Payload Codec Proto - Spec Completeness Audit

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Summary

Interpreter	Tests	Features	Status
Python	401	31/31	[OK] Complete
Go	89	31/31	[OK] Complete

Python Interpreter

All 31 features implemented, documented, and tested.

Feature	Status	Tests
integer_types	[OK]	13
float_types	[OK]	13
bool_type	[OK]	8
bytes_type	[OK]	10
string_type	[OK]	9
enum_type	[OK]	7
mult_modifier	[OK]	6
div_modifier	[OK]	4
add_modifier	[OK]	2
lookup_modifier	[OK]	5
polynomial	[OK]	3
compute	[OK]	15
guard	[OK]	2
transform	[OK]	2
ref	[OK]	6
switch_match	[OK]	20
flagged	[OK]	7
bitfield	[OK]	7
bitfield_string	[OK]	4
byte_group	[OK]	3
tlv	[OK]	6
nested_object	[OK]	7
repeat	[OK]	10
ports	[OK]	2
definitions	[OK]	2

Feature	Status	Tests
var	[OK]	4
skip	[OK]	3
endian	[OK]	17
unit	[OK]	2
semantic	[OK]	6
formula	[OK]	10

Go Interpreter

All 31 features implemented and tested. 89 tests passing.

Feature	Status	Tests
integer_types	[OK]	6
float_types	[OK]	2
bool_type	[OK]	3
bytes_type	[OK]	6
string_type	[OK]	3
enum_type	[OK]	3
mult_modifier	[OK]	3
div_modifier	[OK]	2
add_modifier	[OK]	2
lookup_modifier	[OK]	3
polynomial	[OK]	1
compute	[OK]	2
guard	[OK]	2
transform	[OK]	2
ref	[OK]	3
switch_match	[OK]	3
flagged	[OK]	5
bitfield	[OK]	3
bitfield_string	[OK]	2
byte_group	[OK]	3
tlv	[OK]	2
nested_object	[OK]	2
repeat	[OK]	4
ports	[OK]	2
definitions	[OK]	2
var	[OK]	2
skip	[OK]	2
endian	[OK]	4
unit	[OK]	1

Feature	Status	Tests
semantic	[OK]	2
formula	[OK]	3
u24/s24	[OK]	2

Requirements Traceability

Data Types (12 requirements)

- REQ-Unsigned-I-001, REQ-Signed-Int-002, REQ-Type-Alia-003
- REQ-Float-Typ-007, REQ-Float-Typ-008
- REQ-Boolean-Ty-016, REQ-Bytes-Type-017, REQ-String-Typ-018
- REQ-ASCII-Type-019, REQ-Hex-Type-020, REQ-Skip-Type-021
- REQ-Base64-Typ-057

Bitfields (9 requirements)

- REQ-Bitfield–009 through REQ-Bitfield–014
- REQ-Bitfield-String-069, REQ-Consume-Fi-015, REQ-Byte-Group-037

Modifiers (7 requirements)

- REQ-Arithmeti-022, REQ-Modifier-O-023
- REQ-Mult-Modi-024, REQ-Add-Modif-025, REQ-Div-Modif-026
- REQ-Lookup-Ta-027, REQ-Transform-001

Computed Fields (5 requirements)

- REQ-Formula-Fi-028, REQ-Polynomial-001
- REQ-Compute-001, REQ-Guard-001, REQ-Encode-Formula-063

Conditional/Structures (12 requirements)

- REQ-Match-Cond-030 through REQ-Match-Defa-036
- REQ-Nested-Obj-029, REQ-Enum-Type-038
- REQ-Definitio-051, REQ-Ref-Field-052, REQ-Variables-070

Repeat/Arrays (5 requirements)

- REQ-Repeat-Coun-064 through REQ-Repeat-Vari-068

Output/Encoding (10 requirements)

- REQ-Endiannes-004, REQ-Endiannes-005
- REQ-Output-For-040 through REQ-TTN-Output-043

- REQ-Unit-Annot-071, REQ-Encoder-Re-044, REQ-Roundtrip-045

Verification

Run audit: `python tools/verify_spec_completeness.py -v`

Run Python tests: `pytest tests/ -v`

Run Go tests: `cd go/schema && go test -v`

Changelog

- 2026-02-19: Go interpreter feature completion
  - Implemented: bool, string, ascii, enum, byte_group, definitions/$ref, u24/s24
  - Tests increased from 49 to 89
  - All features now complete in both interpreters