

Using the Samba Testsuite

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Torture yourself!

- The Samba4 torture suite is an extensive, general purpose CIFS test suite. It is not Samba specific.
 - All CIFS vendors should take advantage of it to test their server products
- The test suite has been available for over 2 years, but we have received very little feedback from vendors.
 - Any idea why?

Installing the test suite

- Download the latest Samba4 tree from samba.org
 - see <http://devel.samba.org/>
 - or for a quick start, do this:
 - `rsync -avz samba.org::ftp/unpacked/samba4 .`
- Configure, compile, install
 - `cd source`
 - `./configure && make && make install`
- The main tool you need is 'smbtorture', but the other tools can be useful too

The tools

- The test suite is made of a number of components
 - smbtorure: a general purpose test tool
 - masktest: for testing wildcard handling
 - locktest: randomised testing of byte range locks
 - gentest: a generalised random CIFS tester
 - smbscript: a scripting environment for writing new tests
- Most people will probably just use smbtorure, which offers the most extensive set of canned tests

Using smbtoriture

- General usage is:
 - `smbtoriture [target] [options] [test names]`
- `[target]` varies depending on the type of test
 - for file sharing tests use `//server/share`
 - for RPC tests use a DCE/RPC binding string
- `[options]` also depends on the test.
 - The most commonly used options are for authentication
- `[test names]` lists what tests to run
 - run without a test name to get a list of available tests

examples

- Test handling of query filesystem calls:
 - `smbtorture //server/share -Uuser%pass RAW-QFSINFO`
- Test handling of SAMR rpc calls:
 - `smbtorture ncacn_np:server -Uuser%pass RPC-SAMR`
- Note that:
 - `smbtorture` will exit with status 0 on success
 - to analyse failures properly a network sniffer such as `ethereal` is useful

New tests for 2005

- New base tests
 - BASE-NTDENY1, BASE-NTDENY2, BASE-SECLEAK, BASE-DISCONNECT, BASE-DELAYWRITE
- New benchmark tests
 - BENCH-NBT, BENCH-WINS, BENCH-RPC, BENCH-CLDAP
- New raw tests
 - RAW-EAS, RAW-EAMAX, RAW-STREAMS, RAW-ACLS, RAW-COMPOSITE

... new tests for 2005

- New scanners
 - SCAN-RAP
- New RPC tests
 - RPC-SECRETS, RPC-UNIXINFO, RPC-SAMLOGON, RPC-SAMSYNC, RPC-INITSHUTDOWN, RPC-OXIDRESOLVE, RPC-REMACT, RPC-LOGIN, RPC-ROT, RPC-DSSETUP, COM-SIMPLE
- New LDAP tests
 - LDAP-BASIC, LDAP-CLDAP
- New NBT tests
 - NBT-REGISTER, NBT-WINS, NBT-WINSREPLICATION, NBT-DGRAM

Common Options

- Some of the more commonly needed options are:
 - `-d N` : set debug level
 - `--num-ops N` : choose number of operations
 - `--num-progs N` : choose number of parallel connections
 - `--seed N` : choose seed for randomised tests
 - `-Uuser%pass` : username and password
 - `-W workgroup` : choose domain (or workgroup)
 - `-t timelimit` : timelimit for timed tests

BASE-NTDENY tests

- Designed to test the correct implementation of the deny modes in NTCreatex calls.
 - tries `--num-ops` random combinations of `access_mask` and `share_access` bits
 - tries to open a file twice, with different combinations of access masks
 - tests if the result matches an internal 'correct' algorithm
 - you can see all operations using the `--show-all` switch
- Two forms of the test
 - BASE-NTDENY1 tests with two opens on one connection
 - BASE-NTDENY2 tests with opens on separate connections

BASE-SECLEAK

- Used to test for memory leaks in failed session setups
 - run with `-t RUNTIME`
 - watch for increasing memory usage in your SMB server
- SPNEGO and leaks
 - The multi-packet nature of SPNEGO auth makes memory leaks happen easily
 - the test is designed to avoid an easy anonymous denial of service attack

BASE-DISCONNECT

- Tests release of open files and locks on unexpected disconnect
 - client opens a file, does a 2nd async open, then disconnects. This should force the file to auto-close
 - client sets up a async timed lock, then disconnects. This should destroy the timed lock and the open file
- Async logic
 - The test is designed in particular to stress the async handling logic in the server. These async events need to be logically attached to the connection, so if the connection goes away, the async event goes away too

BENCH-NBT and BENCH-WINS

- New NBT and WINS client libraries allow for new tests
 - BENCH-NBT benchmarks NBT name query calls
 - BENCH-WINS benchmarks registration, query and release calls
- Typical results
 - more than 4000 ops/sec for WINS
 - more than 12000 ops/sec for NBT
- Sudden drops in performance have indicated regressions in our database code

CLDAP tests

- Samba4 now includes a CLDAP library and server
 - LDAP-CLDAP test for CLDAP netlogon queries
 - BENCH-CLDAP benchmark for CLDAP performance
- Some surprises
 - Scanning for CLDAP levels showed far more than expected
 - search can include bad components for domain, guid, user etc, as long as at least one of the components is correct
 - structures are similar to, but not the same as, the corresponding netlogon DGRAM structures

RAW-EAS

- Primarily for OS/2 clients
 - OS/2 makes extensive use of EAs in the workplace shell
 - very poor documentation on EA calls
- Tests include
 - creation, deletion, query
 - directory search with EA return
 - creation of files with initial EAs

RAW-STREAMS

- Streams are increasingly required in CIFS servers
 - poor documentation on exact semantics
- RAW-STREAMS test
 - checks for basic stream operations
 - tests creation of stream without base file
 - checks aliasing with \$DATA modifier
 - checks deletion via delete-on-close

RAW-ACLs

- More complex than they look
 - inheritance rules are particularly poorly documented
 - creation of files with initial ACL and/or EA
- w2k3 bug?
 - the test finds a bug in ACL inheritance
 - seems to be fixed in longhorn
- No dynamic inheritance?
 - surprisingly, dynamic inheritance appears to be a client feature, using directory traversals

WINS testing

- Two tests of WINS server behaviour
 - NBT-WINS tests basic operation of a WINS server
 - NBT-WINSREPLICATION tests replication operations
- Built on IDL
 - Like many of the new libraries in Samba4, these tests are built on library code generated from IDL files
 - This allows you to display the contents of all packets using a high debug level, for these tests -d10 gives the packet details

Automated Testing

- Prevent regressions
 - It is worthwhile developing a set of smb torture tests that are known to pass
 - in Samba4, we put lists of known passing tests in `source/script/tests/`
 - Each commit triggers the running of all tests on the samba build farm machines
- Not all tests are suitable for automation
 - some take too long to run
 - some are known to fail
 - some are designed for manual operation

Scripting new tests

- ejs for test writing
 - Samba4 is starting to move to a new scripting system for tests
 - ejs is a subset of ECMAScript (javascript)
 - RPC bindings for all IDL files auto-generated
 - bindings for RAW SMB library not done yet, but will be soon
- easier test development
 - much easier to write comprehensive tests in a scripting language

Vendor Feedback

- The Samba4 test suites is meant for all CIFS vendors
 - please give us feedback on the tests
 - are you using them now? If not, then why not?