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# Redfish for Power Distribution Equipment White Paper

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# Foreword

This white paper covers Redfish schema support for managing power distribution equipment and infrastructure. This includes power distribution units, transfer switches, energy storage or backup power systems, and facility location information.

The Redfish standard has expanded its coverage of datacenter components, having started with server management and added storage systems, networking and fabric support. As this provides a consistent protocol and data model for managing the bulk of the IT equipment in a datacenter, it was natural to further extend the data model to include power distribution and other facility services. This allows the utilization of a common set of tools to manage the entire infrastructure, and enable development of tools that can integrate data across the various subsystems to optimize resource utilization.

## Where can I find more information?

The following websites provide more information about the Redfish standard:

- **Redfish Developer Hub:** <http://redfish.dmtf.org> Resources for developers building applications using Redfish. Contains an interactive schema explorer, hosted schema and other links.
- **Redfish User Forum:** <http://www.redfishforum.com> User forum monitored by DMTF Redfish personnel to answer questions about any Redfish-related topics:
- **DMTF Github Repositories:** <http://www.github.com/DMTF> Open source tools and libraries for working with the Redfish API.
- **Redfish Standards:** <http://www.dmtf.org/standards/redfish> Schemas, specs, mockups, white papers, FAQ, educational material and more.
- **DMTF Redfish Forum** (Working group that maintains the Redfish standard): <http://www.dmtf.org/standards/spmf> Companies involved, upcoming schedules and future work, charter, and information about joining.

## Using the reference guide

The power distribution-related schemas are listed in the following section for reference. This section should be considered an extension to the contents of DSP2046, the Redfish Resource and Schema Guide, which lists the common Redfish properties, other object definitions, and all released Redfish schemas (including those shown here).

This guide was produced using the contents of the schema files from DMTF Redfish Schema bundle DSP8010 and merged with supplemental text using the DMTF's [Redfish Documentation Generator](#).

## Common Properties

Properties and objects defined for all Redfish schemas, or referenced by this white paper are detailed in the Redfish Resource and Schema Guide (DSP2046), available for download at the Redfish Standards site: <http://www.dmtf.org/standards/redfish>

# Central data model concepts

Modeling power distribution equipment required the addition of several new concepts to the Redfish data model. It is expected that these concepts will also be leveraged to model additional facility systems and monitoring equipment.

## Sensor model and excerpts

Redfish models a device that provides a single data value or "reading" as a Sensor. Associated with that reading is a wealth of meta-data (data about the reading), which may be used by software or administrators to better understand the reading or make decisions based on its value.

A simple example is a thermometer. It provides a single reading of temperature. But associated with that reading are a number of properties that describe that reading, such as the thermometer's accuracy, range of possible values, and whether it can read in whole degrees or tenths of a degree. In addition, there are thresholds associated with the thermometer that will depend on its usage, which may be set by the product design, or may be set by the end user.

Some sensors have additional readings that are related to the primary reading and must be acquired and reported at the same time to be useful. In these cases, a Sensor may have additional properties to return those values, with the most frequently used data assigned as `Reading`. For example, a Power sensor will return "Real Power" in the `Reading`, and will also include properties for `ReactiveVAR`, `PowerFactor`, and `ApparentVA` values.

All of this information is made available in the resource for a Sensor in the Redfish model. Every Sensor gets its own individual resource, and the properties are consistent across all types of readings. A property called `ReadingType` allows the user to determine what kind of sensor and reading each Sensor resource represents. The `ReadingType` also mandates the units of measure assigned for each type of reading. This requirement ensures interoperability among Sensor implementations and prevent software error that occur when different units are used but not recognized (e.g., Celsius vs. Fahrenheit temperatures).

Since the most frequently used property of a sensor is its reading (value), Redfish added the ability to incorporate just a portion of the Sensor resource when appropriate elsewhere in the data model. This is called a "Schema Excerpt" and is defined in the schema for a Redfish resource. For a Sensor, the primary excerpt includes just the `Reading`, as the remaining Sensor properties are generally static data and therefore do not need to be retrieved frequently.

## Facility

One of the basic model constructs for Redfish is the presentation of both a "Functional" and a "Physical" view of the managed systems or devices. For Computer Systems (servers) this results in resources for both a `ComputerSystem` (functional view) and a `Chassis` (physical view). The chassis model works well for equipment that is "contained within a sheet metal box", but the terminology and concept becomes confusing when describing equipment placed in a room.

This was addressed by the addition of the `Facility` schema to describe a room or other physical location that can contain equipment and likely has relationships to other facilities. Many of the concepts from the `Chassis` schema were applied to `Facility`, including the ability to nest facilities (e.g., a Room is contained by a Floor or Building).

## Power Domain

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One of the primary associations within a facility is the physical relationship of power equipment to describe the equipment affected by a power system or to report the responsible organization (humans or software) of a set of equipment.

# Power Distribution resource tree

Below is a diagram of the resource tree, starting at the Redfish Service Root, containing all resources used to model a rack-based Power Distribution Unit (PDU). The individual resources are detailed in the following sections.

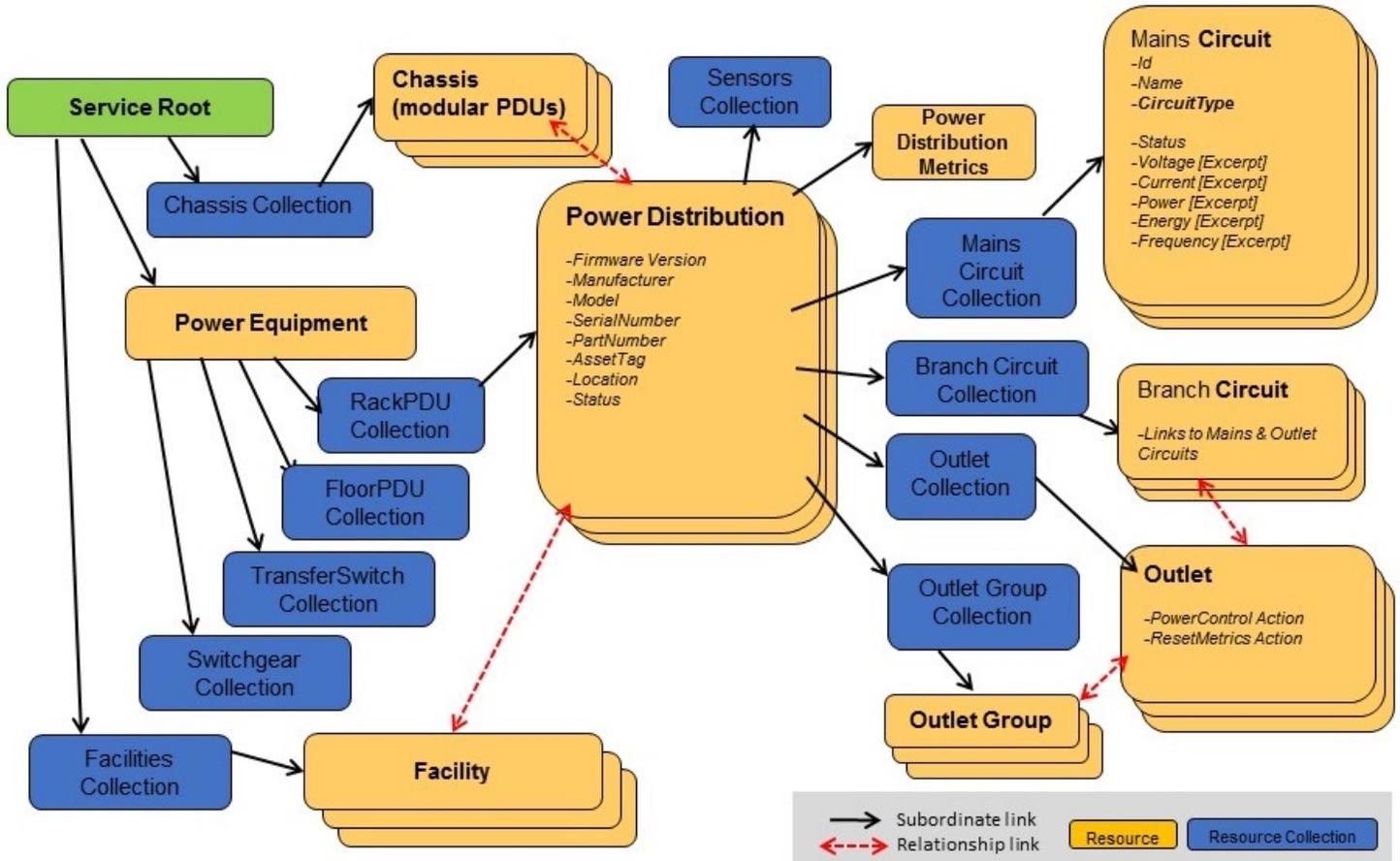


Figure 1: Resource Tree for a Power Distribution Unit

## Power Equipment

A new resource, linked from the Service Root, was added to contain all links to Power Distribution equipment and any future properties that may relate to power equipment in general. The `PowerEquipment` resource can be used to quickly determine the types of power equipment supported by the Service. It also allows for future additions to the schema without requiring changes to the `ServiceRoot` schema.

## Power Distribution Unit

The main resource for describing a power distribution component is the `PowerDistribution` schema and resource. As various types of power distribution gear follow a very similar model (power inputs, power outputs, measurements, and general product identification), these are all modeling using a single schema. This schema is then used to populate a number of Resource Collections, grouped by the type of equipment, but all sharing the same schema definition.

In the current release of the schema, there are separate Resource Collections for Rack-mounted Power Distribution Units (PDUs), Floor-level PDUs, Transfer Switches (Manual or Automatic), and various Switchgear. It is expected that the schema will be expanded over time to include Uninterruptible Power Systems (UPSs) and additional types of equipment.

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### Power Distribution Metrics

To provide efficient access to the electrical measurements of an entire power distribution unit, a separate metrics resource is available, which reports total power and energy consumption.

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### Support for modular or large-scale units

For larger or more complex power distribution units, some additional modeling may be necessary to fully explain relationships and capabilities. This typically includes "modular" power systems whose configuration will vary depending on customer needs. For these units, the `PowerDistribution` schema has support for `Chassis` resources that can be used to model those modules and their relationships. Only units that require this level of detail are expected to implement the `Chassis` models.

