Excerpts from "OCP's Rack Manager Controller subproject (OpenRMC)"

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OpenRMC Overview

OpenRMC

• Goals and Motivation
• Logistics and meetings

Status

• Reviewed of existing rack management implementations
• Specifying interface and requirements
• Received Code Contributions

RMC for OpenEdge Platform
The OpenRMC Goals

Specify the Rack Manager Controller service architecture

• Northbound interface to datacenter manager (spec)
• Southbound interface requirements to OCP platforms in the rack

Deliver a Rack Manager implementation

• Available as open source

OCP compliant hardware designs

• Handled by other OCP projects
OpenRMC project has since Nov 2018

Participation
• ARM, Microsoft, Facebook, Huawei, Inspur, Nokia, Intel, etc

Reviewed and compare
• Existing RMC interfaces and architectures from Facebook, Intel, Inspur and Microsoft (Comparison of interfaces)

Draft specifications and requirements
• Draft of Northbound API Specification
• Draft of Southbound interface requirements

RMC code contributions (reviewed)
• From Microsoft, Inspur, and Intel
Source Repository

On OCP Github (github.com/opencomputeproject/Rack-Manager)
Contrib-Microsoft, Contrib-Inspur, Contrib-Intel folders.
./OpenRMC folder

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<tr>
<th>Language</th>
<th>Architecture</th>
<th>Processor</th>
<th>Memory</th>
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<tr>
<td>Microsoft</td>
<td>C++</td>
<td>OpenBMC</td>
<td>AST2500</td>
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<td>Intel</td>
<td>C++</td>
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<td>Intel NUC</td>
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OpenRMC on OpenEdge at MWC 2020

Demo use cases

• Input from the OpenEdge project?
• Use Redfish Tacklebox use-cases¹
  • Power/Reset - Performs a power/reset operation of a system
  • Boot Override - Performs an one-time boot override of a system
  • FW Update - Performs a firmware update of a system (pull model)
  • Sensor List - Reads the power and thermal sensors of the chassis

¹github.com/DMTF/Redfish-Tacklebox
Nokia Airframe openEdge Chassis

Open edge chassis overview

Key specifications

• Cooling: Fan units are part of sled solution
  • Air flow direction configurable: front to rear/rear to front

• Chassis management controller (RMC)
  • PSU management (control, sensors, ..)
  • Management Ethernet interface to sleds
    • 1 GE to all sleds via backplane
    • 1x 1 GE (RJ45) + 2x 10 GE (SFP+) front panel interface for external connectivity and chaining of multiple chassis

• Power distribution board and chassis backplane provide connectivity between RMC, sleds and PDUs

Interface supported:

• DMTF Redfish
• DMTF SMASH
• IPMI
• SNMP
Nokia RMC Firmware Overview

RMC Controller:
- Processor=AST2500, Memory ? Image size?

Redfish resources (from Service Root)
- Chassis\(^1\), Systems\(^2\), Managers
- **Services:** Account, Session, Task, Telemetry, Update
- **Schema formats:** json-schema, OData CSDL

Comparison to code contributions ([link](#))

\(^1\)Nokia Open Edge Chassis Spec v1.2 (OCP Accepted)
\(^2\)Nokia Open Edge Server Spec v0.1 (community review)
Testing OpenRMC conformance

- **OpenRMC profile** file specifies the Northbound interface requirements in a JSON format (Redfish resources & properties).

- The open-source Redfish Interop Validator: 1) reads the OpenRMC profile, 2) autogenerates the tests, and 3) runs them against an implementation.

- The Interop Validator is a component of the Redfish conformance test suite, which also includes:
  - Redfish Service Conformance Check
  - Redfish Service Validator
  - Redfish Usecase Checkers

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