IDEALX Management Console

- Motivations
- IMC for sysadmins
- IMC for developers
- Samba Console & the smbldap-tools
- Roadmap & community
Motivations

“Open Source Infrastructure software rocks!“, but...

“How do I manage it all? What if I don't already have a Linux workstation? Where is my MMC console?“

Webmin provides part of the answer: web based, lots of modules
But is beginning to show its age: focused on configuration not on _management_, based mostly Perl-4

IMC (IDEALX Management Console)
- web based, ergonomic widgets
- webmin-compatible
- object-oriented, componentized,
- in Perl (the language of choice for sysadmins)
IDEALX Management Console

> IMC for sysadmins
Overview

Samba Console

Nagios Console

Webmin Console (LDAP roles)

New projects: amavis, pf, bacula, etc.

IMC Generic Components

IMC Framework
Available consoles

Samba Console: smooth migration for NT sysadmins
Nagios Console (initial, and “reloaded” version)
Secure MX Console (console for our Postfix/SpamAssassin/ClamAV, pending release)
Bacula Console (monitor network backups made with Bacula)
IDX-PKI Console: monitor the technical parts of IDX-PKI
Webmin Console: just reuse your existing modules, with integrated LDAP auth. and access control
X509 auth also (mail gmacinenti@idealx.com to get its devel version)

<your own console here...>
Nagios Console

SYSTEM OVERVIEW

Current Status: Error
Last check: Sun Apr 18 02:38:24 2004

Basic Trends

Event Log
  Description: USB hub found
  Description: 2 ports detected
  Description: Found IRQ 11 for device 0000:00:14.2
  Description: Sharing IRQ 11 with 0000:00:1f.1
  Description: Sharing IRQ 11 with 0000:03:01.0

SERVICES OVERVIEW

<table>
<thead>
<tr>
<th>Service</th>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>http</td>
<td>Running</td>
<td>Apache is a World Wide Web server. It is used to serve HTML files and CGI.</td>
</tr>
<tr>
<td>std</td>
<td>Running</td>
<td>Runs commands scheduled by the at command at the time.</td>
</tr>
</tbody>
</table>

Login:
- User: admin
- Password: ****

Common tasks:
- Enable checks
- Acknowledge problems
- Enable notifications
- Delay next notification
- Schedule downtime
- Disable notifications for all services
- Enable notifications for all services
- Schedule an immediate check of all services
- Disable checks of all services
- Enable checks of all services
- Disable event handler
- Disable flag detection
- Get help
Webmin module, Samba Console wizard
Other generic consoles

Memory Usage

Hard Disk Occupation

Hard Disk Read/Write Actions
IDEALX Management Console

> IMC for developers
Let's build a better new 'wheel'?

Need a framework for building web mgmt interfaces “à la MMC”
=> need a base API and a proven extension framework, like Eclipse

Must enable highly ergonomic GUI, without much efforts
=> need templating & HTML widgets

Webmin provides lots of modules
=> must be able to re-use Webmin modules

Java is interesting but limit productivity and code re-use
(webmin modules) + Perl is the favorite language for sysadmins
=> need a J2EE-like framework for Perl

Perl/CPAN dependencies are a nightmare for packagers
=> need something like .jar packages for libraries
Components overview

**Generic CPAN Stack**
- Log4P
- PAR
- TT2
- etc.

**New modules (not IMC specific)**
- PXP
- Struts4P
- WebFaces

**Perl 5 VM (with Unix semantics)**

**IMC Console**
- "Application A"
- "Application B"

**Reusable Components**
- UserManager2,
- ServiceManager2,
- LogViewer, Monitor, etc.

**Controller and Renderers**
- IMC::Struts4P::Controller
- IMC::WebFaces::ViewRenderer

**IMC Core facilities**
- Standalone Web Server (HTTPS)
- Pipeline slots

**Webmin Modules**
- "Legacy"

**CGI/Webmin Wrapper**

**CGI/Webmin Wrapper**

Le partenaire Open Source des Grands Comptes et Administrations
Core and reusable components

Standalone Web Server (HTTPS only, Net::Server + libwww)

Generic pipeline slots, for
  • Session handling (cookie + Apache::Session)
  • Authentication: static XML file or LDAP connector

User and Role API: access control, role based, role mapped to LDAP group membership

Available modules
  • Webmin wrapper: re-use existing modules transparently
  • UserManager2: account management, provisioning
  • ServiceManager2: start/stop services, inspect applications logs, local or remote (ssh), display RRD monitoring graphs
IDEALX Management Console

> Generic modules
PXP : Perl eXtensions & Plugins

**Extension Point** : generic interface for a facade or a registry (Exemple : IMC::MainMenu)

**Extension** : piece of code/class/module of simply text or XML fragment that is registered into an extension point to “extend” the functionnality of the system

**Plugin** : group of extension points and extensions, with possible startup() and shutdown() methods to initialize plugin specifics structures : caches, configuration files, struts controllers (see Struts4P), etc.

