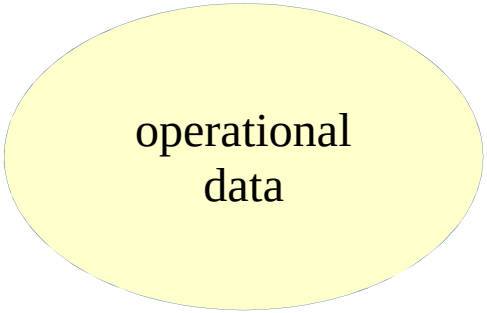
I2RS Topology Example

Sue Hares

Current Datastores

config true;

config false;



All operational data exists alongside config=true but there is no datastore defined for config=false data nodes

Topology

```
module ietf-network {
  grouping network-ref {
    leaf-network-ref {
      type leafref {path “network/network-id”;
    }
  }
  grouping node-ref  {
   leaf-network-ref {
     type leafref {
          path “network/network-id-current()/
          …/ntework-ref]”+ +”/node/node-id”;
         }
       uses network-ref;
   }
   list network {
     key “network-id”
     leaf network-id  {type network-id; }
     leaf server-provided {type  boolean;
         config false; }
     list supporting-network {
       key “network-ref”;
       leaf network-ref {type leafref;
           path “network/network-id”
     }
```

```
list node {
        key “node-id”;
        leaf node-id  {type node-id;};
        list supporting-node {
          key “network-ref node-ref”;
          leaf network-ref {
            type leafref  {path
           “../../../supporting-network/network-ref”
           }
           leaf node-ref {
              type leafref {
                path “/network/node/node-id”;
               }
            }
         }/end supporting node list
   } /end node
} /end grouping node-ref
```

Network 1:
node: 1
nework-1
node, 1,2, 3

Route

```
Network 1:
node: 1
 network-1
  link [id-5]
  source {
     source-node: 1
     tp-id:1
   }
   destination {
    dest-node: 2
    tp-id:4
   }
  leaf link-id inet-uri
  list supporting-links
   key:  1  2
   network-ref
    link-ref
```

```
module ietf-network-topology { ….
augment "/nd:network"
   list link {
     key "link-id";
     container source {
      leaf source-node {
        type leafref { path "../../../nd:node/nd:node-id"; }
        mandatory true };
      leaf source-tp {
         type leafref { path "../../../nd:node/[nd:node-id=current()/../"
          + "source-node]/ termination-point/tp-id"; }
      } /container source
  container destination {
      leaf dest-node {
        type leafref { path "../../../nd:node/nd:node-id"; }
        mandatory ture;
        }
      leaf dest-tp {
         type leafref { path "../../../nd:node/[nd:node-id=current()/../"
          + "source-node]/ termination-pont/tp-id";
        }
    } /container destination
    leaf link-id { type link-id;}
    list supporting-links {
       key "network-ref link-ref"
       leaf network-ref {type leafref {
            path "../../../nd:supporting-network/nd:network-ref";
       leaf link-ref { type leafref { path "nd:network [nd-networkid=cuurent()/
                          …+ /network-ref]/link/link-id }
    } /list supporting links
  } augment
```

Thermostat Model Equivalent

Network 1
 Node 1
  igp node-attributes (router-id 192.1.1.2,
        list of prefix: 128.1/16, 128.2)
  Link id 5
    Node 1, 2
    node 2, 4
    supporting links
      1-3, 1-4
   igp-link-attributes (link-flag up; metric 5);

config true;

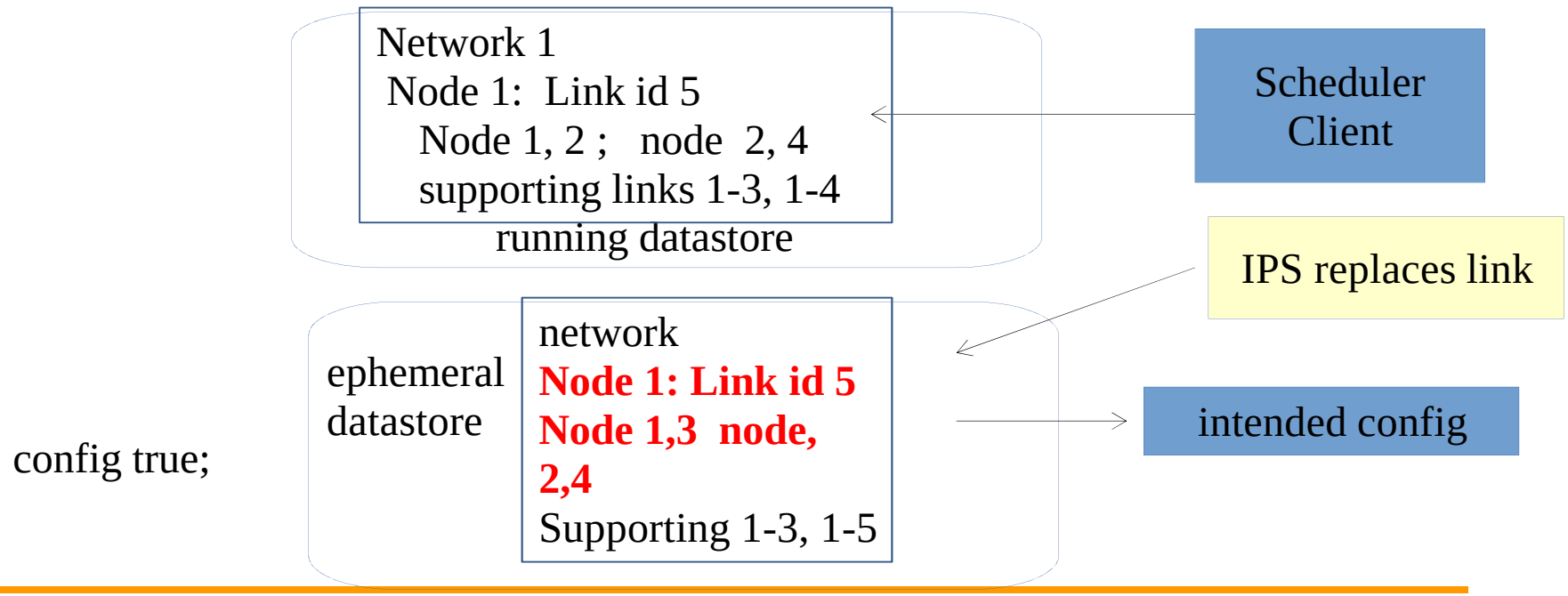
config false;

Scheduler Client

intended config

Topology
OSPF topology
ISIS topology

Topology plus ephemeral link



Topology link is
Replaced by
IPS route

RESTCONF Example

RESTCONF Running Datastore Edit (Src 1,2 to 2,4)

PUT /restconf/data/l3-unicast-igp-topology/network-ref=1/node-ref=1/link-id=5/ source/source-node=1/source-tp=2/destination/dest-node=2/dest-tp=4/

RESTCONF Ephemeral Datastore Edit of config=true changes to src 1,3

PUT /restconf/data/l3-unicast-igp-topology/network-ref=1/node-ref=1/link-id=5/ source/source-node=1/source-tp?datastore=ephemeral
{ “source-tp”:3 }

Open issues

- Large scale uploads (writes)
  - PUT? RPC?
- Model has:
  - Native: learned from OSPF/ISIS or BGP LS
  - Combined (learned + rules of combination)
  - Added from I2RS Client
- Should we have different protocol for large outputs ?