Firmware Update

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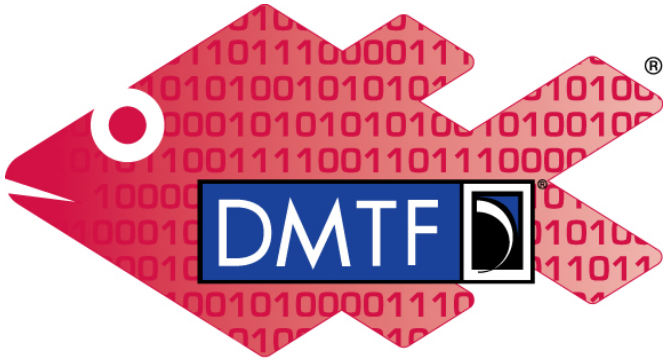
Agenda

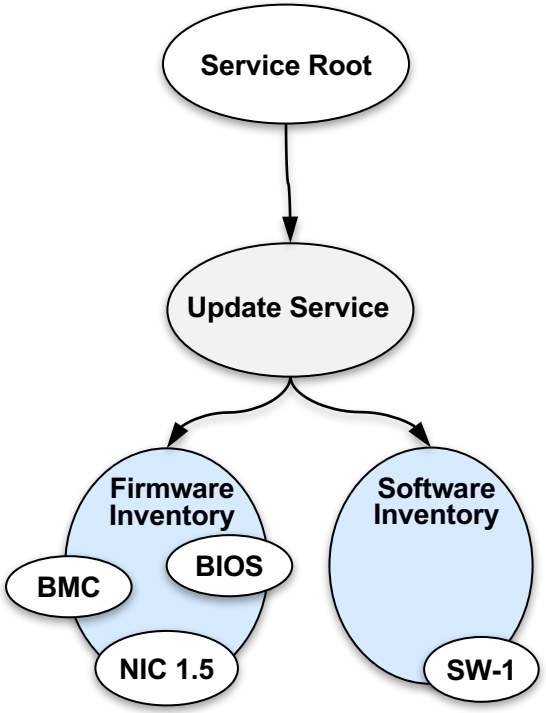
- Firmware Update Model
  - Update Service
  - Firmware Inventory
- Simple Update - pull update
- Multi-part HTTP Push update
- Unstructured HTTP Push update



Redfish

Firmware Update Model

- Update Service
  - The service for updating firmware
  - Firmware updates are accomplished by invoking a Update Service action or performing HTTP Post's
- Firmware Inventory
  - Software components generally referred to as platform firmware
- Software Inventory
  - Software components executed in the context of a host operating system
  - Such as device drivers, applications, or offload workloads



Firmware Package Transfer Methods

- Pull update
  - The Redfish service is provided a URI from which to obtain the firmware update package
  - Also known as Simple Update
- Push update
  - The Redfish service is provided the firmware update package as part of the HTTP POST request

Simple Update - pull update

- This fragment is present in the UpdateService resource when SimpleUpdate action is supported

```
{
    "Actions": {
        "#UpdateService.SimpleUpdate": {
            "target": "/redfish/v1/UpdateService/Actions/SimpleUpdate",
            "@Redfish.ActionInfo": "/redfish/v1/UpdateService/SimpleUpdateActionInfo"
    }
},
```

  - The 'target' property specifies the target of a HTTP POST
  - The SimpleUpdateActionInfo resource describes the parameters that can be included in the HTTP POST message

Parameters for Simple Update

- If these parameters are present in SimpleUpdateActionInfo resource, they can be included in the SimpleUpdate HTTP POST message
  - **ImageURI** specifies the URI of the firmware update package
  - **TransferProtocol** specifies the transfer protocol associated with the URI
  - **Targets** specifies a list of resources to be updated with the firmware update image
  - **User** and **Password** specify the credentials for accessing the firmware update package

Multi-part HTTP Push Update

- This fragment is present in the UpdateService resource when the Multi-part HTTP Push Update action is supported

```
{
    "MultipartHttpPushUri": "/redfish/v1/UpdateService/update-multipart",
    "UpdateParameters": { … }
}
```

  - The 'MultipartHttpPushURI' property specifies the target of a HTTP POST
  - The parts of the multi-part message are described in the table

Part	Req'd	Description
Update parameters	Yes	JSON-formatted part for passing the update parameters. See the "UpdateParameters" property.
Update file	Yes	The opaque blob which contains the firmware image(s) use for the update.

