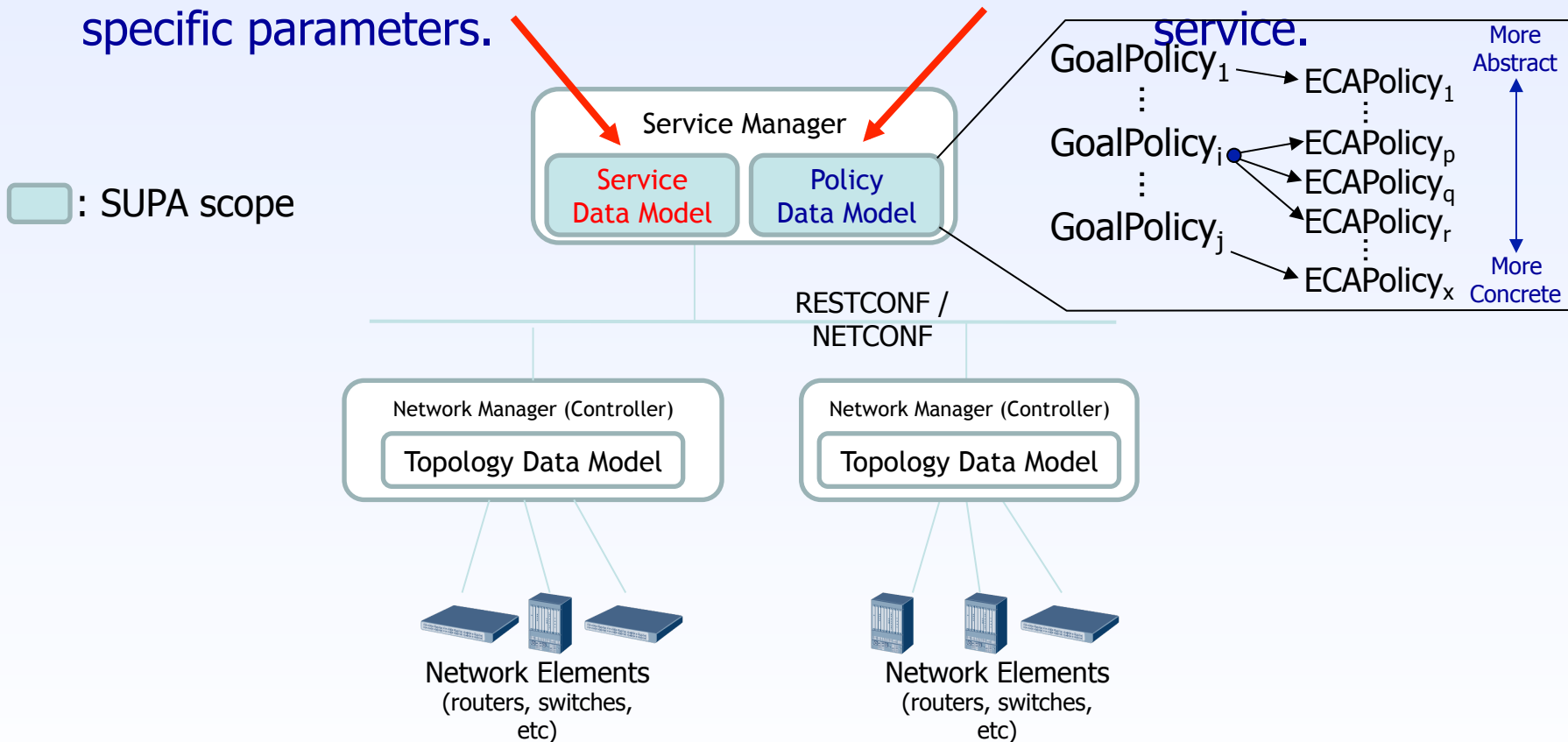
SUPA Policy-based Services

Deliverable #2:

A Yang data model that describes network services, their resource requirements as well as service specific parameters.

