AODVv2

Charlie Perkins
Stan Ratliff, John Dowdell

IETF89 London
5th March 2014

Overview

- Implementation status on RIOT
- Implementation status on Linux
- Issues raised
- Source code sharing
- Next steps

Implementation Status

- RIOT
  - "The friendly Operating System for the Internet of Things."
  - http://www.riot-os.org/
  - Easily portable to Linux

- Implementation of AODVv2 at Freie Universität
  - Code is now running on RIOT
  - RIOT user space has direct access to kernel

- RFC 5444 parser (Henning Rogge's oonf api)

- RREQ, RREP relatively stable

- ND and RERR packets implemented

Linux implementation status

- Kernel interface via /dev/net/tun
  - Spent a long time messing with netlink interface
  - tun/tap uses a restricted set of ioctls
- Will use RFC 5444 code from RIOT (oonf api port)
- Currently building on Ubuntu
  - Hope to run on many modern versions of Linux

References for RIOT implementation

- detailed list of implemented parts
  - https://github.com/Lotterleben/RIOT-AODVv2/blob/master/docs/aodvv2_minimal.txt
- RIOT
  - https://github.com/RIOT-OS
- OONF API
  - http://olsr.org/git/?p=oonf_api.git
- Soon: DES testbed experiments
  - http://www.des-testbed.net/

Deletion of AddedNode feature

- Was included originally for compatibility with DSR

- Later experiments failed to show clear benefits

- Deletion affords significant simplification of protocol specification

- Can easily be added as an optional feature remaining compatible with base specification

Other recent changes

- Inclusion of the OrigNode's SeqNum in the RREP message is no longer specified.
- Numerous editorial improvements and terminology made more consistent
- Example RREQ and RREP message formats shown in the Appendices were changed to use OrigSeqNum and TargSeqNum message TLVs instead of using the SeqNum message TLV.
- Additional acknowledgements were included, and contributors names were alphabetized.
- Definitions in the Terminology section capitalize the term to be defined.
- Uncited bibliographic entries deleted.
- Ancient "Changes" sections were deleted.

Recent issues raised

- Idle routes must be marked as active after use
- Route termination time issue, keeping timed routes in route table instead of expunging

Sharing

- Github and bitbucket repositories set up
- RIOT nearing suitability for general availability
- Linux code needs too much work to distribute yet
- If interested, please contact me for more information.
- Open source available after it's working.

Next Steps

- Resolve remaining open issues
- Finalize RIOT code
- Complete Linux/Ubuntu code (at least a month)
- NS-2 / NS-3 Simulation

Future work

- MPR integration (or other CDS)
- Possible integration with AODV-UU code
  - Run AODVv2 and AODV in same network…