SIP for Light Bulbs
Using SIP to Support Communication with Networked Appliances

draft-moyer-sip-appliances-framework-00.txt

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SIP for Light Bulbs...

- What’s the problem?
- Why use SIP?
- Using SIP for Networked Appliances
- What’s next…
What is a Networked Appliance (NA)?
(aka: Internet Appliance or IP Appliance)

Networked Appliance: n. A dedicated function consumer device containing a networked processor.

Examples:

- Lamps
- Coffee Makers
- Alarm Clocks
How are NAs communicated with?

- Directly;

- Indirectly;
Networking Appliances Today...
A Multitude of Devices and Technologies...

X.10
VESA home n/w
Home P’n’P
UPnP
Jini
HAVi
Issues accessing into the home...

1. Addressing & Numbering

Where’s Simon’s bedroom lamp?

RGW/NAT/ Firewall

Home.simon.net (public)

Appliance Controller (X.10)

B0 (X.10)  B1 (X.10)

1.13.1.1 (Private IP)

Home.simon.net (public)

192.178.56.2 tv.home.simon.net (Public IP)

Where’s Simon’s bedroom lamp?
What protocol Should I use to communicate with the Appliance?

Issues accessing into the home...

2. Control Protocols/Interfaces
Accessing Appliances from the wide area...

- Different communications paradigms:
  - Media streaming ("sessions")
  - Control ("Instant Messaging")
  - Queries (e.g., of device state)
  - Asynchronous events (notification)
- Imposes additional requirements of **security** and **privacy** on the communication into the home.
- Requires identification of the device within the home that the message is intended for, and cannot rely upon DNS to achieve this.
- May require many different device communication languages to be used.
- May have to work through a firewall or NAT type device.
- Cannot assume transparent IP numbering.
Accessing into the home...

Corporate Intranet → Internet → Mobile network

Internet → Any data network!

Outside World → Protection → In Home

Internal LAN

RGW

Appliance Controller

Firewall/NAT

Corporate Intranet

Mobile network

Any data network!
Use **SIP** to meet the requirements for access to devices from the wide area.

This allows re-use of the infrastructure that has been constructed for SIP in a **whole new domain**.
Using SIP to Access Into the Home...

Corporate Intranet

Internet

Mobile network

Any data network!

Outside World

Protection

In Home

SIP

SIP

SIP

SIP

SIP Proxy

SIP UA

SIP UA

SIP UA

SIP UA

SIP UA

Appliance
Controller

Telcordia Technologies
Our Proposed Usage for Supporting NAs...

**Issue:** SIP is a session protocol, it transports in the context of a session that is established (e.g. INFO).

- Leverage IM work and use the method called **MESSAGE**, which behaves similarly to **INVITE**, but does not explicitly set up a session - it simply delivers its payload to the UA and carries back the response.
- Also need IM **SUBSCRIBE** and **NOTIFY** methods

**Issue:** How to address devices.

- Encode a hierarchical device naming scheme (e.g., SLP URL) to left of “@” sign in To: field.
- Encrypt encoded address to ensure privacy.
- Example: slp:/d=lamp,r=bedroom,u=stsang

**Issue:** SIP traditionally carries SDP payload.

- Need to define new payloads (==new MIME types) which can carry the information required to excite NAs and which can carry responses back to the originator.
- Propose a Device Messaging Protocol (DMP) MIME type
SIP Extensions in Action... Controlling an Appliance (Lamp)...

MESSAGE [slp:d=lamp,r=bedroom,u=simon]@simon.home.net
To: [slp:d=lamp,r=bedroom,u=simon]@simon.home.net
From: smoyer@mypc.company.com
Content-type: application/dmp
<xml><command>ON</command></xml>
What’s Next...

- Revise Framework I-D
- Additional detailed Internet Drafts
  - Device addressing conventions/practices
  - New Payload - Device Message Protocol (DMP)
  - REGISTER Payload – Device Description Protocol (DDP)
  - SIP Security for Appliances
- Seek collaborations/partners
- Develop prototypes of SIP_{Appliances} components and demo
- Participate in next (Nov./Dec.?) bakeoff
- Continue to spread the word on SIP for Networked Appliances throughout the industry….
Thank You...

• Internet-Draft:
  draft-moyer-sip-appliances-framework-00.txt or
  ftp://ftp.telcordia.com/pub/world/stanm/ietf/draft-moyer-sip-
  appliances-framework-00.pdf
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