

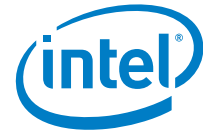
# Intel<sup>®</sup> Rack Scale Design (Intel<sup>®</sup> RSD) POD Manager (PODM)

Release Notes  
Software v2.5

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*July 2019*

*Revision 001*



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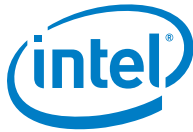
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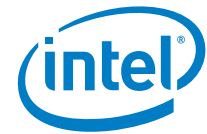
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## Revision History

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Revision	Description	Date
001	Initial release of Intel® RSD software v2.5	July 2019

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## 1.0 Introduction

This document contains information about the installation and configuration of Intel® Rack Scale Design (Intel® RSD). This software is referred to as the PODM throughout this document.

### 1.1 Intended Audience

The intended audiences for this document include:

- Independent Software Vendors (ISVs) of POD management software, who make use of PODM to discover, compose, and manage drawers, regardless of the hardware vendor, or manage drawers in a multivendor environment.
- Original Equipment Manufacturers (OEMs) of Pooled System Management Engine (PSME) firmware who would like to provide Intel® RSD PODM API on top of their hardware platform.

### 1.2 Conventions

The key words/phrases "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [Table 4, Key words for use in RFCs to Indicate Requirement Levels, March 1997, RFC 2119](#).

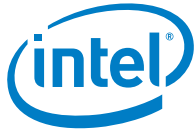
### 1.3 Software Package Contents

[Table 1](#) lists the contents of the release package.

**Table 1. Software package for Intel® RSD v2.5**

Title	Description
Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) Release Notes Software v2.5	This document
Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) Representational State Transfer (RESTful) User Guide Software v2.5	User Guide
Intel® Rack Scale Design (Intel® RSD) Generic Assets Management Interface (GAMI) API Software v2.5	JSON-RPC* API specifications to communicate with GAMI Modules
Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) Representational State Transfer (RESTful) API Specification Software v2.5	PODM RESTful API Specifications
Intel® Rack Scale Design (Intel® RSD) Rack Management Module (RMM) Representational State Transfer (RESTful) API Specification Software v2.5	RMM API Specification
Intel® Rack Scale Design (Intel® RSD) Storage Services API Specification Software v2.5	Storage Service REST API Specifications
License.txt	Apache*License, Version 2.0

Customers should check <http://www.intel.com/intelRSD> to download the latest available onboard device drivers, system firmware, and system software. For further assistance, contact your Intel Field Representative.



## 1.4 Revision Numbers of Package Components

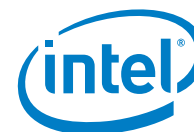
Table 2. Revision Numbers and Beta release Components

Subproject (component)	Revision
Intel® Rack Scale Design PODM	RSD_PODM_2.5

## 1.5 Terminology

Table 3. Terminology

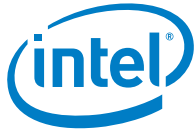
Term	Definition
BIOS	Basic Input/output System
BMC	Baseboard Management Controller
CM	Control Module
DCBX	Data Center Bridging eXchange
DMTF	Distributed Management Task Force
ETS	Enhanced Transmission Selection
FPGA	Field-Programmable Gate Array
FPGA-oF	FPGA-of Fabric
IPMB	Intelligent Chassis Management Bus Bridge
IPMI	Intelligent Platform Management Interface
IPsec	Internet Protocol Security
ISV	Independent Software Vendor
NVMe-oF*	NVMe over Fabrics*
PCIe*	Peripheral Component Interconnect express*
PFC	Priority Flow Control
PSME	Pooled System Management Engine
PODM	Pod Manager
OEM	Manufacturers
QoS	Quality of Service
RMDA	Remote Direct Memory Access
RMM	Rack Management Module
Intel® RSD	Intel® Rack Scale Design
SMBIOS	System Management BIOS
TPM	Trusted Platform Module
TLS	Transport Layer Security



