Topology API Use Cases
draft-amante-i2rs-topology-use-cases-01
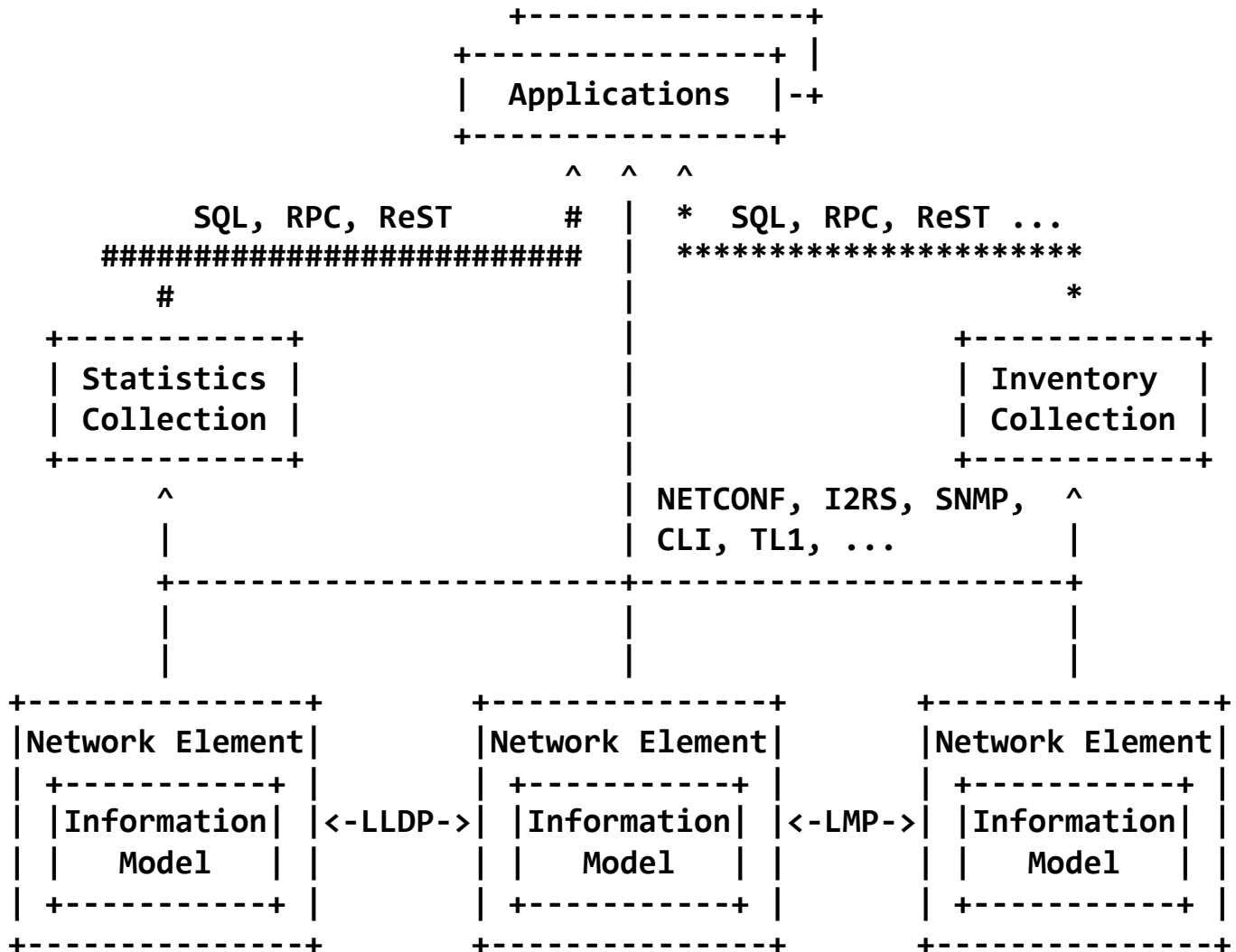
Shane Amante
