

Y.1731 DEMO

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Agenda

- Motivation
- Y.1731 overview
- Implementation
- Measurements
- Demo setup
- Demo

Motivation

- Extendable protocol but:
 - Closed source implementations
 - Specialized hardware
- Open source Y.1731:
 - Extendability
 - General purpose hardware
 - Virtualization

Y.1731 overview

- Maintenance entity end-points (MEP)
 - MEP identity
- Maintenance intermediate points (MIP)
- Maintenance entity groups (MEG)
 - MEG identity

Y.1731 overview

- Fault management:
 - Connectivity checks
 - Loop back
 - Link trace
 - Alarm indication signal / Remote defect indication
- Performance management:
 - Loss measurements
 - Synthetic loss measurement
 - Delay measurements

Implementation

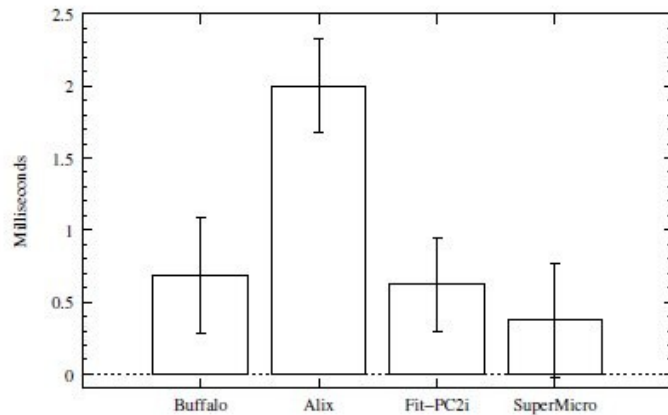
- Single threaded userspace daemon written in c
- Roughly 9000 lines of code
- Fault management:
 - CCM, LB, LT, AIS, RDI
- Performance mangement:
 - DM, LM, SLM
- Others:
 - MCC, EXP, VSP

Measurements

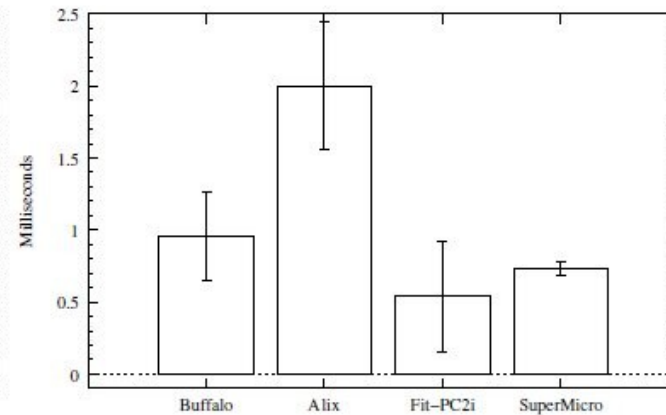
- Buffalo Airstation WHR-G54S-2,
 - CPU: Broadcom BCM5352 rev 0 @ 200 Mhz, NIC: 10/100, OS: OpenWRT Backfire 10.03.1 final, Kernel: 2.6.32.27
- PC Engines Alix2d13,
 - CPU: AMD Geode LX800 @ 500 Mhz, NIC: 10/100, OS: Voyage Linux 0.8.5, Kernel: 3.2.17-voyage
- fit-PC 2i fit-PC2i-D2G-C2000-W,
 - CPU: Intel Atom Z550 @ 2GHz, NIC: GigE, OS: Ubuntu 12.04.1 LTS (Precise Pangolin), Kernel: 3.2.0.30-generic-pae
- SuperMicro SuperServer X8ST3-F,
 - CPU: Intel(R) Xeon(R) CPU X5680 @ 3.33GHz, NIC: GigE, OS: Debian 6.0 (squeeze)

