Accelerating the Internet of Things: The oneM2M App-ID Registry

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Agenda

oneM2M Introduction

Application Identifier (App-ID)

Application Identifier (App-ID) Registry

Q&A
oneM2M Introduction

What is oneM2M

Goals

Architecture Overview (High Level)
About oneM2M

Standard Development Organizations
Service Providers
Educational and Research Institutes
Policy/Governmental Bodies
Device Vendors
Software Developers
oneM2M Goals

- Advance Global M2M and IoT Adoption
- Common M2M Service Layer Framework
- Industry and Vertical Agnostic
Fragmentation and Silos

**Apps**
- Remote & on vehicle
- Mobile, telematics & Embedded platforms
- Security & Remote Control
- Home Management
- Wellness & diagnostic Fitness Tracker Apps
- Open Healthcare
- Energy use & monitoring
- Smart grids, ETP GridControl platform

**Middleware**
- Monitoring centers, real time traffic, weather data systems
- Home gateway middleware
- Patient Info data warehouses, SaaS
- Service oriented middleware

**Device**
- Smart dashboards, OBD-II Devices, In-vehicle Cameras
- Home alarm, temperature sensors, electronic locks, garage door openers, smart lights
- Pace makers, glucose meters, heart rate monitor
- Smart utility energy meters
Interoperability Across Verticals – oneM2M
oneM2M Common Services Layer

- Registration
- Discovery
- Security
- Data Management and Repository
- Device Management
- Group Management
- Communication Management / Delivery Handling
- Service Charging and Accounting
- Location

Application Layer

Network Layer

Existing Platforms

Source: oneM2M Common Services Framework
oneM2M Architecture Configurations

- **AE**: Application Entity
- **CSE**: Common Services Entity

**Infrastructure Domain**
- **Infrastructure Node**
- **IN-CSE**

**Field Domain**
- **Middle Node**
- **CSE**
- **AE**

Source: Dr. Josef Blanz - Qualcomm
Agenda

Application Identifier (App-ID)
Application Identifier (App-ID)

- Definition
- Usage
- Example
Application Identifier (App-ID)

- An Application Identifier (App-ID) uniquely identifies an application within a oneM2M Service Provider network.

- App-ID comes in two variations:
  - Registered: assigned by Registration Authority
    - Guaranteed to be globally unique
    - Format¹: R<registration authority>.<reverseDNS>.<appName>
  - Unregistered: assigned by the Developer
    - Not guaranteed to be globally unique
    - Format: N<any-string>

Temperature Monitor Application
App-ID: Ra1.com.abcd.tempMonitor

Light Control Application
App-ID: NlightController

¹ Registered App-ID format proposed in oneM2M Release 2.0
App-ID vs Application Entity ID (AE-ID)

- App-ID uniquely defines the application running in the oneM2M environment
- AE-ID uniquely defines the INSTANCE of the application running in the oneM2M environment

Temperature Monitor Application
App-ID: Ra1.com.abcd.tempMonitor
AE-ID: C1234501

Light Control Application
App-ID: NlightController
AE-ID: C1234502

Temperature Monitor Application
App-ID: Ra1.com.abcd.tempMonitor
AE-ID: C1234503
App-ID Usage

Application Entity

CSE

Security
An Application Identifier (App-ID) uniquely identifies an application within a oneM2M system.

An Application Entity Identifier (AE-ID) uniquely identifies the instance of an application within the oneM2M system.
Common Service Entity <CSEBase>

- allowedAppIDs are used by CSEs to restrict applications from registering with the system
Temperature Monitor Application
App-ID: Ra1.com.acme.tempMonitor

<table>
<thead>
<tr>
<th>Certificate Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issued to: ABC Corp</td>
</tr>
<tr>
<td>Issued by: Certificate Authority Name</td>
</tr>
<tr>
<td>App-ID: Ra1.com.acme.tempMonitor</td>
</tr>
<tr>
<td>etc…</td>
</tr>
</tbody>
</table>
Example: Application Entity Registration

1. Security Association Establishment (optional)

2. Request (Create <AE>)
   (includes the App-ID value)

3. Determine the allowed App-ID/AE-ID-stem combinations from Certificate or Service Subscription Profile (allowedAppIDs)

4. Check if the App-ID/AE-ID-stem combination provided in the CREATE <AE> request is consistent with allowed combinations from Step 3

5. Response (Create <AE>)
   The <AE> resource is created and the Application Entity instance is now available for use
Unregistered App-IDs

• With unregistered App-IDs, a developer may self-assign an App-ID to their application

Company A Developer

Temperature Monitor Application
App-ID: NTempMonitor

Light Control Application
App-ID: NlightController
- Service provider configures their CSEs to allow
  - App-ID: NTempMonitor
  - App-ID: NlightController
As more developers join the M2M ecosystem, the chance that completely different applications have the same App-ID increases.

