Web-based IoT standardization activity including OMA GotAPI and DWAPI

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Web-based IoT Standardization

- **W3C Web of Things WG**
  - WoT Architecture
  - WoT Thing Description
  - WoT Scripting API
  - WoT Binding Templates

- **oneM2M WG3(PRO)**
  - TS–0008 CoAP Protocol Binding
  - TS–0009 HTTP Protocol Binding

- **OMA Contents Delivery(CD)**
  - Generic Open Terminal API(GotAPI)
  - Device Web API(DWAPI)
  - Social Network Web–Social Web of Things(SWoT)
W3C WoT Servient

![Diagram of WoT Servient architecture]

- **WoT Servient**
  - **Client API**
  - **Server API**
  - **Discovery API**

- **Runtime Environment**
  - **Security Option**
  - **Scripting API**

- **Proprietary API**
  - **Legacy communication**
  - **Local Hardware**

- **Protocol Binding**
  - **Binding Template**
    - HTTP
    - CoAP
    - WebSocket
    - MQTT

- **Security and Privacy**
  - **Thing Description**

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oneM2M entities and HTTP Client/Server

Example oneM2M System Configuration

AE

MN-CSE (Registrar of AE)

IN-CSE

MN-CSE (Host of Resource)

HTTP Protocol Binding

Equivalent System With HTTP Binding

HTTP Client

HTTP Proxy Server

HTTP Server

Legend

Request (triggered by AE, arrow-head side provides service)
Response by server

Request (triggered by CSE, arrow-head side provides service)
Response by server

Actor
OMA GotAPI & DWAPI

- Supports PCH and 3DP

- DWAPI Common API
  - Service Discovery
  - One-shot Messaging
  - Asynchronous Messaging

- DWAPI–3DP Specific API
  - Service Connecting
  - Authentication
  - 3D Printing Command
Getting 3D model file of DWAPI-3DP

Application

GotAPI Server

Plug-In

Contents Server

(1) Send a HTTP request to start monitoring

(2) Pass the request

Plug-In Approval procedure (if needed)

(3) Returns the result

Action: "....RESPONSE",
{
   "requestCode": 10,
   "result": 0,
   "contentserver": [
      {
         "servicename":"3D Example Contents",
         "url":"www.3dexcont.com",
         "secureToken": "xyxyx",
      },
      ...]
}

In-scope

(4) Passes the result

http/GotAPI-1

Out-of-scope

(5) Send a HTTP request to get 3D model file list

Intent/GotAPI-4

Out-of-scope

(6) Returns the requested 3D model file list

(7) 3D model file works occurred between Application and Contents Server (e.g. selection, setting 3D printing options)
OMA DWAPI Status

- Updated ER and additional TS
  - Will be released within this year
  - Modified architecture and additional features

- Additional Features
  - Supports Remote Operation
  - Provides Secured Domain between external device (e.g. 3DP) and external server (e.g. 3D contents service)

- External Liaison
  - oneM2M WG5(MAS) device profile
DEMO

- EDIX 2017 (Educational IT Solutions Expo) Tokyo
- May 17th–19th, 2017 (Tokyo Big Sight)

ETRI

Download 3D model

Place (auto/manual) 3D models on printer volume

Preview printing information

Printing control & status monitoring

Mobile 3D Printing Process

Add-on board (Raspberry Pi)
Спасибо! 谢谢! 감사합니다.

Pěkně děkuji. Danke schön! Thank you!

Merci beaucoup. Muchas gracias.

ありがとうございます。

ขอบคุณครับ. Terima kasih.

Талархлаа. Cảm ơn chì.

अतिकृतत्व होना Hálás vagyok.