Samba 4 Status Report

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SambaXP
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Samba 4 - Where are we now?

- Originally started in 2003, as an effort to improve the SMB server
- Later became the effort to get an AD DC working
- Strong focus on the right infrastructure
- 12000 commits since April 2004, 4000 in the last year
On our way to an alpha

• Improvements in the last year
  – Protocol knowledge
  – Protocol Coverage
  – Usability Improvements
  – Development Tool Improvements
Protocol knowledge

• We now know the format of all AD attributes
  – previously, we didn't know the internal format of encrypted attributes

• Knowing this means we know the LDB data format won't change drastically

• Give administrators confidence to try an alpha
Protocol coverage
SMB2 server

- Implementation of Microsoft's new SMB protocol
  - As seen in windows Vista
  - passes most of our SMB2 client testsuite
Kerberos

- **PKINIT**
  - Basis for smart-card login to Samba4

- **Heimdal merge**
  - Collaboration with Heimdal developers
  - No longer running a drastically custom version of Heimdal
DRSUAPI

- The Windows way of doing LDAP replication
- Decryption
  - Some attributes are doubly encrypted
- Replication
  - We now understand and implement AD replication!
  - Allows us to be a peer DC to a Windows DC [see Metze's talk]
LDAP

- Backends
  - run samba4 backend onto OpenLDAP or Fedora DS
- Start-TLS in LDAP server
- Better SASL support
File change notification

- Missing part of our file-server implementation
- new implementation backed by Linux inotify()
- Ported to Samba 3.0.25
Asynchronous

- IO
  - Based on new Linux Kernel Async IO functionality
- DCE/RPC
  - This layer is now fully non-blocking/async
- LDB
  - No longer blocks waiting for LDAP replies.
Usability
SWAT

- Browser-based LDB Editor
  - qooxdoo
- libnet getting more mature
GTK+ tools

- Now a separate project
- Applications managing for registry, SAM, services, crontab
Clustering

• Samba4 has hosted a big effort to create a clustered Samba.
  – Uses 'ctdb', clustered version of TDB
Development Tool Improvements
lib/replace

- provides standard functions/macros/defines not provided by the system
- Not required on recent POSIX-compatible systems
- Similar in purpose to libroken or GNUlib
PIDL improvements

• Pidl-generated code now used by Wireshark
• Use of standard IDL constructions
  – Compatible with Wine, MIDL, jCIFS IDL
• Now also used in Samba 3
• tests!
Build system

- all functionality now exported as shared libraries
- used happily by openchange and (now a separate project) samba-gtk
Test improvements

- 'make testenv' (development environment improvements)
- lcov test coverage driven testing
- new perl-based test infrastructure
  - progress indication
  - test environments: can now test domain member code
  - can run individual testsuites
Code Coverage

- Percentage of the code that is run during the testsuite
- 41.6% now!
- Main untested code:
  - Heimdal
  - SWAT
  - Winbind
  - Registry
### LTP GCOV extension - code coverage report

**Current view:** directory  
**Test:** samba4.lcov.info  
**Date:** 2007-04-25  
**Code covered:** 41.5%  
**Instrumented lines:** 326916  
**Executed lines:** 139817