Notes :

- These are ordinary Perl objects, NO BASE CLASS DEPENDENCY is required.
- Extension instantiation is is delegated to the extension point implementation : it needs not be a class, can as simple as a text string
**PXP : example**

Excerpt from a plugin.xml:

```xml
<plugin
  id="IMC::Core"
  class="IMC::Core::InitPlugin"
  version="0.1"
  name="Core Plugin"
  provider-name='IDEALX'>

<extension-point
  id='IMC::MainPipeline'
  version="0.1"
  name='Main Pipeline Extension-Point'/>

[...]

<extension
  id='IMC::SessionLoader'
  name='Session Loader Extension'
  point="IMC::MainPipeline"/>

PXP is actually located in ~imc2/lib/IMC/..., but should move to a top-level package as it does not rely on any other IMC packages and provides fairly generic services.
```
Struts4P

• Port of Struts (http://jakarta.apache.org/struts) to Perl
• Implements MVC (“Model 2”)
• Reads “standard” struts-config.xml (not all tags supported yet)
• Struts4P::RequestProcessor implements a generic controller
• Advanced Perl syntax reduces need multiple “Action classes” : ie one can group several actions inside a common MyAppAction and dispatch at the method level (the java version leads to a “one class per action” approach)
• All parts of the framework can be replaced or overloaded (RequestProcessor, ViewRenderer, Role-based access control, etc.)
• Default IMC::Struts4P::ViewRenderer works with Template Toolkit for rendering views, with pre-defined logic for .cgi/pl and .xsl processors
Struts4P : example config file

```xml
<struts-config>
    <form-beans>
        <form-bean
            name="testForm"
            type="IMC::Struts4P::TestForm"/>
    </form-beans>

    <action-mappings>
        <action path="/" forward="/pages/test.html"/>
        <action path="/test" forward="/pages/test.html"/>
        <action path="/testSubmit"
            type="IMC::Struts4P::TestAction"
            parameter="testMethod"
            name="testForm"
            scope="request"
            validate="true"
            input="/pages/input.html">
            <forward name="success" path="/pages/success.html"/>
            <forward name="failure" path="/pages/failure.html"/>
        </action>
    </action-mappings>
</struts-config>
```
WebFaces

A GUI framework for web applications

- A WebFaces::View groups together a set of widgets and a default layout (template) for arranging them
- A widget renders a view of the model and “reacts” to state changes of other widgets
- The framework can be layered over traditionnal CGI responses (wraps a dumb html page inside a template)
- It works with Struts4P too ;-)
- Available widgets type
  - Perl Widget: HTML rendering in plain Perl, before integration inside the template
  - Template Widget: HTML is produced by a template
  - Template Plugin: rendering is called from the template
IDEALX Management Console

> Samba Console & smbldap-tools
Samba Console

Initial goal was to replace usrmgr.exe

Version 1.1 features

• Account management (users & groups, computers)
• Resource provisioning (homes, profiles, custom actions)
• Support for admin roles (Domain Admins & Account Operators), even without the new privilege stuff (LDAP access control)
• Service management (Samba controller and OpenLDAP servers)
• Log browsing and some CPU/IO/mem graphical monitors

Requires a recent imc 1.2
### LDAP Log

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Origin</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=1 SEARCH RESULT tag=101 err=0 nentries=1 text=</td>
</tr>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=2 SRCH base=&quot;cn=monitor&quot; scope=0 deref=2 filter=&quot;(cn=monitor)&quot;</td>
</tr>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=2 SRCH attr=description</td>
</tr>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=2 SEARCH RESULT tag=101 err=0 nentries=1 text=</td>
</tr>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=3 SRCH base=&quot;cn=Bytes,cn=Statistics,cn=Monitor&quot; scope=0 deref=2 filter=&quot;(objectClass=*&quot;</td>
</tr>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=3 SRCH attr=monitorCounter</td>
</tr>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=3 SEARCH RESULT tag=101 err=0 nentries=1 text=</td>
</tr>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=4 SRCH base=&quot;cn=PDU,cn=Statistics,cn=Monitor&quot; scope=0 deref=2 filter=&quot;(objectClass=*&quot;</td>
</tr>
<tr>
<td>Oct 12 13:59:01</td>
<td>linux</td>
<td></td>
<td>slapd[6372]: conn=26 op=4 SRCH attr=monitorCounter</td>
</tr>
</tbody>
</table>
New features