## Circuits

A key component of any power distribution unit is the electrical `Circuit`, which can describe either an input to the unit, or an output. The various types of circuits are once again described using a single `Circuit` schema, with a `CircuitType` property used to specify a particular usage. As with the PDUs, circuits are separated by type, and populate separate Resource Collections so that "input" vs. "output" circuits can be easily located.

Each circuit resource contains properties to describe the configuration and capabilities of a particular circuit, as well as measurements of the electrical characteristics of the circuit. The supported measurements include voltage, current, frequency, power (real power, reactive power, and power factor), and energy consumed (kWh).

## Outlets

Individual electrical outlets are described by the `Outlet` schema and Resource Collection. This schema shares the majority of its property definitions with `Circuit`, with some additions to describe the plug types and relationship to its circuit.

There is a single `Outlet` Resource Collection that contains all outlets from all output circuits of a PDU. This removes the need to know the circuit associations prior to locate a particular outlet.

## Outlet Groups

Outlets may be contained in a group, either dictated by electrical functionality (e.g., a Battery-backed outlet vs. an unprotected outlet), or by end user configuration or usage. The `OutletGroup` schema and resource allows data to be gathered and actions performed on a per-group basis.

# Schema Reference Guide

## Circuit 1.0.0

v1.0

2019.4

This is the schema definition for an electrical circuit.

### URIs:

[/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Branches/{CircuitId}](#)  
[/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Mains/{CircuitId}](#)  
[/redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Subfeeds/{CircuitId}](#)  
[/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Branches/{CircuitId}](#)  
[/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Mains/{CircuitId}](#)  
[/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Branches/{CircuitId}](#)  
[/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Feeders/{CircuitId}](#)  
[/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Mains/{CircuitId}](#)

<b>BreakerState</b>	string (enum)	read-only (null)	The state of the over current protection device. <i>For the possible property values, see <a href="#">BreakerState</a> in Property Details.</i>
<b>CircuitType</b>	string (enum)	read-only (null)	The type of circuit. <i>For the possible property values, see <a href="#">CircuitType</a> in Property Details.</i>
<b>CriticalCircuit</b>	boolean	read-write (null)	Designates if this is a critical circuit.
<b>CurrentAmps {</b>	object (excerpt)		The current reading for this single phase circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor (v1.1+)</b>	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent (v1.1+)</b> }	number	read-only (null)	The total harmonic distortion (THD).
<b>ElectricalContext</b>	string (enum)	read-only (null)	The combination of current-carrying conductors. <i>For the possible property values, see <a href="#">ElectricalContext</a> in Property Details.</i>
<b>EnergykWh {</b>	object (excerpt)		The energy reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading (v1.1+)</b>	number	read-only (null)	The total accumulation value for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b> }	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>FrequencyHz {</b>	object (excerpt)		The frequency reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.

<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>IndicatorLED</b>	string (enum)	read-write (null)	The state of the indicator LED, which identifies the circuit. <i>For the possible property values, see <a href="#">IndicatorLED</a> in Property Details.</i>
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>BranchCircuit {</b>	object	(null)	A reference to the branch circuit related to this circuit.
<b>@odata.id</b> }	string	read-only	<i>Link to another Circuit resource.</i>
<b>Oem { }</b>	object		The OEM extension property. <i>See the <a href="#">Resource</a> schema for details on this property.</i>
<b>Outlets [ {</b>	array		An array of references to the outlets contained by this circuit.
<b>@odata.id</b> } ]	string	read-only	<i>Link to a Outlet resource. See the Links section and the <a href="#">Outlet</a> schema for details.</i>
<b>Outlets@odata.count</b> }	integer	read-only	The number of items in a collection.
<b>NominalVoltage</b>	string (enum)	read-only (null)	The nominal voltage for this circuit. <i>For the possible property values, see <a href="#">NominalVoltage</a> in Property Details.</i>
<b>PhaseWiringType</b>	string (enum)	read-only (null)	The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires). <i>For the possible property values, see <a href="#">PhaseWiringType</a> in Property Details.</i>
<b>PlugType</b>	string (enum)	read-only (null)	The type of plug according to NEMA, IEC, or regional standards. <i>For the possible property values, see <a href="#">PlugType</a> in Property Details.</i>
<b>PolyPhaseCurrentAmps {</b>	object	(null)	The current readings for this circuit.
<b>Line1 {</b>	object (excerpt)		Line 1 current sensor. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor (v1.1+)</b>	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent (v1.1+)</b> }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line2 {</b>	object (excerpt)		Line 2 current sensor. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor (v1.1+)</b>	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent (v1.1+)</b> }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line3 {</b>	object (excerpt)		Line 3 current sensor. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor (v1.1+)</b>	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.

<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Neutral</b> {	object (excerpt)		Neutral line current sensor. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>PolyPhaseEnergykWh</b> {	object	(null)	The energy readings for this circuit.
<b>Line1ToLine2</b> {	object (excerpt)		The Line 1 to Line 2 energy reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b> }	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>Line1ToNeutral</b> {	object (excerpt)		The Line 1 to Neutral energy reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b> }	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>Line2ToLine3</b> {	object (excerpt)		The Line 2 to Line 3 energy reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b> }	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>Line2ToNeutral</b> {	object (excerpt)		The Line 2 to Neutral energy reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.

<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b> }	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>Line3ToLine1</b> {	object (excerpt)		The Line 3 to Line 1 energy reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b> }	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>Line3ToNeutral</b> {	object (excerpt)		The Line 3 to Neutral energy reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b> }	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>PolyPhasePowerWatts</b> {	object	(null)	The power readings for this circuit.
<b>Line1ToLine2</b> {	object (excerpt)		The Line 1 to Line 2 power reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>Line1ToNeutral</b> {	object (excerpt)		The Line 1 to Neutral power reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>Line2ToLine3</b> {	object		The Line 2 to Line 3 power reading for this circuit.

	(excerpt)		<i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>Line2ToNeutral</b> {	object (excerpt)		The Line 2 to Neutral power reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>Line3ToLine1</b> {	object (excerpt)		The Line 3 to Line 1 power reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>Line3ToNeutral</b> {	object (excerpt)		The Line 3 to Neutral power reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>PolyPhaseVoltage</b> {	object	(null)	The voltage readings for this circuit.
<b>Line1ToLine2</b> {	object (excerpt)		The Line 1 to Line 2 voltage reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in</i>

			<i>DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line1ToNeutral</b> {	object (excerpt)		The Line 1 to Neutral voltage reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line2ToLine3</b> {	object (excerpt)		The Line 2 to Line 3 voltage reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line2ToNeutral</b> {	object (excerpt)		The Line 2 to Neutral voltage reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line3ToLine1</b> {	object (excerpt)		The Line 3 to Line 1 voltage reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line3ToNeutral</b> {	object (excerpt)		The Line 3 to Neutral voltage reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in</i>

			<i>DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>PowerCycleDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay.
<b>PowerEnabled</b>	boolean	read-only (null)	Indicates if the circuit can be powered.
<b>PowerOffDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power off after a PowerControl action. Zero seconds indicates no delay to power off.
<b>PowerOnDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power up after a power cycle or a PowerControl action. Zero seconds indicates no delay to power up.
<b>PowerRestoreDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
<b>PowerRestorePolicy</b>	string (enum)	read-write	The desired power state of the circuit when power is restored after a power loss. <i>For the possible property values, see <a href="#">PowerRestorePolicy</a> in Property Details.</i>
<b>PowerState</b>	string (enum)	read-only (null)	The power state of the circuit. <i>For the possible property values, see <a href="#">PowerState</a> in Property Details.</i>
<b>PowerWatts</b> {	object (excerpt)		The power reading for this circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>RatedCurrentAmps</b>	number (A)	read-only (null)	The rated maximum current allowed for this circuit.
<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. <i>See the <a href="#">Resource</a> schema for details on this property.</i>
<b>Voltage</b> {	object (excerpt)		The voltage reading for this single phase circuit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>VoltageType</b>	string (enum)	read-only (null)	The type of voltage applied to the circuit. <i>For the possible property values, see <a href="#">VoltageType</a> in Property Details.</i>

**BreakerControl**

This action attempts to reset the circuit breaker.

**Action URI:** {Base URI of target resource}/Actions/Circuit.BreakerControl

Perform the action using a POST to the specific Action URI for this resource. Parameters for the action are passed in a JSON body and are defined as follows:

{			
<b>PowerState</b>	string (enum)	optional	The desired power state of the circuit if the breaker is reset successfully. <i>For the possible property values, see <a href="#">PowerState</a> in Property Details.</i>
}			

**PowerControl**

This action turns the circuit on or off.

**Action URI:** {Base URI of target resource}/Actions/Circuit.PowerControl

Perform the action using a POST to the specific Action URI for this resource. Parameters for the action are passed in a JSON body and are defined as follows:

{			
<b>PowerState</b>	string (enum)	optional	The desired power state of the circuit. <i>For the possible property values, see <a href="#">PowerState</a> in Property Details.</i>
}			

**ResetMetrics**

This action resets metrics related to this circuit.

**Action URI:** {Base URI of target resource}/Actions/Circuit.ResetMetrics

Perform the action using a POST to the specific Action URI for this resource. This action takes no parameters.

**Property Details**

**BreakerState:**

The state of the over current protection device.

string	Description
Normal	The breaker is powered on.
Off	The breaker is off.
Tripped	The breaker has been tripped.

**CircuitType:**

The type of circuit.

string	Description
Branch	A branch (output) circuit.
Feeder	A feeder (output) circuit.
Mains	A mains input or utility circuit.
Subfeed	A subfeed (output) circuit.

**ElectricalContext:**

The combination of current-carrying conductors.

string	Description
Line1	The circuits that share the L1 current-carrying conductor.
Line1ToLine2	The circuit formed by L1 and L2 current-carrying conductors.
Line1ToNeutral	The circuit formed by L1 and neutral current-carrying conductors.
Line1ToNeutralAndL1L2	The circuit formed by L1, L2, and neutral current-carrying conductors.
Line2	The circuits that share the L2 current-carrying conductor.
Line2ToLine3	The circuit formed by L2 and L3 current-carrying conductors.

Line2ToNeutral	The circuit formed by L2 and neutral current-carrying conductors.
Line2ToNeutralAndL1L2	The circuit formed by L1, L2, and Neutral current-carrying conductors.
Line2ToNeutralAndL2L3	The circuits formed by L2, L3, and neutral current-carrying conductors.
Line3	The circuits that share the L3 current-carrying conductor.
Line3ToLine1	The circuit formed by L3 and L1 current-carrying conductors.
Line3ToNeutral	The circuit formed by L3 and neutral current-carrying conductors.
Line3ToNeutralAndL3L1	The circuit formed by L3, L1, and neutral current-carrying conductors.
LineToLine	The circuit formed by two current-carrying conductors.
LineToNeutral	The circuit formed by a line and neutral current-carrying conductor.
Neutral	The grounded current-carrying return circuit of current-carrying conductors.
Total	The circuit formed by all current-carrying conductors.

