

Link-local Registration Protocol - Architecture and Transport Mechanism

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Introduction

As initial preparation for the coming startup of the 802.1CS work, this presentation discusses two fundamental technical issues of the LRP.

- **What should the architecture of the LRP look like in comparison with the current MRP?**
- **Which kind of link-local transport mechanism could LRP deploy to achieve the goals defined in the PAR?**

Review of 802.1CS LRP PAR

- ❑ **LRP is a L2 protocol**, which
 - facilitates the creation of application protocols that distribute information through all or part of a network

- ❑ **LRP is a link-local registration protocol**, which
 - replicates a registration database from one end to the other of a point-to-point link and to replicate changes to parts of that database
 - provides a facility to purge the replicated database if the source becomes unresponsive

- ❑ **LRP is needed to overcome the scalability and performance issues of MRP**
 - MRP is optimized for databases up to 1500 bytes, and slows significantly when used for larger databases.
 - LRP will be optimized for databases on the order of 1 Mbyte

802.1CS PAR: <http://www.ieee802.org/1/files/public/docs2016/cs-LRP-PAR-1116-v01.pdf>

802.1CS CSD: <http://www.ieee802.org/1/files/public/docs2016/cs-LRP-CSD-1116-v01.pdf>

MRP Architecture

MRP is not a stand-alone protocol, but defines a generic registration framework that consists of three application-specific components

- MRP application is application specific
- MAD (MRP Attribute Declaration):** The encoding/decoding of Attribute values in MRPDUs is application specific
- MAP (MRP Attribute Propagation)** is specified by each MRP application

