SDF Protocol Mapping

ASDF working group meeting @IETF124

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Status since IETF 123

- Adopted by the WG
  - https://datatracker.ietf.org/doc/draft-ietf-asdf-sdf-protocol-mapping/
- Published draft-ietf-asdf-sdf-protocol-mapping-01

- Changelog:
  - Fixed the existing CDDL definitions
  - Added a SCIM extension for SDF (thanks Eliot!)
  - New IANA registration for the SDF extension urn

SCIM extension for SDF


```
{
  "schemas": [
    "urn:ietf:params:scim:schemas:core:2.0:Device",
    "urn:ietf:params:scim:schemas:extension:sdf:2.0:Device"
  ],
  "id": "e9e30dba-f08f-4109-8486-d5c6a3316111",
  "displayName": "Heart Monitor",
  "active": true,
  "urn:ietf:params:scim:schemas:extension:sdf:2.0:Device": {
    "sdf": [
      "https://example.com/thermometer#/sdfThing/thermometer",
      "https://example.com/heartrate#/sdfObject/healthsensor"
    ]
  }
}
```

NIPC

ASDF working group meeting @IETF124

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Nov 03, 2025

Status since last interim

- Draft 14 released
  - https://datatracker.ietf.org/doc/draft-ietf-asdf-nipc/
- Changelog:
  - 24 items fixed
  - 9 items need discussion
  - 5 items work in progress

Fixed items

Proposed for closure, please perform final review by Nov 17:

- Provide reference to vendor-specific implementations #71 (@Michael Richardson)
- clarify scope section #73 (@Michael Richardson)
- NIPC GW definition #75 (@Michael Richardson))
- Figure 2 #79 (@(@Michael Richardson)
- Update references to draft-ietf-scim-device-model from SCIM #80 (@Michael Richardson)
- API authorization #81(@Michael Richardson)
- JSON vs CBOR #82 (@Michael Richardson)
- .well_known #83 (@Michael Richardson)
- Device-ID #84 (@Michael Richardson)
- Async responses #85 (@Michael Richardson)
- SDF upper case #87 (@Michael Richardson)
- GET /{id}/property read-all #98 (@Ari Keränen)
- 1.2 editorial #117 (@Ari Keränen)
- Define all acronyms and technical terms on first use #158 (@Eliot Lear (elear))
- Discrepancy between APIs in the draft and OpenAPI model #111 (@Rohit Mohan (rohitmo))
- 2.1 editorial #119 (@Ari Keränen)
- 2.3 editorial #121 (@Ari Keränen)
- 2.5 editorial #123 (@Ari Keränen)
- 2.7 & 2.8 editorial #124 (@Ari Keränen)
- 2.9 editorial #125 (@Ari Keränen)
- 3.1.1 SDF model registration #126 (@Ari Keränen)
- 3.1. SDF model registration issues #128 (@Ari Keränen)
- 3.2.1 App data registration issues #130 (@Ari Keränen)

Group Events API update /groups/{id}/events{?instanceId}

- No way to know the status of a device in the group
- Updated the response to return the device ID:

GET /groups/{id}/events?instanceId=12345678-1234-5678-1234-56789abcdef3


```
[
  {
    "event": "https://example.com/heartrate#/sdfObject/healthsensor/sdfEvent/fallDetected",
    "deviceId": "12345678-1234-5678-1234-56789abcdef4"
  },
  {
    "event": "https://example.com/heartrate#/sdfObject/healthsensor/sdfEvent/fallDetected",
    "deviceId": "12345678-1234-5678-1234-56789abcdef5"
  }
]
```

‘ Onboarding’ terminology

- "Onboarding" #74 (@Michael Richardson) & 2.2 editorial #120 (@Ari Keränen) & more "onboarding" #76 (@Michael Richardson)
- ‘onboarding’ is the term used in the SCIM device model draft: https://www.ietf.org/archive/id/draft-ietf-scim-device-model-18.html It would be confusing to use different terms in both draft.
- NIPC: In order to perform a NIPC operation on a device, the device has to have its identity declared to the NIPC gateway. We refer to this as 'onboarding'. Apart from the device identity, it is also necessary that the device object contains all required information to bootstrap trust with the device, as well as establish connectivity with the device.

‘ Registrations’ terminology

- 2.2 and 2.3 terms #77 (@Michael Richardson)
- Sections updated, however there was also a comment around the usage of the word ‘registrations’ as it pertains to registering a data-app.
- Currently, the /registrations collection is used for
  - SDF model registration: /registrations/model
  - Data-app registration: /registrations/data-app
- Suggestion was for data-app a path called /authorizations/data-app could be appropriate, or /map/data-app
- Leveraging the ‘authorizations’ collection could certainly be possible, but it would be the only API in the collection. Does this really make the API clearer?
- Suggest staying with ‘registrations’ collection, which is a collection of registrations required for the gateway to perform NIPC operations. Registrations are the collection of NIPC APIs that do not pertain to a a particular {id}

Bindings

- **Application gateway function #78** (@Michael Richardson)**:** I thought that SDF with appropriate mappings would be able to map payloads from one technology to another. That's not required, but it seems like such a gateway would be able to translate Zigbee light switches into BTLE actuators, for instance.
- Interesting Idea!
  - Zigbee has the notion of bindings to bind an event (switch) to an action (turn on light)
  - Can NIPC implement this cross-technology?
- Bindings would pertain to particular instances of devices, not a class of devices, so would not be part of the SDF model
- Bindings would bind an event to an action.
- Bindings could be:
  - 1-1
  - 1-n
  - n-1
- /registrations/binding API?

Naming

- Current: NIPC = Non-IP Control
- Current naming indicates that the draft only applies to a Gateway function for Non-IP devices. While this may be the predominant use case, protocol mapping does not exclude protocol mapping to an IP-based protocol.
- Protocol mapping is now in a different draft though: Would NIPC really be useful for IP-Based API's or would they just be called directly?
- A retronym could be: Non-Internet-Connected Physical Component
- Fundamental question: Is NIPC useful as a gateway for IP-connected devices?

Other

Implementation status section:

- Open Source: https://github.com/iot-onboarding/tiedie
- Cisco implementation: Can we reference vendor specific implementation? What about stability of links?
- Other?

CDDL in all API definitions

- CDDL only describes data model, while OpenAPI describes API + data model
- Do we need both? We could also put relevant OpenAPI sections in the document

Motivation: Limited power budget

- Devices may not use IP because of limited power budget.
- @Ari Keränen brings up other reasons, in our experience this is the main reason, but can add others

Work in progress

- Jetty servlet implementation issues with path-based %-encoding #103: Add a section that explain the query parameter choice
- IANA considerations #91 & problem types #138: Get feedback on NIPC problem types
- leverage contentFormat quality to indicate content-type #104: add section and examples on contentFormat
- More details on data applications #129
- 4.4.1 Connection management details #135

Next steps

- Address any comments after review of fixed issues
- Address outcomes of items up for discussion
- Finish work in progress
- Proof-read and fix typos
- Another round of working group reviews