**IndicatorLED:**

The state of the indicator LED, which identifies the circuit.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.

**NominalVoltage:**

The nominal voltage for this circuit.

string	Description
AC100To240V	AC 100-240V nominal.
AC100To277V	AC 100-277V nominal.
AC120V	AC 120V nominal.
AC200To240V	AC 200-240V nominal.
AC200To277V	AC 200-277V nominal.
AC208V	AC 208V nominal.
AC230V	AC 230V nominal.
AC240AndDC380V	AC 200-240V and DC 380V.
AC240V	AC 240V nominal.
AC277AndDC380V	AC 200-277V and DC 380V.
AC277V	AC 277V nominal.
AC400V	AC 400V or 415V nominal.
AC480V	AC 480V nominal.
DC240V	DC 240V nominal.
DC380V	High Voltage DC (380V).
DCNeg48V	-48V DC.

**PhaseWiringType:**

The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires).

string	Description
OneOrTwoPhase3Wire	Single or Two-Phase / 3-Wire (Line1, Line2 or Neutral, Protective Earth).
OnePhase3Wire	Single-phase / 3-Wire (Line1, Neutral, Protective Earth).

ThreePhase4Wire	Three-phase / 4-Wire (Line1, Line2, Line3, Protective Earth).
ThreePhase5Wire	Three-phase / 5-Wire (Line1, Line2, Line3, Neutral, Protective Earth).
TwoPhase3Wire	Two-phase / 3-Wire (Line1, Line2, Protective Earth).
TwoPhase4Wire	Two-phase / 4-Wire (Line1, Line2, Neutral, Protective Earth).

**PlugType:**

The type of plug according to NEMA, IEC, or regional standards.

string	Description
California_CS8265	California Standard CS8265 (Single-phase 250V; 50A; 2P3W).
California_CS8365	California Standard CS8365 (Three-phase 250V; 50A; 3P4W).
Field_208V_3P4W_60A	Field-wired; Three-phase 200-250V; 60A; 3P4W.
Field_400V_3P5W_32A	Field-wired; Three-phase 200-240/346-415V; 32A; 3P5W.
IEC_60309_316P6	IEC 60309 316P6 (Single-phase 200-250V; 16A; 1P3W; Blue, 6-hour).
IEC_60309_332P6	IEC 60309 332P6 (Single-phase 200-250V; 32A; 1P3W; Blue, 6-hour).
IEC_60309_363P6	IEC 60309 363P6 (Single-phase 200-250V; 63A; 1P3W; Blue, 6-hour).
IEC_60309_460P9	IEC 60309 460P9 (Three-phase 200-250V; 60A; 3P4W; Blue; 9-hour).
IEC_60309_516P6	IEC 60309 516P6 (Three-phase 200-240/346-415V; 16A; 3P5W; Red; 6-hour).
IEC_60309_532P6	IEC 60309 532P6 (Three-phase 200-240/346-415V; 32A; 3P5W; Red; 6-hour).
IEC_60309_560P9	IEC 60309 560P9 (Three-phase 120-144/208-250V; 60A; 3P5W; Blue; 9-hour).
IEC_60309_563P6	IEC 60309 563P6 (Three-phase 200-240/346-415V; 63A; 3P5W; Red; 6-hour).
IEC_60320_C14	IEC C14 (Single-phase 250V; 10A; 1P3W).
IEC_60320_C20	IEC C20 (Single-phase 250V; 16A; 1P3W).
NEMA_5_15P	NEMA 5-15P (Single-phase 125V; 15A; 1P3W).
NEMA_5_20P	NEMA 5-20P (Single-phase 125V; 20A; 1P3W).
NEMA_6_15P	NEMA 6-15P (Single-phase 250V; 15A; 2P3W).
NEMA_6_20P	NEMA 6-20P (Single-phase 250V; 20A; 2P3W).
NEMA_L14_20P	NEMA L14-20P (Split-phase 125/250V; 20A; 2P4W).
NEMA_L14_30P	NEMA L14-30P (Split-phase 125/250V; 30A; 2P4W).
NEMA_L15_20P	NEMA L15-20P (Three-phase 250V; 20A; 3P4W).
NEMA_L15_30P	NEMA L15-30P (Three-phase 250V; 30A; 3P4W).
NEMA_L21_20P	NEMA L21-20P (Three-phase 120/208V; 20A; 3P5W).
NEMA_L21_30P	NEMA L21-30P (Three-phase 120/208V; 30A; 3P5W).
NEMA_L22_20P	NEMA L22-20P (Three-phase 277/480V; 20A; 3P5W).
NEMA_L22_30P	NEMA L22-30P (Three-phase 277/480V; 30A; 3P5W).
NEMA_L5_15P	NEMA L5-15P (Single-phase 125V; 15A; 1P3W).
NEMA_L5_20P	NEMA L5-20P (Single-phase 125V; 20A; 1P3W).
NEMA_L5_30P	NEMA L5-30P (Single-phase 125V; 30A; 1P3W).
NEMA_L6_15P	NEMA L6-15P (Single-phase 250V; 15A; 2P3W).
NEMA_L6_20P	NEMA L6-20P (Single-phase 250V; 20A; 2P3W).
NEMA_L6_30P	NEMA L6-30P (Single-phase 250V; 30A; 2P3W).

**PowerRestorePolicy:**

The desired power state of the circuit when power is restored after a power loss.

string	Description
--------	-------------

AlwaysOff	Always remain powered off when external power is applied.
AlwaysOn	Always power on when external power is applied.
LastState	Return to the last power state (on or off) when external power is applied.

**PowerState:**

The power state of the circuit.

string	Description
Off	The state is powered off.
On	The state is powered on.
PoweringOff	A temporary state between on and off.
PoweringOn	A temporary state between off and on.

**VoltageType:**

The type of voltage applied to the circuit.

string	Description
AC	Alternating Current (AC) circuit.
DC	Direct Current (DC) circuit.

**Example Response**

```
{
  "@odata.type": "#Circuit.v1_0_0.Circuit",
  "Id": "A",
  "Name": "Branch Circuit A",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "CircuitType": "Branch",
  "PhaseWiringType": "TwoPhase3Wire",
  "NominalVoltage": "AC200To240V",
  "RatedCurrentAmps": 16,
  "BreakerState": "Normal",
  "PolyPhaseVoltage": {
    "Line1ToNeutral": {
      "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageAL1N",
      "Reading": 118.2
    },
    "Line1ToLine2": {
      "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageAL1L2",
      "Reading": 203.5
    }
  },
  "CurrentAmps": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA",
    "Reading": 5.19
  },
  "PolyPhaseCurrentAmps": {
    "Line1": {
      "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA",
      "Reading": 5.19
    }
  },
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA",
    "Reading": 937.4,
    "ApparentVA": 937.4,
    "ReactiveVAR": 0,
    "PowerFactor": 1
  },
  "PolyPhasePowerWatts": {
    "Line1ToNeutral": {
      "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA1",
      "Reading": 937.4,
      "PeakReading": 1000.5,
      "ApparentVA": 937.4,
      "ReactiveVAR": 0,
      "PowerFactor": 1
    }
  },
  "FrequencyHz": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/FrequencyA",
    "Reading": 60
  },
  "EnergykWh": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/EnergyA",
    "Reading": 325675
  },
  "Links": {
    "Outlets": [
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
      },
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A2"
      },
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A3"
      }
    ]
  }
},
```

```

"Actions": {
  "#Circuit.BreakerControl": {
    "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A/Circuit.BreakerControl"
  },
  "#Outlet.ResetMetrics": {
    "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A/Circuit.ResetMetrics"
  }
},
"@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A"
}

```

## Facility 1.0.0

v1.0

2019.4

The Facility schema represents the physical location containing equipment, such as a room, building, or campus.

### URIs:

/redfish/v1/Facilities/{[FacilityId](#)}

<b>FacilityType</b>	string (enum)	read-only required	The type of location this resource represents. <i>For the possible property values, see <a href="#">FacilityType</a> in Property Details.</i>
<b>Links {</b>	object		The links to other Resources that are related to this resource.
<b>ContainedByFacility {</b>	object		The link to the facility that contains this facility.
<b>@odata.id</b> }	string	read-only	<i>Link to another Facility resource.</i>
<b>ContainsChassis [ {</b>	array		An array of links to outermost chassis contained within this facility.
<b>@odata.id</b> }]	string	read-only	The unique identifier for a resource.
<b>ContainsChassis@odata.count</b>	integer	read-only	The number of items in a collection.
<b>ContainsFacilities [ {</b>	array		An array of links to other facilities contained within this facility.
<b>@odata.id</b> }]	string	read-only	<i>Link to another Facility resource.</i>
<b>ContainsFacilities@odata.count</b>	integer	read-only	The number of items in a collection.
<b>FloorPDUs [ {</b>	array		An array of links to the floor power distribution units in this facility.
<b>@odata.id</b> }]	string	read-only	<i>Link to a PowerDistribution resource. See the Links section and the <a href="#">PowerDistribution</a> schema for details.</i>
<b>FloorPDUs@odata.count</b>	integer	read-only	The number of items in a collection.
<b>ManagedBy [ {</b>	array		An array of links to the managers responsible for managing this facility.
<b>@odata.id</b> }]	string	read-only	The unique identifier for a resource.
<b>ManagedBy@odata.count</b>	integer	read-only	The number of items in a collection.
<b>Oem { }</b>	object		The OEM extension property. <i>See the <a href="#">Resource</a> schema for details on this property.</i>
<b>RackPDUs [ {</b>	array		An array of links to the rack-level power distribution units in this facility.
<b>@odata.id</b> }]	string	read-only	<i>Link to a PowerDistribution resource. See the Links section and the <a href="#">PowerDistribution</a> schema for details.</i>
<b>RackPDUs@odata.count</b>	integer	read-only	The number of items in a collection.
<b>Switchgear [ {</b>	array		An array of links to the switchgear in this facility.
<b>@odata.id</b> }]	string	read-only	<i>Link to a PowerDistribution resource. See the Links section and the <a href="#">PowerDistribution</a> schema for details.</i>
<b>Switchgear@odata.count</b>	integer	read-only	The number of items in a collection.
<b>TransferSwitches [ {</b>	array		An array of links to the transfer switches in this facility.
<b>@odata.id</b> }]	string	read-only	<i>Link to a PowerDistribution resource. See the Links section and the <a href="#">PowerDistribution</a> schema for details.</i>

<b>TransferSwitches@odata.count</b> }	integer	read-only	The number of items in a collection.
<b>Location</b> { }	object		The location of the facility. See the <a href="#">Resource</a> schema for details on this property.
<b>PowerDomains</b> {	object		Link to the power domains in this facility.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Status</b> { }	object		The status and health of the Resource and its subordinate or dependent resources. See the <a href="#">Resource</a> schema for details on this property.