## 1.6 Related Documents

**Table 4. Reference Documents and Resources**

Doc ID	Title	Location
613314	<i>Intel® Rack Scale Design (Intel® RSD) Pooled System Management Engine (PSME) User Guide Software v2.5</i>	Note: <a href="https://www.intel.com/content/www/us/en/architecture-and-technology/rack-scale-design/rack-scale-design-resources.html">https://www.intel.com/content/www/us/en/architecture-and-technology/rack-scale-design/rack-scale-design-resources.html</a>
613315	<i>Intel® Rack Scale Design (Intel® RSD) Conformance and Software Reference Kit Getting Started Guide v2.5</i>	
613317	<i>Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) User Guide Software v2.5</i>	
613318	<i>Intel® Rack Scale Design (Intel® RSD) Pooled System Management (PSME) Release Notes Software v2.5</i>	
613319	<i>Intel® Rack Scale Design (Intel® RSD) Architecture Specification Software v2.5</i>	
613320	<i>Intel® Rack Scale Design (Intel® RSD) Pod Manager (PODM) Representational State Transfer (REST) API Specification Software v2.5</i>	
613321	<i>Intel® Rack Scale Design (Intel® RSD) Rack Management Module (RMM) Representational State Transfer (REST) API Specification Software v2.5</i>	
613324	<i>Intel® Rack Scale Design (Intel® RSD) Generic Assets Management Interface (GAMI) API Specification v2.5</i>	
613325	<i>Intel® Rack Scale Design (Intel® RSD) Pooled System Management Engine (PSME) REST API Specification Software v2.5</i>	
613329	<i>Intel® Rack Scale Design Storage Services API Specification Software v2.5</i>	
613326	<i>Intel® Rack Scale Design (Intel® RSD) Conformance Test Suite (CTS) Release Notes v2.5</i>	
608298	<i>Field Programmable Gate Array (FPGA) over Fabric Protocol Architecture Specification</i>	<a href="https://cdrdv2.intel.com/v1/dl/getContent/608298">https://cdrdv2.intel.com/v1/dl/getContent/608298</a>
596167	<i>Intel® Rack Scale Design (Intel® RSD) for Cascade Lake Platform Firmware Extension Specification</i>	<a href="https://cdrdv2.intel.com/v1/dl/getContent/596167">https://cdrdv2.intel.com/v1/dl/getContent/596167</a>
DSP2051	<i>Redfish Telemetry White Paper (WIP)</i>	<a href="https://www.dmtf.org/dsp/DSP2051">https://www.dmtf.org/dsp/DSP2051</a>
DSP0266	<i>Scalable Platforms Management API Specification v1.5.0</i>	<a href="https://www.dmtf.org/sites/default/files/standards/documents/DSP0266_1.5.0.pdf">https://www.dmtf.org/sites/default/files/standards/documents/DSP0266_1.5.0.pdf</a>
DSP-IS0007	<i>Redfish* Extensions for FPGAs</i>	<a href="https://www.dmtf.org/sites/default/files/standards/documents/DSP-IS0007_0.9a.zip">https://www.dmtf.org/sites/default/files/standards/documents/DSP-IS0007_0.9a.zip</a>
DSP8010	<i>Redfish® Schema v2018.1</i>	<a href="https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2018.1.zip">https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2018.1.zip</a>
DSP8010	<i>Redfish Schema v2018.2</i>	<a href="https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2018.2.zip">https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2018.2.zip</a>
DSP8010	<i>Redfish Schema v2018.3</i>	<a href="https://www.dmtf.org/sites/default/files/Redfish_2018_Release_3_Overview.pdf">https://www.dmtf.org/sites/default/files/Redfish_2018_Release_3_Overview.pdf</a>



Doc ID	Title	Location
N/A	<i>Swordfish Scalable Storage Management API Specification v1.0.6</i>	<a href="https://www.snia.org/sites/default/files/technical_work/Swordfish/Swordfish_v1.0.6_specification.pdf">https://www.snia.org/sites/default/files/technical_work/Swordfish/Swordfish_v1.0.6_specification.pdf</a>
N/A	<i>Storage Networking Industry Association (SNIA) Swordfish* v1.0.7a</i>	<a href="https://www.snia.org/sites/default/files/technical_work/Swordfish/Swordfish_v1.0.7a.zip">https://www.snia.org/sites/default/files/technical_work/Swordfish/Swordfish_v1.0.7a.zip</a>
N/A	<i>NVM Express over Fabrics revision 1.0</i>	<a href="https://nvmexpress.org/wp-content/uploads/NVMe_over_Fabrics_1_0_Gold_20160605.pdf">https://nvmexpress.org/wp-content/uploads/NVMe_over_Fabrics_1_0_Gold_20160605.pdf</a>
RFC2616	<i>Hypertext Transfer Protocol - HTTP/1.1</i>	<a href="https://tools.ietf.org/html/rfc2616">https://tools.ietf.org/html/rfc2616</a>
RFC2119	<i>Key Words for Use in RFCs to Indicate Requirement Levels, March 1997</i>	<a href="https://ietf.org/rfc/rfc2119.txt">https://ietf.org/rfc/rfc2119.txt</a>

**NOTE:** Documents referenced in this table which have a Doc ID, but cannot be accessed, can be obtained by calling 1-800-548-4725 or by visiting [www.intel.com/design/literature.htm](http://www.intel.com/design/literature.htm) obtain a copy.

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## 2.0 Overview

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This section provides an overview of the new features and Security Recommendations for the Intel® RSD v2.5 release.