Measurements 1ms timeout

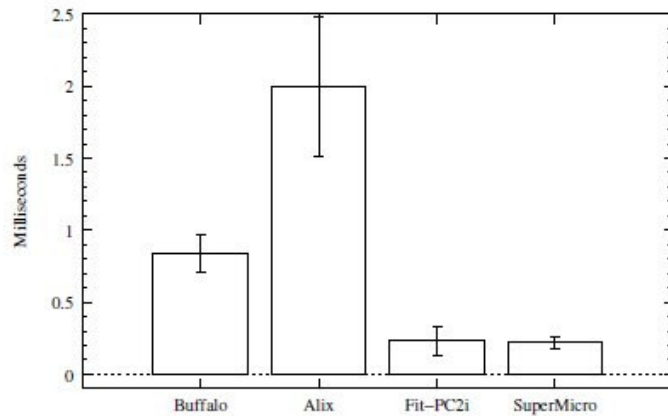
	Buffalo	Alix	Fit-PC2i	SuperMicro
1s	0,6832 ($\pm 0,3984$)	1,9999 ($\pm 0,3266$)	0,6212 ($\pm 0,3294$)	0,3747 ($\pm 0,3937$)
100ms	0,9560 ($\pm 0,3073$)	1,9987 ($\pm 0,4445$)	0,5375 ($\pm 0,3790$)	0,7303 ($\pm 0,0459$)
10ms	0,8387 ($\pm 0,1316$)	1,9984 ($\pm 0,4862$)	0,2338 ($\pm 0,1004$)	0,2212 ($\pm 0,0400$)
3.33ms	0,5506 ($\pm 0,0893$)	0,6714 ($\pm 0,5949$)	0,2085 ($\pm 0,0868$)	0,1124 ($\pm 0,1298$)