### Property Details

#### FacilityType:

The type of location this resource represents.

string	Description
Building	A structure with a roof and walls.
Floor	A floor inside of a building.
Room	A room inside of a building or floor.
Site	A small area consisting of several buildings.

### Example Response

```
{
  "@odata.type": "#Facility.v1_0_0.Facility",
  "Id": "Room237",
  "Name": "Room #237, 2nd Floor",
  "FacilityType": "Room",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Location": {
    "PostalAddress": {
      "Country": "US",
      "Territory": "OR",
      "City": "Portland",
      "Street": "1001 SW 5th Avenue",
      "HouseNumber": 1100,
      "Name": "DMTF, Inc.",
      "PostalCode": "97204",
      "Floor": "2",
      "Room": "237"
    }
  },
  "PowerDomains": {
    "@odata.id": "/redfish/v1/Facilities/Room237/PowerDomains"
  },
  "Links": {
    "ContainedByFacility": {
      "@odata.id": "/redfish/v1/Facilities/Building"
    },
    "RackPDUs": [
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Facilities/Room237"
}
```

## Outlet 1.0.0

v1.0
2019.4

This is the schema definition for an electrical outlet.

#### URIs:

- /redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Outlets/{OutletId}
- /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Outlets/{OutletId}
- /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Outlets/{OutletId}

<b>CurrentAmps</b> {	object (excerpt)		The current reading for this single phase outlet. This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.
<b>CrestFactor</b> (v1.1+)	number	read-only	The crest factor for this sensor.

		(null)	
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>ElectricalContext</b>	string (enum)	read-only (null)	The combination of current-carrying conductors. <i>For the possible property values, see <a href="#">ElectricalContext</a> in Property Details.</i>
<b>EnergykWh</b> {	object (excerpt)		The energy reading for this outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b> }	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>FrequencyHz</b> {	object (excerpt)		The frequency reading for this outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>IndicatorLED</b>	string (enum)	read-write (null)	The state of the indicator LED, which identifies the outlet. <i>For the possible property values, see <a href="#">IndicatorLED</a> in Property Details.</i>
<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>BranchCircuit</b> {	object	(null)	A reference to the branch circuit related to this outlet. <i>See the <a href="#">Circuit</a> schema for details on this property.</i>
<b>@odata.id</b> }	string	read-only	Link to a <a href="#">Circuit</a> resource. See the <a href="#">Links</a> section and the <a href="#">Circuit</a> schema for details.
<b>Oem</b> { }	object		The OEM extension property. <i>See the <a href="#">Resource</a> schema for details on this property.</i>
<b>NominalVoltage</b>	string (enum)	read-only (null)	The nominal voltage for this outlet. <i>For the possible property values, see <a href="#">NominalVoltage</a> in Property Details.</i>
<b>OutletType</b>	string (enum)	read-only (null)	The type of receptacle according to NEMA, IEC, or regional standards. <i>For the possible property values, see <a href="#">OutletType</a> in Property Details.</i>
<b>PhaseWiringType</b>	string (enum)	read-only (null)	The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires). <i>For the possible property values, see <a href="#">PhaseWiringType</a> in Property Details.</i>
<b>PolyPhaseCurrentAmps</b> {	object	(null)	The current readings for this outlet.
<b>Line1</b> {	object (excerpt)		Line 1 current sensor. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line2</b> {	object		Line 2 current sensor.

	(excerpt)		<i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number	read-only (null)	The total harmonic distortion (THD).
<b>Line3</b> {	object (excerpt)		Line 3 current sensor. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number	read-only (null)	The total harmonic distortion (THD).
<b>Neutral</b> {	object (excerpt)		Neutral line current sensor. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number	read-only (null)	The total harmonic distortion (THD).
<b>PolyPhaseVoltage</b> {	object	(null)	The voltage readings for this outlet.
<b>Line1ToLine2</b> {	object (excerpt)		The Line 1 to Line 2 voltage reading for this outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number	read-only (null)	The total harmonic distortion (THD).
<b>Line1ToNeutral</b> {	object (excerpt)		The Line 1 to Neutral voltage reading for this outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+)	number	read-only (null)	The total harmonic distortion (THD).
<b>Line2ToLine3</b> {	object (excerpt)		The Line 2 to Line 3 voltage reading for this outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>

<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line2ToNeutral</b> {	object (excerpt)		The Line 2 to Neutral voltage reading for this outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line3ToLine1</b> {	object (excerpt)		The Line 3 to Line 1 voltage reading for this outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>Line3ToNeutral</b> {	object (excerpt)		The Line 3 to Neutral voltage reading for this outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor</b> (v1.1+)	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent</b> (v1.1+) }	number	read-only (null)	The total harmonic distortion (THD).
<b>PowerCycleDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power on after a PowerControl action to cycle power. Zero seconds indicates no delay.
<b>PowerEnabled</b>	boolean	read-only (null)	Indicates if the outlet can be powered.
<b>PowerOffDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power off after a PowerControl action. Zero seconds indicates no delay to power off.
<b>PowerOnDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power up after a power cycle or a PowerControl action. Zero seconds indicates no delay to power up.
<b>PowerRestoreDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
<b>PowerRestorePolicy</b>	string (enum)	read-write	The desired power state of the outlet when power is restored after a power loss. <i>For the possible property values, see <a href="#">PowerRestorePolicy</a> in Property Details.</i>
<b>PowerState</b>	string (enum)	read-only (null)	The power state of the outlet. <i>For the possible property values, see <a href="#">PowerState</a> in Property Details.</i>
<b>PowerWatts</b> {	object		The power reading for this outlet.

<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>RatedCurrentAmps</b>	number (A)	read-only (null)	The rated maximum current allowed for this outlet.
<b>Status {}</b>	object		The status and health of the resource and its subordinate or dependent resources. See the <a href="#">Resource</a> schema for details on this property.
<b>Voltage {</b>	object (excerpt)		The voltage reading for this single phase outlet. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>CrestFactor (v1.1+)</b>	number	read-only (null)	The crest factor for this sensor.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>THDPercent (v1.1+)</b>	number	read-only (null)	The total harmonic distortion (THD).
<b>VoltageType</b>	string (enum)	read-only (null)	The type of voltage applied to the outlet. For the possible property values, see <a href="#">VoltageType</a> in Property Details.

## Actions

### PowerControl

This action turns the outlet on or off.

**Action URI:** {Base URI of target resource}/Actions/Outlet.PowerControl

Perform the action using a POST to the specific Action URI for this resource. Parameters for the action are passed in a JSON body and are defined as follows:

{			
<b>PowerState</b>	string (enum)	optional	The desired power state of the outlet. For the possible property values, see <a href="#">PowerState</a> in Property Details.
}			

### ResetMetrics

This action resets metrics related to this outlet.

**Action URI:** {Base URI of target resource}/Actions/Outlet.ResetMetrics

Perform the action using a POST to the specific Action URI for this resource. This action takes no parameters.

## Property Details

### ElectricalContext:

The combination of current-carrying conductors.

string	Description
Line1	The circuits that share the L1 current-carrying conductor.
Line1ToLine2	The circuit formed by L1 and L2 current-carrying conductors.
Line1ToNeutral	The circuit formed by L1 and neutral current-carrying conductors.
Line1ToNeutralAndL1L2	The circuit formed by L1, L2, and neutral current-carrying conductors.

Line2	The circuits that share the L2 current-carrying conductor.
Line2ToLine3	The circuit formed by L2 and L3 current-carrying conductors.
Line2ToNeutral	The circuit formed by L2 and neutral current-carrying conductors.
Line2ToNeutralAndL1L2	The circuit formed by L1, L2, and Neutral current-carrying conductors.
Line2ToNeutralAndL2L3	The circuits formed by L2, L3, and neutral current-carrying conductors.
Line3	The circuits that share the L3 current-carrying conductor.
Line3ToLine1	The circuit formed by L3 and L1 current-carrying conductors.
Line3ToNeutral	The circuit formed by L3 and neutral current-carrying conductors.
Line3ToNeutralAndL3L1	The circuit formed by L3, L1, and neutral current-carrying conductors.
LineToLine	The circuit formed by two current-carrying conductors.
LineToNeutral	The circuit formed by a line and neutral current-carrying conductor.
Neutral	The grounded current-carrying return circuit of current-carrying conductors.
Total	The circuit formed by all current-carrying conductors.

**IndicatorLED:**

The state of the indicator LED, which identifies the outlet.

string	Description
Blinking	The indicator LED is blinking.
Lit	The indicator LED is lit.
Off	The indicator LED is off.

**NominalVoltage:**

The nominal voltage for this outlet.

string	Description
AC100To240V	AC 100-240V nominal.
AC100To277V	AC 100-277V nominal.
AC120V	AC 120V nominal.
AC200To240V	AC 200-240V nominal.
AC200To277V	AC 200-277V nominal.
AC208V	AC 208V nominal.
AC230V	AC 230V nominal.
AC240AndDC380V	AC 200-240V and DC 380V.
AC240V	AC 240V nominal.
AC277AndDC380V	AC 200-277V and DC 380V.
AC277V	AC 277V nominal.
AC400V	AC 400V or 415V nominal.
AC480V	AC 480V nominal.
DC240V	DC 240V nominal.
DC380V	High Voltage DC (380V).
DCNeg48V	-48V DC.

