

# IEEE 802.1ag Ethernet OAM

## *An Open Source Implementation*

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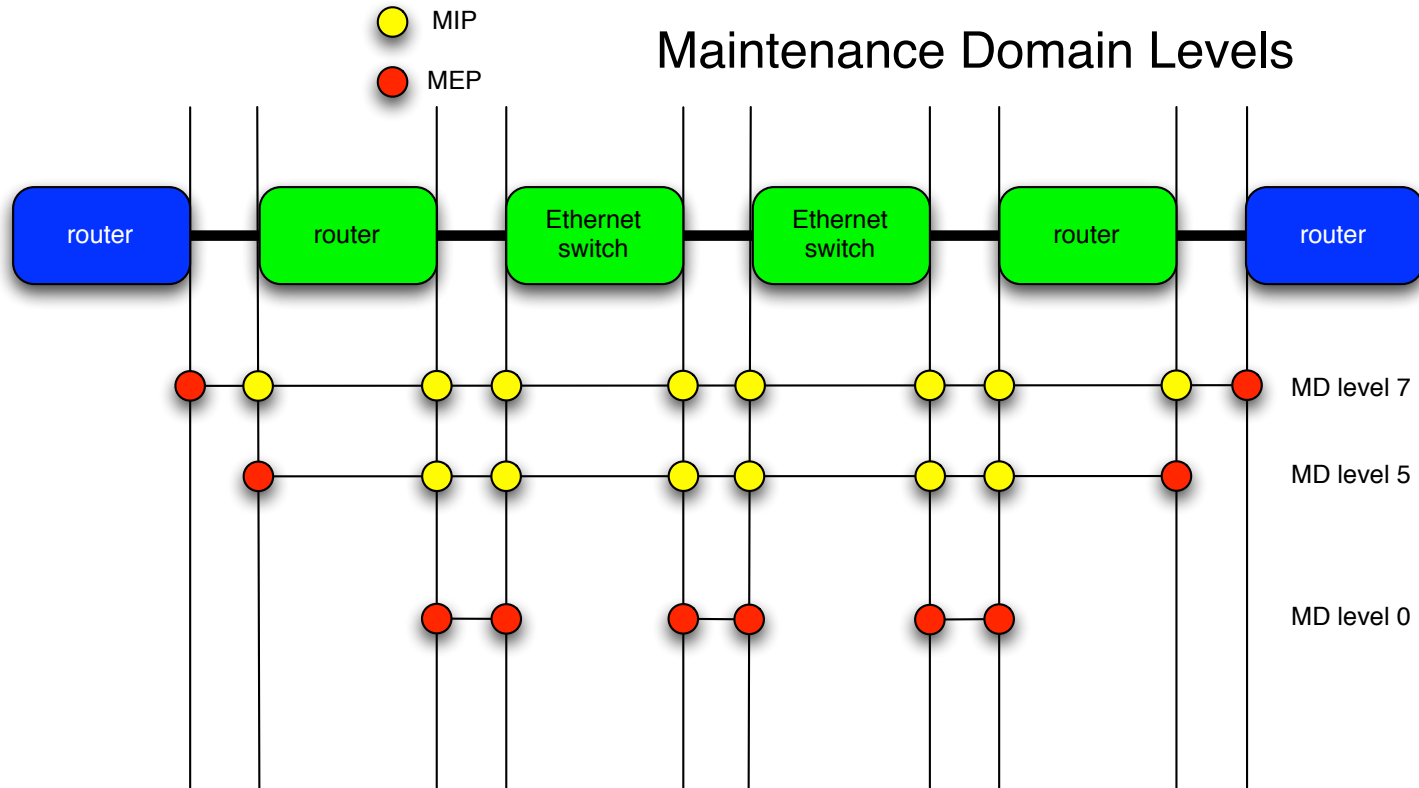
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**SARA**

# 802.1ag Messages

- **Continuity Check Messages (CC)**
  - Periodic hello messages
  - Detect loss of connectivity
- **Loopback Messages (LBM/LBR)**
  - L2 ping
- **Link Trace Messages (LTM/LTR)**
  - L2 traceroute

# 802.1ag MEPs and MIPs



# IEEE 802.1ag OAM Types

- ▶ **Continuity Check (CC)**
  - ▶ Periodic hello messages
  - ▶ Detect loss of connectivity
  - ▶ Multicast sent by MEP, no replies sent
  - ▶ Processed by MIP/MEP
- ▶ **Loopback Message/Reply (LBM/LBR)**
  - ▶ L2 ping sent manually from CLI
  - ▶ Unicast sent by MEP, unicast reply by MIP/MEP
- ▶ **Link Trace Message/Reply (LTM/LTR)**
  - ▶ L2 traceroute sent manually from CLI
  - ▶ Multicast sent by MEP, unicast replies by MIP/MEP
  - ▶ LTM is forwarded until TTL is 0
  - ▶ LTM is forwarded until target MIP/MEP is reached

