

OpenFlow Demo

IEEE 802.1ag Ethernet OAM SCInet Research Sandbox

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This demo shows how OpenFlow can be used by end-users to easily add new network protocols to OpenFlow switches. SARA implemented the IEEE 802.1ag standard, which is a protocol for Ethernet OAM (Operations, Administration, and Maintenance). The code was added to the NOX OpenFlow controller so that every OpenFlow switch can now support 802.1ag. The detection of link failures with this setup is demonstrated in a multi-domain Ethernet network with sites in Amsterdam, Chicago, Ottawa and Seattle. The 802.1ag implementation is available as open source (BSD license) at <http://nrg.sara.nl/dot1ag-utils>.



IEEE 802.1ag Functionality

Continuity Check (CC)

- Periodic hello messages
- Detect loss of connectivity

Loopback Message/Reply (LBM/LBR)

- Ethernet ping sent manually from CLI
- Sent to Ethernet MAC address

Link Trace Message/Reply (LTM/LTR)

- L2 trace sent manually from CLI
- Replies from Ethernet interfaces in the path

NOX OpenFlow Controller

dot1ag-utils
component

Flow Entry:
dl_type=0x8902,actions=CONTROLLER



Pronto
OpenFlow
switch

OpenFlow Protocol
IEEE 802.1ag PDU
OpenFlow Protocol
IEEE 802.1ag PDU

IEEE 802.1ag PDU

IEEE 802.1ag PDU

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