Open Source and Industry Trends
Pivot Towards Open Source

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<thead>
<tr>
<th>Consumption</th>
<th>Contribution</th>
<th>Culture</th>
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- Consumption
- Contribution
- Culture
Open Source Adoption

Open Source Community

Community Teams

Internal Teams
Key Open Source Characteristics:

- No License Cost
- Vibrant Community
- Source Code Accessible

OPEN SOURCE
OS-IoT – ATIS Project on Open Source IoT
ATIS Advances oneM2M Adoption

- oneM2M is promoting the adoption of its standard and working to educate and equip developers to use it:
  - Training materials and developer guides
  - “Developers Corner” on oneM2M web site

- Testing framework, profiling and interoperability events to help deliver openness in the market

- Emerging ecosystem of implementations and tools
  - Open-source and proprietary
ATIS OS-IoT Project: Background

• ATIS member and industry survey highlighted a support need for simple clients:
  – Simple clients are required for many IoT applications (e.g., smart metering, smart city/transport, wearables)
• A portable, simple, open source oneM2M client framework would drive industry adoption and help improve the quality and security of IoT devices
• OS-IoT’s goal is to create a simple oneM2M Open Source client which can broaden and enrich the range of open oneM2M clients available
OS-IoT Client: Key Goals

• Simple “on-ramp” for developers to quickly develop common types of IoT clients based on oneM2M specifications

• Open source with commercial/industry-friendly licensing terms

• Highly portable across platforms

• Reference target is open-hardware and open-software embedded platform
OS-IoT Client: System Aspects

- Basis will be stable oneM2M Release 2 (with clarifications adopted from Release 3 where needed):
  - Will draw on the oneM2M Release 3 client profile work
- Support oneM2M client Application Service Node (ASN) or Application Dedicated Node (ADN):
  - Target basic sensor (thermometer) and actuator (door lock) applications
- oneM2M security support intended as part of early deliverables
- Initial release will assume IP network connectivity
OS-IoT Participation

- Open to both ATIS members and non-members
- Leaders and active contributors:
  - AT&T, Qualcomm, Huawei, InterDigital, and Linaro
- Other participants:
  - ARM, CenturyLink, Cisco, KETI, Nokia, and Sierra Wireless

Contributors provide a wide-range of expertise on oneM2M standards, client chipsets and open-client ecosystems
Overview of OS-IoT Client Architecture

Custom Application

OS-IoT Lib API

Management
Actor/Sensor Access Library

OneM2M Library
Parsing, Serialization and Protocols
CBOR, JSON, XML
Websockets, CoAP, HTTP

Operating System
HW Platform
OS-IoT Platform

- Initial target hardware representative of embedded platforms: ‘96boards’ DragonBoard 410c (ARM Cortex A53 CPU)
- Open hardware specification with common form factor and software load available from multiple vendors
- Initial target OS: Debian Linux
  - Packaged by Linaro for the 96Boards open platform
  - OS dependencies will be abstracted to allow portability to other OSs/RTOSs/No OS environments
- Development language C++
  - Portable and broadens the range of languages which have open oneM2M clients
IPR

• Legal framework established for code licensing and contribution process:
  – Project deliverables are licensed under 3 clause BSD license
    • BSD version 2.0
    • Highly flexible and industry friendly
    • No “copy-left” requirements
    • Developers Certificate of Origin confirmation for contributed code to confirm compliance
  – ATIS FRAND patent policy applies:
    • Balances interests of patent holders and patent users
First Deliverables

- First working prototype has been shared with OS-IoT participants:
  - Supports XML over HTTP
  - Tested against Eclipse OM2M CSE and InterDigital Cloud CSE
  - Portable between PC/x64 environment and DragonBoard/ARM
  - Supports create/get/delete for AE, Container and contentInstance
  - Prototype tests some of the concepts and helps direct future work

- Planning phase:
  - Support for JSON over HTTP
  - Simplified API for application developers
  - Code availability for others to review, test and contribute
How Can You Contribute?

• Provide testing input:
  – Ensures the client offers maximum value
  – Involvement in testing against different CSEs or against test tools would be valuable
  – Comments on the API and alignment of capabilities to developer needs are welcome

• Contribute to the code:
  – Many aspects of the prototypes should be enhanced to make a ready-to-release version
  – Participation, particularly coders with experience in C/C++ embedded development, is encouraged
  – In addition to the oneM2M library, interfacing to actors and sensors will be added
For More Information

• To join the activity or to be notified when prototypes are released, please contact:
  – Iain Sharp (isharp@atis.org), ATIS Technical Lead, or
  – Yvonne Reigle (yreigle@atis.org), ATIS Director – Strategic Initiatives
Open Source Software

- Vibrant Community
- Source Code Accessible
- Speed & Agility
- Open Innovation