Deliverable #3:

A Yang data model that specifies policy rules controlling a network



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Terminology

➤ **An Information Model**

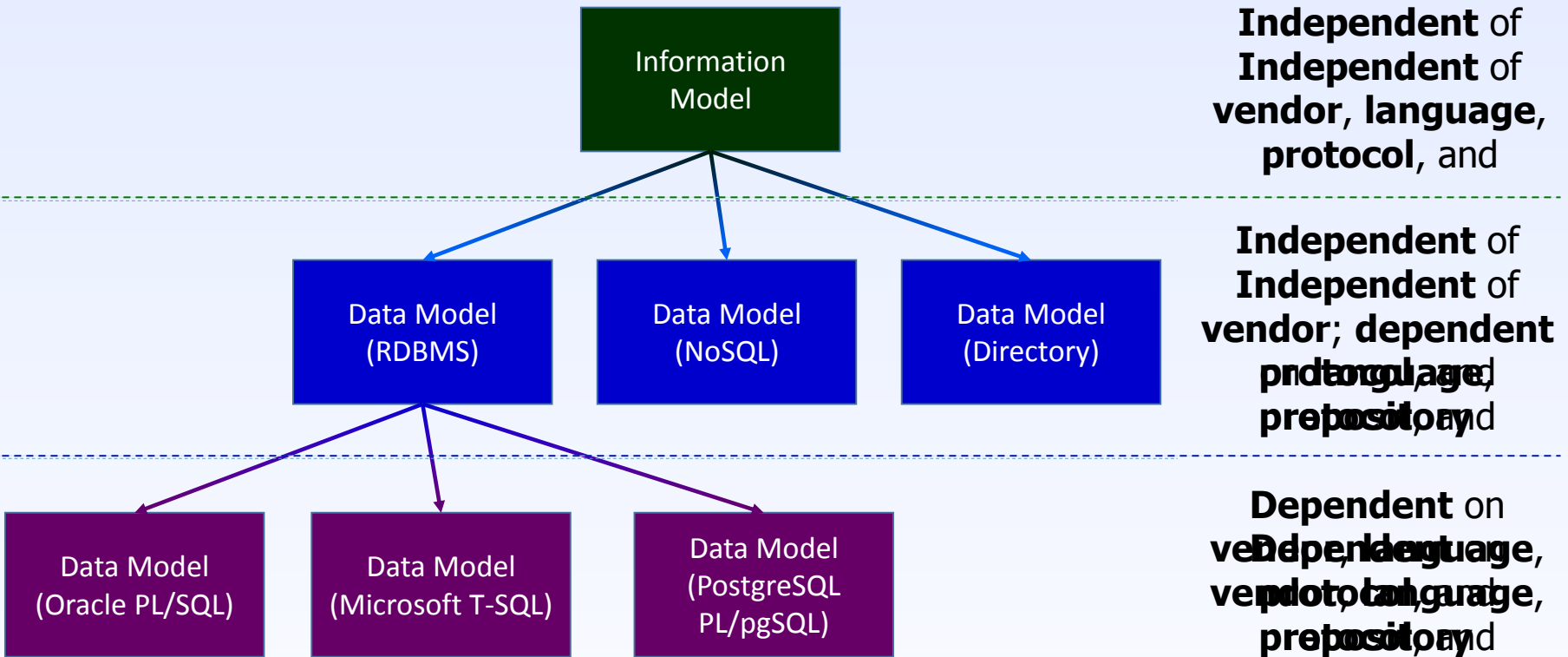
- A representation of managed objects and their relationships that is independent of data repository, language, and protocol

➤ **A Data Model**

- A representation of managed objects and their relationships that is dependent on data repository, language, and/or protocol (typically all three)

➤ **A Policy Rule**

- A container that
 1. uses metadata to define how the content is interpreted, and hence, how the behavior that it governs is defined
 2. separates the content of the policy from its representation
 3. provides a convenient control point for OAMP operations



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Motivation for Policy Management