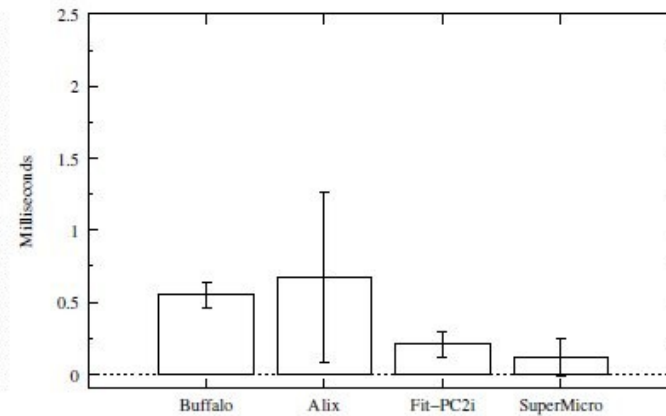
(a) 1 s



(b) 100 ms

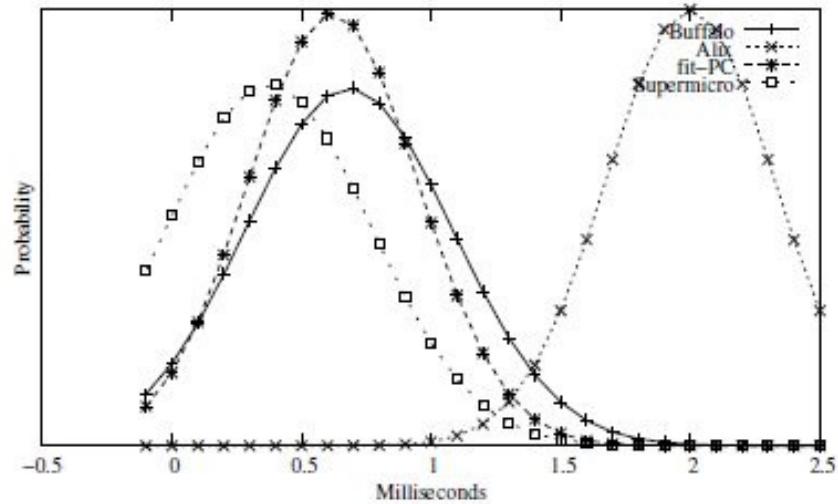


(c) 10 ms

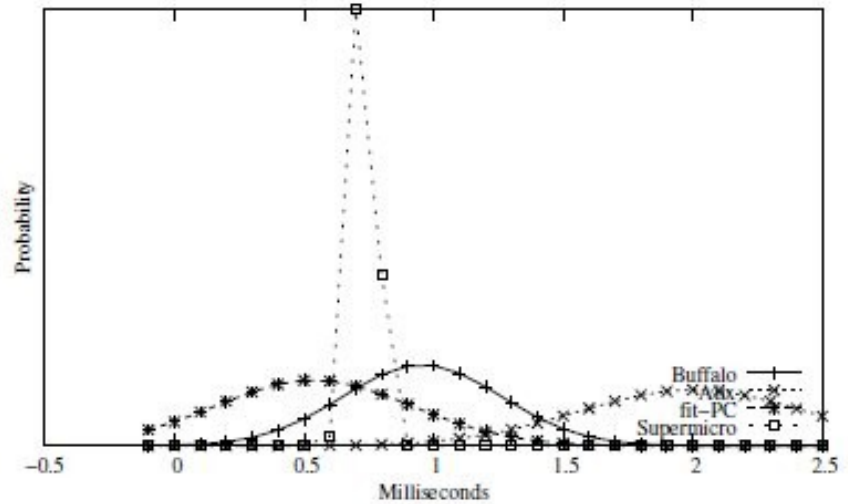


(d) 3.33 ms

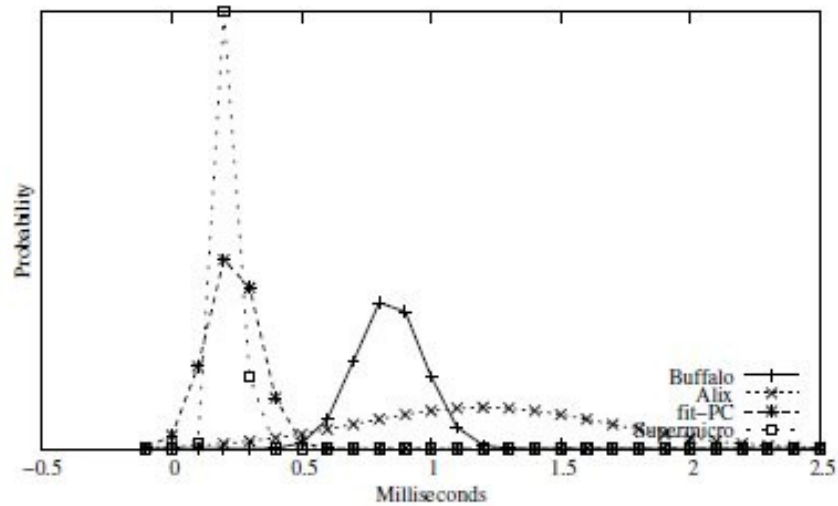
Measurements 1ms pdf



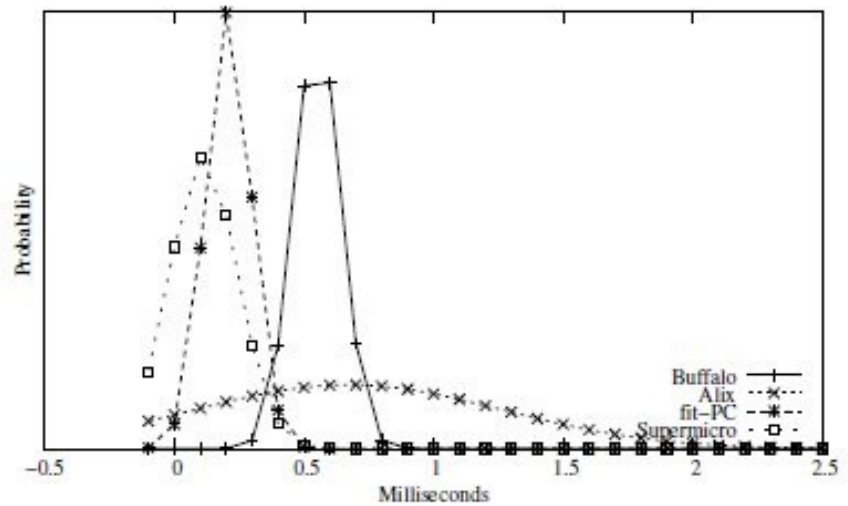
(a) 1 s



(b) 100 ms



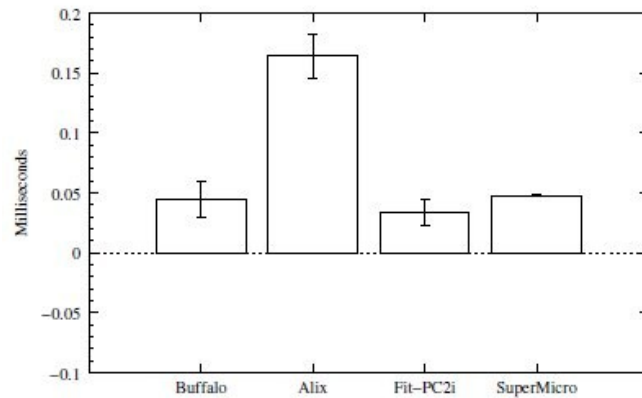
(c) 10 ms



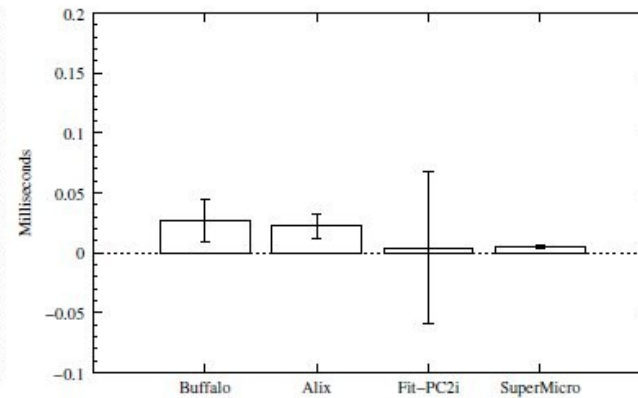
(d) 3.33 ms

Measurements polling

