LTP and CBHE (and one BP) Registries

draft-dtnrg-ltp-cbhe-registries-02

Licklider Transmission Protocol (LTP, RFC5326) Registries

- **Engine IDs** (like link-layer addresses -- expressed as SDNVs)
  - Need *uniqueness among LTP neighbors transmitting to a given receiver*
  - Registry split into:
    - IANA Allocation: Expert review
    - Delegation to CCSDS SANA
    - IANA Allocation: First-Come First-Serve
    - Private / Experimental use

- **Client Service IDs** (like protocol ID in IP -- expressed as SDNVs)
  - Need *global uniqueness* of 'well-known' service identifiers
  - Registry split into:
    - IANA Allocation: Expert review
    - Delegation to CCSDS SANA
    - Private / Experimental use

- **Cancel Segment Reason Codes**
  - Draft proposes: Allocation by IANA (RFC Required)
  - Needs IANA assignment? -- Could simply rely on updates to the LTP spec?

Compressed Bundle Header Encoding (CBHE, RFC6260) Registries

- **CBHE Node Numbers** (like IP addresses -- expressed as SDNVs)
  - Need *global uniqueness*
  - Registry split into:
    - IANA Allocation: Expert review
    - Delegation to CCSDS SANA
    - IANA Allocation: First-Come First-Serve
    - Private / Experimental Use

- **CBHE Service Numbers** (like TCP/UDP port #s -- expressed as SDNVs)
  - Need *global uniqueness* of "well-known" ports
  - Registry split into:
    - Delegation to CCSDS SANA
    - IANA Allocation: Document Required
    - Private / Experimental Use [Can also serve for ephemeral source service numbers]

Bundle Protocol (RFC5050) Administrative Record Types

- **BP Administrative Record Types** (like a subset of IP protocol IDs – 4 bits)

  - Need _global uniqueness_ of known values
  - Draft proposes: Allocation by IANA (RFC Required)
  - Needs IANA assignment? -- Could simply rely on updates to the BP spec?

Rationale for Delegation of Portions of the Registry Spaces to CCSDS

- LTP and BP have a strong space heritage
- CCSDS is one of the more bandwidth-constrained environments for LTP and BP (shorter IDs are better)
- CCSDS needs some autonomy in allocating / controlling values for space missions

➢ 'Split-Registry' with references in each should provide the required flexibility / autonomy while preserving interoperability

Registries

LTP Engine ID

	0	Reserved	
	$[1 \; -- \; 2^{14}-1]$	Assignable by IANA (expert review)	[2-byte SDNVs]
	$[2^{14} \; -- \; 2^{21}-1]$	Administered by CCSDS SANA	[3-byte SDNVs]
	$[2^{21} \; -- \; 2^{27}-1]$	Private / Experimental Use	[4-byte SDNVs]
	$[2^{27} \; -- \; 2^{42}-1]$	Assignable by IANA (First-Come First-Served)	[5-byte SDNVs]
	$>= 2^{42}$	Reserved	

LTP Client Service ID

	0	Reserved	
	1	Bundle Protocol	
	2	LTP Service Data Aggregation (CCSDS LTP Book)	
	3	CCSDS File Delivery Service	
	$[4 – 2^{14}-1]$	Administered by CCSDS SANA	[2-byte SDNVs]
	$[2^{14}– 32{,}767]$	Private / Experimental Use	[some 3-byte SDNVs]
	$>= 16384$	Assignable by IANA (expert review)	[3+-byte SDNVs]

Codes

LTP Cancel Segment Reason Codes	
0	Client service canceled session
1	Unreachable client service
2	Retransmission limit exceeded
3	data received
4	System error caused termination
5	Retransmission Limit Exceeded
0x06 – 0xFF	by IANA

Registries

CBHE Node Numbers		
0	Reserved	
$[1 -- 2^{14}-1]$	Assignable by IANA (expert review)	[2-byte SDNVs]
$[2^{14} -- 2^{21}-1]$	Administered by CCSDS SANA	[3-byte SDNVs]
$[2^{21} -- 2^{27}-1]$	Private / Experimental Use	[4-byte SDNVs]
$[2^{27} -- 2^{42}-1]$	Assignable by IANA (FCFS)	[5-byte SDNVs]
$>= 2^{42}$	Reserved	

CBHE Service Numbers	
0	BP Administrative Record
1	Echo Service
2	Discard Service
3	Console Service
4	CCSDS File Delivery Protocol
$[5 – 127]$	Administered by CCSDS SANA
$[128 – 2^{14}-1]$	Assignable by IANA (document required)
$>= 2^{14}$	Private / Experimental

Bundle Administrative Record
Bundle Administrative Record Types

BP Administrative Record Types		
0	Reserved	
1	Bundle Status Report	
2	Custody Signal	
3--15	Assignable by IANA (RFC Required)	

LTP Engine and Client Service IDs

LTP Engine ID

	0	Reserved
	[1 -- 2^{14}-1]	Assignable by IANA (expert review)
	[2^{14} -- 2^{21}-1]	Administered by CCSDS SANA
	[2^{21} -- 2^{27}-1]	Private / Experimental Use
	[2^{27} -- 2^{42}-1]	Assignable by IANA (FCFS)
	$>= 2^{42}$	Reserved

LTP Client Service ID

	0	Reserved
	1	Bundle Protocol
	2	LTP Service Data Aggregation (CCSDS LTP Pack)