Status – NEMO Route Optimization for Aeronautics

- Draft being worked
  - NEMO Route Optimization Requirements for Operational Use in Aeronautics and Space Exploration Mobile Networks
    - (Will be named “draft-eddy-nemo-aero-reqs” when submitted in April)
    - Authors: Wes Eddy, Terry Davis, Will Ivancic
  - Expected to be submitted by mid-April if not sooner
  - RO needs being considered are between air and ground
    - Critical communications is air traffic control (safety-of-flight/life).
    - Revenue generation is potentially passenger services
  - Current approach is to include Route Optimization and multi-homing (monami6) issues in single document
    - (Desire feedback on this approach)
    - Allows one document to be referenced to simplify ability to educate implementers of the aeronautic community’s needs
    - RO solutions that do not work with multi-homed systems will not meet aeronautics needs.

Route Optimization Requirements – NEMO Route Optimization for Aeronautics

- Route Optimization (NEMO)
  - MUST NOT imply a single point of failure, whether that be a single MR, or point within the ground network. (Availability)
  - RO decisions MUST be authenticable. (Security)
    - There is some question on whether or not this should be done with IPsec or some other mechanism
  - New applications, potentially using new transport protocols or IP options MUST be possible with a RO scheme. (Adaptability)
- Potential work areas
  - Multiple and globally distributed Home Agents
    - Example is Global HAHA, but we do not want to assume a solution at this point

Multi-Homing Requirements – NEMO Route Optimization for Aeronautics

- MUST allow an MR to be simultaneously connected to multiple access networks, having multiple Care-Of Addresses in a MONAMI6 context. (Multihoming)
- MUST allow for policy-base routing
  - Enables safety-of-life, safety-of-flight critical data over approved links.

Relevant Documents – NEMO Route Optimization for Aeronautics

- NEMO RO Problem Statement
  - Sub-Optimality with NEMO Basic Support
    - Longer route leading to increased delay
    - Increased packet overhead
  - Not overly concerned with Nested MRs
- Network Mobility Route Optimization Solution Space Analysis
  - Non-Nested NEMO Route Optimization
  - Infrastructure based Optimization
  - Issues of NEMO Route Optimization
    - Additional Signaling Overhead
    - Increased Delay during Handoff (although this may be more an issue for nested MRs)
  - Security Considerations

Deployment Considerations – NEMO Route Optimization for Aeronautics

- Bandwidth
  - Current Aeronautics system have extremely low bandwidth.
  - For the foreseeable future, operating over limited bandwidth is a constraint.
  - There is a strong desire that the RO solution have as little signaling overhead as reasonably possible.
- Security
  - It should probably be noted in the security section that some security deployments are likely to undo route optimization
    - Traditional IPsec VPNs will likely remove all route optimization
    - Application layer security may be a better choice.