Jan Medved, jmedved@cisco.com
Stefano Previdi, sprevidi@cisco.com
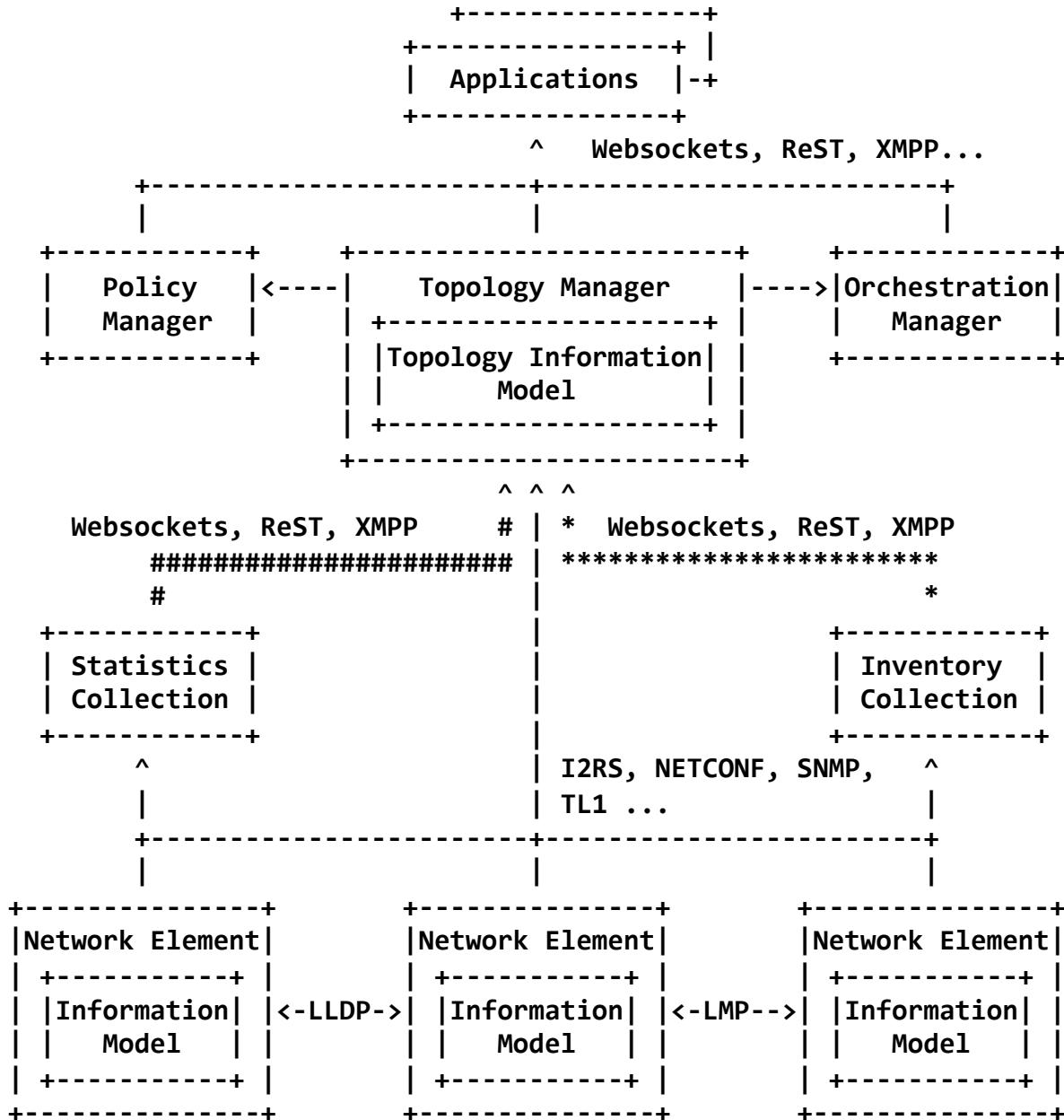Victor Lopez, vlopez@tid.es