Example: Multipart HTTP push update request

```
POST /redfish/v1/UpdateService/update-multipart HTTP/1.1
Content-Type: multipart/form-data; boundary=--------------------------d74496d66958873e
Content-Length: <computed-length>

--------------------------d74496d66958873e
Content-Disposition: form-data; name="UpdateParameters"
Content-Type: application/json

{}

--------------------------d74496d66958873e
Content-Disposition: form-data; name="UpdateFile"; filename="bmc_update.bin"
Content-Type: application/octet-stream

<opaque blob>
```

- Note: the UpdateFile can contain one or more firmware images

Unstructured HTTP Push Update - deprecated

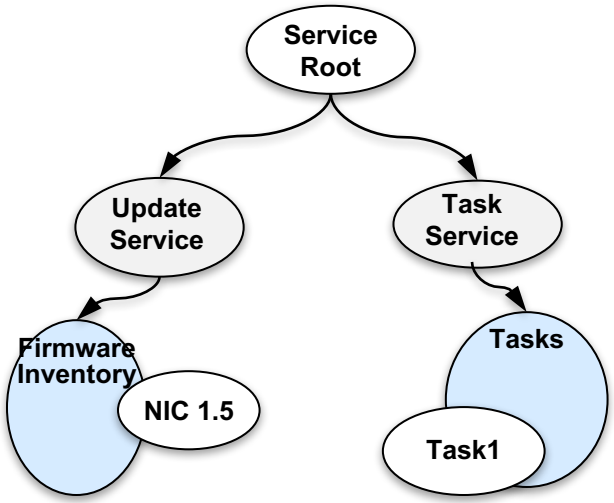
- This fragment is present in the UpdateService resource when the Unstructured HTTP push update is supported

```
{
    "HttpPushUri": "/redfish/v1/UpdateService/update",
    "HttpPushUriTargets": [],
    "HttpPushUriTargetsBusy": false,
    "HttpPushUriOptions": {
        "HttpPushUriApplyTime": {
            "ApplyTime": "Immediate",
            "MaintenanceWindowStartTime": "2018-12-01T03:00:00+06:00",
            "MaintenanceWindowDurationInSeconds": 600
        }
    },
    "HttpPushUriOptionsBusy": false,
    ...
}
```

- Due to the vendor-specific details of this operation, this method was deprecated in favor of multipart HTTP push update

Redfish Client TaskService Flow

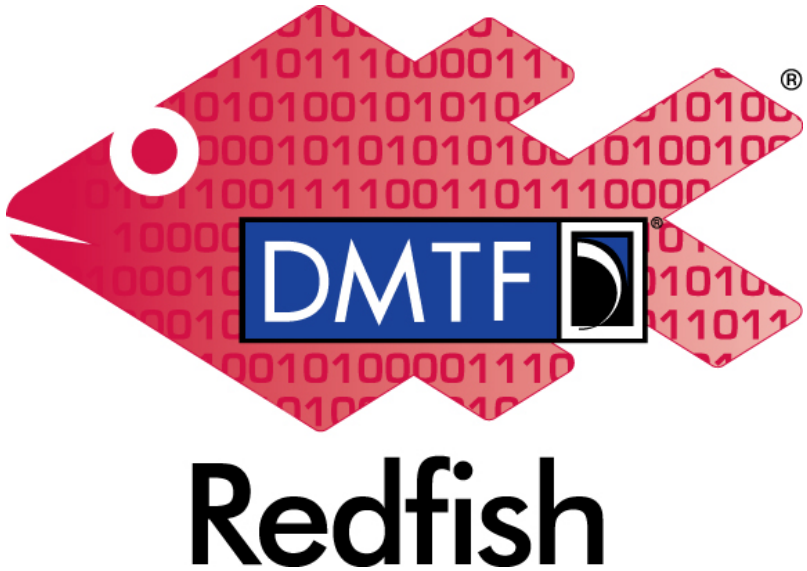
1. **Client starts an update** (push or pull)
   - **Task1** is created
   - POST returns 202 (Accepted) with a **TaskMonitorURI**
2. **Client monitors updates**
   - Client monitors (GETs) **TaskMonitorURI**
   - **Task1** may include **TaskStarted** and **TaskProgressChanged** messages
3. **Update completes**
   - **Task1** may include **TaskCompletedOK** message
   - GET on URI returns a 200 (with messages)
4. **Update faults**
   - **Task1** may include **TaskCompletedWarning** message
   - GET on URI returns a 2xx or 4xx (with messages), 5xx



Task Message Registry
- **"TaskStarted" {taskID}**
- **"TaskCompletedOK"**
- **"TaskCompletedWarning"**
- **"TaskProgressChanged" {taskID, %}**

Thank you for watching!

- Redfish Community
  - Bulletin board
  - http://redfishforum.com
- Redfish Developer Hub
  - Redfish Explorer, Hosted schema at Namespace, Educational Material
  - http://redfish.dmtf.org
- Redfish Forum
  - Schemas, Specs, Mockups, White Papers, FAQ & more
  - http://www.dmtf.org/redfish



Firmware Update Methods

- Simple Update - pull update
  - Redfish 2016.3 model extensions
- Multi-part HTTP Push Update
  - Redfish 2019.2 model extensions
- Unstructured HTTP Push Update (deprecated)
  - Redfish 2017.1 model extensions