NameFLOW-Paradise X.500(93) Test Results - Phase One

VB(96)15

These are the test results of the X.500(93) pilot test from 12 to 16 February 1996. A full description of the test plan can be found at <http://www.dante.net/np/93pilot.html>. The actual tests performed were based on the EuroSInet X.500(88) Interoperability Tests with modifications for our environment. A draft list with detailed problems has been distributed. Most problems were sent to the mailing list (np-93@dante.nameflow.net) and discussed at the Schiphol meeting.

The first part of this document gives a general description of the findings. The second part gives a summary of problems reported.

In an attempt to make this report as vendor independent as possible, the names of the products will not be not mentioned. For further information one is advised to consult vendors or participants.

DAP and DSP (Directory Access Protocol and Directory System Protocol)

There were no major problems with the DAP and DSP tests. A few minor problems occured but most of them related to ill-configured Access Control Information or defects in the standard already reported. The DAP extensions were not thoroughly tested, but the first impression is that this works. The modification of some extensions was not possible.

Although outside the scope of this test phase, TU-Chemnitz-Zwickau have tested interworking between Quipu(=88) and the X.500(93) DSA in both directions. It was reported that DSP worked without any problems.

DISP (Directory Information Shadowing Protocol)

The DISP tests showed quite a few shortcomings. The initial limitation is that the EWOS uses 6 different subsets for DISP, each specifying different functionality (EWOS EG DIR/ETSI TE.6 ADY 53). At the EuroSInet Workshop it became clear that the lowest common denominator of subsets implemented is:

Subset A: "naming context only" (= everything) and/or,

Subset B: "complete subtrees" (= everything starting from this node).

The currently used one-level shadow copy (EWOS subset C; "chopped subtrees" for example all organisation entries in a country) could not be used between the different vendors. Unexpected was the increase in memory usage from 10 to over 45 Mbytes for an update of 3300 person entries. Besides the increase of memory the DSA "blocked" during replication, other users (processes) were not able to bind to the DSA. The configuration of DISP agreements can also be improved, as it varies between a mix of dollars/text/hashes and editing ASN.1 strings. The conclusion of the DISP tests is that it is too early to deploy DISP between different implementations in an operational environment .

The use of the one-level replication (EWOS Subset C) is needed in our specific environment.

Root Context

The "Managing the Root Context" paper written by David Chadwick and others on behalf of DANTE was put through the test and serveral complications were discovered. The Root Context proposal is only implemented by NEXOR, so interworking testing between different implementations was not possible. The replication as proposed in the paper between two MDS implementations was successful and could be considered as a proof of concept.

The replication of the information worked, but using it in the "shadow DSA" seems to break the standard. It was beyond the scope of the tests performed as the basics of the standard prohibit the implementation as described in the Chadwick proposal. Problems with the current proposal are name resolving, illegal context prefixes and dseType combinations. As a result the proposal must be revised to describe all the implications in full detail, or alternative solutions need to be found. The current standard depends on the Directory model where interaction will be done via bi-lateral agreement between Directory Management Domains and not on a "multi-lateral" basis as is the case in the current Quipu model.

Access Control Information (ACI)

The Access Control mechanism introduced in the X.500(93) standard is not as straightforward as in the Quipu model. Understanding the basics of the new Access Control mechanisms was perceived by the testing organisations as "problematic". Access Control needs simplification or proper explanation. Manuals and other documentation will need improvement to make this easier to understand. The used one-to-one mapping from current Quipu Access Control to X.500(93) could be optimised.

LDAP support

The used LDAP implementation was based on software of an early prototype of the University of Michigan, not conforming to the proposed Internet Standard. Large part of Directory usage is via LDAP and must be supported in coming releases. It was suggested that this should be an integral part of DSAs instead of a gateway function.

DSA management

Management of the DSA is restricted compared to Quipu DSA management. The tools are improving and the graphical interface was appreciated. A shortcoming is that not all functionality is yet available. There is the stability question for the conversion tool which needs improvement to be used in a production service. The logging file format needs improvement for one of the products.

Product Stability

Most DSAs ran stable with an exceptional crash. The early version(s) of the tested software are unstable, but the stability seems to improve as newer versions come along. In the problem report

questionnaire people were asked to mark the tested product, and most participants think that the product are almost there, but not entirely. The software would presumably work fine in a single vendor environment, but for full operational deployment it is yet to early. The major concern was stability of the product. It was decided to await the coming EuroSInet interworking test workshop in Copenhagen. If necessary, when improvements have been implemented, a follow up test (Phase Two) can be started.

It is only fair to say that the vendors participating in this test have improved their software as a result of the problems encountered (in time for the Copenhagen meeting).