- The **usage of policy rules to manage the behavior** of one or more managed entities
 - Policy rules are **half** of the solution
 - The other half is the **mechanism used to effect governance** (e.g., state automata)
- Policy is about governance, and can be expressed differently:
 - When this threshold is violated, change the type of queuing used
 - Provide Gold Service users the opportunity to upgrade to Platinum Service for ½ the price
- Policy provides a scalable automation implementation mechanism, which involves:
 - Issuing changes to one or more entities
 - Controlling how changes are being delivered
 - Coordinating which entities are being changed when and in what order

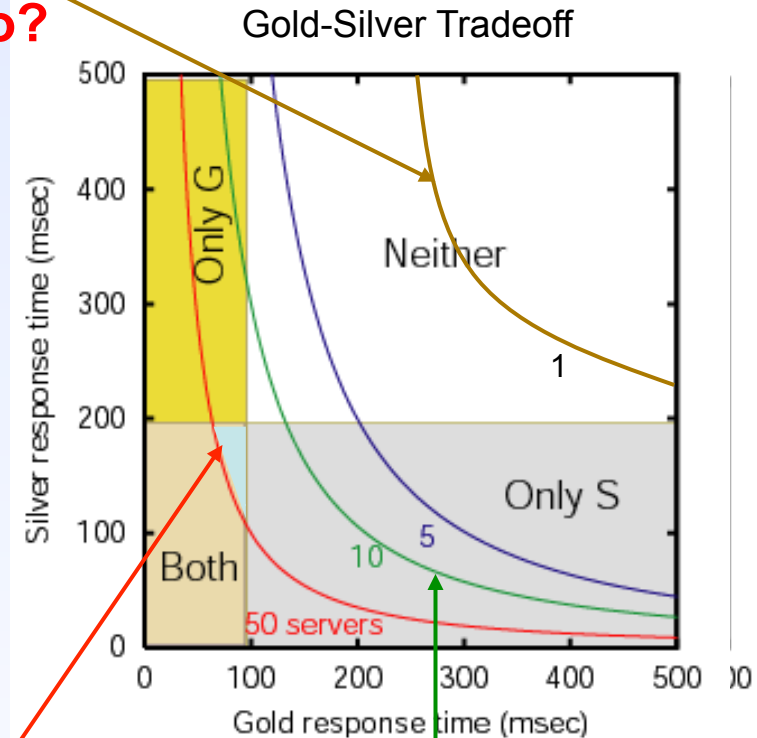
Why Multiple Types of Policy Rules?

It's all bad!
What to do?

Gold: IF ($RT_G > 100$ msec)
THEN (Increase CPU_G by 5%)

Silver: IF ($RT_S > 200$ msec)
THEN (Increase CPU_S by 5%)

*There are different types of policy rules;
SUPA will initially consider two*



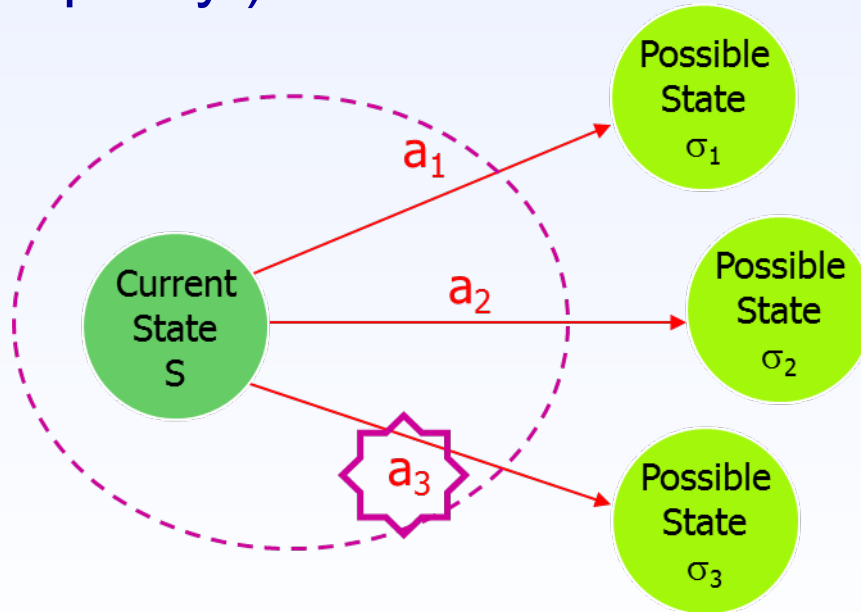
It's all good!
What is best?

