

# A YANG Data Model for Time Variant Link Availability

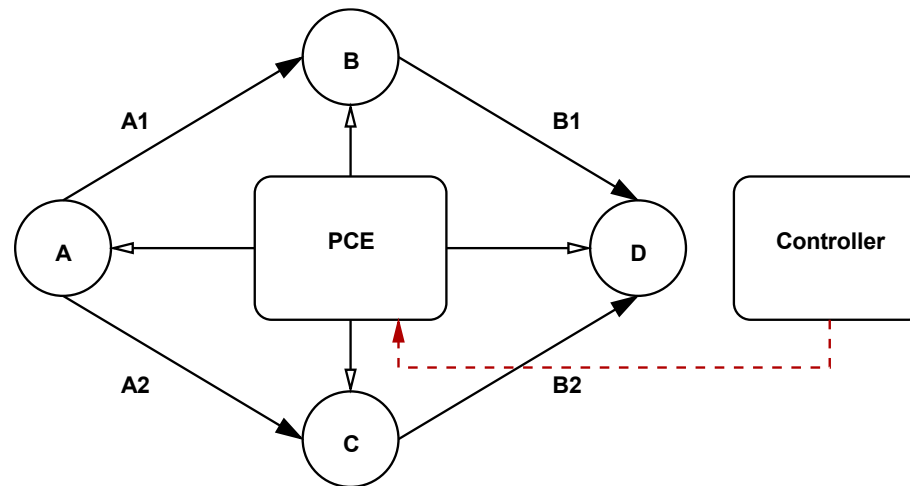
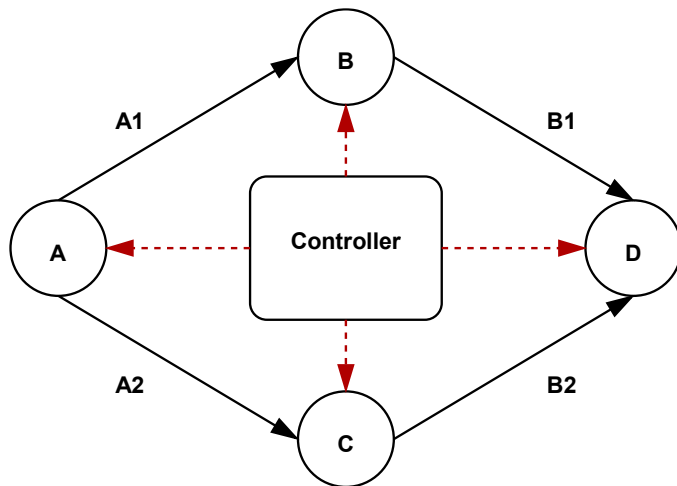
draft-kinzie-tvr-link-availability-00

Eric Kinzie <ekinzie@labn.net>

Don Fedyk <dfedyk@labn.net>

# Objectives

- Support network control with predicted links
- Distributed control plane - A controller configures routers with the availability list and predicted link properties influence IGP
- Centralized control plane - A controller which includes a PCE more directly affects computed paths.