Using Source or Binaries

The organisations using source code had slightly more trouble installing the software than people using binaries. The installation of SunPro C-compiler fixed this, the problem seems to be the Gnu C-compiler (gcc). In all, the disadvantages of having to compile source or having to redistribute binaries seems to outweigh each other. It is up to organisation what they locally prefer and what their local requirements are.

User Testing versus Vendor Testing

The tests performed by this user community are done using a live Wide Area Network environment. This makes DISP updates of 23 Megabyte for 3300 entries over the network very tedious, and such problems do not occur in a local test setting. It is clear that this user testing is different from vendor testing at the EuroSInet workshops and participants want to repeat this type of user testing in the Autumn of 1996 (with more products). It is agreed that the participants can continue testing independently and the necessary information, such as knowledge references, will be made available via <ftp://ftp.nameflow.dante.net/root/>.

Problem Overview

Problem:
Authenticated binds to other DSA

Description:
Authenticated binds give the error "service unavailable" when DAP or DSP is used to access other DSA.

Solution:
Intermediate solution provided during the test, the bug must be fixed in final release.

Problem:
Binds refused when using presentation addresses "X500" TSEL/xxxxx

Description:
The DSA does not accept binds when using presentation addresses with "X500" TSEL. No communication between DSAs possible. No DAP binds are possible.

Solution:
Don't use "X500" TSEL for presentation addresses. Bug reported.

Problem:
Quoting T.61 characters (EuroSInet tests 3.1.1.17 and 3.1.1.18)

Description:
Problems in the tcldish DUA, using the correct quoting was not that obvious. The used interfaces do not display the T.61 characters as supposed.

Solution:
Double quoting, e.g. sn=M\\c8uller worked.

Problem:
Shadow agreement configuration

Description:
The configuration of shadowing agreements is limited

Solution:
Modifying e.g. lastReplicatedTimestamp must be done by editing the ASN.1 encoding. A more user-friendly interface would be much appreciated.

Problem:
DISP Agreement

Description:
Due to local tests shadowing agreement information was left and caused problems for next update.

Solution:
Using a new (unused) binding ID in agreement.

Problem:
Memory usage of the DSA is increasing during replication

Description:
A DSA increased the usage of memory during the replication from 10 MB to over 45 MB

Solution:

No solution yet provided.

(Note by VB: The problem is that the used ASN.1 encoder/decoder is memory based, meaning that the complete DISP PDU must be stored in memory.)

Problem:

DISP replication

Description:

A DISP agreement was set up between two vendors. After receipt of the coordinateShadowResult PDU the replication worked fine on network level but a ROS error occurred.

Solution:

This ROS error is a bug and is reported.

Problem:

Unable to bind to DSA during DISP replication.

Description:

During the replication of c=CH (3300 entries) the DSA was blocked for 60 minutes and no DAP request were accepted. The outage was about 60 minutes. DSP and DISP during this time were not tested.

Solution:

None. At first unresolved, might be fixed in new release.

Problem:

Usage of replicated information

Description:

Replication of data from one FLDSA via the root DSA to a (third) FLDSA succeeded. The DSA is capable of reading the information, however not to perform the list operation. The error log shows "Chaining prohibited or other DSA unavailable". The DSA has problem with the `dseType = shadow admpoint entry subr cp` for the test entry. The usage of valid DSEs were properly chained to the FLDSA for list operation.

Solution:

It is questionable whether the operations expected in this test are 'legal' according to the X.500 standard.

Problem:
Very long entryACI.

Description:
The conversion tools work very well, however they generate very long entryACI attributes! This is probably caused by the fact that Quipu Access control is more efficient than the new X.500(93) access control.

Solution:
Access Control in X.500(93) might need a different implementation as the Quipu and 93 model differ.

Problem:
Quipu "iatr" not (fully) supported.

Description:
Quipu attribute "iatr" not recognised by conversion tool. The support for this attribute in the software is questionable.

Solution:
It is not supported by the conversion tool as the DSA's does not correctly handle iatr information. The solution proposed was to remove this function from the coming release and to supported it in the one thereafter.

Problem:
Management tools need improvement

Description:
The management tools for the DSA need more attention. The DSA was considered a "black box" with limited possibilities to tune and configure. Another example is that ACI information cannot be modified using the tools.

Solution:
Problem forwarded.

Problem:
Root context management, overwriting entry

Description:
During the root context test, the replication of the country entry upwards to the root DSA was successful. Replication downwards (back) to the country master entry is overwritten by the shadowed entry from the root.

Solution:
New software installed during test implementing the Root Context management proposal.