

# Open Source Implementation of IEEE 802.1ag

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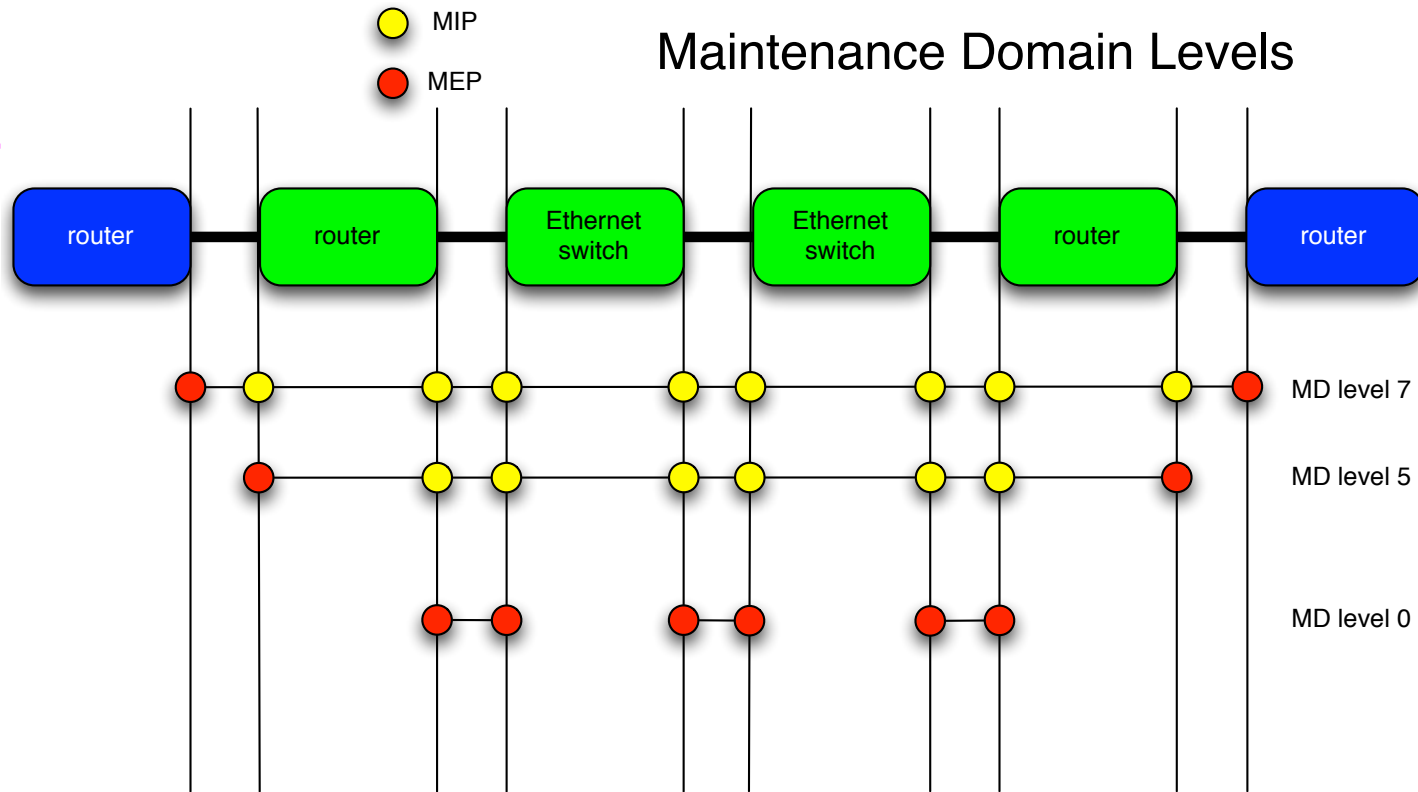
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SARA

# IEEE 802.1ag OAM Types

- ▶ **Continuity Check (CC)**
  - ▶ Detect loss of connectivity
  - ▶ Periodic hello messages from MEPs
  - ▶ Processed by MEPs
  - ▶ CC frames sent to multicast group, no replies are sent
- ▶ **Loopback Message/Reply (LBM/LBR)**
  - ▶ Check for reachability
  - ▶ Sent manually from MEPs via CLI
  - ▶ Processed by MIPs/MEPs
  - ▶ Unicast request, unicast reply
- ▶ **Link Trace Message/Reply (LTM/LTR)**
  - ▶ Path information
  - ▶ Sent manually from MEPs via CLI
  - ▶ Processed by MIPs/MEPs in path
  - ▶ Multicast request including TTL, unicast replies