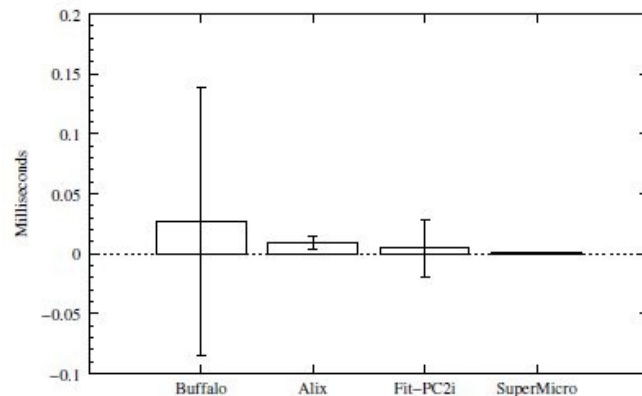
	Buffalo	Alix	Fit-PC2i	SuperMicro
1s	0,0446 ($\pm 0,0148$)	0,1638 ($\pm 0,0185$)	0,0331 ($\pm 0,0107$)	0,0473 ($\pm 0,0006$)
100ms	0,0266 ($\pm 0,0173$)	0,0223 ($\pm 0,0102$)	0,0039 ($\pm 0,0636$)	0,0047 ($\pm 0,0014$)
10ms	0,0267 ($\pm 0,1118$)	0,0088 ($\pm 0,0056$)	0,0043 ($\pm 0,0241$)	0,0005 ($\pm 0,0006$)
3.33ms	0,0390 ($\pm 0,1241$)	0,0078 ($\pm 0,0275$)	0,0038 ($\pm 0,0197$)	0,0001 ($\pm 0,0008$)