**OutletType:**

The type of receptacle according to NEMA, IEC, or regional standards.

string	Description

BS_1363_Type_G	BS 1363 Type G (250V; 13A).
CEE_7_Type_E	CEE 7/7 Type E (250V; 16A).
CEE_7_Type_F	CEE 7/7 Type F (250V; 16A).
IEC_60320_C13	IEC C13 (250V; 10A or 15A).
IEC_60320_C19	IEC C19 (250V; 16A or 20A).
NEMA_5_15R	NEMA 5-15R (120V; 15A).
NEMA_5_20R	NEMA 5-20R (120V; 20A).
NEMA_L5_20R	NEMA L5-20R (120V; 20A).
NEMA_L5_30R	NEMA L5-30R (120V; 30A).
NEMA_L6_20R	NEMA L6-20R (250V; 20A).
NEMA_L6_30R	NEMA L6-30R (250V; 30A).
SEV_1011_TYPE_12	SEV 1011 Type 12 (250V; 10A).
SEV_1011_TYPE_23	SEV 1011 Type 23 (250V; 16A).

**PhaseWiringType:**

The number of ungrounded current-carrying conductors (phases) and the total number of conductors (wires).

string	Description
OneOrTwoPhase3Wire	Single or Two-Phase / 3-Wire (Line1, Line2 or Neutral, Protective Earth).
OnePhase3Wire	Single-phase / 3-Wire (Line1, Neutral, Protective Earth).
ThreePhase4Wire	Three-phase / 4-Wire (Line1, Line2, Line3, Protective Earth).
ThreePhase5Wire	Three-phase / 5-Wire (Line1, Line2, Line3, Neutral, Protective Earth).
TwoPhase3Wire	Two-phase / 3-Wire (Line1, Line2, Protective Earth).
TwoPhase4Wire	Two-phase / 4-Wire (Line1, Line2, Neutral, Protective Earth).

**PowerRestorePolicy:**

The desired power state of the outlet when power is restored after a power loss.

string	Description
AlwaysOff	Always remain powered off when external power is applied.
AlwaysOn	Always power on when external power is applied.
LastState	Return to the last power state (on or off) when external power is applied.

**PowerState:**

The power state of the outlet.

string	Description
Off	The state is powered off.
On	The state is powered on.
PoweringOff	A temporary state between on and off.
PoweringOn	A temporary state between off and on.

**VoltageType:**

The type of voltage applied to the outlet.

string	Description
AC	Alternating Current (AC) outlet.
DC	Direct Current (DC) outlet.

**Example Response**

```

{
  "@odata.type": "#Outlet.v1_0_0.Outlet",
  "Id": "A1",
  "Name": "Outlet A1, Branch Circuit A",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "PhaseWiringType": "OnePhase3Wire",
  "VoltageType": "AC",
  "OutletType": "NEMA_5_20R",
  "RatedCurrentAmps": 20,
  "NominalVoltage": "AC120V",
  "IndicatorLED": "Lit",
  "PowerOnDelaySeconds": 4,
  "PowerOffDelaySeconds": 0,
  "PowerState": "On",
  "PowerEnabled": true,
  "Voltage": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageA1",
    "Reading": 117.5
  },
  "PolyPhaseVoltage": {
    "Line1ToNeutral": {
      "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/VoltageA1",
      "Reading": 117.5
    }
  },
  "CurrentAmps": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA1",
    "Reading": 1.68
  },
  "PolyPhaseCurrentAmps": {
    "Line1": {
      "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/CurrentA1",
      "Reading": 1.68
    }
  },
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PowerA1",
    "Reading": 197.4,
    "ApparentVA": 197.4,
    "ReactiveVAR": 0,
    "PowerFactor": 1
  },
  "FrequencyHz": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/FrequencyA1",
    "Reading": 60
  },
  "EnergykWh": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/EnergyA1",
    "Reading": 36166
  },
  "Actions": {
    "#Outlet.PowerControl": {
      "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1/Outlet.PowerControl"
    },
    "#Outlet.ResetMetrics": {
      "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1/Outlet.ResetMetrics"
    }
  },
  "Links": {
    "BranchCircuit": {
      "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches/A"
    }
  },
  "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
}

```

## OutletGroup 1.0.0

v1.0
2019.4

This is the schema definition for an electrical outlet group.

### URIs:

/redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/OutletGroups/{OutletGroupId}

/redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/OutletGroups/{OutletGroupId}

<b>CreatedBy</b>	string	read-write (null)	The creator of this outlet group.
<b>EnergykWh</b> {	object (excerpt)		The energy reading for this outlet group. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only (null)	The total accumulation value for this sensor.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b>	string	read-only (null)	The date and time when the time-based properties were last reset.
}			

<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>Oem</b> { }	object		The OEM extension property. See the <a href="#">Resource</a> schema for details on this property.
<b>Outlets</b> [ {	array		The set of outlets in this outlet group.
<b>@odata.id</b> } ]	string	read-only	Link to a <a href="#">Outlet</a> resource. See the <a href="#">Links</a> section and the <a href="#">Outlet</a> schema for details.
<b>Outlets@odata.count</b> }	integer	read-only	The number of items in a collection.
<b>PowerCycleDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power on after a <a href="#">PowerControl</a> action to cycle power. Zero seconds indicates no delay.
<b>PowerEnabled</b>	boolean	read-only (null)	Indicates if the outlet group can be powered.
<b>PowerOffDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power off after a <a href="#">PowerControl</a> action. Zero seconds indicates no delay to power off.
<b>PowerOnDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power up after a power cycle or a <a href="#">PowerControl</a> action. Zero seconds indicates no delay to power up.
<b>PowerRestoreDelaySeconds</b>	number	read-write (null)	The number of seconds to delay power on after power has been restored. Zero seconds indicates no delay.
<b>PowerRestorePolicy</b>	string (enum)	read-write	The desired power state of the outlet group when power is restored after a power loss. For the possible property values, see <a href="#">PowerRestorePolicy</a> in <a href="#">Property Details</a> .
<b>PowerState</b>	string (enum)	read-only (null)	The power state of the outlet group. For the possible property values, see <a href="#">PowerState</a> in <a href="#">Property Details</a> .
<b>PowerWatts</b> {	object (excerpt)		The power reading for this outlet group. This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in <a href="#">DataSourceUri</a> .
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared <a href="#">ApparentVA</a> and squared <a href="#">Power (Reading)</a> for a circuit, in var units.
<b>Reading</b> }	number	read-only (null)	The sensor value.
<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. See the <a href="#">Resource</a> schema for details on this property.

## Actions

### PowerControl

This action turns the outlet group on or off.

**Action URI:** {Base URI of target resource}/Actions/OutletGroup.PowerControl

Perform the action using a POST to the specific Action URI for this resource. Parameters for the action are passed in a JSON body and are defined as follows:

{			
<b>PowerState</b>	string (enum)	optional	The desired power state of the outlet group. For the possible property values, see <a href="#">PowerState</a> in <a href="#">Property Details</a> .
}			

### ResetMetrics

This action resets metrics related to this outlet group.

**Action URI:** {Base URI of target resource}/Actions/OutletGroup.ResetMetrics

Perform the action using a POST to the specific Action URI for this resource. This action takes no parameters.

## Property Details

**PowerRestorePolicy:**

The desired power state of the outlet group when power is restored after a power loss.

string	Description
AlwaysOff	Always remain powered off when external power is applied.
AlwaysOn	Always power on when external power is applied.
LastState	Return to the last power state (on or off) when external power is applied.

**PowerState:**

The power state of the outlet group.

string	Description
Off	The state is powered off.
On	The state is powered on.
PoweringOff	A temporary state between on and off.
PoweringOn	A temporary state between off and on.

**Example Response**

```
{
  "@odata.type": "#OutletGroup.v1_0_0.OutletGroup",
  "Id": "Rack5Storage",
  "Name": "Outlet Group Rack5Storage",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "CreatedBy": "Bob",
  "PowerOnDelaySeconds": 4,
  "PowerOffDelaySeconds": 0,
  "PowerState": "On",
  "PowerEnabled": true,
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/GroupPowerA",
    "Reading": 412.36
  },
  "EnergykWh": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/GroupEnergyA",
    "Reading": 26880
  },
  "Links": {
    "Outlets": [
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A1"
      },
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A2"
      },
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets/A3"
      }
    ]
  },
  "Actions": {
    "#Circuit.PowerControl": {
      "target": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage/OutletGroup.PowerControl"
    },
    "#Outlet.ResetMetrics": {
      "target": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage/OutletGroup.ResetMetrics"
    }
  },
  "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups/Rack5Storage"
}
```

**PowerDistribution 1.0.0**

v1.0
2019.4

This is the schema definition for a power distribution component or unit, such as a floor power distribution unit (PDU) or switchgear.

**URIs:**

- /redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}
- /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}
- /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}

<b>AssetTag</b>	string	read-write (null)	The user-assigned asset tag for this equipment.
<b>Branches</b> {	object		A link to the branch circuits for this equipment.
<b>@odata.id</b>	string	read-only	The unique identifier for a resource.

<b>EquipmentType</b>	string (enum)	read-only required	The type of equipment this resource represents. <i>For the possible property values, see <a href="#">EquipmentType</a> in Property Details.</i>
<b>Feeders {</b>	object		A link to the feeder circuits for this equipment.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>FirmwareVersion</b>	string	read-only	The firmware version of this equipment.
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>Chassis [ {</b>	array		An array of links to the chassis that contain this equipment.
<b>@odata.id</b> }]	string	read-only	The unique identifier for a resource.
<b>Chassis@odata.count</b>	integer	read-only	The number of items in a collection.
<b>Facility {</b>	object		A link to the facility that contains this equipment. <i>See the <a href="#">Facility</a> schema for details on this property.</i>
<b>@odata.id</b> }	string	read-only	<i>Link to a Facility resource. See the Links section and the <a href="#">Facility</a> schema for details.</i>
<b>ManagedBy [ {</b>	array		An array of links to the managers responsible for managing this equipment.
<b>@odata.id</b> }]	string	read-only	The unique identifier for a resource.
<b>ManagedBy@odata.count</b>	integer	read-only	The number of items in a collection.
<b>Oem { }</b>	object		The OEM extension property. <i>See the <a href="#">Resource</a> schema for details on this property.</i>
<b>Location { }</b>	object		The location of the equipment. <i>See the <a href="#">Resource</a> schema for details on this property.</i>
<b>Mains {</b>	object		A link to the power input circuits for this equipment.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Manufacturer</b>	string	read-only (null)	The manufacturer of this equipment.
<b>Metrics {</b>	object		A link to the summary metrics for this equipment. <i>See the <a href="#">PowerDistributionMetrics</a> schema for details on this property.</i>
<b>@odata.id</b> }	string	read-only	<i>Link to a PowerDistributionMetrics resource. See the Links section and the <a href="#">PowerDistributionMetrics</a> schema for details.</i>
<b>Model</b>	string	read-only (null)	The product model number of this equipment.
<b>OutletGroups {</b>	object		A link to the outlet groups for this equipment.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Outlets {</b>	object		A link to the outlets for this equipment.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>PartNumber</b>	string	read-only (null)	The part number for this equipment.
<b>ProductionDate</b>	string	read-only (null)	The production or manufacturing date of this equipment.
<b>Sensors {</b>	object		A link to the collection of sensors located in the equipment and sub-components.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>SerialNumber</b>	string	read-only (null)	The serial number for this equipment.