Changes Since Last Revision

- Text & terminology cleanup (e.g. info model instead of data model)

- Added the Virtual Network Topology Manager use case

Present Mode of Operation

```
                            +---------------+
                 +---------------+ |
                 | Applications  |-+
                 +---------------+
                      ^   ^   ^
       SQL, RPC, ReST     #   |  *  SQL, RPC, ReST ...
    #########################  |  *********************
            #                  |                      *
   +------------+              |            +------------+
   | Statistics |              |            |  Inventory |
   | Collection |              |            | Collection |
   +------------+              |            +------------+
          ^                    | NETCONF, I2RS, SNMP,  ^
          |                    | CLI, TL1, ...          |
          +--------------------+-----------------------+
          |                    |                       |
          |                    |                       |
   +--------------+     +--------------+        +--------------+
   |Network Element|    |Network Element|       |Network Element|
   | +----------+ |     | +----------+ |        | +----------+ |
   | |Information| |<-LLDP->| |Information| |<-LMP->| |Information| |
   | |  Model   | |     | |  Model   | |        | |  Model   | |
   | +----------+ |     | +----------+ |        | +----------+ |
   +--------------+     +--------------+        +--------------+
```

The Topology Manager

```
                            +---------------+
                    +---------------+ |
                    |  Applications |-+
                    +---------------+
                            ^   Websockets, ReST, XMPP...
         +---------------------------+---------------------------+
         |                           |                           |
  +-----------+    +-----------------------+           +-------------+
  |  Policy   |<----|    Topology Manager   |---->|Orchestration|
  |  Manager  |     | +-------------------+ |     |   Manager    |
  +-----------+     | |Topology Information| |     +-------------+
                    | |      Model        | |
                    | +-------------------+ |
                    +-----------------------+
                            ^ ^ ^
     Websockets, ReST, XMPP     # | *  Websockets, ReST, XMPP
         #####################  | ************************
         #                      |                        *
  +-----------+                 |           +-----------+
  | Statistics |                 |           | Inventory |
  | Collection |                 |           | Collection|
  +-----------+                 |           +-----------+
       ^                         | I2RS, NETCONF, SNMP,  ^
       |                         | TL1 ...               |
       +---------------------------+---------------------------+
       |                         |                           |
+---------------+     +---------------+     +---------------+
|Network Element|     |Network Element|     |Network Element|
| +-----------+ |     | +-----------+ |     | +-----------+ |
| |Information| |<-LLDP->| |Information| |<-LMP-->| |Information| |
| |  Model    | |     | |  Model    | |     | |  Model    | |
| +-----------+ |     | +-----------+ |     | +-----------+ |
+---------------+     +---------------+     +---------------+
```

Use Cases

- Capacity Planning & Traffic Engineering
- Virtual Network Topology Manager
- Services provisioning
- Path Computation Element
- ALTO Server

An Information Model for Network Topologies
draft-medved-i2rs-topology-im-01.txt

Jan Medved, jmedved@cisco.com
Nitin Bahadur, nitinb@juniper.net
Alexander Clemm, alex@cisco.com
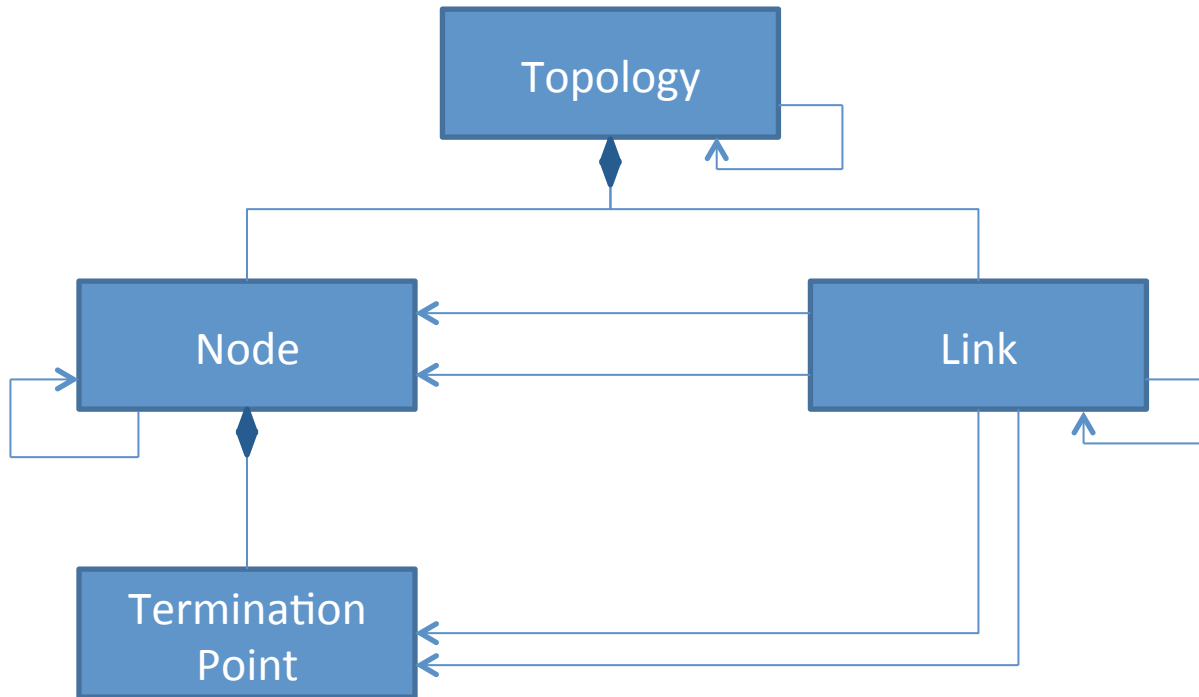Hariharan Ananthakrishnan, hanantha@juniper.net

Purpose

- Information model for network topologies
- Generic topology model, extensions for specific topologies
  - L3 Unicast IGP, OSPF, IS-IS as part of this draft
  - Can be extended for other topologies
- Specified using RBNF
- Applications
  - Data nodes capture and reconcile their understanding of network topology, propagate topology info
  - Network controllers represent controller network topology
- Ask: Decide if network topology is in the WG's scope; if yes, adopt as WG item