Conflict:
Gold/Silver Tradeoff
What to do?

Types of Policy Rules (1)

➤ Event-Condition-Action (ECA)

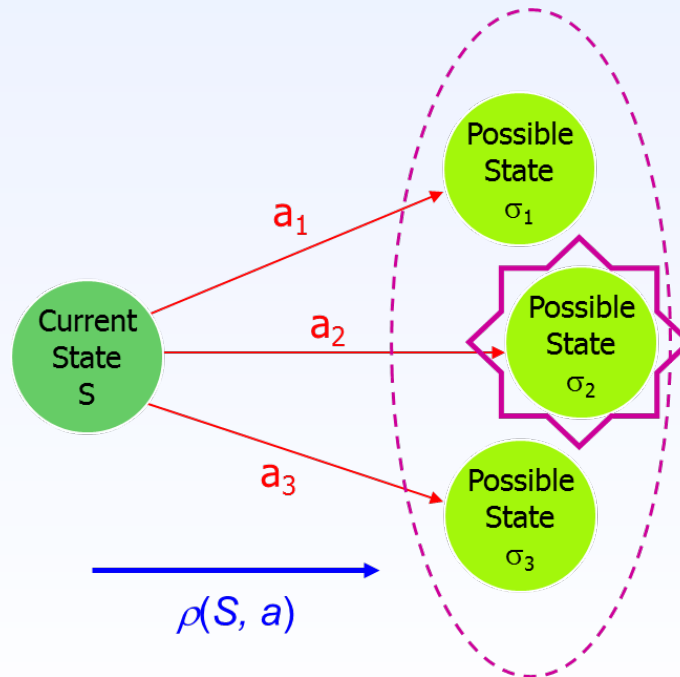
- IF the clause of Events evaluates to TRUE
 - » IF the clause of Conditions evaluates to TRUE
 - THEN execute the clause of Actions
- Explicit programming of state (rationality is compiled into the policy!)



Types of Policy Rules (2)

➤ Goal (Intent)

- Express *what* should be done, *not how to do it*
- Specifies criteria for choosing a set of states, any of which is acceptable
- Rationality is generated by optimizer/planner