# Overview

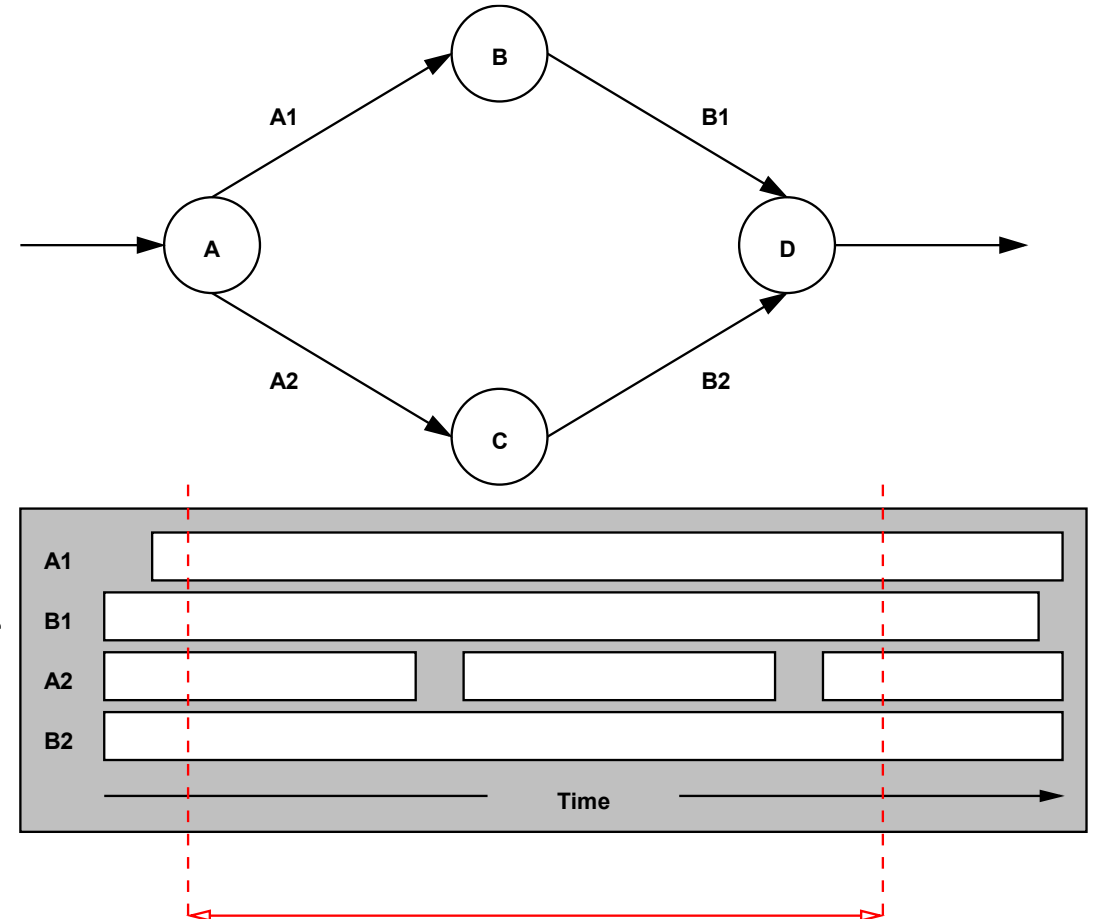
- YANG module that describes when links can be used
- Describes some common link attributes
- Complements a network topology
- Used when
  - Links are predictably available / not available
  - Link attributes may change over time
  - Neighbors may change over time
- Assist with resource planning

# Usage

- Availabilities list is updated on an on-going basis.
  - Time of next scheduled update included
- List is provided to routing system
- Recipient may, in some cases, replace predicted link attributes with measured values
- Link attributes may be used as values in existing IGP metrics and updated according to availability list
- . . . or as source data for time variant IGP metrics.

# Resource Planning

- Make before break
- Avoid “unstable” links
- Example: choose path based on predicted availability



# Structure

```
module: ietf-link-availability
  +--ro link-availability
    +--ro next-update?  yang:date-and-time
    +--ro link* [avail-from source-node source-link-id]
      +--ro avail-from      yang:date-and-time
      +--ro source-node     string
      +--ro source-link-id  string
      +--ro destination-node? string
      +--ro avail-until?    yang:date-and-time
      +--ro bandwidth?     te-types:te-bandwidth
      +--ro delay?         uint32
      +--ro igp-link-metric? uint32
      +--ro te-default-metric? uint32
      +--ro link-affinity-names
        | +--ro link-affinity-name* [usage]
        |   +--ro usage      identityref
        |   +--ro affinity-name* [name]
        |     +--ro name     string
      +--ro link-srlgs-names
        +--ro link-srlgs-name* [usage]
          +--ro usage      identityref
          +--ro names*     string
```

# Topics for Future Consideration

- The contents of source-node and destination-node are not well defined.
- Additional link attributes?
  - expected power dissipation?
- Order list by source-node, source-link and then time? [Acee]
- It may be inefficient to represent link availabilities for a variable node, as the node itself can be powered on/off. [Sandy]
- Indicating node by prefix can reduce duplicated data [Sandy]
- A subset of elements in a variable node can be represented by a prefix [Sandy]

# Next Steps

- Solicit and address feedback from the WG
  - Use cases – are there others?
  - Feed back on this solution
- Complimentary TVR draft
  - draft-qu-tvr-schedule-yang-00
  - Work with authors on a combined draft
  - Slides describing possible path forward following both draft discussions