

# PCE Hierarchical SDNs

draft-chen-pce-h-sdns-00

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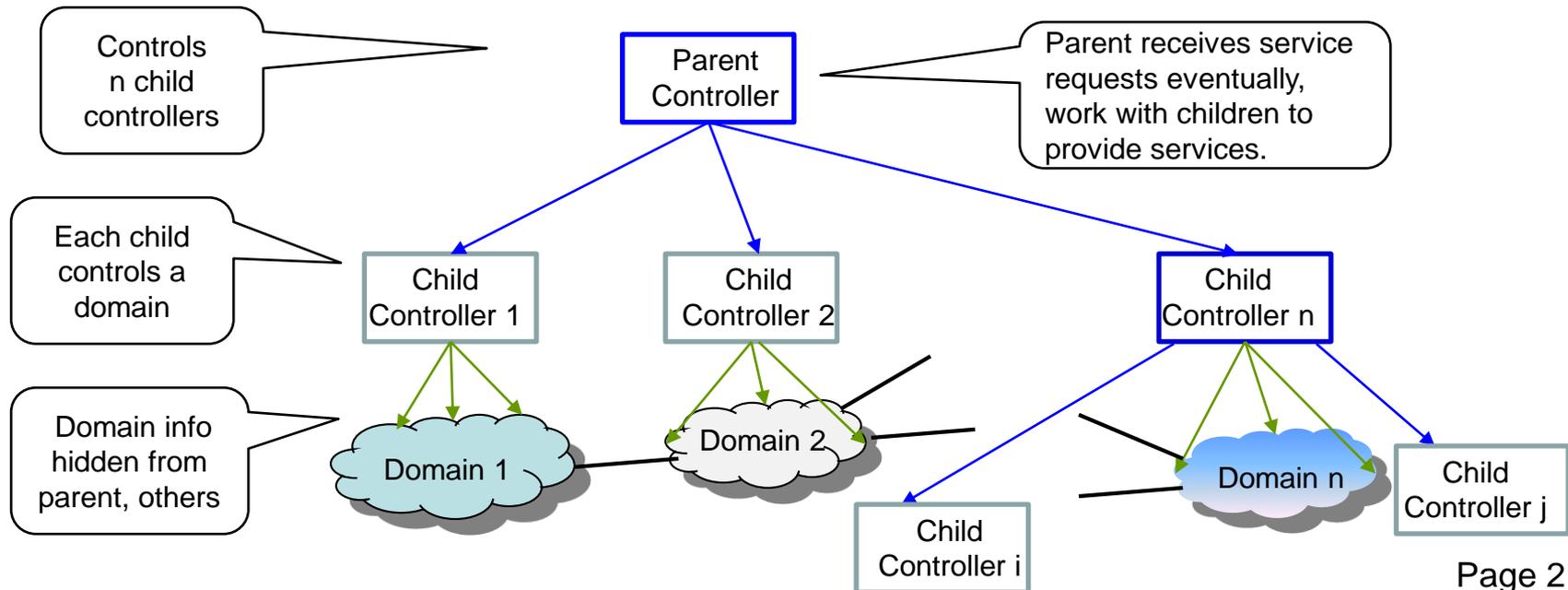
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# Introduction

- Hierarchical PCE:
  - RFC 6805 as referenced
  - Architecture
  - Hierarchical PCE Procedures (parent child discovery, etc)
  - Hierarchical PCE Applicability

