

DTN AMP UPDATES

Command Parser Demo

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AMP-07 Improves CBOR Encoding

- AMP 06 used Arrays and Binary strings to hold certain data items
 - Preceded by a length identifying byte for self delineating data
 - This is compounded by definitions that encapsulate other definitions
 - Update removes any length identifiers from self-delineating structures
- Replace Array and Byte String representation with “Octets”
 - Objects such as collections of data values (TNVC), time and state based rules(TBR/SBR), and Variables (VAR)
 - AMP object encodings are not solely CBOR-encoded
 - AMP encoding uses CBOR to encode specific data types
- ~25% reduction in the size of the CBOR encoding

Why a String Encoding?

- AMP data objects are all uniquely identifiable
 - There is a JSON encoding
 - There is a CBOR encoding
- Existing reference implementations of AMP Agents only accept CBOR encodings.
 - Most agents run on embedded devices.
 - Most agents do not have the processing ability to run heavy or multiple protocol stacks.
- A string encoding provides additional human-interfacing capabilities
 - Helps with documentation
 - Helps with creating “scripts” for performing AMP actions
 - Provides the ability to rapidly enter new commands into a system.
- All AMP objects (to include controls and their parameters) have a unique id
 - Create a URI scheme to identify AMP objects
 - Use that scheme to identify all AMP objects.

AMP Object ARI Scheme Details

- ari:/Namespace/Type.Name
- Scheme Name: “ARI”
- ARI-URI: “ari:” ari-hierarchy
- Ari-hierarchy: delim Namespace delim Object-type “.” Object-Name
- Delim = “/”
- Namespace = Issuer “:” Tag
- Issuer = 1*VCHAR(*[“.” 1*VCHAR])
- Tag = *VCHAR([“.” 1*VCHAR])
- If an element is published in an ADM:
 - Issuer = ADM and Tag = ADM Namespace

