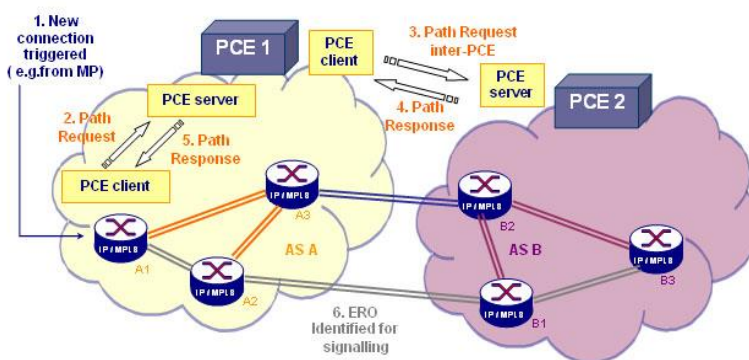


THE ADVANCED IMPLEMENTATION OF THE IETF PCE PROTOCOL



PCE ARCHITECTURE HAS BEEN DESIGNED TO REDUCE NETWORK RESOURCE CONSUMPTION WHILE IMPROVING SCALABILITY THROUGH INTER-DOMAIN AND CONTROLLING DISTRIBUTED PATH COMPUTATION.



PRODUCT TARGET

As MPLS and GMPLS are now largely deployed, new technical solutions are required as carriers face limits in optimizing and managing these larger scale automated networks. Some of these challenges include:

- Sub-optimal Inter-Domain End-to-End paths since the ASON architecture implies a per domain control and opaque interfaces through different domains;
- (G)MPLS networks re-optimization as successive setups and releases of Label Switch Path can fragment the transport network resources;
- Limited Network topology visibility due to Inter-Carrier confidentiality issues and presence of non GMPLS legacy equipment in core domain;
- Path Computation (e.g. inter-layer path computation in a multilayer transport plane) might be too CPU-intensive to be performed by Network Elements themselves : it would limit the availability for adaptive functions between layers which discriminate MSPP equipment;

Using a remote Path Computation Element in charge of remotely computing E2E path inside an MPLS/GMPLS network is the key to meet these new challenges:

- The PCE server can combine Traffic Engineering information from multiple sources such as different layer control planes, or management planes when advertising some information in IGP does not scale well (e.g. Lambda availability in WSON network).
- Dedicated server with powerful CPU can perform highly complex path computation to optimize Network Resource Usage. E.g. inter-layer path computation, global re-optimization of the network....
- Inter domain optimal path computation can be solved by PCE cooperation as detailed in the figure below: Every PCE server from each domain exchange path information to build an E2E optimal path.

Equipment vendors are thus facing a major issue to quickly implement the new IETF PCE protocol to meet this new challenge.

MARBEN PCE is the solution for bringing up an efficient PCE connectivity ensuring interoperability. By relying on MARBEN PCE, you will significantly accelerate your time market.

About Marben

A leading provider of key software solutions for next generation service-driven networks.

More than 30 years of experience

Delivers interoperable, robust and efficient signaling, routing and AAA solutions to accelerate the delivery of network services.

Marben Customers

Airbus, Be-Mobile, Bosch, Ciena, Cisco, Continental, CSG, Ericsson, ESA, Fujitsu, GMV, HP, Nokia, NEC, Oracle, Siemens, Sprint, Telstra, Valeo, Verizon, Volvo ...

KEY BENEFITS

Marben Products introduces the first commercial implementation of PCE. MARBEN PCE Solution has been proven through interoperability tests.

The solution is based on our large experience on protocols stack: PCE is another productive tool belonging to the MARBEN MPLS/GMPLS suite: it can be added to your current stack or operate as a standalone solution.

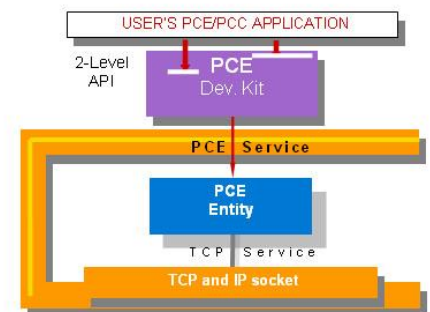
MARBEN PCE supports both PCE client and PCE server roles. It offers two different APIs as a trade-off between flexibility and simplicity.

TECHNICAL OVERVIEW

MARBEN PCE implementation is based on two separate parts which allow a clear separation of real time and management functions:

MARBEN PCE entity inside the MARBEN stack offers the following features:

- PCEP sessions management (FSM, negotiation phase, keep alive mechanism);
- PCEP messages encoding and decoding the;
- SVEC management;
- Decoded messages trace facilities.



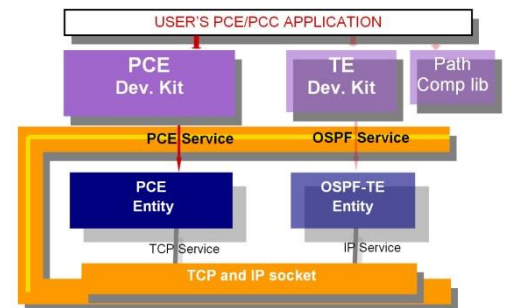
The PCE entity runs inside the stack as an independent process or task while the MARBEN PCE DevKit is basically a library to be linked to the PCE/PCC application.

The PCE DevKit offers a C Application Programming Interface for:

- opening/closing PCEP sessions;
- building PathRequests/Replies;
- managing the set of objects as bandwidth, LSP attributes, metric load balancing stored in the transient db;
- Offering a higher interface with pre-built messages.

This PCE solution is either a C source code delivery or binary deliver at your convenience, fully portable and thread safe.

This implementation can run with the combination of MARBEN Traffic Engineering offer for interaction with the control plane and Path computation libraries including Node Disjoint and Link Diverse Path computation algorithm.



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CONFORMANCE

RFC4655: A Path Computation Element Based Architecture
RFC5440: PCE Communication Protocol
RFC4657: PCE Communication Protocol Generic requirements
RFC5441: BRPCRFC5521 Route Exclusions
RFC5541: Objective Functions

RELATED OFFERS

MARBEN GMPLS Suite, MARBEN GMPLS Emulator
Consulting, training and custom services.