

Solutions for P802.1Qbz / P802.11ak: Unreliable links

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Version 1

Introduction

- This presentation is available at:
<http://www.ieee802.org/1/files/public/docs2012/bz-nfinn-soln-unreliable-links-0113-v01.pdf>
- It attempts to answer one of the questions raised by:
<http://www.ieee802.org/1/files/public/docs2012/bz-nfinn-pt-to-pt-problem-list-1112-v02.pdf>

Wireless links are dynamic

- Wireless links can come up and go down frequently.
- Wireless links can vary in speed over short time frames.
- Stations can go to sleep for a while to conserve power.
- Wireless stations can be mobile.
- **Bridges** were invented to use wired connections that do **none** of the above.

Link availability

- You cannot have a bridge-to-bridge link flapping; frequent topology changes will keep the topology control protocols in turmoil, and disrupt connectivity throughout the network.
- Bridge-to-end-station link flapping is a local matter, and causes no serious network problems.
- Heuristics must be applied to prevent bridge-to-bridge link flapping—A flapping link is presented to the network as either:
 - Always present, which causes frame loss if the outage lasts too long; or
 - Always absent, which prevents the link from being used, and perhaps partitions what was intended to be one network.
 - Pick your poison and drink heartily!

Link speeds

- Similarly, the network cannot be updated as link speeds change. A single speed should be chosen, and left alone, unless (perhaps) the heuristics indicate that it is stable in the long term.
- All wireless links are represented to the network protocols as being very slow, so that the network will always prefer wired links, where connectivity permits.

Notes on heuristics

- If an unreliable wireless link must be used to achieve connectivity, then connectivity is unreliable. This is a fact, no matter what bridging or routing technology is used.
- The parameters controlling whether an unreliable link is considered up or down certainly will be managed objects; further study is required to find good default values, and to determine whether automatic algorithms can adjust them.