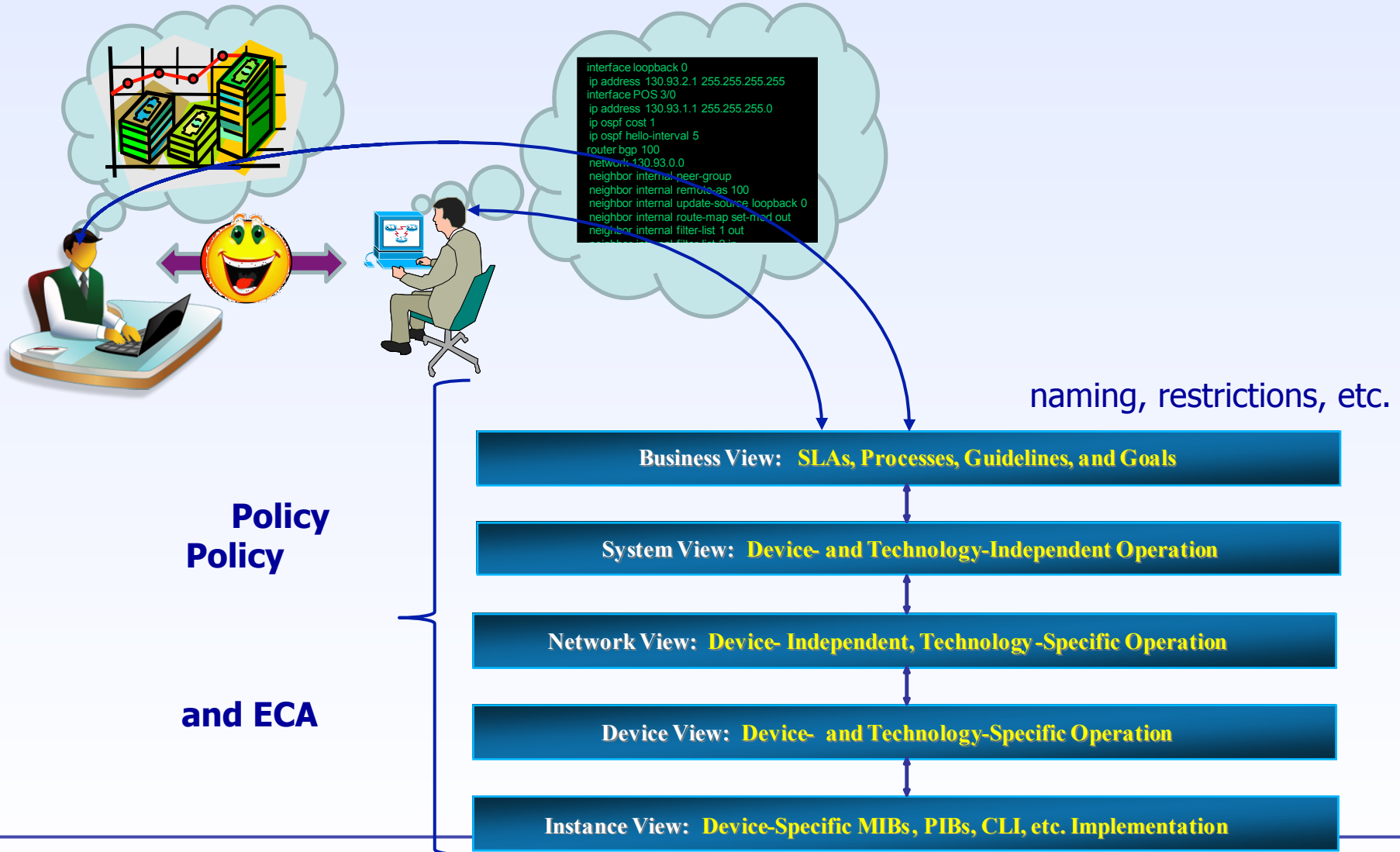


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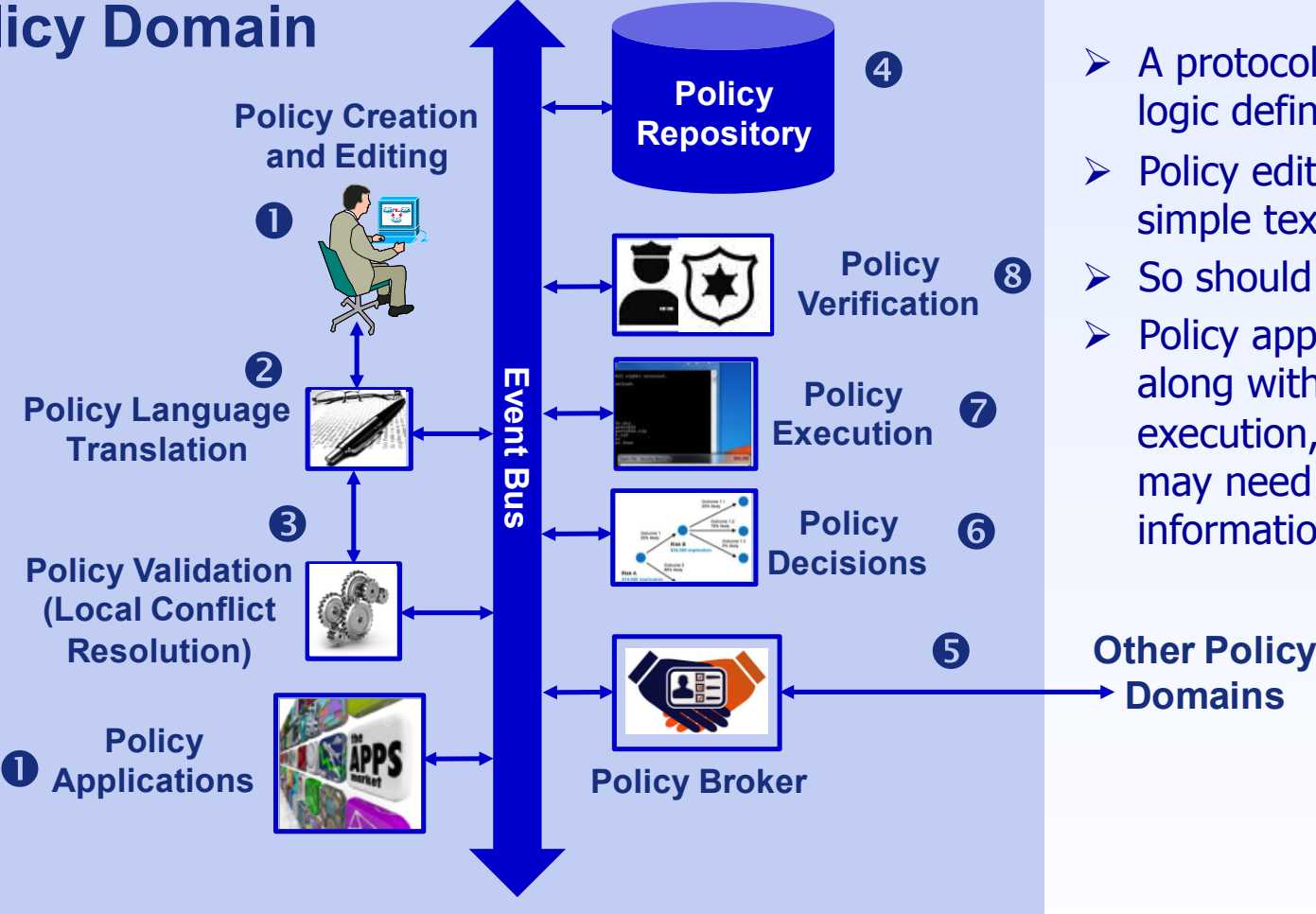
Policy Continuum

SUPA



PBSM Architecture

Policy Domain



Protocol and Information Exchange Requirements

- A protocol for encoding logic definitions is needed
- Policy editing should use simple text or XML
- So should policy translation
- Policy apps and brokers, along with policy decision, execution, and verification, may need richer forms of information transfer

Extracted from TM Forum TR234 Information Model Snapshot R14.5.0

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VPN Service Management Data Model

