

Developing GENI Tools: Experiences, Utilities and Plans

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Tools

Omni
Stitcher

Services

Service Registry
Member Authority
Slice Authority
Sliver Info Service
Monitoring API
OpenID

- Flack (University of Utah)
- Jacks (University of Utah)
- xml-signer (speaks-for) (University of Utah)
- geni-lib (Barnstormer Softworks)
- Stitching Computation Service (MAX)
- Omni (GPO)
- Federation APIs (GPO)
- LabWiki (NICTA and University of Massachusetts)
- GENI Desktop (University of Kentucky)
- Orbit (Rutgers)

- Can be wrapped in a larger Python process
 - In python: `gcf.oscript.call(args, options)`
 - Stitcher
 - geni-lib
- Can be wrapped in other systems
 - `system.exec("omni ...")`
 - GENI Portal
 - GENI Desktop
- Ongoing work to make it more embedded-friendly
- Written in Python

- Uses Common Federation API v1 or now v2
 - Manipulate projects and slices
 - Reports and uses ‘sliver info’ to know where a slice has resources
 - Uses service registry to find Aggregates, SA
- Uses AM API v1-3
 - http://groups.geni.net/geni/wiki/GAPI_AM_API
 - Supports passing arbitrary options to commands
 - For example, the new IG POA command ‘geni_console_url’ “just works”
- Agg_nick_cache maps nickname/URN/URL



- Includes helper python functions such as:
 - Find sliver expiration from status or manifest 
 - Find nickname given URN or URL
 - Extract slice expiration
 - Is user certificate expired?
 - Get User URN from cert
 - Get target or owner URN or expiration from credential
- See <http://trac.gpolab.bbn.com/gcf/wiki/Omni>
- Questions? Contact gcf-dev@geni.net

- A python wrapper around Omni
- Uses Omni interface, for ease in embedding
- Uses Stitching Computation Service to find paths among AMs
- Includes numerous heuristics for handling AM differences
- See <http://trac.gpolab.bbn.com/gcf/wiki/Stitcher>

- The GENI Federation Services implement the Common Federation API
 - Service Registry, Member Authority, Slice Authority, Sliver Info Service
 - <http://groups.geni.net/geni/wiki/CommonFederationAPIv2>
 - Code in python: <http://trac.gpolab.bbn.com/chapi/wiki>
- The Portal uses these APIs:
 - Code in PHP: <http://trac.gpolab.bbn.com/proto-ch/wiki>

- Find aggregates and federation services
 - Member Authorities
 - Slice Authorities
 - Aggregate Managers
 - Etc.
- Attributes on aggregates 
 - Arbitrary key-value pairs
 - Used by portal to categorize aggregates

- User info (name, email, ...)
- User SSH keys
- User credentials (including ABAC credentials)
- New user registration

- See Omni or Portal code for sample usage

- Get or Set Project info, membership, etc.
 - Create, Update, Add or Change Members, ...
- Get or Set Slice info, membership, etc.
 - Create, Renew, Add or Change Members, ...
- Project & Slice credentials (including ABAC credentials)

- See Omni or Portal code for sample usage



- Records Slice, Aggregate and Expiration for each active sliver
- Used for “This Slice” feature on Portal slice page
- Advisory information, *not authoritative*
- Written by Omni and the Portal
 - Not available for slivers created in Flack
- This data can be improved
 - Through monitoring data?
 - Have other tools or AMs write data?



- The GPO Federation Services implement the new GENI Monitoring REST API
- Monitoring Architecture and APIs:
 - <http://groups.geni.net/geni/wiki/MonitoringArch>
- The GPO implementation provides
 - Users
 - Slices
 - Etc.

- GENI Portal is an OpenID Identity Provider
- Used by LabWiki, Orbit, GEE, Seattle to ID users
- Some user attributes passed with authentication
 - Username
 - URN
 - Application specific info (e.g. iRODS account, WiMAX username)
- General info: <http://openid.net/>
- Ask us: portal-help@geni.net

- Selenium (<http://docs.seleniumhq.org/>)
 - Portal or other web tool testing, including load testing
- pgBadger (<http://dalibo.github.io/pgbadger/>)
 - PostgreSQL log file analysis

Backup

- Clearinghouse
 - Speaks for and Certificate Management
 - Export Monitoring REST API
- Portal
 - Scalability (e.g. new slice page)
 - Editable RSpec properties
 - Aggregate Attributes
 - Select aggregates using ‘This Slice’
 - Uses sliver_info tables
 - Jacks integration
 - Handle unresponsive AM API calls (kill Omni)
 - Certificate renewal

- Omni
 - More Federation API support
 - V2, removeslicemember, listprojects, listprojectmembers
 - Better output control
 - -o option
 - Print_sliver_expirations
 - Parses expiration from manifest, SliverStatus
- Stitcher
 - Faster: Request VLAN 'any' where possible
 - Cleaner: log less, clearer to console and all to a file
 - Embeddable: Option to put all output in specified dir
 - Support GRE, Stitching schema V2

- Clearinghouse and Portal
 - Jacks
 - Stitching
 - Scalability
 - Transition
- Omni
 - Better support as a library
- Stitcher
 - More error handling
 - Multi Threading
 - Stitch Points, AL2S, stitch-to-AM