Naming Architecture for Object to Object Communications
<draft-lee-object-naming-00.txt>

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Contents

- History of previous document
- E-mail discussions since last meeting
- Overview of object naming document
  - Key concept
  - Layered architecture for identity processing
  - Object mapping – extension of stack architecture
  - Conceptual diagram for providing connectivity to objects
- Issues for object naming
- Next steps
History of previous document

- Previous document (HIP extensions for object to object communications)
  - 1st presentation, Dublin meeting (00 version)
    - Presented the necessity of object to object communications
  - 2nd presentation, Minneapolis meeting (01 version)
    - Introduced ITU-T’s activities
    - Discussed several technical issues including security
  - 3rd presentation, San Francisco meeting (02 version)
    - Specified protocols for HIP extension
E-mail discussions since last meeting

- **Future work on naming objects in HIP**
  - Two possible solutions for RG item
    - Pick up one or both of the existing drafts and work on them as RG documents
    - Work on a more broadly scoped informational document
  - Discussion results
    - Agreed that the topic is interesting
    - Decided to create a new internet-draft on the object naming which concentrates more on conceptual requirements and architecture

- **Develop a new high-level architectural document**
  - Naming Architecture for Object to Object Communications
Overview of object naming document

- **Object to object communications (ubiquitous networking)**
  - New types of objects connected to the network for enabling the use of various communication services
  - Each object delivers information using network with/without the help of humans. (e.g., sensor networking, etc)

- **Objective**
  - Connecting to anything using object identification
    - Protection of object (including right management)
    - Service and location discovery
  - Protocol development for object naming
Key concept

- Communications with objects through Internet

Objects:
- Personal Devices: PC, Phone, PDA, TV, Camera
- Info. Devices: Server, Database, Navigation, Meter
- RFID/Sensors: RFID tag, e-tag, Smart card
- Contents: Audio, Video, Doc, Book
- Appliances: Home, Office, Medical, Surveillance
- Transportation: Car, Train, Airplane

Providing connectivity

Internet
Layered architecture for identity processing

Identity Processing

- User Name (Attributes)
- Object IDs (Physical & logical IDs)
- Communication IDs
- Identification/Authorization
- Mapping/Binding

Identifiers

- Logical identities for services
- RFID, Content ID, Telephone number, URL/URI, etc
- Session/Protocol ID
- IP address
- MAC address
Object mapping – extension of stack architecture

(a) Direct mapping (Object in a host)

(b) Indirect mapping (remote objects)
Conceptual diagram for providing connectivity to objects

Host (e.g., server)  
Object (e.g., content)  
IP address  
Gateway  
non-IP interface  
IP interface  
Internet  
Object (e.g., device, product, sensor, etc)  
Identifier for object  
Mapping  
Binding  
IP Address  
Global Connectivity with Internet
Issues for object naming

- **Detailed requirements**
  - How to identify all of objects
  - How to support security

- **Architectural aspects**
  - Extensible to all of objects
  - Interoperable with a new naming/addressing architecture (e.g., ID/LOC splits)

- **Alternative protocol solutions**
  - Reuse existing protocols (e.g., extension of HIP)
  - Develop a new protocol (e.g., object identity protocol)
Next steps

Proposals

- Adopt as Research Group Item?
  - We already have consensuses on importance of this topic through e-mail discussion
- How to develop this document?
  - Officially make a design team for more progresses

Update the document

- Inputs from feedbacks and comments using mailing list
- Inputs from experts/design team of HIPRG