➤ Summary

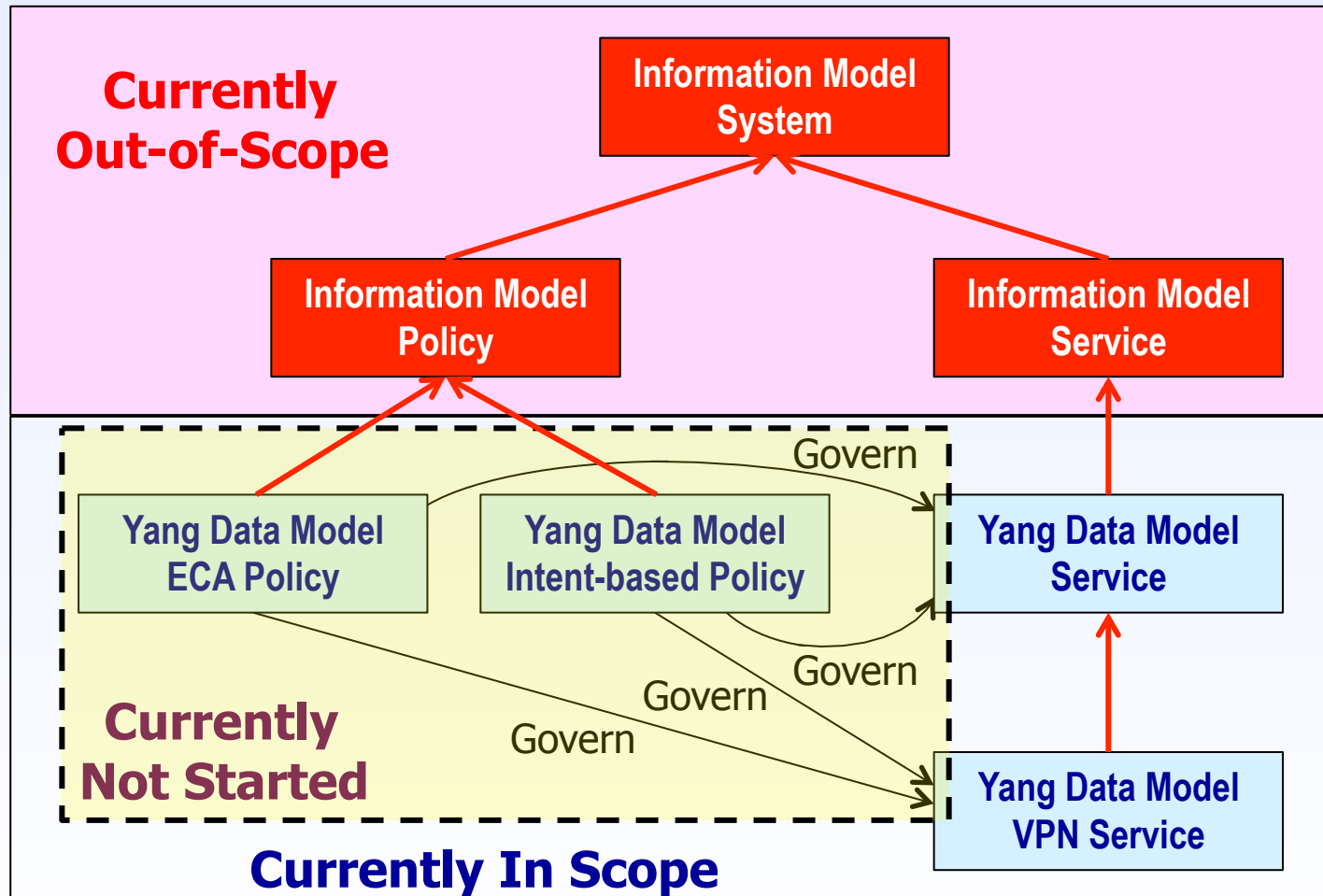
- draft-zaalouk-supanet-vpn-service-management-model defines a VPN service management Yang data model
- VPN management model is designed for DDC services
 - » Defines DDC service initiation, VPN-based connectivity initiation, and other required services

➤ Status

- Several details need to be further worked out
- Integration with other SUPA drafts needs to be done
 - » Integration with a generic service data model
 - » Integration with a generic policy rule model
- Some comments received from mailing list, and will be addressed in the next version of the draft

Policy and VPN Service Management

"...develop a model that abstracts network resources and services and a methodology by which the management and monitoring of network services can be done using standardized policy rules"



VPN Service Management Data Model

➤ DDC model

- describes SUPA VPN management model designed for DDC services use case
- Module “ietf-sup-a-ddc” defines generic VPN management aspects that are common to all DDC services use case regardless of the type of vendor
- This module can be viewed as providing a generic VPN management for DDC services
- Update: focusing more about DDC info by removing the duplicated part of VPN initiation

```
module: ietf-sup-a-ddc
  +--rw ddc-service
  | +--rw ddc-service* [name]
  |   +--rw name          string
  |   +--rw tenant-name   string
  |   +--rw dc-name*      string
  |   +--rw interface-name* string
  |   +--rw connection-type? enumeration
  |   +--rw connection-name string
  |   +--rw vlan-id?      uint16
  |   +--rw bandwidth     uint32
  |   +--rw latency        uint32
```

