HIP-RG meeting, IETF60

Review of HIP-RG charter and workplan

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Agenda

- Administrivia/Agenda — Tom Henderson (5 minutes)
- Review of HIPRG charter and work plan — Tom Henderson (15 minutes)
- HIP native API — Laganier/Komu (15 minutes)
  - http://hipl.hiit.fi/hipl/hip-native-api-snapshot-20040708.pdf
- HIP over Network Address Translators — M. Stiemerling (15 minutes)
  - draft-stiemerling-hip-nat-01
- HIP rendezvous concepts — L. Eggert (15 minutes)
  - draft-eggert-hip-rendezvous-01
- Layered Naming Architecture for Internet
  - http://www.acm.org/sigs/sigcomm/sigcomm2004/papers.html#A_Layered_Naming
  - Combining HIP and i3 — K. Lakshminarayanan (10 min)
  - Flat Names in a Delegation-Oriented Architecture — M. Walfish (10 min)
- Host Identity Indirection Infrastructure (Hi3) J. Arkko (20 minutes)
  - draft-nikander-hiprg-hi3-00.txt
- Open mike

What is HIP?

- HIP is a specific proposal to separate host identifiers from locators (IP addresses) in the Internet architecture
  - context establishment to establish security associations that are agile across different locators
  - identifiers are cryptographic (public keys) and may either be well-known or anonymous

- See http://hip.piuha.net for HIP drafts

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Why HIP-RG?

- HIP, or other identifier/locator separation, in the Internet architecture have possibly broad implications
- HIP WG formed to finalize basic specifications for initial interoperability (experimental RFCs)
  - Base specification and SA updates
  - (host) mobility and multihoming extensions
  - DNS resource records
  - Basic rendezvous server
- HIP RG formed to study the longer-term issues

HIP-RG basics

- Officially approved in June 2004
  - BOF-style RG meeting in Seoul
- Chairs:
  - Pekka Nikander (pekka.nikander@nomadiclab.com)
  - Tom Henderson (thomas.r.henderson@boeing.com)
- Open-participation research group
- Meetings coincide with IETF meetings
- Open mailing list:
  - http://honor.trusecure.com/mailman/listinfo/hipsec-rg

HIP-RG charter

- "Study proposed HIP protocol and architecture, including effects on the Internet"
- Study consequences and effects of wide scale adoption of any type of separation of identifier and locator roles of IP addresses

- Not within scope to debate whether separation is a good thing
  - analysis of drawbacks of this potential separation are valid, however

Sample research issues

- Comparisons of HIP with other identifier/locator separation mechanisms
- Comparisons of HIP with other mobility and multi-homing mechanisms
- Studies of how HIP might change Internet traffic patterns
- Studies of privacy and security effects that HIP may have

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Sample research issues (cont.)

- Studies and prototype designs of additional mechanisms, such as:
  - mechanisms for referrals using HITs as host identifiers
  - mechanisms for security policy control using HITs
  - mechanisms for HIT-based overlay routing
  - mechanisms for HIT-based firewalls and NAT devices
- Studies of how HIP might help with other current IETF design tasks, such as mobile networks (NEMO), multicast and anycast.
- Development of other identifier/locator separation mechanisms besides HIP

From mailing list recently

- Ability of busy HIP server to shed load (and how to secure this mechanism against attack)
- Puzzles with more “egalitarian” work functions than hash-matching (e.g., memory-bound computations)
- HIP and multi6 relationship
- Long-term API for HIP
- DHTs with constant time performance (Cornell Beehive/CoDoNS projects)

Research group output

- "Experiment Report", documenting the collective experiences, experiments, and designs completed by the research group
  - Initial version: 2Q 2005
  - Final version: 2Q 2006
- Questions within scope:
  - How does HIP compare with other mechanisms?
  - Is an identifier/locator split architecturally sound? What are the negative effects?
  - Do the initial (experimental) HIP specifications need any changes?

Background reading

- Name Space Research Group (NSRG) final report
- Multi6 architecture (draft-ietf-multi6-architecture-00.txt)
- HIP architecture and other drafts

Last RG/BOF meeting (Seoul)

(see proceedings for more detail)

- summary of other projects
  - NewArch, DTNRG, Ambient Networks, Daidalos
- advanced rendezvous server concepts
- NAT traversal
- Lightweight HIP (HIP without IPsec)
- Common Endpoint Locator Pools (CELP)
- Referrals and distributed hash tables (DHT)
- HIP overlays using any server as rendezvous point

Straw polls from last RG meeting

- Should we continue to work on full blown non-HIP supporting proxies?
  - Yes. Transition mechanisms are an important issue.
- Should we continue to work on NAT traversal?
  - Yes, but unclear how.
- Should we continue to work on the Lightweight HIP idea?
  - Yes (large interest).
- Should we continue to work on CELP?
  - Yes (some interest).
- Should we continue to work on DHT/overlay ideas?
  - Yes, but unclear where to focus.
- Any additional important areas that we missed?
  - Applications

Next steps

Experimentation

Wanted:

i) good, openly available software

- volunteers to port/update existing software also wanted

ii) participants to host HIP services in the public v6/v4 Internet

- HIP servers (http://hipserver.mct.phantomworks.org)
- HIPpified DNS
- Rendezvous servers

iii) people to try using HIP regularly

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Report outline

- Outline of experiment report within next month
  - Based on initial RG meetings, HIP open issues, related research papers
  - Bibliography of various HIP and ID/locator split-related previous work