### 2.1 New Features for Intel® RSD v2.5

1. Refer to [Table 4](#) for the Distributed Management Task Force (DMTF) Redfish\*/SNIA Swordfish\* reference documents listed below:
  - This release is based on the DSP 8010, *Redfish® Specification v1.5.0*. It uses DSP8010, *Redfish® Schema v2018.3* and *Storage Networking Industry Association (SNIA)*, *Swordfish v1.0.7a*.
  - Interface for Field-Programmable Gate Array (FPGA) is based on a DSP8010, *Redfish® Schema v2018.3*.
  - Interface for Telemetry is based on a DSP8010, *Redfish® Schema v2018.3*.
  - Interfaces for various resources are enhanced with Intel® Rack Scale Design extensions.
2. FPGA pooling over Fabric (FPGA-oF) – support for services providing FPGA pooling over Peripheral Component Interconnect express\* (PCIe\*) and Remote Direct Memory Access (RDMA) Ethernet.
3. PODM now provides [LogService](#) for Redfish interoperability.

### 2.2 New Features for Intel® RSD v2.4

1. Refer to [Table 4](#) for the DMTF Redfish\*/SNIA Swordfish\* reference documents listed below:
  - This release is based on the DSP8010, Redfish® specification v1.5.0. It uses the DSP8010, Redfish® Schema v2018.1, and Swordfish Scalable Storage Management API Specification, v1.0.6.
    - Manager and Memory resources are based on Redfish® Schema v2018.2.
  - Interface for FPGA is based on a Redfish® WIP IS0007, Redfish\* Extensions for FPGAs.
  - Interface for Telemetry is based on a Redfish® WIP DSP2051, Redfish Telemetry White Paper (WIP).
    - Interfaces for various resources are enhanced with Intel® Rack Scale Design extensions.
2. **Second Generation Intel® Xeon® Scalable Processors** – support for services providing Second Generation Intel® Xeon® Scalable Processors resources.
3. **Intel® Optane™ DC Persistent Memory** - Enables discovery of Intel Optane™ DC Persistent Memory modules and composition of nodes containing those modules.
4. **FPGA pooling over Fabric** – support for services providing FPGA pooling over PCIe\* and RDMA Ethernet.
5. **PODM** now provides [SessionService](#), [AccountService](#), and [LogService](#) for Redfish interoperability.
6. **High Availability** – failure of selected PODM services will not create a delay that is noticeable or disruptive.

### 2.3 Feature end of Life Notices

The following features were dropped in the Intel® RSD v2.4 release:

**Deep Discovery** - The in-band method of discovery is succeeded by out-of-band discovery methods based on the Intel® RSD Firmware Extensions.



## 2.4 Limitations

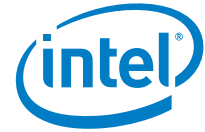
Allocation limitations:

Due to the limitations of the PODM service, resource availability for allocation is only guaranteed after at least one full cycle of discovery process after resource changed. This interval between the end of previous discovery and start of next one can be configured according to the steps in section "Discovery configuration" in the PODM User Guide. The default value for the interval is 60 seconds.

## 2.5 Security Recommendations

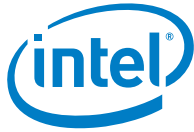
It is recommended to implement the following isolation, administration, and security procedures to use the Intel® RSD v2.5 reference code in a production environment.

Issue	Recommendation
Unauthorized log on to Discovery Service or Storage Server	The Intel® RSD v2.5 provisioning of the Discovery Service Host and Storage Server requires admin/root access to the host for placing manager credentials. Confirm the admin account is secured.
Network adversary provisions bogus credentials to PSME	To withstand network attacks the communication between the PODM and the Storage PSME must be secured. To provide this security, the communication channel between the PODM and PSME uses Transport Layer Security (TLS).
Compromise discovery/storage service authentication credential provisioning process	Internet Protocol Security (IPsec) is not used in Intel® RSD v2.5, and this credential will not be provisioned to the storage client. This credential will also not be used between the storage client and the Discovery Service or Storage server.
Authorized admin is fooled into installing/updating a compromised image	There must be mechanisms in place to verify that every FW and SW element within the Intel® RSD trust boundary has not changed from the original version delivered by the author. Typically, the FW/SW should be delivered using a cryptographically signed file to ensure the code has not been altered. Refer to <a href="#">Table 4, Intel® Rack Scale Design (Intel® RSD) Architecture Specification Software v2.5</a> , Platform Security section for more details.
Attacker impersonates a PODM	Access to NVMe-oF target management APIs is only allowed when the PODM and NVMe-oF targets establish a TLS connection before they can communicate. Refer to <a href="#">Table 4, Intel® Rack Scale Design (Intel® RSD) Architecture Specification Software v2.5</a> , Ethernet Pooled Storage - Security section or more details.
Attacker eavesdrops on communication between client and Storage Server	Protection is for the datacenter only to allow trusted entities to access the storage access network.
Attacker eavesdrops on communication between FPGA-oF client and server	Protection is for the datacenter to allow only trusted entities to access the FPGA access network.
The attacker modifies data flowing between client and storage server	Protection is for the datacenter only to allow trusted entities to access the storage access network.
The attacker modifies data flowing between FPGA-oF client and server	Protection is for the datacenter to allow only trusted entities to access the FPGA access network
The attacker obtains a drive that has been discarded and accesses data in that drive by mounting it on its system	The default policy in the PODM shall be to erase the drive during decomposition where the PSME must secure erase the drive. As always, ensure security measures are enacted to safeguard the security of your physical drives during and after use.
The attacker obtains an FPGA that has been discarded and accesses the Acceleration Function in that FPGA	The default policy in the PODM shall be to erase the FPGA during decomposition where the PSME must remove the user's Acceleration Function from the FPGA, for example by reprogramming the device with a default function.