In the current branch: provisioning spool interface (async creation of /home on remote systems)

• re-uses the existing pipeline from the AccountFactory
• each task is calling
• adds a task to spool a provisioning event
• uses a simple ldiff for the moment
• will move to SPML sometimes in the future
• try it: it's already in patch-35

This can be the basis of next major version of the smbldap-tools.
Pipeline details

```php
use UserManager2::ProvisioningRequestor;
$self->{'registry'}{'SambaAccount'} =
    new UserManager2::GenericLDAPAccountFactory(
        objectClass => [ 'account', 'posixAccount', 'sambaSamAccount' ],
        base_dn => $self->{'base_dn'},
        users_prefix => $self->{'users_prefix'},
        groups_prefix => $self->{'groups_prefix'},
        default_user_gid_number => $args{'default_user_gid_number'},
        newOps => [
            &UserManager2::GenericLDAPAccountFactory::sampleCheckPasswordC
        complexity,
            &UserManager2::GenericLDAPAccountFactory::setDefaultDN,
            &UserManager2::GenericLDAPAccountFactory::setPosixUID,
            &UserManager2::GenericLDAPAccountFactory::setDefaultPosixGroupID,
            &UserManager2::SambaTasks::setSambaSID,
            &UserManager2::SambaTasks::setSambaPrimaryGroupSID,
            &UserManager2::GenericLDAPAccountFactory::setPassword,
            &UserManager2::SambaTasks::setSambaPassword,
            &UserManager2::GenericLDAPAccountFactory::setObjectClass,
            &UserManager2::GenericLDAPAccountFactory::checkSchema,
            &UserManager2::ProvisioningRequestor::spoolJob,
            &UserManager2::GenericLDAPAccountFactory::createHomeDirectory,
        ],
        delOps => [
            &UserManager2::GenericLDAPAccountFactory::removeFromGroups],
    );
```
Other features

Resource servers management

- Add/remove shares, manage ACLs
- Monitor status of SMB services of a remote server (NT or Linux), or reboot!
- Printing support: no idea yet
- First version: q&d 'net' wrapper
- Now working on libnet (samba4), and trying to bring back code from samba 3 and IDLs to have the missing RPCs
- Courtesy of Gregory (gleocadie@idealx.com)

Installation wizard

- handles 2 basic configurations: PDC and member server
- generates smb.conf
- calls smbldap-populate for directory provisioning
- should have seen the ./setup/provision.pl script before! ;-)
**New resource management screens**

<table>
<thead>
<tr>
<th>Domain Configuration</th>
<th>Home</th>
<th>03-May-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Account Policy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Properties</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Share Name**
- Sambaxp

**Server Path**
- /tmp

**Description**
- SambaXP Demo

---

**Computer Shares**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>print$</td>
<td>Disk</td>
<td>Printer Drivers</td>
</tr>
<tr>
<td>tmp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>samba</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPC$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADMIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>root</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- REVISION: 1
- OWNER: IDEALX-NET\root
- GROUP: IDEALX-NET\root
- ACL: IDEALX-NET\root: ALLOWED/0/FULL
- ACL: Everyone: ALLOWED/0/FULL

---

**Computer Printers**

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>printer 1: \pdc-srv\sambaxp_printer, shared as: sambaxp_printer</td>
</tr>
</tbody>
</table>
New wizard feature (upcoming)
IDEALX Management Console

> Roadmap and community
Roadmap

IMC (as presented at Fosdem 2005)
  • X509 auth. *(done)*, perl tainting *(anyone ?)*
  • mod_perl connector *(hack works)*
  • more IoC/code injection improvements (layered configuration: components wiring, configuration defaults, site specific parameters, all management by the same mechanism) *(working on it)*

Samba Console
  • Multiple domain support
  • libnet Perl wrapper (even for account creations)

Nagios 2.x integration (Nagios Console)

Bacula console *(will be ready for may 12)*
smbldap-tools

What we want to add

• plugin support (add radius attributes, notify other systems, etc.)
• basic set of tasks (from smbldap_tools.pm)
• async support
• CLI will stay for Unix admins & users

What else would you like in the next version ?
Target architecture proposal

- **Samba DC**
  - *version 3*
  - *CLI interface*

- **smbldap-useradd**
  - chunk #1
  - ldap_add
  - other plugins
  - notify

- **OpenLDAP**

- **Mgt Console**

- **smbldap library**

- **Provisioning Daemon**
  - create home
  - ssh ...
  - ...

- **Other agents**
Community

Samba Fan?
Like Webmin?
Love Perl?

Then go to http://imc.sourceforge.net/home.html
Mailing-list: lst-imc@lists.idealx.org

GNU Arch/TLA development archive

Documentation: err.. not much yet...