

What's *not* in VWRAP

A dissection of the Linden Lab "Legacy" Protocol

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Assumptions...

1. Take Linden Lab's "legacy protocol" (LLLP)
2. Convert UDP message system to LLSD over HTTP
3. Publish RFC

No! No! A Thousand Times No!!

LLLP Overview

Currently protocol:

- Binary messages over UDP (client<->server)
- LLSD messages POSTed over HTTP(S) (client->server)
- LLSD messages over EventQueue/HTTP(S) (server->client)
- LLSD over RESTful APIs (via capabilities)

Issues:

- Bulk of traffic over UDP; non-standard reliability layer
- Non-RESTful traffic follows UDP message structure
 - Usually migrated only for TLS
- Mix of "protocol" types (REST, stream, CRUD, ...)
- Mix of conceptual types (rez, manage, chat, view, ...)

LLLP Analysis

- 475 defined message types
- 377 sent/received by viewer (others are sim-sim, etc)
- 263 map to REST semantics
 - ... with wildly varying granularity

Caveat: This is ignoring post-UDP parts of the protocol: RESTful APIs and messages never sent over UDP (~30 messages), including group chat and voice setup.

Radical Claim:

Only 23% to 33% of LLLP
should be in VWRAP

(Fraction by *message type* ; probably >90% of
the *message traffic* would be standardized.)

But is he claiming...

... **3/4** of the client/server communication should
be **proprietary** data formats?

...**Maybe!**

But here's why you probably want that too.

Message Categories/Counts in LLLP

Account Properties 8	Inventory 26
Administration 5	Parcels 28
Agent Control 25	"Pick" Profiles 4
Agent Profile 9	Postcards 1
Agent Properties 6	Region Administration 14
Asset Transport 11	Region Properties 2
Avatar Appearance 14	Rez/Derez 6
Build Tools 37	Scene Graph 23
Build Tools (Land) 2	Script UI 9
Communication 7	Search 29
Connection Management 20	Teleport 11
Event Profiles 7	Textures 6
Friends 11	Virtual Currency 8
Grid Status 2	World Map 7
Groups 40	

What *should* be detailed in VWRAP?

At the very least...

- Avatars, Objects
- Communication
- Connection Management
- Rez/Derez
- Scene Graph
- Teleport

Three broad protocol requirements:

- RESTful (avatars, objects)
- Reliable, mid-latency streams (control, chat, build)
- Unreliable, high-latency stream (scene graph)

Grid-Wide Services

- Search
- Events, Classifieds, "Top Picks"
- Agents, Places
- World Map

Claim: VWRAP should define common set of Grid services, but only describe each as a URL to Web page, not a service-specific sub-protocol.

URL is for a Web *page* not *service* - human readable and usable (given contemporary Web browser).

Aside: Risks

- *By not enforcing a data standard, this fractures the uni/multi/meta/omni-verse of virtual worlds!*
- Requires that VWRAP viewers are supersets of Web browsers

Yes, but...

- Standardizing on Web technology (URL to page) has worked rather well on the Internet
- Gives service providers maximum flexibility for implementation and deployment
- Expose world services to non-VWRAP viewers

In-World Property Pages

- Agent Properties
- Object Properties
- Region Administration
- Land Administration

Claim: VWRAP should standardize mechanism to interrogate agent/object/land/region for (optional) property page URL.

Again: URL is for a Web page not service .

Example: Agent Inventory

Claim: VWRAP should not standardize agent inventory, just the Viewer/AD/RD interaction for rez/de-rez.

Agent Domain would provide Agent Inventory

- Web page? Custom REST API? Outside of scope!
- Source of URLs for rez/sink for derez (HTML5 drag/drop?)

Allows for arbitrary hosted inventories:

- Current Region library (costumes, meeting tools)
- "Creative Commons" library (cross-grid freebies)
- Group libraries
- Store inventories (pay-on-rez?)

Viewer / Agent Domain

Do these need a standard, or just conventions?

- Postcards
- Mute Lists, Gestures
- Landmarks, Calling Cards

Or even these?

- Friends
- Groups

Viewer / Region Domain

How about...

- Object Edit/Build Tools
- Land/Terraform Tools

But... unlike inventory, friends, etc. these require scene-graph interaction, possibly AD/RD permission checks.

So... Maybe?

Remove (with a vengeance...)

- Asset Upload/Download - *just use HTTP*
- Textures - *ditto*

(May be hidden behind per-item capabilities for access control, etc.)

- Others?

These hurt my brain...

Parcels

- is region subdivision first class?
- easy: "gimme a web page to inspect/edit land at X/Y"
- but: visualizing boundaries

Script UI

- Do we mandate a set of common actions any server-side logic can trigger (JavaScript alert/confirm/prompt)
- Wait for client + server-side scripting standards?

Virtual Currency

- Tourist transactions

Calls to Action

- Does it make sense to decouple this much from VWRAP?
- Populate three buckets:
 - What's in, what's out, what's deferred
- Explore:
 - Presence across virtual worlds
 - Non-RESTful protocols (XMPP? RTSP?)
 - Parcels, script UI, ...

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