Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Driving New IoT Services

- Better Customer Experience
- New Business Models

- Operational Improvements
- Increased Efficiency

Grow Revenue

Shareholder Value

Reduce Cost

- Preventative Maintenance
- Remote Diagnostics
- Safety Systems
- V2X and C2X
- Fleet and Use Management

- HVAC
- Lighting
- Safety and Security
- Resource Utilization
- Maintenance
The Building Blocks for IoT

- Devices/Things
- IoT Cloud Service
- Enterprise Orchestration
Applications Drive the Enterprise

Customer Experience  |  Supply Chain Management  |  Enterprise Resource Planning  |  Customer Relationship Management

E-Commerce  |  Finance  |  Human Capital Management  |  Billing and Revenue Management
The Device Challenge

- Security and identity
- Always available, but not always on
- Scale (connection and data)
- Different formats, architectures, languages
- Life-cycle management
- IoT Device Management
The “link” Challenge

Oracle IoT
Oracle Internet of Things Cloud Service

Devices / “Things”
- Cloud Service Gateway
- Java
- Other Devices

Internet
- 2G/3G/LTE Network
- Firewall
- Network Management and Policy
- Communications Service Provider Applications
- Endpoint Management
- Messaging Proxy
- Oracle Event Processing
- Device Management
- Dispatcher REST/JMS

Oracle Cloud
- Oracle Database
- Oracle Business Intelligence Cloud Service
- Oracle Integration Cloud Service
- Hadoop
- Middleware

Enterprise
- Cloud or On Premise
- CRM / OM / SFA
- Industry Vertical Applications
- Charging and Billing
- ERP
- Financials
- SCM
- HCM

Other Devices

Gather
Enrich
Stream
Manage
Acquire
Organize
Action
Devices/Things

Support for heterogeneous Things:
• Device adapter framework
• Standards driven integration
• Proprietary protocols
• Managed endpoints
Oracle IoT Cloud Service device-side strategy

• Java preferred, but support “everything”
• Enable any device to integrate with the Oracle IoT Cloud Service
  – Java, C, Javascript, standard protocols, HW, etc.
• Out of the box libraries for Java ME/SE to make integration of Java-enabled devices very easy
  – Enables communications, device management, security, etc
  – Reduces cost & effort for Oracle’s customers & partners
• Leverage open ecosystem to enable scale
  – Collaborate with customers/partners/competitors based on OSS for device-side enablement
Java Benefits for IoT Devices

• Familiar, (relatively) platform independent, strong tooling/ecosystem
• IoT enabling functionality readily available from commercial vendors and FOSS community
  – Hardware/network support
  – Application containers, remote management etc
  – OpenJDK, Eclipse, Apache to name a few
• Mature set of security features & APIs – easily extended to support different levels based on industry/regulatory needs
• “Distributed intelligence” straightforward
<table>
<thead>
<tr>
<th>Type of Device</th>
<th>Positioning</th>
<th>Software</th>
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<tbody>
<tr>
<td>Gateway</td>
<td>Proxy/bridge between Internet and existing devices and peripherals using non-IP protocols (mesh networks, field buses, etc)</td>
<td>Java SE + adapter framework + managed application container (for example OSGi)</td>
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<td></td>
<td>Can also double as high-end endpoint</td>
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<tr>
<td>High-end endpoint (CPU, 10+ MB RAM, 100+ MB disk/flash)</td>
<td>Data collection and advanced device-side logic/processing. Can be quite powerful: good when sensor data is combined with media (audio, video) or interactive UI. Wired power available.</td>
<td>Java SE + IoT endpoint application or managed application container (eg, OSGi)</td>
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<td>Low/medium-end endpoint (wireless module or MCU, 128+ kB RAM, 1 MB + disk/flash)</td>
<td>For remote and low-power data collection + some device-side logic/processing. Lower cost, economically feasible to deploy in very large numbers.</td>
<td>Java ME + agent for management ME 8 application container + management functionality sufficient, no additional “infrastructure SW“ needed</td>
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IoT Cloud Service

- IoT-scale messaging
- Event processing
- Data driven real-time dispatch
- Managed identity, security, lifecycle
- Flexible and scalable business model
Enterprise Orchestration

- Standards based integration
- Event processing
- Oracle BI and Data Analytics support
For More Information

Visit: oracle.com/iot
Hardware and Software
Engineered to Work Together