TAHI IPv6 and IPsec test suites

Mar 7, 2000, Connectathon 2000
Hiroshi HOSHINO
TAHI Project
http://www.tahi.org/
Introduction

- TAHI Project: Objectives
- Activities of TAHI
- IPsec IPv6 conformance test
TAHI Project: Objectives

- Developing verification technology for IPv6 and IPsec
  - conformance test suites
  - interoperability test suites
- Cooperating with KAME and contributing quality improvement of IPv6 implementation
- Making our test suites freely available
Activities of TAHI

• Conformance test
• Interoperability test
• Other activities of TAHI
Conformance test suites spec.

- **Test coverage**
  - IPv6 basic spec / Neighbor Discovery / Address autoconf / PathMTU / ICMPv6 / IPv6 over IPv4 tunnel / IPsec IPv6
  - over 200 (6hours) tests for host and for router

- **Automated verification**

- **Generating HTML based test results and log**
Interoperability test suites

- Test scenarios
  - for host: IPv6 basic spec
  - for router: RIPng, BGP4+
- Test tools
  - packet analyzer, traffic generator
- http://www.tahi.org/inop/
Other activities of TAHI

- Test report
  - KAME (by monthly)
  - Microsoft Research IPv6 (1.4 beta)

- Interoperability test event in Japan (Sep, 99)
  - 3com, Cisco, Ericsson, ETRI, GAYDYADE, IMAG, Microsoft, Toshiba, Hitachi, NEC, Fujitsu, Matsushita, Yamaha, NTT Software, PFU, TITECH, Linux v6
  - Provided the overview of the test results to IESG
IPsec IPv6 conformance test
IPsec test spec.

• Test coverage
  – AH or ESP, Transport-mode for a host or Tunnel-mode for a router

• Test examples
  – AH with HopByHop/Dest. Options header
  – ESP padding, ESP with ICV
  – fragmented packet with AH or ESP

• About 50 tests for AH, 50 tests for ESP
IPsec test spec.

- Requirements to a target implementation
  - IPsec ICMPv6 echo request and reply
    (no test with UDP, TCP)
  - off-link IPsec communication with Global address
    (no test with link-local address)
  - manual key management
    (no test with IKE)
  - IPv6
    (no test with IPv4)
Experience with IPsec test

- Test for KAME (fbsd228+kame stable 20000214)
  - 97/100 tests result “PASS”
You are welcome

- You are welcome to ask me for testing your implementation in this event
- Demonstration is available in our booth
- My booth: KAME PROJECT 403
Contact points

- Contact point
  - contact@tahi.org
  - http://www.tahi.org/

- Any feedback is welcome
- Future plan being discussed
The End
Conformance • Test • System • Architecture

TN: Tester Node
NUT: Node Under Test

Conformance Test
Packet def
Test Sequence
Remote Ctrl

Test Tool

OS
Network I/F

Physical Network
Element of the conformance test suites

- **Hardware**
  - IBM PC
    - CPU: AMD-K6 200MHz  Memory: 128MB
    - Network I/F: Ethernet, 10/100BaseT

- **OS**
  - FreeBSD2.2.8, 3.2, 3.3, 3.4

- **Conformance Test Tool**
  - C++ and Perl5  (25,000 + 5,000 step)
  - OpenSSL0.9.2b

- **Conformance Test**
  - Perl5 and original packet definition language
    (40,000 + 30,000 step)