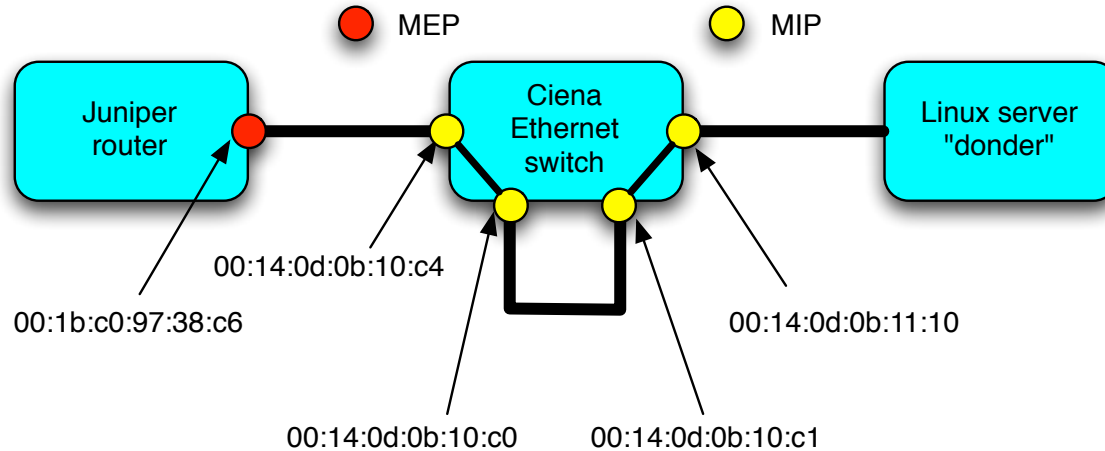
# What are the *dot1ag-utils*?

- ▶ **Open Source implementation of IEEE 802.1ag**
- ▶ **New BSD License**
- ▶ **Supported on FreeBSD, Linux and MacOSX**
- ▶ **User space implementation**
- ▶ **Work In Progress**

# Release Schedule

- ▶ **Alpha release available today, looking for:**
  - ▶ Code reviewers
  - ▶ Alpha testers with FreeBSD, Linux or MacOSX servers
  - ▶ Alpha testers with 802.1ag routers and switches
- ▶ **Beta release mid May 2011**
  - ▶ Looking for broader test community
- ▶ **First release in Summer 2011**

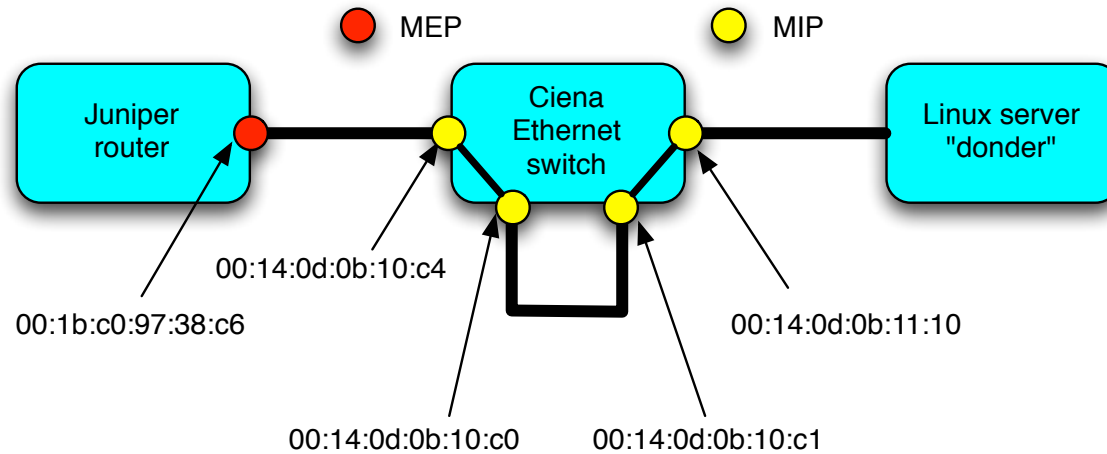
# I2ping demo



```

root@donder:~# I2ping -i eth5 -v 123 -l 7 -c 10 00:1b:c0:97:38:c6
CFM LBM to 00:1b:c0:97:38:c6
68 bytes from 00:1b:c0:97:38:c6, sequence 477635892, 0.839 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635893, 0.872 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635894, 0.817 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635895, 0.829 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635896, 0.851 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635897, 0.718 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635898, 0.713 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635899, 0.917 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635900, 0.731 ms
68 bytes from 00:1b:c0:97:38:c6, sequence 477635901, 0.713 ms
root@donder:~#
  
```

# I2trace demo



```

root@donder:~# I2trace -i eth5 -v 123 -l 7 00:1b:c0:97:38:c6
Sending CFM LTM probe to 00:1b:c0:97:38:c6
ttl 1: LTM with id 1784875395
    reply from 00:14:0d:0b:10:c1, id=1784875395, ttl=0, RlyFDB
ttl 2: LTM with id 1784875396
    reply from 00:14:0d:0b:10:c4, id=1784875396, ttl=0, RlyFDB
    reply from 00:14:0d:0b:10:c1, id=1784875396, ttl=1, RlyFDB
ttl 3: LTM with id 1784875397
    reply from 00:14:0d:0b:10:c4, id=1784875397, ttl=1, RlyFDB
    reply from 00:14:0d:0b:10:c1, id=1784875397, ttl=2, RlyFDB
    reply from 00:1b:c0:97:38:c6, id=1784875397, ttl=0, RlyHit
root@donder:~#
  
```



# More Information

- ▶ Mail to [rvdp@sara.nl](mailto:rvdp@sara.nl) or [nrg@sara.nl](mailto:nrg@sara.nl)
- ▶ <http://nrg.sara.nl/dot1ag-utils>

