



# oVirt Engine Tools

## Java based tools

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# Overview

- The Engine has several tools and utilities, written for various tasks.
- This session will focus on Java-based tools, and will not cover iso-uploader and log-collector.
- Java based tools try to share as much code as possible with the Engine core (backend) and among themselves.
- Common uses for code re-use
  - DB access using JBoss' configuration files
  - Encryption/Decryption libraries
  - LDAP / Kerberos libraries

# Engine Notification Service



- Implemented as a standard Linux daemon.
- Starts as a part of the OS boot sequence.
- Performs 2 important tasks
  - 📧 Monitor incoming events in the DB, and notify the relevant users on registered events.
  - 🕒 Watchdog; Monitor the Engine core, and notify if core stops responding or becomes responsive again.



# Engine Notification Service -notifications



- Users may subscribe to various system events
- By design, a subscriber should be able to choose from a list of notification methods (mail, SMS, etc)
  - Currently only email is implemented.
- Periodically the service will query `event_audit_log_subscriber_view` and notify each subscriber on each incoming event.
- Once processed, the events are marked so they won't be included in the next polling cycle.

# Engine Notification Service -watchdog



- The Engine has a health servlet, which allows querying the status of the Engine core and DB.
- The notification service polls this servlet periodically.
- If the servlet will indicate the core is down, a notification will be generated for the subscribed users.
- Once core becomes responsive again, a matching notification will be generated as well.



# Engine Configuration tool

- The Engine's configuration is located in vdc\_options table.



- engine-config was written as a simple command line utility to allow the admin to modify configuration values.
- The tool provides information on current value(s) and allows setting existing values as well.
- The tool works regardless of Engine / JBoss status, since it requires only DB to be operational.

## Engine Configuration tool - continued

- The implementation is relatively simple;
  - Simple SQL select or update existing values making sure we KISS.
- In order to maintain data integrity
  - New keys cannot be added
  - Not all keys are accessible via engine-config.
  - Accessible keys have data types assigned, and validation is performed when setting data.
- Validation information is maintained in a simple engine-config.properties file



## Engine Configuration tool - continued

- Each key may have a description (locale is supported).
- Each key may have an alternate name. This allows using human-readable keys. Name needs to be bash friendly (no spaces, etc).
- Each key may have a type and valid values
  - If no type given, we assume the type is string.
- Supported validation types
  - String
  - Integer
  - Password

# Engine Configuration tool - continued

- Valid values

- String: list of strings (Sun, Mon, ...)
- Integer: list and range (-1,1..100000)
- Implement boolean using string (true, false) or integer (0,1)

- Example

- `FenceQuietTimeBetweenOperationsInSec.description="Quiet time between Power Management operations in seconds."`
- `FenceQuietTimeBetweenOperationsInSec.type=Integer`
- `FenceQuietTimeBetweenOperationsInSec.validValues=60..600`
- `FenceQuietTimeBetweenOperationsInSec.alternateKey=Fence_Quiet_Time`

# Engine Manage Domains



- Goes along with engine-config. Dedicated to LDAP/Kerberos management.
- Does not handle the internal (default) domain.
- Main functionalities
  - Adding a domain
  - Editing a domain
  - Removing a domain
  - Validating configuration
  - List configuration



# Engine Manage Domains - continued



- ◆ Adding a domain
  - ◆ A krb5.conf file is created using krbConfCreator for all configured domains (the new one, and all existing ones). During this phase we go to the DNS, and do a kerberos SRV record query.
  - ◆ We query for the LDAP servers in the domain, and try to connect to them via the given credentials, and query for the given user. In this procedure we use a rootDSE query to identify if the LDAP server is AD or IPA.
  - ◆ If everything is successful we add the user in the DB, and grant him super user permissions.
  - ◆ All relevant config values (DomainName, AdUserName, LDAPSecurityAuthentication, AdUserPassword) are updated.

# Engine Manage Domains - continued



- Editing a domain
  - We make sure the domain exists using the DomainName configuration entry
  - The relevant configuration entries are updated, permissions are granted.
  - Existing permissions are never removed. Removing permissions, if needed, should be done manually.

# Engine Manage Domains - continued



## ★ Removing a domain

- ★ We check that the domain exists using the DomainName configuration entry
- ★ We remove the domain from the configuration in the DB. No krb5.conf changes are made, no permissions changes are made.
- ★ If this is the last domain a suitable warning is printed.

# Engine Manage Domains - continued



- Validating configuration
  - In this flow we loop over domains configured in the DB
  - For each domain we try to connect to using the krb5.conf file and the supplied credentials.
    - By default this will break on first error.
    - Using *-report* flag will continue running, reporting all errors.
- List configuration
  - Just gives a list of all domains and their configuration (vdc\_options configuration).
  - The krb5.conf file is not printed.
  - No passwords are showed.

# Engine Manage Domains - continued



- Some notes
  - When krbConfCreator is called, the krb5.conf file is always re-generated. No incremental changes are made to the file.
  - As mentioned, no users/permissions are ever removed automatically.
  - Removing a domain does not result in re-generation of the krb5.conf file. The reason is that a failure in the re-generation may result in a failure of removing the domain.
  - All domains use GSSAPI authentication. Simple is not being handled



# Tool Improvements

## ★ Notifications

- ★ Subscribe limited to MLA'd resources / tags?
- ★ Implement additional notification methods than smtp.

## ★ Config

- ★ Documentation / MAN page
- ★ Backup & restore functionalities

## ★ Domain

- ★ Krb5 handling
- ★ Much more...

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**THANK YOU !**

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