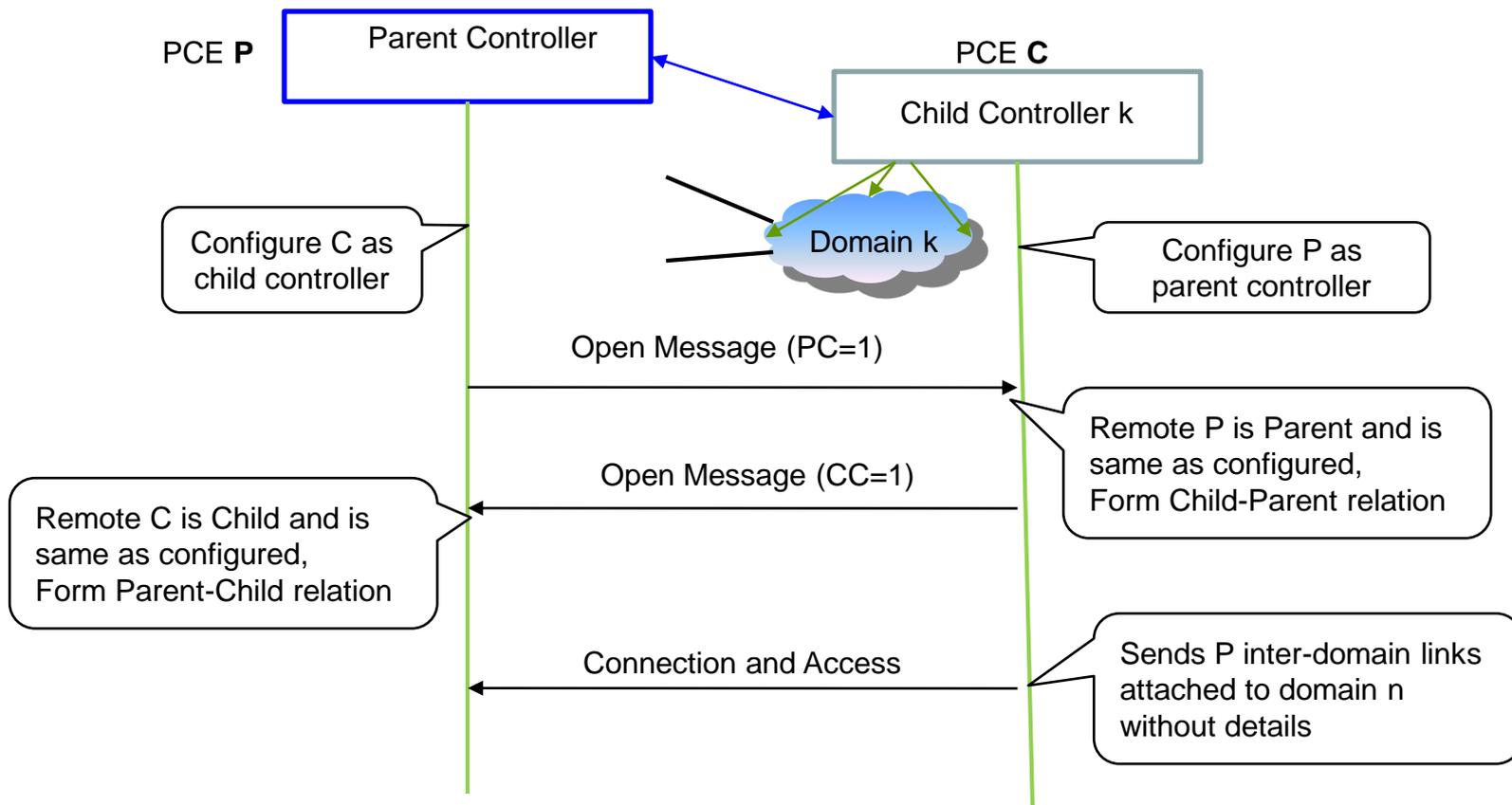
Nature and simple extensions

- Hierarchical Controller



# Extensions to PCE: Parent-Child Discovery

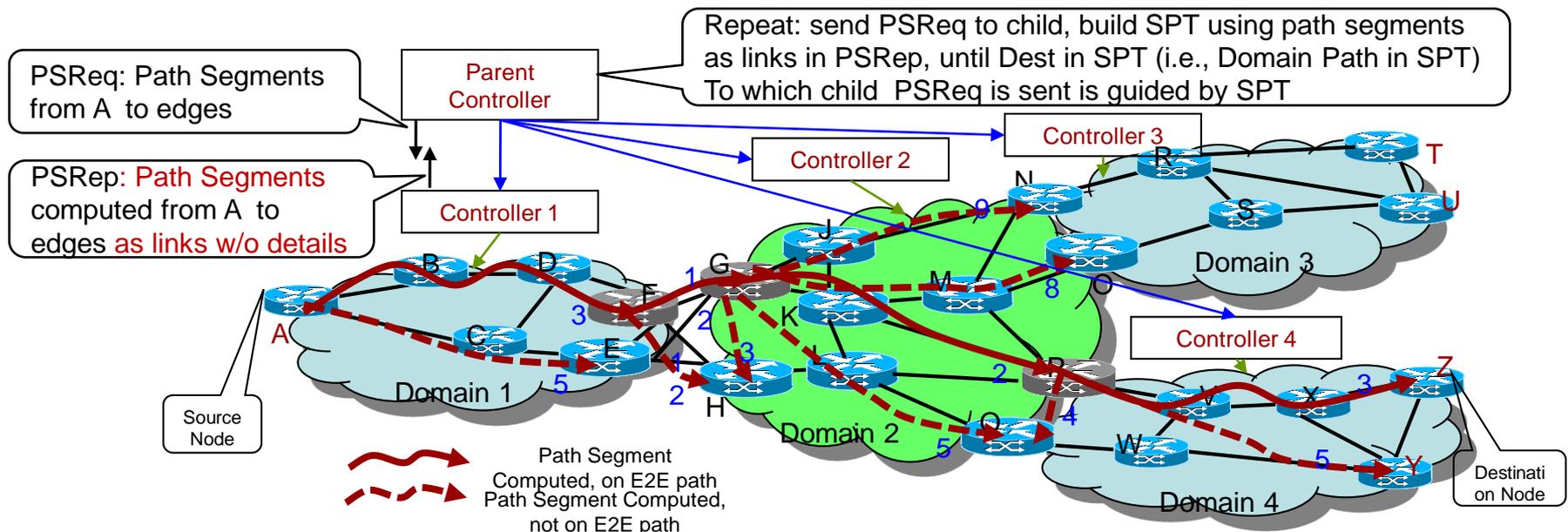
- Using Open Messages with capability TLV
  - flag PC: Parent Controller, flag CC: Child Controller
- ◆ An example sequence of events for discovery
  - ◆ Assume PCE session between P and C