Changes Since Last Revision

- Incorporated feedback from the WG

Info model structure

- Links connect nodes, are terminated by termination points
- Topologies can refer to underlay topologies
- Links can refer to underlay links
- Nodes can refer to underlay nodes
- Unidirectional, point-to-point links
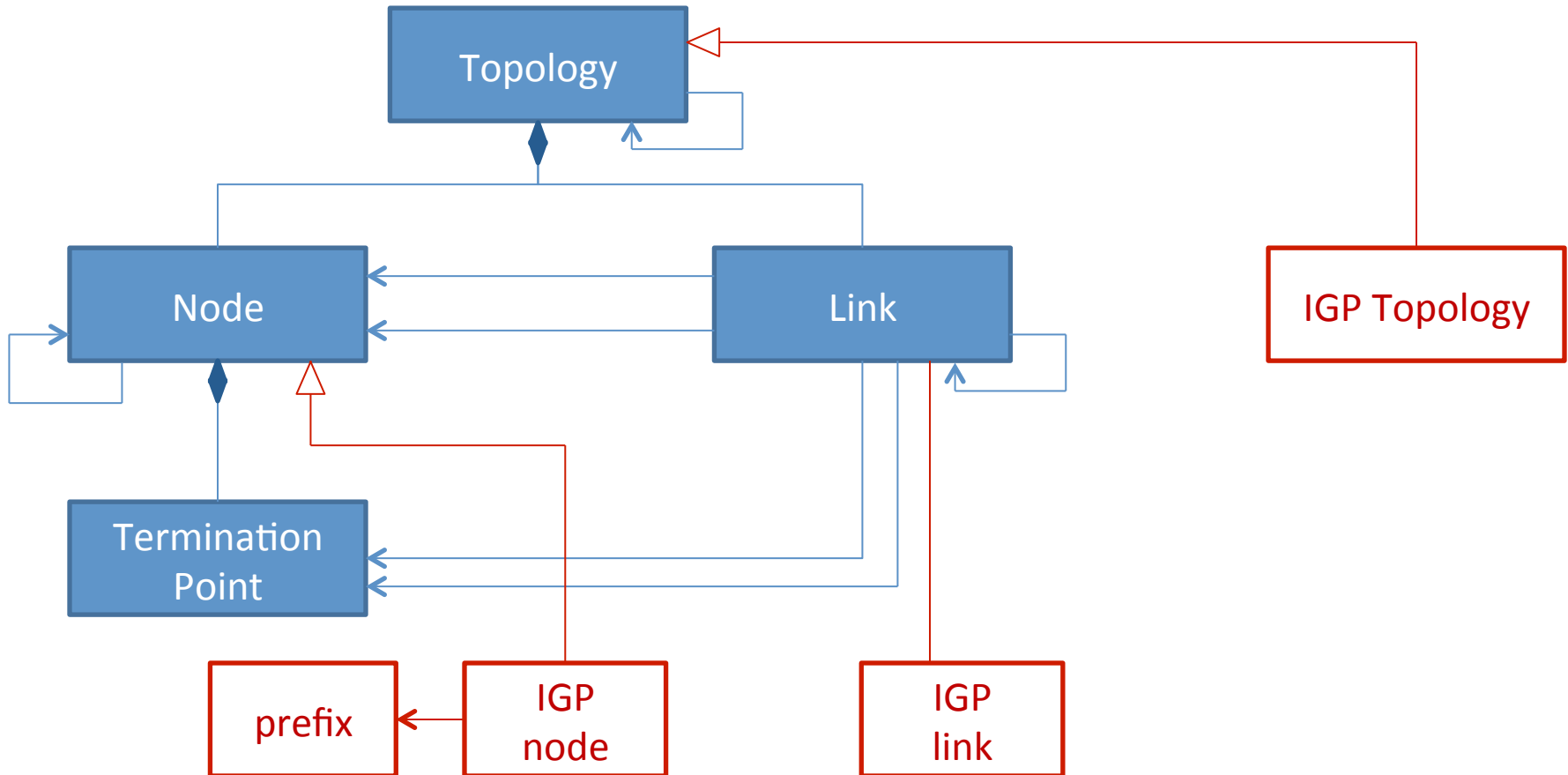 - represent non-ptp through hierarchies of nodes links

Info model structure (contd.)

Questions?

Backup

Infomodel structure (contd.)

- Derive IGP topology model elements
- Integrity rules ensure links, nodes, topology of matching type

Info model structure (contd.)

- Pattern recurses