<b>Status</b> { }	object		The status and health of the resource and its subordinate or dependent resources. See the <a href="#">Resource</a> schema for details on this property.
<b>Subfeeds</b> {	object		A link to the subfeed circuits for this equipment.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>TransferConfiguration</b> {	object	(null)	The configuration settings for an automatic transfer switch.
<b>ActiveMainsId</b>	string	read-write (null)	The mains circuit that is switched on and qualified to supply power to the output circuit.
<b>AutoTransferEnabled</b>	boolean	read-write (null)	Indicates if the qualified alternate mains circuit is automatically switched on when the preferred mains circuit becomes unqualified and is automatically switched off.
<b>ClosedTransitionAllowed</b>	boolean	read-write (null)	Indicates if a make-before-break switching sequence of the mains circuits is permitted when they are both qualified and in synchronization.
<b>ClosedTransitionTimeoutSeconds</b>	integer	read-write (null)	The time in seconds to wait for a closed transition to occur.
<b>PreferredMainsId</b>	string	read-write (null)	The preferred source for the mains circuit to this equipment.
<b>RetransferDelaySeconds</b>	integer	read-write (null)	The time in seconds to delay the automatic transfer from the alternate mains circuit back to the preferred mains circuit.
<b>RetransferEnabled</b>	boolean	read-write (null)	Indicates if the automatic transfer is permitted from the alternate mains circuit back to the preferred mains circuit after the preferred mains circuit is qualified again and the Retransfer Delay time has expired.
<b>TransferDelaySeconds</b>	integer	read-write (null)	The time in seconds to delay the automatic transfer from the preferred mains circuit to the alternate mains circuit when the preferred mains circuit is disqualified.
<b>TransferInhibit</b> }	boolean	read-write (null)	Indicates if any transfer is inhibited.
<b>TransferCriteria</b> {	object	(null)	The criteria used to initiate a transfer for an automatic transfer switch.
<b>OverNominalFrequencyHz</b>	number (Hz)	read-write (null)	The frequency in Hertz over the nominal value that satisfies a criterion for transfer.
<b>OverVoltageRMSPercentage</b>	number (%)	read-write (null)	The positive percentage of voltage RMS over the nominal value that satisfies a criterion for transfer.
<b>TransferSensitivity</b>	string (enum)	read-write (null)	The sensitivity to voltage waveform quality to satisfy the criterion for initiating a transfer. For the possible property values, see <a href="#">TransferSensitivity</a> in Property Details.
<b>UnderNominalFrequencyHz</b>	number (Hz)	read-write (null)	The frequency in Hertz under the nominal value that satisfies a criterion for transfer.
<b>UnderVoltageRMSPercentage</b> }	number (%)	read-write (null)	The negative percentage of voltage RMS under the nominal value that satisfies a criterion for transfer.
<b>UUID</b>	string	read-only (null)	The UUID for this equipment.
<b>Version</b>	string	read-only (null)	The hardware version of this equipment.

## Actions

### TransferControl

This action transfers control to the alternative input circuit.

**Action URI:** {Base URI of target resource}/Actions/PowerDistribution.TransferControl

Perform the action using a POST to the specific Action URI for this resource. This action takes no parameters.

## Property Details

### EquipmentType:

The type of equipment this resource represents.

string	Description
AutomaticTransferSwitch	An automatic power transfer switch.

FloorPDU	A power distribution unit providing feeder circuits for further power distribution.
ManualTransferSwitch	A manual power transfer switch.
RackPDU	A power distribution unit providing outlets for a rack or similiar quantity of devices.
Switchgear	Electrical switchgear.

**TransferSensitivity:**

The sensitivity to voltage waveform quality to satisfy the criterion for initiating a transfer.

string	Description
High	High sensitivity for initiating a transfer.
Low	Low sensitivity for initiating a transfer.
Medium	Medium sensitivity for initiating a transfer.

**Example Response**

```
{
  "@odata.type": "#PowerDistribution.v1_0_0.PowerDistribution",
  "Id": "1",
  "EquipmentType": "RackPDU",
  "Name": "RackPDU1",
  "FirmwareVersion": "4.3.0",
  "Version": "1.03b",
  "ProductionDate": "2017-01-11T08:00:00Z",
  "Manufacturer": "Contoso",
  "Model": "ZAP4000",
  "SerialNumber": "29347ZT536",
  "PartNumber": "AA-23",
  "UUID": "32354641-4135-4332-4a35-313735303734",
  "AssetTag": "PDX-92381",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Location": {
    "Placement": {
      "Row": "North 1"
    }
  },
  "Mains": {
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Mains"
  },
  "Branches": {
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Branches"
  },
  "Outlets": {
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Outlets"
  },
  "OutletGroups": {
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/OutletGroups"
  },
  "Metrics": {
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics"
  },
  "Sensors": {
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors"
  },
  "Links": {
    "Facility": {
      "@odata.id": "/redfish/v1/Facilities/Room237"
    }
  },
  "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
}
```

**PowerDistributionMetrics 1.0.0**

v1.0
2019.4

This is the schema definition for the metrics of a power distribution component or unit, such as a floor power distribution unit (PDU) or switchgear.

**URIs:**

- /redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Metrics
- /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Metrics
- /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Metrics

<b>EnergykWh</b> {	object (excerpt)		The energy consumption of this unit. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>LifetimeReading</b> (v1.1+)	number	read-only	The total accumulation value for this sensor.

		(null)	
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>SensorResetTime</b>	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>PowerWatts</b> {	object (excerpt)		The total power reading for this equipment. <i>This object is an excerpt of the <a href="#">Sensor</a> resource located at the URI shown in DataSourceUri.</i>
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>DataSourceUri</b>	string	read-only (null)	The link to the Resource that provides the data for this sensor.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b>	number	read-only (null)	The sensor value.

## Actions

### ResetMetrics

This action resets the summary metrics related to this equipment.

**Action URI:** {Base URI of target resource}/Actions/PowerDistributionMetrics.ResetMetrics

Perform the action using a POST to the specific Action URI for this resource. This action takes no parameters.

## Example Response

```
{
  "@odata.type": "#PowerDistributionMetrics.v1_0_0.PowerDistributionMetrics",
  "Id": "Metrics",
  "Name": "Summary Metrics",
  "PowerWatts": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUPower",
    "Reading": 6438,
    "ApparentVA": 6300,
    "ReactiveVAR": 100,
    "PowerFactor": 0.93
  },
  "EnergykWh": {
    "DataSourceUri": "/redfish/v1/PowerEquipment/RackPDUs/1/Sensors/PDUEnergy",
    "Reading": 56438
  },
  "Actions": {
    "#PowerDistributionMetrics.ResetMetrics": {
      "target": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics/PowerDistributionMetrics.ResetMetrics"
    }
  },
  "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1/Metrics"
}
```

## PowerDomain 1.0.0

v1.0
2019.4

This is the schema definition for the DCIM power domain.

### URIs:

/redfish/v1/Facilities/{FacilityId}/PowerDomains/{PowerDomainId}

<b>Links</b> {	object		The links to other resources that are related to this resource.
<b>FloorPDUs</b> [ {	array		An array of links to the floor power distribution units in this power domain.
<b>@odata.id</b> ]]	string	read-only	Link to a PowerDistribution resource. See the Links section and the <a href="#">PowerDistribution</a> schema for details.
<b>FloorPDUs@odata.count</b>	integer	read-only	The number of items in a collection.
<b>ManagedBy</b> [ {	array		An array of links to the managers responsible for managing this power domain.
<b>@odata.id</b> ]]	string	read-only	The unique identifier for a resource.

<b>ManagedBy@odata.count</b>	integer	read-only	The number of items in a collection.
<b>Oem { }</b>	object		The OEM extension property. See the <a href="#">Resource</a> schema for details on this property.
<b>RackPDUs [ {</b>	array		An array of links to the rack-level power distribution units in this power domain.
<b>@odata.id</b> <b>}]</b>	string	read-only	Link to a <i>PowerDistribution</i> resource. See the <i>Links</i> section and the <a href="#">PowerDistribution</a> schema for details.
<b>RackPDUs@odata.count</b>	integer	read-only	The number of items in a collection.
<b>Switchgear [ {</b>	array		An array of links to the switchgear in this power domain.
<b>@odata.id</b> <b>}]</b>	string	read-only	Link to a <i>PowerDistribution</i> resource. See the <i>Links</i> section and the <a href="#">PowerDistribution</a> schema for details.
<b>Switchgear@odata.count</b>	integer	read-only	The number of items in a collection.
<b>TransferSwitches [ {</b>	array		An array of links to the transfer switches in this power domain.
<b>@odata.id</b> <b>}]</b>	string	read-only	Link to a <i>PowerDistribution</i> resource. See the <i>Links</i> section and the <a href="#">PowerDistribution</a> schema for details.
<b>TransferSwitches@odata.count</b> <b>}</b>	integer	read-only	The number of items in a collection.
<b>Status { }</b>	object		The status and health of the resource and its subordinate or dependent resources. See the <a href="#">Resource</a> schema for details on this property.

### Example Response

```
{
  "@odata.type": "#PowerDomain.v1_0_0.PowerDomain",
  "Id": "Row1",
  "Name": "Row #1 Domain",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Links": {
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/BMC"
      }
    ],
    "RackPDUs": [
      {
        "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs/1"
      }
    ]
  },
  "@odata.id": "/redfish/v1/Facilities/Room237/PowerDomains/Row1"
}
```

## PowerEquipment 1.0.0

v1.0

2019.4

This is the schema definition for the set of power equipment.

#### URIs:

/redfish/v1/PowerEquipment

<b>FloorPDUs {</b>	object		A link to a collection of floor power distribution units.
<b>@odata.id</b> <b>}</b>	string	read-only	The unique identifier for a resource.
<b>Links {</b>	object		The links to other resources that are related to this resource.
<b>ManagedBy [ {</b>	array		An array of links to the managers responsible for managing this power equipment.
<b>@odata.id</b> <b>}]</b>	string	read-only	The unique identifier for a resource.
<b>ManagedBy@odata.count</b>	integer	read-only	The number of items in a collection.
<b>Oem { }</b> <b>}</b>	object		The OEM extension property. See the <a href="#">Resource</a> schema for details on this property.

