OpenLDAP Development

CN=config and Overlays

Howard Chu   hyc@symas.com

ODD/San Diego August 6, 2004

Status Summary

- Overlays: ABI refactoring from ODD March 21 2003
  - Enhancement of callback mechanism introduced in OpenLDAP 2.1
  - Successfully deployed in OpenLDAP 2.2
- Back-config is coming along slowly

Overlay Status

- Original Goals
  - Reduce redundancy
  - Streamline calling sequences
  - Enhance callbacks
  - Enable stacking/layering of backends

Overlay Status (2)

- Largely Successful
  - backend_group/backend_attribute consolidated, backend API continues to grow
  - Operation and SlapReply blocks yielded a measurable performance gain (~10%)
  - ProxyCache, Chain, Rewrite, and various other overlays have proven the viability of the Overlay concept

Overlay Status (3)

- The Overlay mechanism still has a ways to go
  - Not all the backend entry points are handled
  - None of the tool entry points are handled
  - We’d like layering to be totally transparent, but there are obvious issues in backend design that must be accomodated (e.g., back-ldbm deadlocks)
  - We’d like to reimplement SLAPI in terms of overlays – now that we have a global frontend, this is more feasible

CN=config Status

- Initial Goals
  - Convert config.c to table-driven mechanism
    - Maintain backward compatibility with existing slapd.conf syntax
    - Allow creation of a read-only CN=config tree for viewing the current configuration
    - Duplicates some information from CN=monitor

CN=config Status (2)

- Implement simple LDIF backend (back-ldif)
- Use overlay mechanism (surprise!) to implement modification semantics
- Limited initial support for modifications
  - ACL editing
  - Schema additions
- Modifications will be atomic and take effect immediately

CN=config Status (3)

- Proceeding Slowly
  - back-ldif done
    - Stores one entry per file, using filesystem to maintain tree structure
    - No indexing support
  - liblunicode consolidation
    - ucdata hardcoded, so we can bootstrap using LDIF
  - Global variable consolidation
    - New “frontend” mechanism
    - Store remainder of global config items in frontend->be_private

CN=config Bootstrapping

- CN=config overlay stack will be hardcoded
- Migration from slapd.conf:
  - If back-ldif directory exists, slapd.conf is ignored
  - Otherwise, read slapd.conf and write out to back-ldif
  - Alternatively, just write out a flat LDIF file
- Loading a flat LDIF config file
  - Just use slapadd with backend #0
  - Will use a new command line option (e.g. –F) to specify location of back-ldif data directory

CN=config Wishes

- What about `include`?
  - May not be necessary, given the back-ldif implementation
- What about `moduleload`?
  - It may be feasible to load and unload backends and overlays on the fly since there is a well-defined shutdown API
  - Other modules – syntax, password, etc. will need reworking

CN=config Wishes (2)

- Attribute index reconfiguration?
  - Could be done, by treating the attribute as unindexed until the indexing pass completes
- Backend database swapping?
  - Point a backend at a different filesystem location, on the fly, to allow replacing disks, etc.
  - Probably would require multiple LDAPModify requests; might be a candidate for LDAP Transactions
- Plenty more we haven’t thought of yet

Conclusions

- slapd Overlays are really cool
- back-config will be an Overlay
- We expected back-config to be a big effort
- We’re making progress…