- **Temperature Monitor Application**
  - App-ID: NTempMonitor
- **Light Control Application**
  - App-ID: NlightController

**Company A Developer**

**Company B Developer**

**Temperature Monitor Application**
- App-ID: NTempMonitor

**Light Control Application**
- App-ID: NlightController
Multiple Service Provider Domain View

Service Provider

Other Service Provider
App-ID Collision Between Domains

Service Provider

Other Service Provider

App-ID Collision occurs
Same App-ID but not the same application
There is an explosion of applications and services that need to interconnect and interoperate.
The Answer: App-ID Registry

- Uniquely identifying applications is necessary in an interconnected world.
Application Identifier (App-ID) Registry
App-ID Registry Overview

Globally Unique Software Identification

Standards-based Centralized Registry

Web-UI to Manage Data
App-ID Registry Timeline

- **July 2015**: oneM2M designates ATIS as Management Authority
  - ATIS designates iconectiv as Registration Authority

- **September 2015**: iconectiv develops the oneM2M App-ID Registry and launches a closed BETA to oneM2M members

- **December 2015**: The oneM2M App-ID Registry 1.0 version is released
During Steering Committee (SC) Meeting #25, SC identified ATIS as the initial App-ID Registry Management Authority (MA).
App-ID Registry Goals

- Identification of applications via globally unique ID’s
- Record and manage metadata of applications
- Promote exposure and discovery of applications
- Facilitate global data interoperability and communication between applications
Benefit of Registered App-IDs

• Every application is guaranteed to have a globally unique App-ID

Temperature Monitor Application
App-ID: Ra1.com.abcd.TempMonitor

Light Control Application
App-ID: Ra1.com.abcd.lightController

Temperature Monitor Application
App-ID: Ra1.com.xyz.TempMonitor

Light Control Application
App-ID: Ra1.com.xyz.lightController
Registered App-IDs in Multiple Domains

Service Provider

IN-CSE

CSE

CSE

CSE

Other Service Provider

IN-CSE

CSE

CSE

CSE

App-IDs are globally unique
No collision occurs
App-ID Registry Functional Architecture

- **App-ID Registry Database**
- **Registrar API**
- **iconectiv App-ID Registry Browser Interface (Registrar)**

**App-ID**
- Ra1.com.abc.tempMonitorApp
- Ra1.com.abc.lightSensorApp
- Ra1.com.xyz.heartrateMonitorApp
- Ra1.com.iconectiv.onem2m.helloWorld

**App-ID Registration**
- Developers

**App-ID Search**
- Service Providers, Solution Providers, oneM2M Community
App-ID Registry 1.0 Features

- **Developers** Register Unique App-ID code
- **Developers** Manage their App-IDs
- **Registry Users** Search and View App-ID Info
Access the App-ID Registry

Welcome to the oneM2M App-ID Registry Portal
This is the official portal for registering oneM2M App-IDs. For more information on this, please visit oneM2M web site. At this portal, you will be able to register App-IDs for your oneM2M applications, and deploy them in oneM2M compliant networks.

Get started today »

https://appid.iconectiv.com/
Getting Started with the App-ID Registry

1. **CREATE**
   your oneM2M App-ID Registry portal account

2. **SIGN IN**
   in to your account and access your account dashboard.

3. **CREATE**
   your organization (Registrant-ID)

4. **REGISTER**
   your App-IDs

5. **SEARCH**
   for App-IDs
Roadmap

- Discovery, Verification, Authorization, and Management APIs
- Application Version Tracking and other meta-data
- Integration with Security Infrastructure
- Support other oneM2M identifiers
- Developer Community Forum
Questions & Answers
Upcoming oneM2M Webinars

Enhancing oneM2M platform with semantics, why does it matter?

Dr. Mahdi Ben Alaya
CEO of Sensinov
Jan 28, 2016
Thank You!