# Extensions to PCE: E2E Domain Sequence and Path

After controller discovery, parent controller

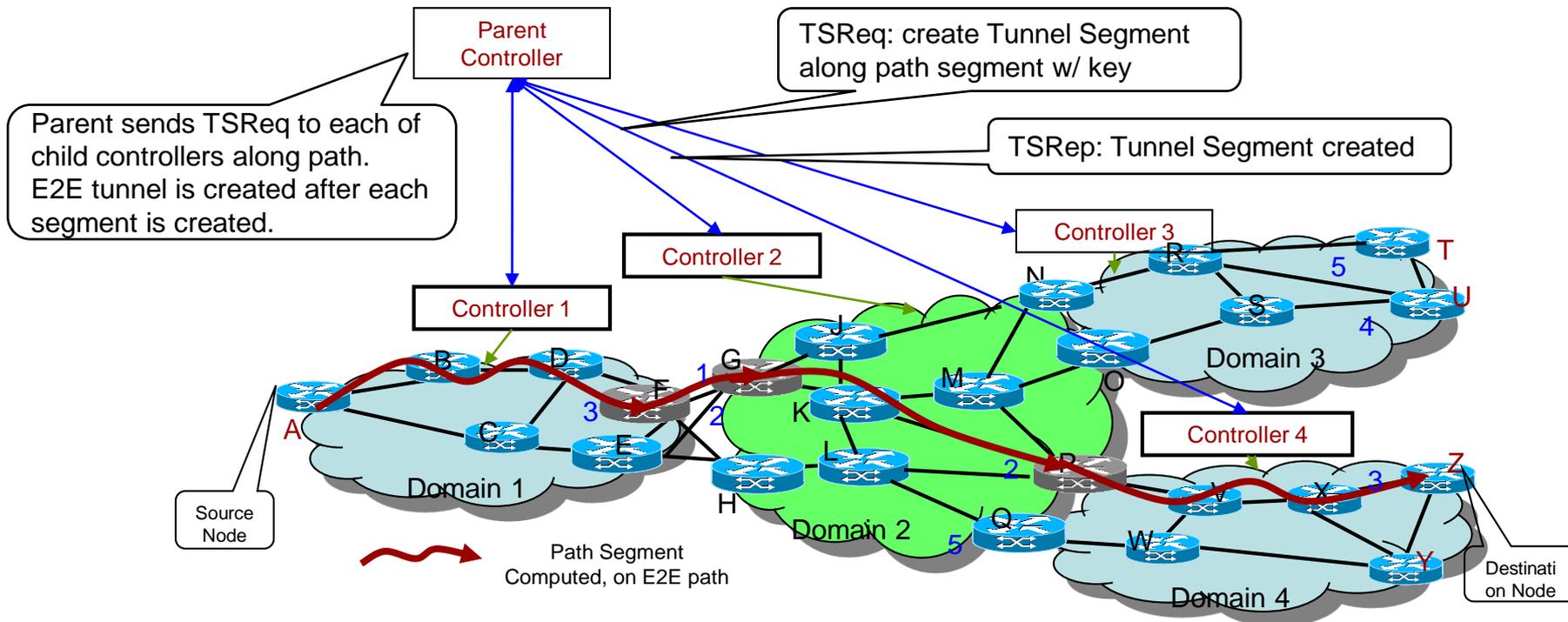
- Knows:
  - its child controllers and connections among domains
- Does not know any details or abstraction on any domain
- Obtains E2E domain (sequence) path (and then path by BRPC)
  - working with related child controllers and
  - using path segments computation request/reply
- ◆ path segments computation request/reply (PSReq/PSRep) may be from
  - ◆ PCReq/PCRep containing RP with a new flag indicating “path segments computation” or
  - ◆ Other ways to extend PCE such as new messages or new RP (CRP)