# 802.1ag MEPs and MIPs



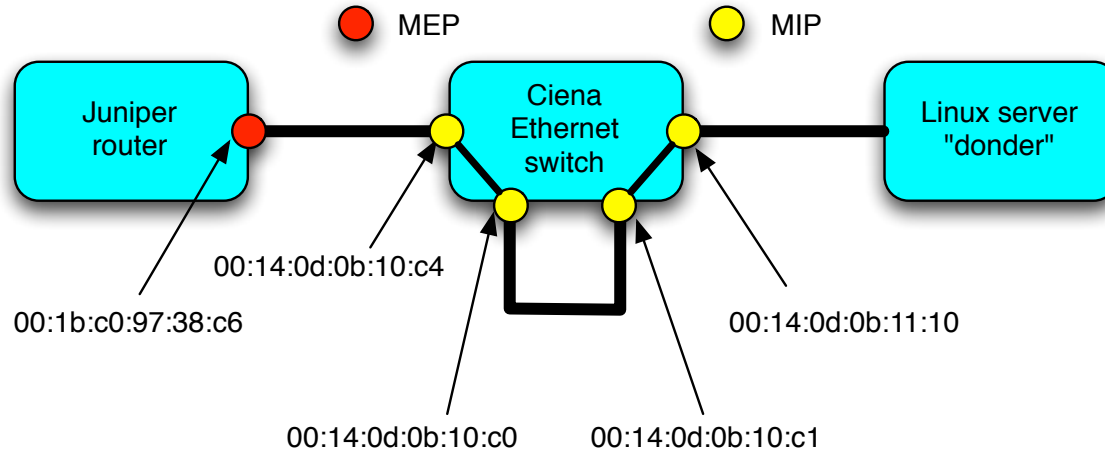
# What are the *dot1ag-utils*?

- ▶ **Open Source implementation of IEEE 802.1ag**
- ▶ **New BSD License**
- ▶ **Supported on Arista, FreeBSD, Linux and MacOSX**
- ▶ **User space implementation**
- ▶ **Work In Progress**
  
- ▶ **Powerful debugging tool for Ethernet based lightpaths, VPNs, etc.**
- ▶ **Ping to Ethernet MAC addresses of routers and switches**
- ▶ **You only need a server and install the software on it**

# Release Schedule

- ▶ **1.0.0-ALPHA2 available since May 13 2011, looking for:**
  - ▶ Code reviewers
  - ▶ Alpha testers with FreeBSD, Linux or MacOSX servers
  - ▶ Alpha testers with 802.1ag routers and switches
- ▶ **Beta release May/June 2011**
  - ▶ Looking for broader test community
- ▶ **First release in Summer 2011**

# I2ping demo

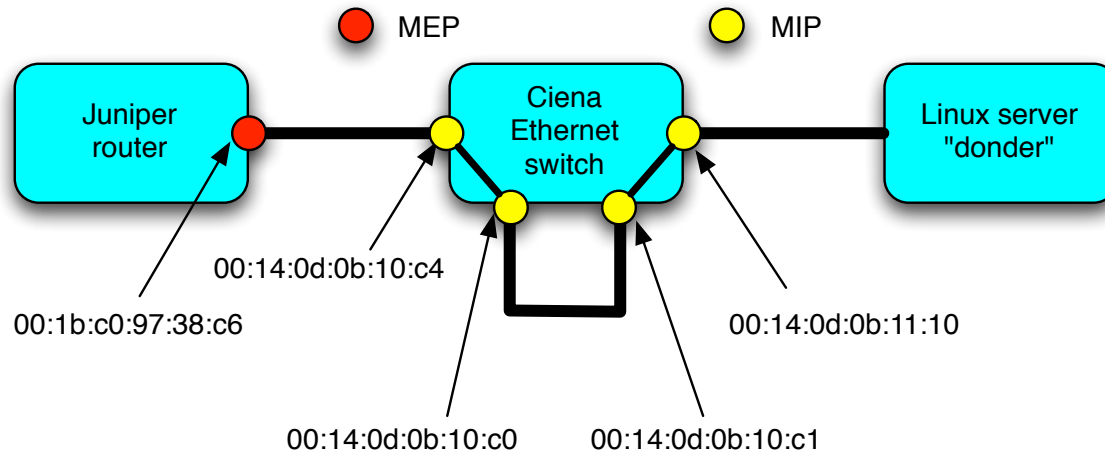


```

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
60 bytes from 00:1b:c0:97:38:c6, sequence 477635892, 0.839 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635893, 0.872 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635894, 0.817 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635895, 0.829 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635896, 0.851 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635897, 0.718 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635898, 0.713 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635899, 0.917 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635900, 0.731 ms
60 bytes from 00:1b:c0:97:38:c6, sequence 477635901, 0.713 ms
root@donder:~#
  