Issue	Recommendation
Attacker gains access to a drive previously assigned to a different user with the old user's data still in it.	The default policy in the PODM shall be to erase the drive during decomposition where the PSME must secure erase the drive.
Attacker gains access to an FPGA previously assigned to a different user with the old user's Acceleration Function still in it.	The default policy in the PODM shall be to erase the FPGA during decomposition when the PSME must remove the user's Acceleration Function from the FPGA.

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## 3.0 Known Issues

This section presents known issues found during the testing of Intel® RSD software v2.5.

**Table 5. Status and Descriptions**

Status	Descriptions
Under Investigation	The sighting is being investigated.
Root Cause Identified	The root cause of the defect is identified.
Workaround Available	A temporary solution to the defect is provided until the bug is fixed.
As Designed	The issue reported is not a defect, and the behavior will not be modified.
Closed no repro	The situation is no longer observed, and no further investigation is scheduled.
Fixed	The defect has been fixed.

[Table 6](#) is a detailed description of all known issues. Each issue provides a problem statement, implication, workaround, note, and status.

**Table 6. Known Issues**

Issue	Description
HSDES 1808028207	Second discovery service does not populate fabric structure.
Problem	-
Implication	-
Workaround	<ul style="list-style-type: none"> <li>Remove first discovery service from managers collections</li> <li>Restart node composer</li> </ul>
Status	Workaround available

Issue	Description
HSDES 1808000886	No link in <a href="#">EthernetInterfaces</a> to the <a href="#">NeighborPort</a> .
Problem	API doesn't expose links to neighboring ports.
Implication	-
Workaround	-
Status	Under investigation

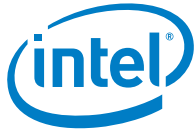


Issue	Description
HSDES 1807484905	Status 500 during attach of FPGA processor, when the manager of <code>psme-pnc</code> is in a state of <code>UnavailableOffline</code> .
Problem	Status of attach operation is reported incorrectly.
Implication	-
Workaround	-
Status	Root cause identified

Issue	Description
HSDES 1807735083	Status 204 instead 500 during delete Node when PSME is disabled.
Problem	If service is offline PODM is covering an attempt to remove the asset from external service and continues other node removal tasks.
Implication	-
Workaround	-
Status	Root cause identified

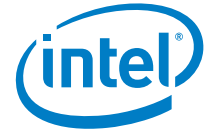
Issue	Description
HSDES 1806665538/ 1806991110	VLANs Arista Switch limitation
Problem	Ethernet switch does not allow to remove untagged VLANs. Only one tagged VLAN is supported.
Implication	Only one tagged VLAN supported
Workaround	-
Status	As Designed

Issue	Description
HSDES 1807384531	ParentID on RMM is not the same as ParentId on PODM.
Problem	ParentID on RMM is not the same as ParentId on PODM.
Implication	-
Workaround	-
Status	Root Cause Identified



Issue	Description
HSDES 1305998460	Problem with Patch at ParentId in ChassisPod.
Problem	PATCH on "Chassis Pod -> Oem -> Location -> Id" and "ParentId"
Implication	Status 404 is returned after patch on this property
Workaround	-
Status	Root Cause Identified

Issue	Description
HSDES 1807445452/ 1807381788/ 18073834630	PODM doesn't generate events
Problem	PODM doesn't generate events after removing/adding Drawer, adding/updating Node, adding/removing subscriptions.
Implication	No events are generated on PODM actions like operation on Nodes or subscriptions.
Workaround	-
Status	As Designed



## 4.0 Fixed Issues

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This chapter presents Fixed issues for Intel® RSD PODM software v2. 5.

**Note:** The Fixed issues in this revision have been resolved in prior Intel® RSD PSME Software testing.

There are no fixed issues for the Intel® RSD v2.5 release.

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