# Extensions to PCE: Create Tunnel along Path

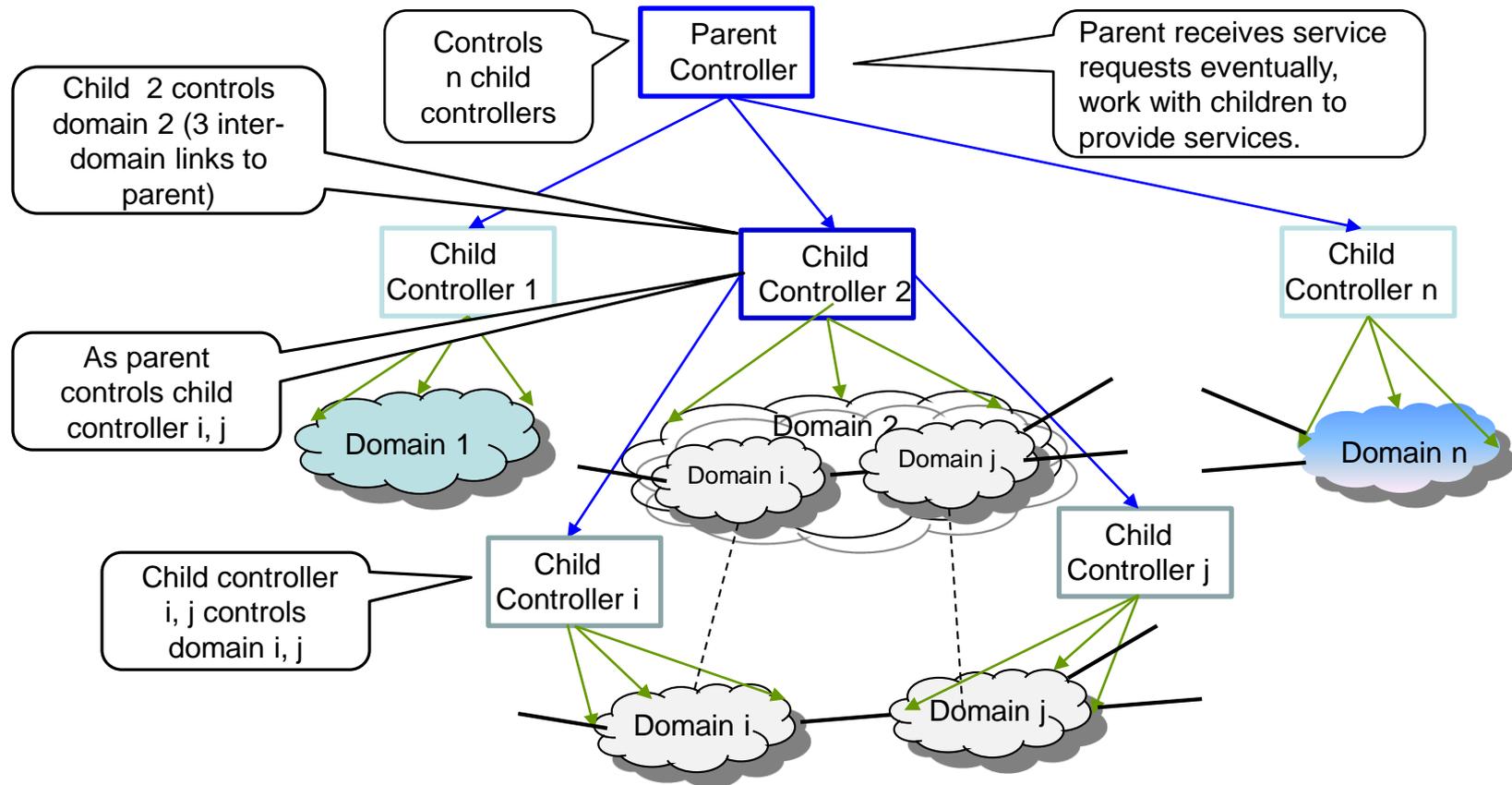
After obtaining E2E path, parent controller

- Create tunnel along path
  - working with related child controllers and
  - using tunnel segment creation request/reply
- ◆ tunnel segment creation request/reply (TSReq/TSRep) may be from
  - ◆ PCReq/PCRep containing RP with a new flag indicating “tunnel segment creation” or
  - ◆ Other ways to extend PCE such as new message, new RP (CRP), or etc



# An Interesting Scenario

A parent has information of domains “controlled” by its children



How does parent co-ordinate with its children? One way:

- Parent computes path, and
- Child creates tunnel segments (assign label and write cross connects, etc)

# Encoding Options

For contents of a message, it may be encoded in one of a few ways

## ➤ New type

- A new type for each message
- A new type for a group of messages
  - Define flags or options to differentiate them

## ➤ Embedded in an existing message

- A new flag or options in existing object such as RP indicating this + new contents
- A new object with a flag or options (such as xRP) + new contents

## ➤ Mixed

# Next Step

- Request for comments and suggestions