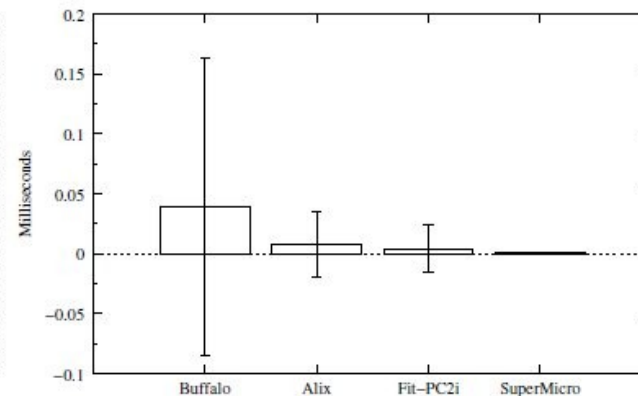
(a) 1 s



(b) 100 ms

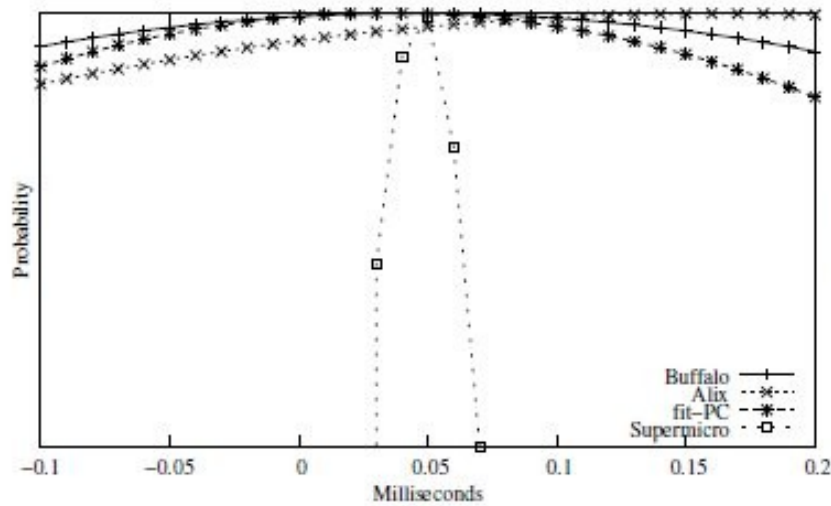


(c) 10 ms

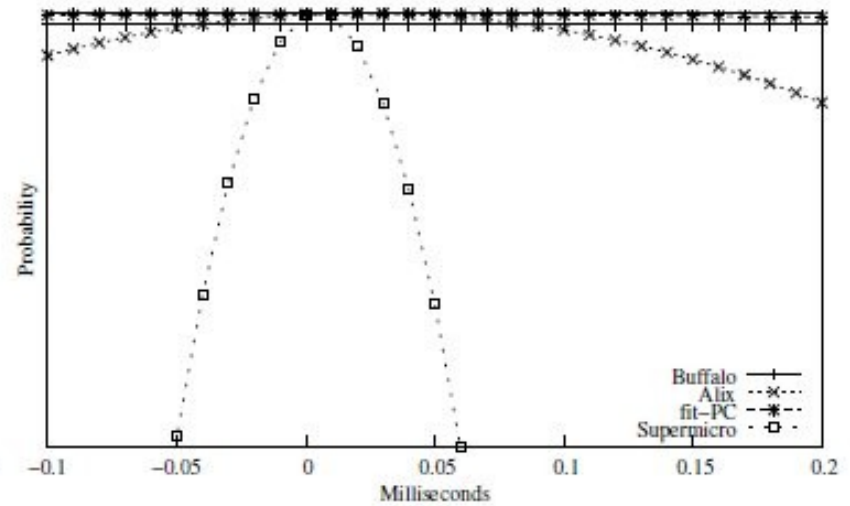


(d) 3.33 ms

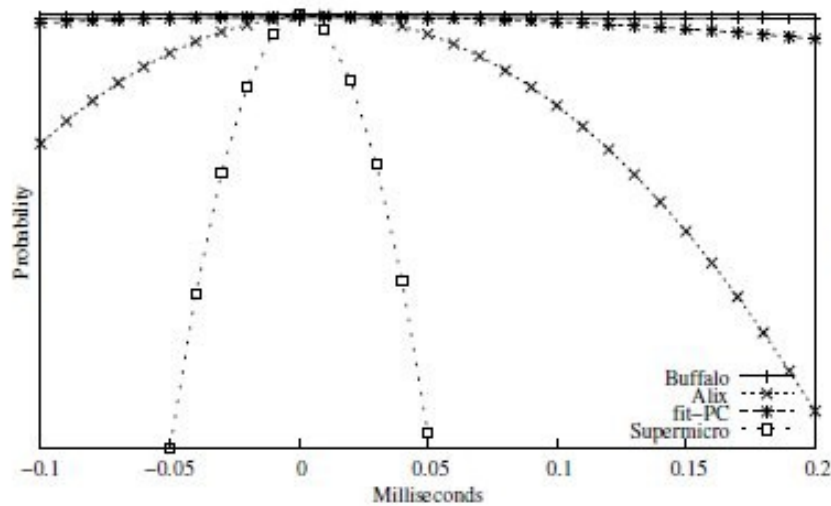