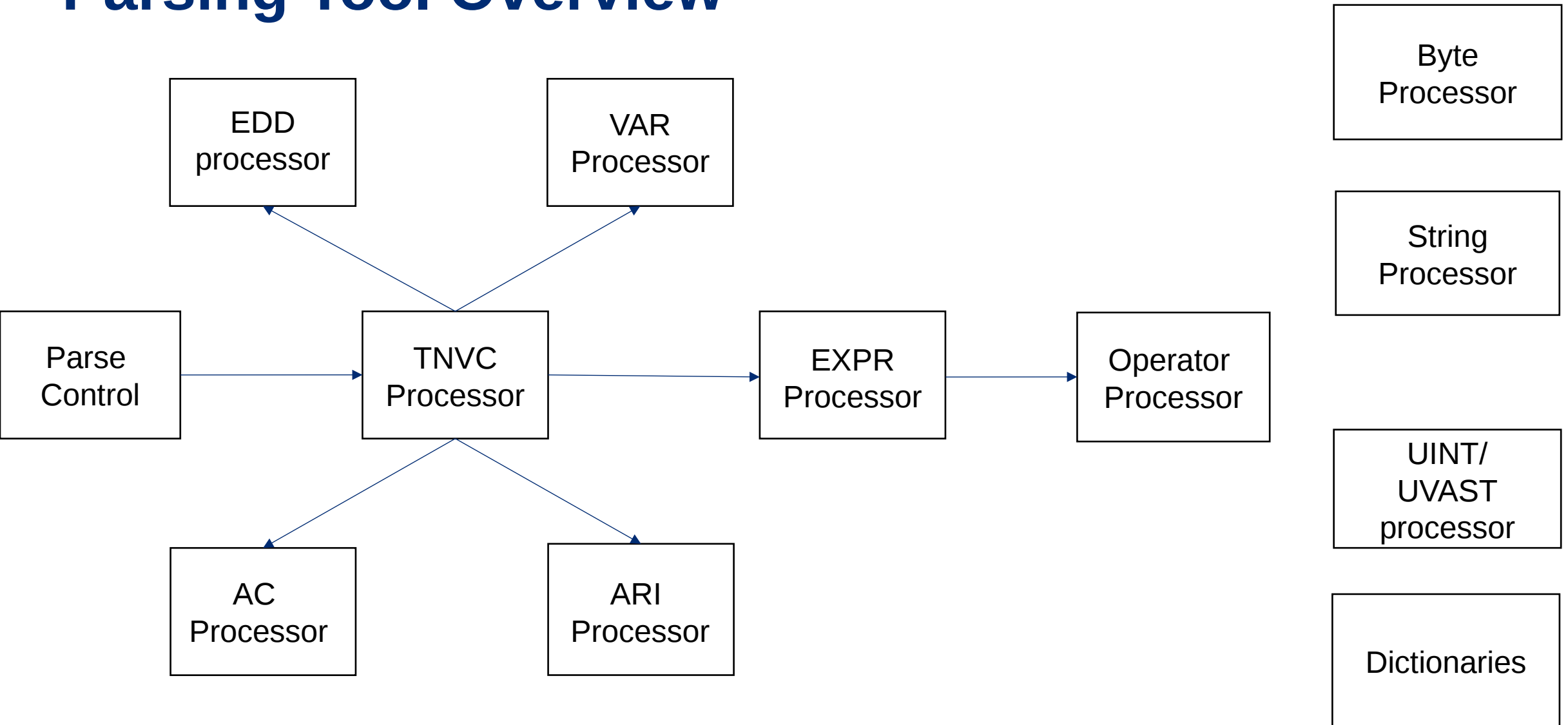
String Encoding Examples

- Generate a BP source report for ipn:1.1
 - Control that generates report
 - `ari:/ADM:Amp.Agent/Ctrl.gen_rpts([Report Names], [Managers])`
 - Report Name:
 - `ari:ADM:DTN.bpsec/rptt.source_report(ipn:1.1)`
- Full Version:
 - `ari:/ADM:Amp.Agent/Ctrl.gen_rpts([ari:ADM:DTN.bpsec/rptt.source_report(ipn:1.1)], [])`
- Short Hand:
 - `gen_rpts([source_report(ipn:1.1)], [])`

CBOR Encoding Comparison

- `ari:/ADM:Amp.Agent/Ctrl.gen_rpts([ ari:/ADM:DTN.bpsec/Rptt.source_report(ipn:1.1)],[])`
 - `c11541050502252381c7185541010501126769706e3a312e3100`
 - `c1154105581d8405422523558153c7185541014d83054112486769706e3a312e314180`
 - 25% byte difference
- `ari:/ADM:Amp.Agent/ctrl.gen_rpts([ari:/ADM:DTN.bp_agent/rptt.endpoint_report('ipn:1.1'), ari:/ADM:DTN.bp_agent/rptt.endpoint_report('ipn:1.2')],[])`
 - `c11541050502252382c7182d41010501126769706e3a312e31c7182d41010501126769706e3a312e3200`
 - `c11541055832840542252358298253c7182d41014d83054112486769706e3a312e3153c7182d41014d83054112486769706e3a312e324180`
 - 25% byte difference
- `ari:/ADM:Amp.Agent/Ctrl.add_tbr(0x2b41661837, 0, 10, 20, [ari:/ADM:Amp.Agent/Ctrl.gen_rpts( [ari:/ADM:DTN.bp_agent/rptt.endpoint_report("ipn:1.1")],[]), "tbr2"])`
 - `c115410a0506241616162512452b416618374100410a411481c11541050502252381c7182d41010501126769706e3a312e31006474627232`
 - `c115410a5842880546241616162512452b416618374100410a41145825815822c1154105581c8405422523548152c7182d41014c83054112486769706E3A312E314180456474627232`
 - 22% byte difference

Parsing Tool Overview



Demo



Questions