Bundle Protocol Application Framework

DTNRG, IETF 81 Québec

draft-blanchet-dtnrg-bp-application-framework-00

Marc Blanchet
marc.blanchet@viagenie.ca

Problem Statement

- Bundle Protocol (BP) RFC does not specify
  - the payload format of the bundle.
  - nor the mapping between a service identifier and the payload format in the bundle
    - To enable implementations to interoperate.
- Therefore, currently, each implementation (and deployments) creates its own service identifier for its own payload format and application.
  - « reading source code/use same implementation » is the only way to garantee interoperability.
  - Shipping binary code, deploying new apps is therefore complicated and not interoperable.

BP Service identifiers

- Types of endpoint identifiers :
  - dtn : URI scheme
  - ipn : scheme defined in RFC6260 with CBHE extension header.
- From the point of view of BP application implementation, end-users and deployment, the use of one or another type of identifier is irrelevant, and should be common.
- Therefore, normalizing the service identifiers is needed for both types.

Proposal

- Create a registry of service identifiers
- For both identifier types
- With a reference to the payload format definition.

- (similar to IP port-numbers/service-identifiers registry)

Service Identifier Syntax

- ipn : has already a syntax for the service identifier : ipn:node_identifier.service_identifier.
- dtn : uri generic syntax. Very powerful and generic but underspecified for application interoperability.
  - Proposal : define at least one specific syntax within the generic URI syntax for looking at the service identifier : dtn:node_identifier/service_identifier

Bundle Protocol Service Identifier Registry

- Created and managed by IANA
- Structure (i.e. columns):
  - dtn service identifier
  - ipn service identifier
  - Specification reference
- Registration policy : IETF RFC or CCSDS book.
- ipn : number space : a range is delegated to CCSDS registry service (SANA).

Initial values in the Registry

- A)
  - dtn:none, RFC5050
  - ipn:0 (same semantic as dtn:none)
- B) ping service
  - dtn:ping
  - ipn:1
  - Payload format specification?

Application Payload Format

- Currently, there is no place where the mapping between the service identifier and a payload format is specified.
- Moreover, there is no standard way to specify a BP application :
  - The payload format
  - The bundle services, extension headers, …
  - Service identifiers used for this application

Proposal

- Define a template to make sure that application specification are enough complete to be interoperable (for the purpose of this discussion).
- A BP application specification should provide the following information:
  - The payload format
  - The bundle services, extension headers, … used.
  - Service identifiers used for this application
  - Request to register the service identifier in the registries.

Mime-Type Instead?

- Mime-Type is more restrictive and also carries overloaded ascii-binary-utf8-encoding-... stuff.
- Cannot easily handle application protocol versioning, headers, …
- In the « legacy » IP world :
  - IP->http->mime; IP->smtp->mime.
  - Not IP->mime.

Conclusion

- No place to map service identifier to BP payload format and application protocol.
- No template to specify BP application protocol specification
- Proposal to create a IANA managed registry for service identifiers for both dtn : and ipn : schemes.
- Proposal to specify a template for application protocol specification.

Questions?

Draft-blanchet-dtnrg-bp-application-framework-00

- Marc Blanchet, marc.blanchet@viagenie.ca