VPN Service Management Data Model

➤ L3VPN model

- A Layer 3 Virtual Private Network (L3VPN) interconnects sets of hosts and routers based on Layer 3 addresses and forwarding.
- A L3VPN model is a collection of L3VPN instances, which contains a set of access interfaces to network devices as well as other attributes, such as routing protocol, address family, topology, and so on.
- To configure a L3VPN instance, the administrator needs to specify
 - » which port(s) of a network device belongs to a L3VPN instance.
 - » what routing protocol needs to be configured for a L3VPN instance.

```
module: ietf-supa-l3vpn
  +--rw l3vpn-Instance* [instance-name]
    +--rw instance-name      string
    +--rw servic-type?       enumeration
    +--rw address-family-type? enumeration
    +--rw access-interface-id* [access-interface-
id]
      +--rw access-interface-id      string
      +--rw access-interface-address  string
      +--rw ip-address-mask-length   uint8
      +--rw role                     enumeration
      +--rw user-name                string
      +--rw user-password            string
      +--rw physical-node-id         string
      +--rw physical-access-interface string
      +--rw protocol
        +--rw protocol-type? enumeration
        +--rw igp-attribute
          | +--rw protocol-id? uint32
        +--rw bgp-attribute
          +--rw remote-as-number? string
          +--rw remote-peer-address string
```

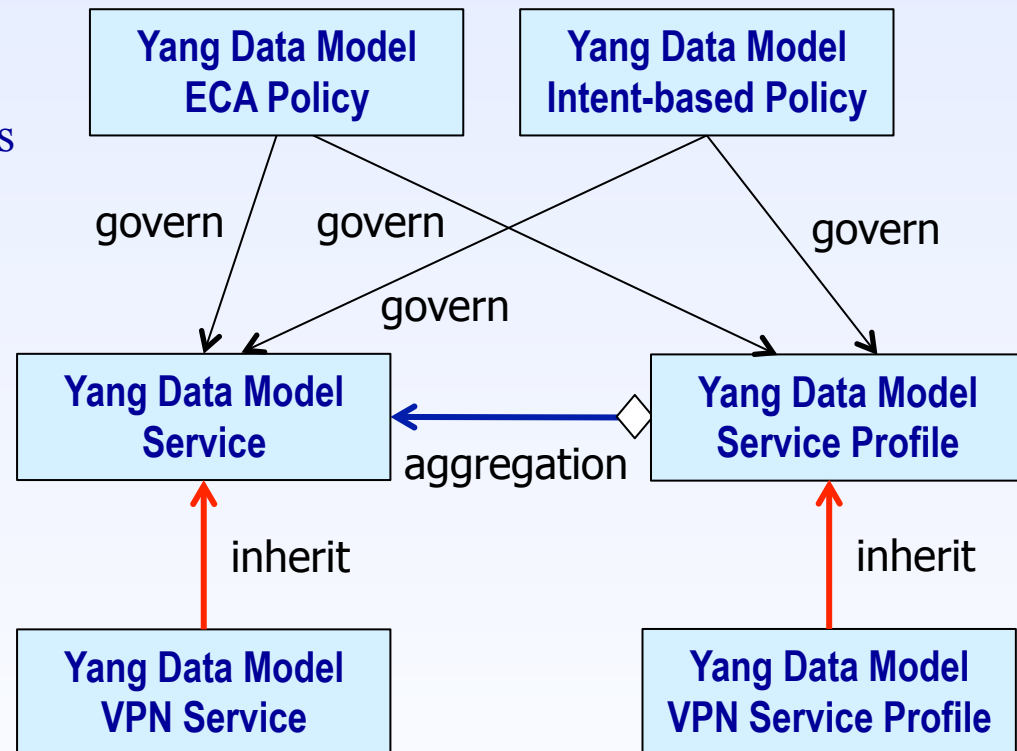
Service Profiles

➤ Service Profile

- draft-ph-supra-alps-yang-dm-00 represents the service as consumed by the Customer as a Yang data model
- Forms a *hierarchy* of service profiles
- Supplies customer-defined configuration data for Services

➤ Policy-based Service Profiles

- Policy can be applied to Services and Service Profiles
 - » Controls semantics of which Customers can use which set of Service Profiles in what context



Questions?



Questions?

***“Create like a god. Command like a king. Work like a slave”
Constantin Brancusi***