#### Samba 4 Status Report

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> SambaXP April 2007



#### 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



4/27/07

# On our way to an alpha

- Improvements in the last year
  - Protocol knowledge
  - Protocol Coverage
  - Usability Improvements
  - Development Tool Improvements



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## 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



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#### Protocol coverage



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#### 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.



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## Usability



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# 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



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# Development Tool Improvements



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# 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



```
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```

LTP GCOV extension - code coverage report				
Current view: directory				
Test: samba4.lcov.info				
Date: 2007-04-25		Instrumented lines: 326916		
Code covered: 41.5 %	Executed lines: 135817			
Directory name	Cov	erage		
/usr/include/sys		0.0 %	0 / 14 lines	
auth		52.7 %	804 / 1526 lines	
auth/credentials		67.6 %	528 / 781 lines	
<u>auth/gensec</u>		54.8 %	1452 / 2648 lines	
<u>auth/kerberos</u>		58.5 %	535 / 915 lines	
<u>auth/ntlmssp</u>		76.0 %	746 / 982 lines	
<u>cldap_server</u>		83.4 %	257 / 308 lines	
<u>client</u>		41.1 %	721 / 1756 lines	
<u>cluster</u>		79.1 %	34 / 43 lines	
<u>cluster/ctdb</u>		0.6 %	4 / 656 lines	
<pre>cluster/ctdb/common</pre>		0.0 %	0 / 1488 lines	
<u>cluster/ctdb/tcp</u>		0.0 %	0 / 147 lines	
dsdb/common		39.0 %	110 / 282 lines	
dsdb/repl		24.3 %	155 / 637 lines	
dsdb/samdb		68.3 %	945 / 1384 lines	
dsdb/samdb/ldb_modules		34.8 %	1595 / 4584 lines	
dsdb/schema		9.4 %	77 / 821 lines	
<u>heimdal/kdc</u>		29.2 %	1275 / 4361 lines	
<u>heimdal/kuser</u>		28.7 %	95 / 331 lines	
<u>heimdal/lib/asn1</u>		46.8 %	11390 / 24317 lines	
<u>heimdal/lib/com_err</u>		52.9 %	112 / 178 lines	
<u>heimdal/lib/des</u>		46.1 %	1372 / 2976 lines	
heimdal/lib/des/imath		54.5 %	713 / 1309 lines	
heimdal/lib/ɑssapi		0.0 %	0 / 1201 lines	



# Static Analysis (checker)

- Developed by IBM
- Run regularly on the build farm



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## Build Farm

http://build.samba.org/

- Now shows test coverage
- One of the hosts runs against Windows
- List with most often broken tests



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#### Already in use



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# 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



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# Merged into Samba3 -2

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



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# 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



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#### Releases

- TP4 was released in january
- TP5 due out this week
- Alpha up next
- Already in Debians' experimental



# **Development Coordination**

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