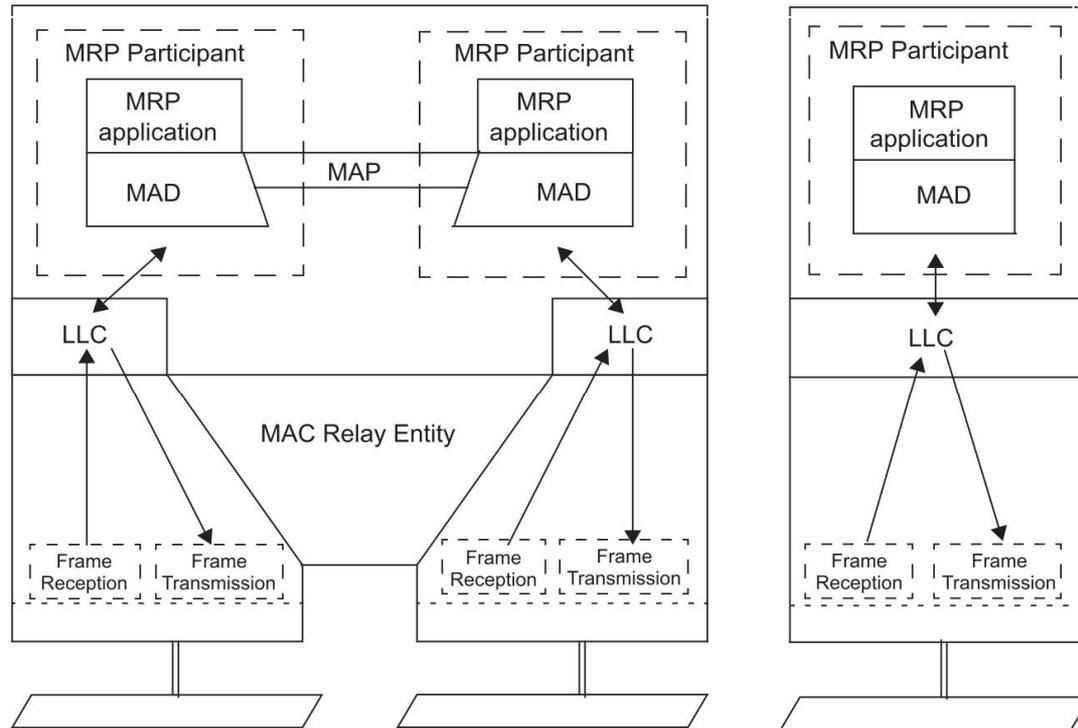


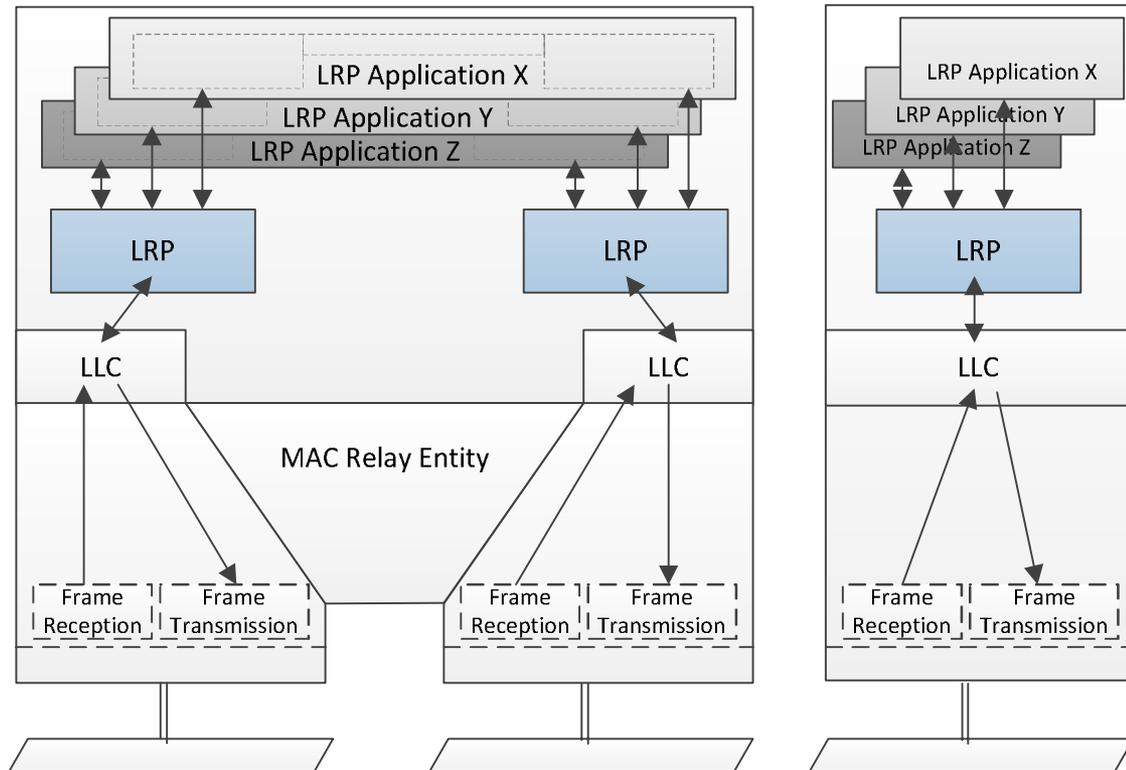
Figure 10-4—MRP architecture

The operations of MRP are largely defined by each MRP application.

Proposed Architecture for LRP

❑ **LRP, intended as a link-local protocol, focuses only on the replication of registration database between two ends of a point-to-point link.**

- LRP serves a similar purpose as MAD in MRP in terms of link-local transmission.
- Application specific parts should not be included in the LRP architecture.
- As a pure link-local mechanism, one LRP instance per port provides a generic transport service for multiple applications.



LRP should become an application-neutral transport protocol

Proposal for LRP Transport Mechanism

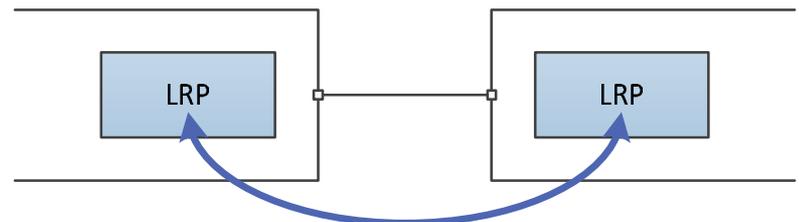
- ❑ **MRP is inefficient in support of large database mainly due to the facts**
 - MAD of MRP conducts cyclic exchanges of all attributes with its neighbor
 - MRP is defined to be a slow protocol

- ❑ To improve scalability and performance for large database, a different transport mechanism is needed for LRP

Proposal:

Instead of cyclic exchanges of all data between the peers, consider the connection-oriented communication approach

- Establish a single “connection” between two ends of a point-to-point link
- Use ACK and Re-transmission for reliability
- Exchange periodic “heartbeat” to detect unresponsive peer
- Throttling to adapt to the speed of the peer



Summary

In line with the scope of the LRP PAR, this presentation provides initial proposals regarding architecture and transport mechanism for LRP, which in the author's opinion may become the starting point of technical discussion for LRP.

Proposals in this presentation:

- ❑ LRP should be defined as an application-neutral protocol that provides link-local transmission service for the applications built on it.
- ❑ LRP could adopt the connection-oriented method to provide reliable and efficient link-local data exchange for large databases on the order of 1 Mbyte.

Any comments on the above proposals or any other ideas are welcome!

Thank you for your attention!

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