

Diffserv Recommendations for LLN class of traffic

<http://www.ietf.org/id/draft-svshah-lln-diffserv-recommendations-01.txt>

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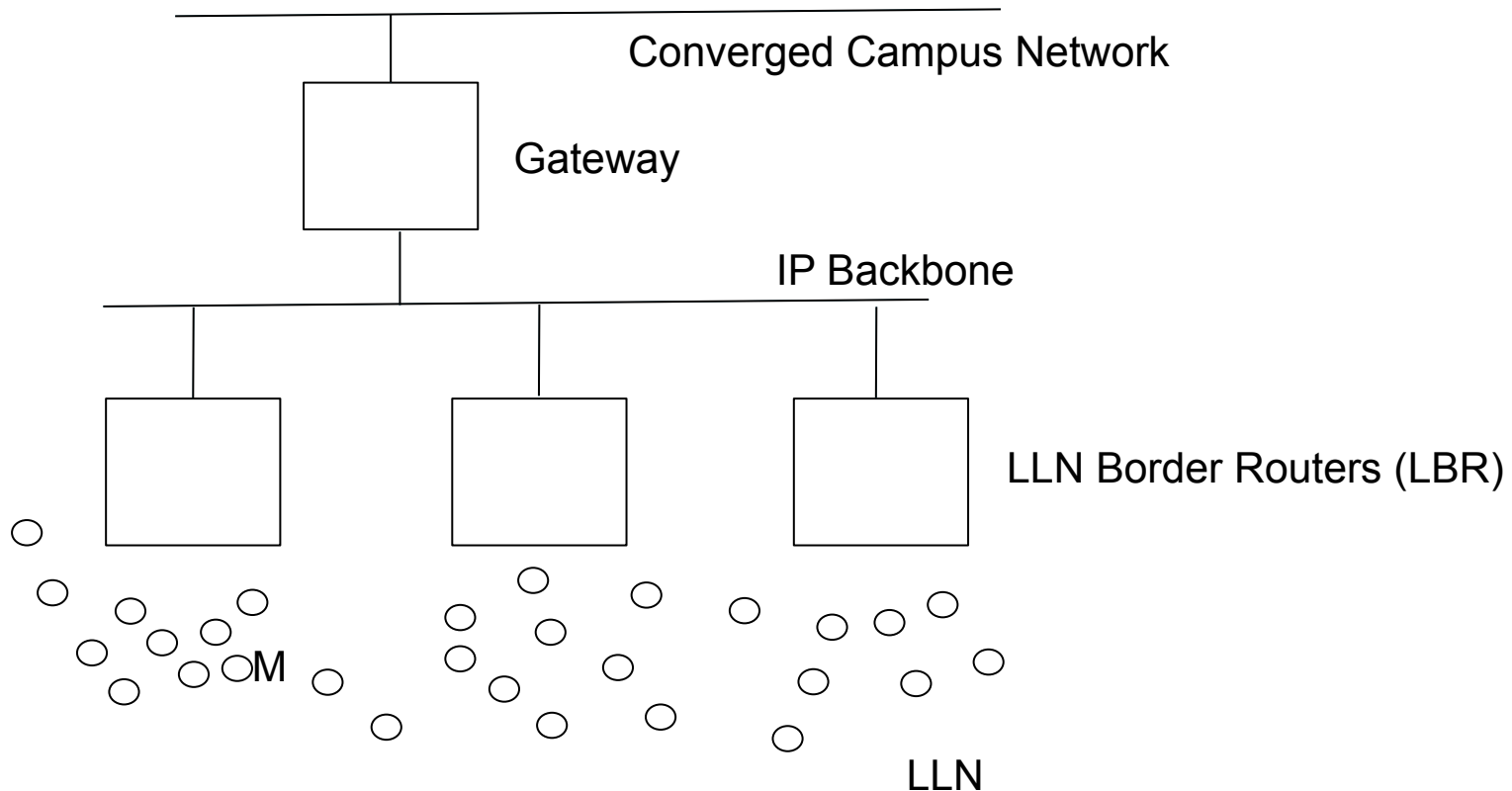
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Topics

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Brief on LLN

- LLN – Low Power and Lossy Networks (aka M2M, IoT)
- Examples – Industrial automation, Home automation, Building automation, Urban automation etc
- Growing in large numbers
- Including with a requirement of traffic over IP back bone, over converged campus network



Motivation

- RFC4594 has well documented recommendation for traditional class of traffic (eg. Media-oriented traffic)
- RFC is not clear for LLN class of traffic
- *Categorize LLN Traffic Classes*
- *Taking 4594 as a reference, define explicit recommendations for LLN traffic classes*

Scope

- Traffic from LLN Border towards IP Backbone, converged campus network
- Source nodes (or application gateways) to mark appropriate dscp code-point
- Traffic in the Reverse direction
- Due to physical constraints and unique characteristics, LL Networks themselves may require other considerations for per-hop forwarding/behavior

LLN Traffic Classes

Traffic Class Name	Traffic Class Characteristics	Tolerance to		
		Loss	Delay	Jitter
Alerts/alarms	Packet size = small, Rate = typically 1-few packets Short lived flow, Burst = not bursty	Low	Low	N/A
Control Signals	Packet size = variable, typically small, Rate = few packets Short lived flow, Burst = none to some-what	Low	Low	Yes
Low latency closed-loop control signals	Packet size = variable, typically small, Rate = few packets Short lived flow, Burst = none to some-what Latency/Jitter sensitive	Low	Very Low	Low
Video monitoring/feed	Packet size = big, Rate = variable Long lived flow, Burst = non-bursty	Low	Low – Medium	Low
Query-based data	Packet size = variable, Rate = variable Short lived elastic flow, Burst = bursty	Low	Medium	Yes
Periodic reporting/log, Software downloads	Variable packet size, rate burst	Yes	Medium - High	Yes

Proposed Recommendation

- Alert Signals CS5
- Control Signaling CS5

(only for latency sensitive?

or for all important ones to distinguish it as a different service class?)

- Low latency closed-loop control-signals EF ?

(incl. jitter sensitive)

- Video broadcast/feed CS3
- Query-based data AF2x
- Assured monitoring data (high throughput) AF1x
- Best effort monitoring, periodic reporting BE

Deployment scenario (Industrial Automation)

Safety

- Class 0: Emergency action : It is expected to use other tightly managed method outside of IP networks

Control

- Class 1: Closed-loop regulatory control EF
- Class 2: Closed-loop supervisory control CS5
- Class 3: Open-loop control CS5

Monitoring

- Class 4: Alerting - Short-term operational effect AF2x
- Class 5: Logging and downloading /uploading AF1x/BE

Next Steps

Questions?