LACP Proposal

Name

LACP

Repo Name

lacp

Description

LACP Project within Open Daylight implements Link Aggregation Control Protocol (LACP) as a MD-SAL service module and will be used to auto-discover and aggregate multiple links between Opendaylight controlled network and LACP enabled endpoints or switches, which are external to Opendaylight controller. The result is the creation of logical channel, which represents the aggregation of the links.Link aggregation provides link resiliency and also provides bandwidth aggregation. Initial LACP protocol is released as IEEE Ethernet specification 802.3ad, but later moved to Bridging and Management Group as 802.1AX specification.

Operational Model

LACP module within Open Daylight will receive and process the LACP control packets through SAL “Packet Processing” Service. It also sends out the LACP control packets through all the active switch ports using SAL packet processing service at regular intervals based on the timer interval configuration. Since this module is designed to aggregate only the external links, it ignores the LACP packets received through internal links. It uses “SAL-FLOW service” to create LAGs within the switch.

LACP module will have the following internal service components.

Component	Description
Receive Machine	This state machine receives LACPDUs from the Partner, records the information contained, evaluates the incoming information from the Partner to determine whether the Actor and Partner have both agreed upon the protocol information exchanged to the extent that the port can now be safely used, either in an aggregation with other ports or as an individual port; if not, it asserts NTT in order to transmit fresh protocol information to the Partner.
Periodic Transmission machine	This state machine determines whether the Actor and its Partner will exchange LACPDUs periodically in order to maintain an aggregation (periodic LACPDU exchanges occur if either or both are configured for Active LACP).
Selection Logic Machine	The Selection Logic is responsible for selecting the Aggregator to be associated with this port. All the ports within a system that have the same operational LACP Key are aggregated as single aggregator, except for the ports are configured as ‘Individual’ (ports that are configured to be not aggregated).
MUX Machine	This component is responsible for attaching the port to a selected Aggregator, detaching the port from a de-selected Aggregator, and for turning on /off collecting and distributing at the port as required by the current protocol information.
TX Engine	This component transmits LACPDUs, both on demand from the other state machines, and on a periodic basis.
LACP Flow Utils	This component provide service to transform Link Aggregation requests to SAL flow service requests.

Here is the LACP module component diagram.

blocked URL

Scope

LACP Aggregation module scope is as follows:

- Implement LACP protocol.
- Supports only passive mode with long-timeout.
- LACP peer device should be outside the controller's domain, i.e., the peer device should not be managed by the same controller.

- Notify all listeners when LAG is created/destroyed, through MD-SAL. Interested applications must register with MD-SAL to be notified about additions, deletions and updates to the LAG data store.
- Program the group-table for LAG functionality, through openflow plugin

Presentations

File:LACP Proposal.pptx

Resources Committed (developers committed to working)

- Venkataraghavan C (Dell) - raghavclv
- Rajesh Sindagi (Dell) - Rajesh_Sindagi
- Kavitha Ramalingham (Dell) - Kavitha_Ramalingam
- Kalaiselvi K (Dell) - kalaiselvik
- Abhijit Kumbhare (Ericsson)
- Arun Yerra (Dell) - arun_yerra
- Mohnish Anumala (Dell) - manumala

Initial Committers

- Rajesh Sindagi (Dell) - Rajesh_Sindagi
- Kavitha Ramalingham (Dell) - Kavitha_Ramalingam
- Arun Yerra (Dell) - arun_yerra
- Venkataraghavan C (Dell) - raghavclv
- Mohnish Anumala (Dell) - manumala

Vendor Neutral

The base functionality described in this proposal is implemented in the Dell Active Fabric controller. Some code may be leveraged for use in OpenDaylight. All contributed code will adhere to OpenDaylight's copyright and license policies.

Meets Board Policy (including IPR)

No significant code being contributed at project creation. Inbound Code Review unneeded. (Phil Robb - 11/24/2014))