<b>RackPDUs</b> {	object		A link to a collection of rack-level power distribution units.
@odata.id	string	read-only	The unique identifier for a resource.
}			
<b>Status</b> {}	object		The status and health of the resource and its subordinate or dependent resources. See the <a href="#">Resource</a> schema for details on this property.
<b>Switchgear</b> {	object		A link to a collection of switchgear.
@odata.id	string	read-only	The unique identifier for a resource.
}			
<b>TransferSwitches</b> {	object		A link to a collection of transfer switches.
@odata.id	string	read-only	The unique identifier for a resource.
}			

## Example Response

```
{
  "@odata.type": "#PowerEquipment.v1_0_0.PowerEquipment",
  "Id": "PowerEquipment",
  "Name": "DCIM Power Equipment",
  "Status": {
    "State": "Enabled",
    "HealthRollup": "OK"
  },
  "FloorPDUs": {
    "@odata.id": "/redfish/v1/PowerEquipment/FloorPDUs"
  },
  "RackPDUs": {
    "@odata.id": "/redfish/v1/PowerEquipment/RackPDUs"
  },
  "TransferSwitches": {
    "@odata.id": "/redfish/v1/PowerEquipment/TransferSwitches"
  },
  "Links": {},
  "@odata.id": "/redfish/v1/PowerEquipment"
}
```

## Sensor 1.1.0

v1.1	v1.0
2019.4	2018.3

The Sensor schema describes a sensor and its properties.

### URIs:

/redfish/v1/Chassis/{ChassisId}/Sensors/{SensorId}  
 /redfish/v1/PowerEquipment/FloorPDUs/{PowerDistributionId}/Sensors/{SensorId}  
 /redfish/v1/PowerEquipment/RackPDUs/{PowerDistributionId}/Sensors/{SensorId}  
 /redfish/v1/PowerEquipment/Sensors/{SensorId}  
 /redfish/v1/PowerEquipment/TransferSwitches/{PowerDistributionId}/Sensors/{SensorId}

<b>Accuracy</b>	number (%)	read-only (null)	The estimated percent error of measured versus actual values.
<b>AdjustedMaxAllowableOperatingValue</b>	number	read-only (null)	The adjusted maximum allowable operating value for this equipment based on the environmental conditions.
<b>AdjustedMinAllowableOperatingValue</b>	number	read-only (null)	The adjusted minimum allowable operating value for this equipment based on the environmental conditions.
<b>ApparentVA</b>	number (V.A)	read-only (null)	The product of voltage and current for an AC circuit, in Volt-Ampere units.
<b>CrestFactor (v1.1+)</b>	number	read-only (null)	The crest factor for this sensor.
<b>ElectricalContext</b>	string (enum)	read-only (null)	The combination of current-carrying conductors. For the possible property values, see <a href="#">ElectricalContext</a> in Property Details.
<b>Implementation (v1.1+)</b>	string (enum)	read-only (null)	The implementation of the sensor. For the possible property values, see <a href="#">Implementation</a> in Property Details.
<b>LifetimeReading (v1.1+)</b>	number	read-only (null)	The total accumulation value for this sensor.
<b>LoadPercent (deprecated v1.1)</b>	number (%)	read-only (null)	The power load utilization for this sensor. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of using a Sensor instance with a</i>

			<i>ReadingType</i> of `Percent` to show utilization values when needed.
<b>Location { }</b>	object		The location information for this sensor. See the <a href="#">Resource</a> schema for details on this property.
<b>MaxAllowableOperatingValue</b>	number	read-only (null)	The maximum allowable operating value for this equipment.
<b>MinAllowableOperatingValue</b>	number	read-only (null)	The minimum allowable operating value for this equipment.
<b>PeakReading</b>	number	read-only (null)	The peak sensor value.
<b>PeakReadingTime</b>	string	read-only (null)	The time when the peak sensor value occurred.
<b>PhysicalContext</b>	string (enum)	read-only (null)	The area or device to which this sensor measurement applies. For the possible property values, see <a href="#">PhysicalContext</a> in Property Details.
<b>PhysicalSubContext</b>	string (enum)	read-only (null)	The usage or location within a device to which this sensor measurement applies. For the possible property values, see <a href="#">PhysicalSubContext</a> in Property Details.
<b>PowerFactor</b>	number	read-only (null)	The power factor for this sensor.
<b>Precision</b>	number	read-only (null)	The number of significant digits in the reading.
<b>ReactiveVAR</b>	number (V.A)	read-only (null)	The square root of the difference term of squared ApparentVA and squared Power (Reading) for a circuit, in var units.
<b>Reading</b>	number	read-only (null)	The sensor value.
<b>ReadingRangeMax</b>	number	read-only (null)	The maximum possible value for this sensor.
<b>ReadingRangeMin</b>	number	read-only (null)	The minimum possible value for this sensor.
<b>ReadingTime (v1.1+)</b>	string	read-only (null)	The date and time that the reading was acquired from the sensor.
<b>ReadingType</b>	string (enum)	read-only (null)	The type of sensor. For the possible property values, see <a href="#">ReadingType</a> in Property Details.
<b>ReadingUnits</b>	string	read-only (null)	The units of the reading and thresholds.
<b>SensingFrequency (deprecated v1.1)</b>	number	read-only (null)	The time interval between readings of the physical sensor. <i>Deprecated in v1.1 and later. This property has been deprecated in favor of the SensingInterval property, which uses the duration time format for interoperability.</i>
<b>SensingInterval (v1.1+)</b>	string	read-only (null)	The time interval between readings of the sensor.
<b>SensorResetTime</b>	string	read-only (null)	The date and time when the time-based properties were last reset.
<b>Status { }</b>	object		The status and health of the Resource and its subordinate or dependent Resources. See the <a href="#">Resource</a> schema for details on this property.
<b>THDPercent (v1.1+)</b>	number	read-only (null)	The total harmonic distortion (THD).
<b>Thresholds { }</b>	object		The set of thresholds defined for this sensor.
<b>LowerCaution { }</b>	object		The value at which the reading is below normal range.
<b>Activation</b>	string (enum)	read-write (null)	The direction of crossing that activates this threshold. For the possible property values, see <a href="#">Activation</a> in Property Details.
<b>DwellTime</b>	string	read-write (null)	The duration the sensor value must violate the threshold before the threshold is activated.
<b>Reading</b>	number	read-write (null)	The threshold value.

<b>LowerCritical</b> {	object		The value at which the reading is below normal range but not yet fatal.
<b>Activation</b>	string (enum)	read-write (null)	The direction of crossing that activates this threshold. <i>For the possible property values, see <a href="#">Activation</a> in Property Details.</i>
<b>DwellTime</b>	string	read-write (null)	The duration the sensor value must violate the threshold before the threshold is activated.
<b>Reading</b> }	number	read-write (null)	The threshold value.
<b>LowerFatal</b> {	object		The value at which the reading is below normal range and fatal.
<b>Activation</b>	string (enum)	read-write (null)	The direction of crossing that activates this threshold. <i>For the possible property values, see <a href="#">Activation</a> in Property Details.</i>
<b>DwellTime</b>	string	read-write (null)	The duration the sensor value must violate the threshold before the threshold is activated.
<b>Reading</b> }	number	read-write (null)	The threshold value.
<b>UpperCaution</b> {	object		The value at which the reading is above normal range.
<b>Activation</b>	string (enum)	read-write (null)	The direction of crossing that activates this threshold. <i>For the possible property values, see <a href="#">Activation</a> in Property Details.</i>
<b>DwellTime</b>	string	read-write (null)	The duration the sensor value must violate the threshold before the threshold is activated.
<b>Reading</b> }	number	read-write (null)	The threshold value.
<b>UpperCritical</b> {	object		The value at which the reading is above normal range but not yet fatal.
<b>Activation</b>	string (enum)	read-write (null)	The direction of crossing that activates this threshold. <i>For the possible property values, see <a href="#">Activation</a> in Property Details.</i>
<b>DwellTime</b>	string	read-write (null)	The duration the sensor value must violate the threshold before the threshold is activated.
<b>Reading</b> }	number	read-write (null)	The threshold value.
<b>UpperFatal</b> {	object		The value at which the reading is above normal range and fatal.
<b>Activation</b>	string (enum)	read-write (null)	The direction of crossing that activates this threshold. <i>For the possible property values, see <a href="#">Activation</a> in Property Details.</i>
<b>DwellTime</b>	string	read-write (null)	The duration the sensor value must violate the threshold before the threshold is activated.
<b>Reading</b> }	number	read-write (null)	The threshold value.
<b>VoltageType</b>	string (enum)	read-only (null)	The voltage type for this sensor. <i>For the possible property values, see <a href="#">VoltageType</a> in Property Details.</i>

## Actions

### ResetMetrics

Resets metrics related to this sensor.

**Action URI:** {Base URI of target resource}/Actions/Sensor.ResetMetrics

Perform the action using a POST to the specific Action URI for this resource. This action takes no parameters.

## Property Details

### Activation:

The direction of crossing that activates this threshold.

string	Description
Decreasing	Value decreases below the threshold.
Either	Value crosses the threshold in either direction.

Increasing	Value increases above the threshold.
------------	--------------------------------------

**ElectricalContext:**

The combination of current-carrying conductors.

string	Description
Line1	The circuits that share the L1 current-carrying conductor.
Line1ToLine2	The circuit formed by L1 and L2 current-carrying conductors.
Line1ToNeutral	The circuit formed by L1 and neutral current-carrying conductors.
Line1ToNeutralAndL1L2	The circuit formed by L1, L2, and neutral current-carrying conductors.
Line2	The circuits that share the L2 current-carrying conductor.
Line2ToLine3	The circuit formed by L2 and L3 current-carrying conductors.
Line2ToNeutral	The circuit formed by L2 and neutral current-carrying conductors.
Line2ToNeutralAndL1L2	The circuit formed by L1, L2, and Neutral current-carrying conductors.
Line2ToNeutralAndL2L3	The circuits formed by L2, L3, and neutral current-carrying conductors.
Line3	The circuits that share the L3 current-carrying conductor.
Line3ToLine1	The circuit formed by L3 and L1 current-carrying conductors.
Line3ToNeutral	The circuit formed by L3 and neutral current-carrying conductors.
Line3ToNeutralAndL3L1	The circuit formed by L3, L1, and neutral current-carrying conductors.
LineToLine	The circuit formed by two current-carrying conductors.
LineToNeutral	The circuit formed by a line and neutral current-carrying conductor.
Neutral	The grounded current-carrying return circuit of current-carrying conductors.
Total	The circuit formed by all current-carrying conductors.

