T-110.551 Topics

Sami Vaarala, 20.1.2004

- Common references and sources of information
  - MIP4 working group: http://www.ietf.org/html.charters/mip4-charter.html
  - IPsec working group: http://www.ietf.org/html.charters/ipsec-charter.html
  - MIP4 and MOBILEIP (previous Mobile IPv4/Mobile IPv6 working group) mailing list archives (see WG home pages)
  - RFC 3344 (and others) for Mobile IPv4
  - RFC 2401, 2402, 2406, 2407-2409 (and others) for IPsec
  - Internet-Draft search: http://www.watersprings.org
  - RFC search: http://www.rfc-editor.org
- Tutor contact
  - e-mail: sami.vaarala <at> hut.fi

Topic: Mobile IPv4 and IPsec in enterprise use

- **Background** – IETF MIP4 WG is working on a profile of IPsec and Mobile IPv4 combined use in enterprise scenarios. This work assumes minimal changes to MIPv4 and IPsec, thus resulting in some inefficiencies in the proposed solution.
- **Goal** – Describe how the proposed solution could be optimized if one assumes that both MIPv4 and IPsec specifications can be changed substantially.
  - Examples of what could be optimized: authentication, number of encapsulations, connection setup overhead, packet overhead
  - Limit the scope of your paper by selecting some particular optimization(s)
- **Difficulty** – Easy to intermediate
- **References**
  - Problem statement
    - http://www.ietf.org/internet-drafts/draft-ietf-mip4-vpn-problem-statement-00.txt
  - Base draft
    - http://www.ietf.org/internet-drafts/draft-ietf-mobileip-vpn-problem-solution-03.txt

Topic: Integrating Mobile IPv4 and IPsec authentication

- **Background** – Mobile IPv4 and IPsec are useful technologies for enterprise deployments. However, they both require separate management, authentication, etc, which makes deployment more difficult and costly than it needs to be.
- **Goal** – Describe existing MIPv4 and IPsec authentication mechanisms, and the building blocks which could be used to combine them (e.g. EAP, PKI). Select some particular approach, and conclude with a (high level) proposed way to do the combination.
- **Difficulty** – Intermediate
- **References**
  - IPsec and Mobile IPv4 base documents
    - RFCs 3344, 2401, 2407-2409, and related
  - Legacy authentication for IKEv1
    - http://www.watersprings.org/pub/id/draft-ietf-ipsra-pic-06.txt
    - Mode config, hybrid, xauth (www.watersprings.org), legacy authentication also in use
  - IKEv2
    - http://www.ietf.org/internet-drafts/draft-ietf-ipsec-ikev2-12.txt
  - Mobile IPv4 AAA
    - http://www.ietf.org/internet-drafts/draft-ietf-mip4-aaa-key-01.txt
    - http://www.ietf.org/internet-drafts/draft-ietf-aaa-diameter-mobileip-15.txt

Topic: Mobile IPv4 high availability

- **Background** – Mobile IPv4 introduces a single point of failure (the Home Agent); single points of failure are undesirable in large scale enterprise environments. Thus some sort of high availability mechanism may be needed in practice.
- **Goal** – Describe existing mechanisms which could be used to achieve high availability, e.g. the virtual router concept (VRRP), home agent redirection mechanisms (as described in the MIP4 list lately), and other relevant technologies. Describe differences in the mechanisms related to some set of criteria (e.g. impact on active IP connections, failover time, etc). Analyze remaining needs and suggest future work.
- **Difficulty** – Intermediate
- **References**
  - http://www.ietf.org/internet-drafts/draft-ietf-mip4-dynamic-assignment-00.txt
  - RFC 2338