<table>
<thead>
<tr>
<th>Directory name</th>
<th>Coverage</th>
<th>Instrumented lines</th>
<th>Executed lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>/usr/include/sys</td>
<td>0.0%</td>
<td>0/14 lines</td>
<td></td>
</tr>
<tr>
<td>auth</td>
<td>52.7%</td>
<td>804/1526 lines</td>
<td></td>
</tr>
<tr>
<td>auth/credentials</td>
<td>67.6%</td>
<td>528/781 lines</td>
<td></td>
</tr>
<tr>
<td>auth/gensec</td>
<td>54.8%</td>
<td>1452/2648 lines</td>
<td></td>
</tr>
<tr>
<td>auth/kerberos</td>
<td>58.5%</td>
<td>535/915 lines</td>
<td></td>
</tr>
<tr>
<td>auth/ntlmssp</td>
<td>76.0%</td>
<td>746/982 lines</td>
<td></td>
</tr>
<tr>
<td>cldap_server</td>
<td>83.4%</td>
<td>257/308 lines</td>
<td></td>
</tr>
<tr>
<td>client</td>
<td>41.1%</td>
<td>721/1756 lines</td>
<td></td>
</tr>
<tr>
<td>cluster</td>
<td>79.1%</td>
<td>34/43 lines</td>
<td></td>
</tr>
<tr>
<td>cluster/ctdb</td>
<td>0.6%</td>
<td>4/656 lines</td>
<td></td>
</tr>
<tr>
<td>cluster/ctdb/common</td>
<td>0.0%</td>
<td>0/147 lines</td>
<td></td>
</tr>
<tr>
<td>cluster/ctdb/tcp</td>
<td>0.0%</td>
<td>0/147 lines</td>
<td></td>
</tr>
<tr>
<td>dsdb/common</td>
<td>39.0%</td>
<td>110/282 lines</td>
<td></td>
</tr>
<tr>
<td>dsdb/repl</td>
<td>24.3%</td>
<td>155/637 lines</td>
<td></td>
</tr>
<tr>
<td>dsdb/samdb</td>
<td>68.3%</td>
<td>945/1394 lines</td>
<td></td>
</tr>
<tr>
<td>dsdb/samdb/lcdb_modules</td>
<td>34.8%</td>
<td>1595/4584 lines</td>
<td></td>
</tr>
<tr>
<td>dsdb/schema</td>
<td>9.4%</td>
<td>77/831 lines</td>
<td></td>
</tr>
<tr>
<td>heimdal/kdc</td>
<td>29.2%</td>
<td>1275/4361 lines</td>
<td></td>
</tr>
<tr>
<td>heimdal/kuser</td>
<td>28.7%</td>
<td>95/331 lines</td>
<td></td>
</tr>
<tr>
<td>heimdal/lib/asnl</td>
<td>46.8%</td>
<td>11390/24317 lines</td>
<td></td>
</tr>
<tr>
<td>heimdal/lib/com_err</td>
<td>62.9%</td>
<td>112/178 lines</td>
<td></td>
</tr>
<tr>
<td>heimdal/lib/des</td>
<td>46.1%</td>
<td>1372/2976 lines</td>
<td></td>
</tr>
<tr>
<td>heimdal/lib/des/simath</td>
<td>54.5%</td>
<td>713/1339 lines</td>
<td></td>
</tr>
<tr>
<td>heimdal/lib/ossapi</td>
<td>0.0%</td>
<td>0/1201 lines</td>
<td></td>
</tr>
</tbody>
</table>
Static Analysis (checker)

- Developed by IBM
- Run regularly on the build farm
Build Farm

http://build.samba.org/

- Now shows test coverage
- One of the hosts runs against Windows
- List with most often broken tests
Already in use
Merged into Samba3 - 1

- TDB transactions
- LDB
- File notification using inotify()
- pidl
  - First interface used in 3.0.25
  - Some more interfaces ported over for 3.0.26
  - plans to port over DCE/RPC library
Merged into Samba3 – 2

- Talloc improvements
- Socket Wrapper
- lib/replace
- Samba 4's test suite is used for Samba 3 testing
- events - maybe soon?
OpenChange

- Built around Samba4
  - Uses the DCE/RPC library and pidl
  - Hooks into smbtorture
Domain Controller Status

- Basic DC works
- Some core functionality still missing
  - Group Policies
  - Schema not enforced yet
  - Access control still limited
  - Browsing
Member Server Status

- Winbind still missing
  - Idmap needs to be ported across
- Improving winbind is Kai's SoC project
Releases

- TP4 was released in January
- TP5 due out this week
- Alpha up next
- Already in Debian's experimental
Development Coordination

- IRC: #samba-technical on irc.freenode.net
- Mailing list: samba-technical@samba.org
- Wiki: http://wiki.samba.org/