```



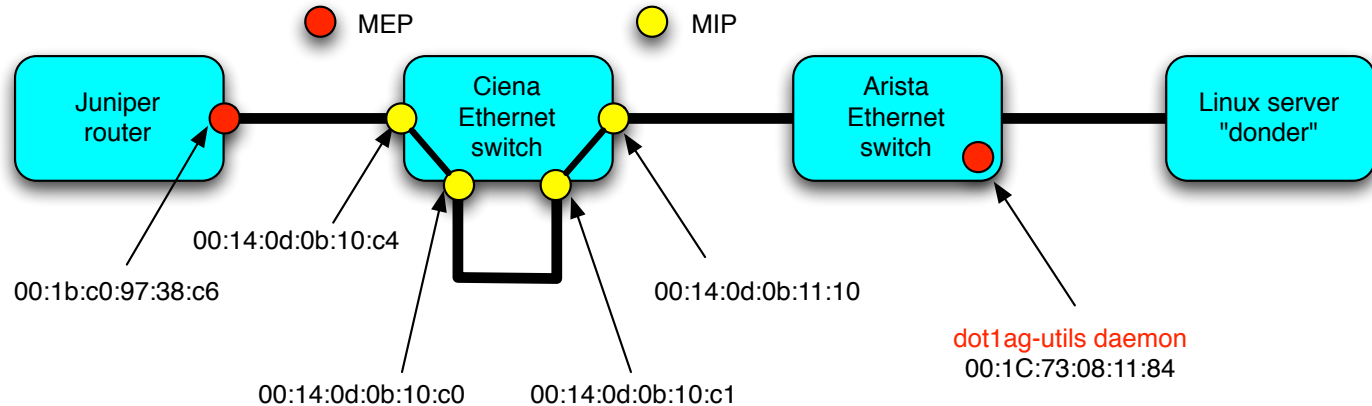
# I2trace demo



```

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:~#
  
```

# I2ping from Juniper to Arista



```

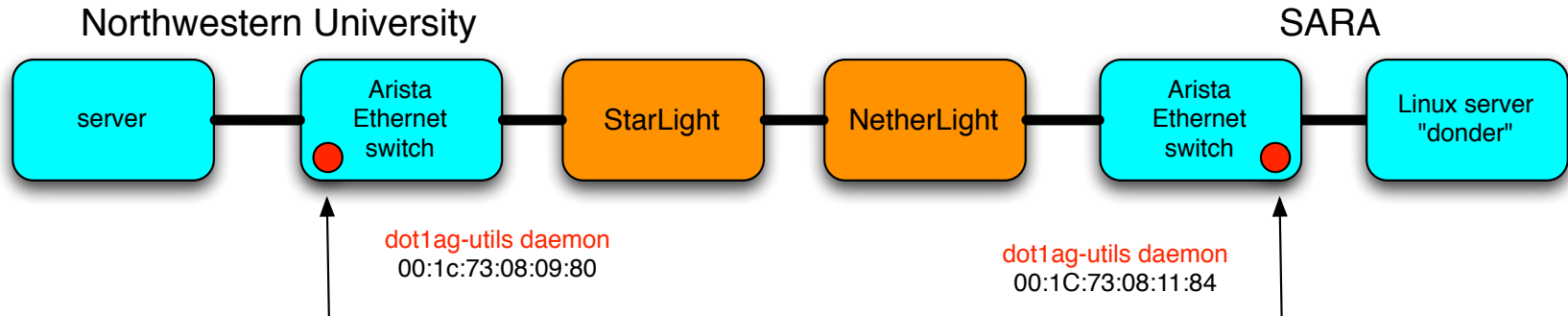
--- JUNOS 10.3I built 2011-04-05 18:23:14 UTC
rudp@re0-ed> ...ntenance-association test 00:1c:73:08:11:84
PING to 00:1c:73:08:11:84, Interface ge-0/3/9.123
64 bytes from 00:1c:73:08:11:84: lbm_seq=81
64 bytes from 00:1c:73:08:11:84: lbm_seq=82
64 bytes from 00:1c:73:08:11:84: lbm_seq=83
64 bytes from 00:1c:73:08:11:84: lbm_seq=84
--- ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss

rudp@re0-ed>

```



# I2ping Amsterdam to Chicago



```
donder# I2ping -i eth5 -v 400 -l 7 00:1c:73:08:09:80
Sending CFM LBM to 00:1c:73:08:09:80
60 bytes from 00:1c:73:08:09:80, sequence 1114864898, 103.453 ms
60 bytes from 00:1c:73:08:09:80, sequence 1114864899, 103.432 ms
60 bytes from 00:1c:73:08:09:80, sequence 1114864900, 103.439 ms
60 bytes from 00:1c:73:08:09:80, sequence 1114864901, 103.455 ms
60 bytes from 00:1c:73:08:09:80, sequence 1114864902, 103.455 ms
#
```

# 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>
- ▶ Subscribe to mailman mailing list