**Implementation:**

The implementation of the sensor.

string	Description
PhysicalSensor	The reading is acquired from a physical sensor.
Reported	The reading is obtained from software or a device.
Synthesized	The reading is obtained by applying a calculation on one or more properties. The calculation is not provided.

**PhysicalContext:**

The area or device to which this sensor measurement applies.

string	Description
Accelerator	An accelerator.
ACInput	An AC input.
ACMaintenanceBypassInput	An AC maintenance bypass input.
ACOutput	An AC output.
ACStaticBypassInput	An AC static bypass input.
ACUtilityInput	An AC utility input.
ASIC	An ASIC device, such as a networking chip or chipset component.
Back	The back of the chassis.
Backplane	A backplane within the chassis.
Chassis	The entire chassis.
ComputeBay	Within a compute bay.

CoolingSubsystem	The entire cooling, or air and liquid, subsystem.
CPU	A processor (CPU).
CPUSubsystem	The entire processor (CPU) subsystem.
DCBus	A DC bus.
Exhaust	The air exhaust point or points or region of the chassis.
ExpansionBay	Within an expansion bay.
Fan	A fan.
FPGA	An FPGA.
Front	The front of the chassis.
GPU	A graphics processor (GPU).
GPUSubsystem	The entire graphics processor (GPU) subsystem.
Intake	The air intake point or points or region of the chassis.
LiquidInlet	The liquid inlet point of the chassis.
LiquidOutlet	The liquid outlet point of the chassis.
Lower	The lower portion of the chassis.
Memory	A memory device.
MemorySubsystem	The entire memory subsystem.
Motor	A motor.
NetworkBay	Within a networking bay.
NetworkingDevice	A networking device.
PowerSubsystem	The entire power subsystem.
PowerSupply	A power supply.
PowerSupplyBay	Within a power supply bay.
Rectifier	A rectifier device.
Room	The room.
StorageBay	Within a storage bay.
StorageDevice	A storage device.
SystemBoard	The system board (PCB).
Transformer	A transformer.
Upper	The upper portion of the chassis.
VoltageRegulator	A voltage regulator device.

**PhysicalSubContext:**

The usage or location within a device to which this sensor measurement applies.

string	Description
Input	The input.
Output	The output.

**ReadingType:**

The type of sensor.

string	Description
AirFlow	Airflow.
Altitude	Altitude.
Barometric	Barometric pressure.

Current	Current.
EnergyJoules	Energy (Joules).
EnergykWh	Energy (kWh).
Frequency	Frequency.
Humidity	Relative Humidity.
LiquidFlow	Liquid flow.
LiquidLevel	Liquid level.
Percent (v1.1+)	Percent.
Power	Power.
Pressure	Pressure.
Rotational	Rotational.
Temperature	Temperature.
Voltage	Voltage (AC or DC).

**VoltageType:**

The voltage type for this sensor.

string	Description
AC	Alternating current.
DC	Direct current.

**Example Response**

```
{
  "@odata.type": "#Sensor.v1_1_0.Sensor",
  "Id": "CabinetTemp",
  "Name": "Rack Temperature",
  "ReadingType": "Temperature",
  "ReadingTime": "2019-12-25T04:14:33+06:00",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Reading": 31.6,
  "ReadingUnits": "C",
  "ReadingRangeMin": 0,
  "ReadingRangeMax": 70,
  "Accuracy": 0.25,
  "Precision": 1,
  "SensingInterval": "PT3S",
  "PhysicalContext": "Chassis",
  "Thresholds": {
    "UpperCritical": {
      "Reading": 40,
      "Activation": "Increasing"
    },
    "UpperCaution": {
      "Reading": 35,
      "Activation": "Increasing"
    },
    "LowerCaution": {
      "Reading": 10,
      "Activation": "Increasing"
    }
  },
  "Oem": {},
  "@odata.id": "/redfish/v1/Chassis/1/Sensors/CabinetTemp"
}
```

**ServiceRoot 1.6.0**

v1.6	v1.5	v1.4	v1.3	v1.2	v1.1	v1.0
2019.4	2018.3	2018.2	2017.3	2017.1	2016.2	1.0

The ServiceRoot schema describes the root of the Redfish Service, located at the '/redfish/v1' URI. All other Resources accessible through the Redfish interface on this device are linked directly or indirectly from the Service Root.

**URIs:**

- /redfish/v1
- /redfish/v1/

<b>AccountService</b> {	object	The link to the Account Service.
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<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>CertificateService</b> (v1.5+) {	object		The link to the Certificate Service.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Chassis</b> {	object		The link to a collection of chassis.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>CompositionService</b> (v1.2+) {	object		The link to the Composition Service.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>EventService</b> {	object		The link to the Event Service.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Fabrics</b> (v1.1+) {	object		The link to a collection of all fabric entities.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Facilities</b> (v1.6+) {	object		The link to a collection of facilities.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>JobService</b> (v1.4+) {	object		The link to the JobService.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>JsonSchemas</b> {	object		The link to a collection of JSON Schema files.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Links</b> {	object	required	The links to other Resources that are related to this Resource.
<b>Oem</b> { }	object		The OEM extension property. <i>See the <a href="#">Resource</a> schema for details on this property.</i>
<b>Sessions</b> {	object	required	The link to a collection of Sessions.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Managers</b> {	object		The link to a collection of managers.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>PowerEquipment</b> (v1.6+) {	object		The link to a set of power equipment. <i>See the <a href="#">PowerEquipment</a> schema for details on this property.</i>
<b>@odata.id</b> }	string	read-only	<i>Link to a PowerEquipment resource. See the Links section and the <a href="#">PowerEquipment</a> schema for details.</i>
<b>Product</b> (v1.3+)	string	read-only (null)	The product associated with this Redfish Service.
<b>ProtocolFeaturesSupported</b> (v1.3+) {	object		The information about protocol features that the service supports.
<b>ExcerptQuery</b> (v1.4+)	boolean	read-only	An indication of whether the service supports the excerpt query parameter.
<b>ExpandQuery</b> {	object		The information about the use of \$expand in the service.
<b>ExpandAll</b>	boolean	read-only	An indication of whether the service supports the asterisk (*) option of the \$expand query parameter.
<b>Levels</b>	boolean	read-only	An indication of whether the service supports the \$levels option of the \$expand query parameter.

<b>Links</b>	boolean	read-only	An indication of whether this service supports the tilde (~) option of the \$expand query parameter.
<b>MaxLevels</b>	integer	read-only	The maximum \$levels option value in the \$expand query parameter.
<b>NoLinks</b> }	boolean	read-only	An indication of whether the service supports the period (.) option of the \$expand query parameter.
<b>FilterQuery</b>	boolean	read-only	An indication of whether the service supports the \$filter query parameter.
<b>OnlyMemberQuery (v1.4+)</b>	boolean	read-only	An indication of whether the service supports the only query parameter.
<b>SelectQuery</b> }	boolean	read-only	An indication of whether the service supports the \$select query parameter.
<b>RedfishVersion</b>	string	read-only	The version of the Redfish Service.
<b>Registries</b> {	object		The link to a collection of Registries.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>ResourceBlocks (v1.5+)</b> {	object		The link to a collection of all Resource Block Resources. This collection is intended for implementations that do not contain a Composition Service but that expose Resources to an orchestrator that implements a Composition Service.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>SessionService</b> {	object		The link to the Sessions Service.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>StorageServices (v1.1+)</b> {	object		The link to a collection of all storage service entities.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>StorageSystems (v1.1+)</b> {	object		The link to a collection of storage systems.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Systems</b> {	object		The link to a collection of systems.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>Tasks</b> {	object		The link to the Task Service.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>TelemetryService (v1.4+)</b> {	object		The link to the Telemetry Service.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>UpdateService (v1.1+)</b> {	object		The link to the Update Service.
<b>@odata.id</b> }	string	read-only	The unique identifier for a resource.
<b>UUID</b>	string (null)	read-only	Unique identifier for a service instance. When SSDP is used, this value should be an exact match of the UUID value returned in a 200 OK from an SSDP M-SEARCH request during discovery.
<b>Vendor (v1.5+)</b>	string (null)	read-only	The vendor or manufacturer associated with this Redfish Service.

## Example Response

```
{
  "@odata.type": "#ServiceRoot.v1_6_0.ServiceRoot",
  "Id": "RootService",
  "Name": "Root Service",
  "RedfishVersion": "1.6.0",
  "UUID": "92384634-2938-2342-8820-489239905423",
  "Product": "UR99 1U Server",
  "ProtocolFeaturesSupported": {
    "ExpandQuery": {
      "ExpandAll": true,
      "Levels": true,

```

```

    "MaxLevels": 2,
    "Links": true,
    "NoLinks": true
  },
  "SelectQuery": false,
  "FilterQuery": false,
  "OnlyMemberQuery": true,
  "ExcerptQuery": true
},
"Systems": {
  "@odata.id": "/redfish/v1/Systems"
},
"Chassis": {
  "@odata.id": "/redfish/v1/Chassis"
},
"Managers": {
  "@odata.id": "/redfish/v1/Managers"
},
"UpdateService": {
  "@odata.id": "/redfish/v1/UpdateService"
},
"CompositionService": {
  "@odata.id": "/redfish/v1/CompositionService"
},
"Tasks": {
  "@odata.id": "/redfish/v1/TaskService"
},
"SessionService": {
  "@odata.id": "/redfish/v1/SessionService"
},
"AccountService": {
  "@odata.id": "/redfish/v1/AccountService"
},
"EventService": {
  "@odata.id": "/redfish/v1/EventService"
},
"Links": {
  "Sessions": {
    "@odata.id": "/redfish/v1/SessionService/Sessions"
  }
},
"Oem": {},
"@odata.id": "/redfish/v1/"
}

```

## Redfish documentation generator

This document was created using the Redfish Documentation Generator utility, which uses the contents of the Redfish schema files (in JSON schema format) to automatically generate the bulk of the text. The source code for the utility is available for download at the DMTF's Github repository located at <http://www.github.com/DMTF/Redfish-Tools>.