Measurements poll pdf



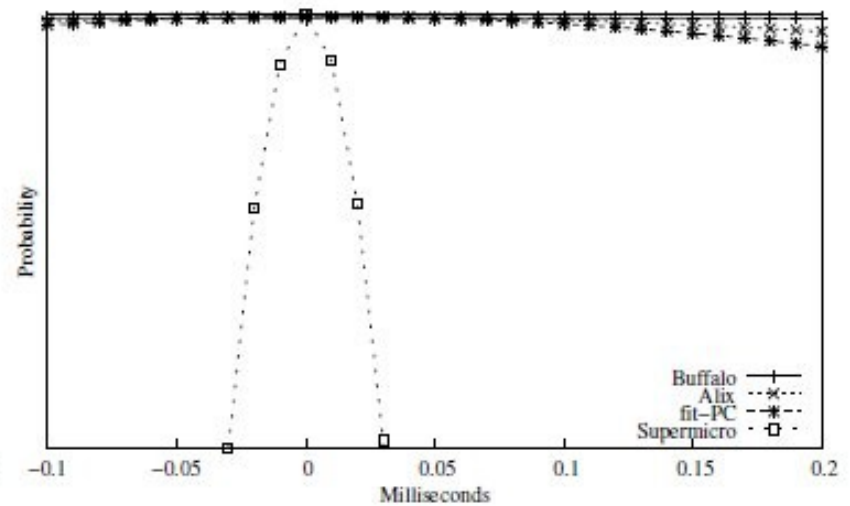
(a) 1 s



(b) 100 ms

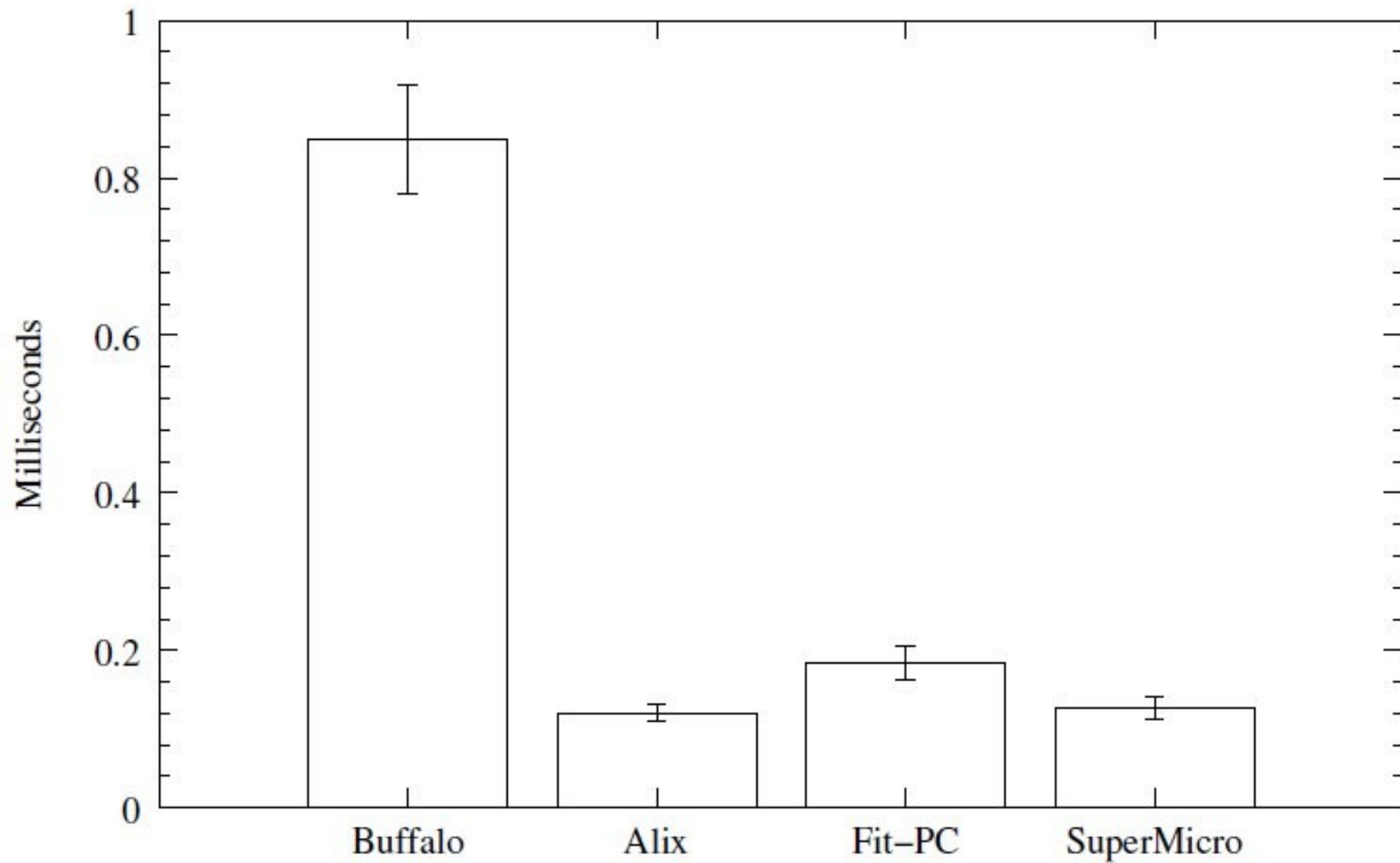


(c) 10 ms

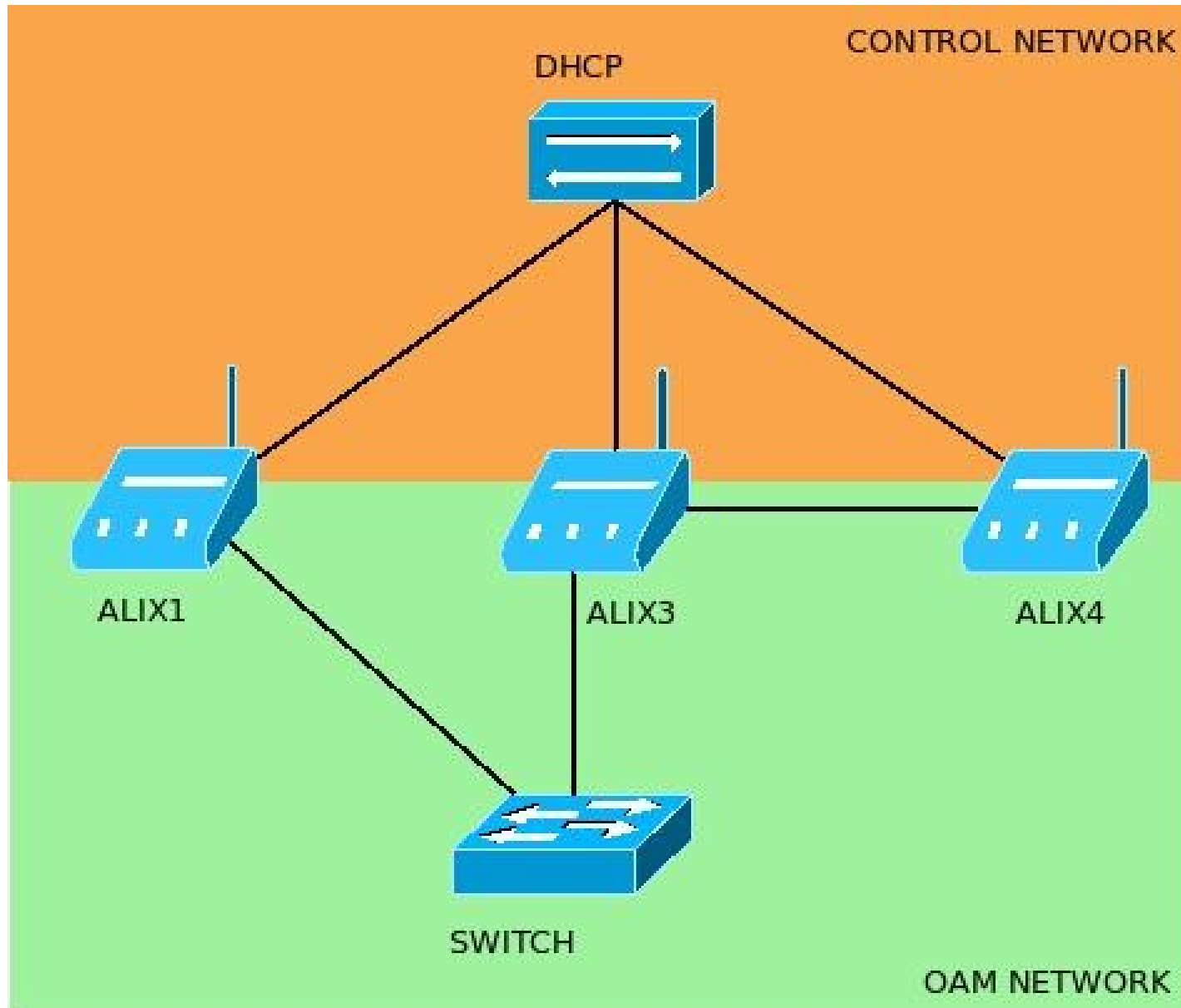


(d) 3.33 ms

Measurements MIP



Demo Setup



Demo

- Delay measurements
- Connectivity loss

Distribution

(added slide)

- Business partners get the code with MIT license from the repository to which they have given access to earlier
- Others get the code with GPLv3 license from *<http://www.cs.helsinki.fi/u/sklvarjo/y1731/>*

Thanks

Questions?

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