

ASE103 Adaptive Server Enterprise Migration to Linux

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THE ENTERPRISE. UNWIRED.

Overview

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The Enterprise

- **No, Scotty won't beam you up... so don't even ask ;-)**
- **A dozen, a hundred, a thousand or more servers in a production environment.**
- **Upgrades are rare and only when absolutely necessary... even then, you wait six months or a year to get the approvals.**
- **If the changes won't work on 90% of the servers, then the changes won't happen.**
- **Careful planning of any change must be performed on development and test systems.**

Migrating the Data

- **Multiple methods including Sybase tools, 3rd Party tools and Open Source Tools**
- **A feature expected in ASE 15 is cross platform dumps and loads.**
 - This would allow us to dump from a database on a Sun box and load it into the Linux box with no extra work necessary by the DBA.
 - Unfortunately, ASE 15 is just now entering beta, so you will have to wait.

Migrating the Data the Sybase Way

- **Bulk Copy (bcp) and DEFNCOPY**
 - Most reliable
 - Can be very fast compared to other solutions
 - Drawbacks:
 - Requires intermediate files for the transfer. No SERVER to SERVER transfers¹
 - Data fields may contain the delimiter used causing the bcp *in* to fail

¹ Server to Server transfers can be obtained by using a named pipe on Unix, Linux servers.

▪ **SybMigrate**

- JAVA based program that integrates the features of bcp and defncopy to 'migrate' one database to another. Not necessarily on the same platform.
- One of the easiest methods of moving a database from one server to another.
- Drawbacks:
 - Requires Java to be installed
 - Works on v11.9.2x and higher only.
 - May be necessary to run multiple times on the same database as not all nested objects may be transferred on the first try.
 - Slower than dump/load or defncopy/bcp.

▪ **Replication Server**

- Relatively fast for keeping the data synced on multiple platforms
- Replication Server 12.6 can replicate an entire database from one machine to the other in a single Replication Definition.
- Drawbacks:
 - Overkill for one time migrations.
 - Expensive for casual use.
 - High learning curve.

▪ **SQL Remote**

- Originally designed for SQL Anywhere and later expanded to ASE.
- Included with SQL Anywhere and ASE
 - No extra \$\$\$ is required.
- Drawbacks:
 - Cumbersome to setup and confusing for DBAs new to SQL Remote
 - Documentation is in the SQL Anywhere Documentation Set.

▪ **Dump & Load the databases**

- Cross platform dump/loads currently unsupported for earlier versions.
- It should work without any major issues on systems with the same “endian” (big/little).
 - Starting in ASE 12.5.2 esd 2, Sybase extended support for this.

3rd Party Migration Tools

- It really isn't necessary to use 3rd party migration tools unless you already have them
- BMC SQL Backtrack (logical dump/load)

Open Source Tools

- **Scott Grey's SQSH**
 - <http://www.sqsh.org>
 - Supports SERVER to SERVER bulk copy
 - Latest version supports the new data types in 12.5
 - Not actively updated.
- **Michael Pepler's DBI DBD::Sybase**
 - Uses Perl's DBI mechanism for quasi-generalized access to Sybase ASE.
 - DBD::Sybase 1.04.6 (test release) includes support for the bulk API
 - Very easy to use
- **Michael Pepler's Simple::Sybase**

- **Michael Pepler's BCPTool**

- <http://www.mbay.net/~mpepler/bcptool>
- GTK or Motif based – works only on Unix/Linux
- Drawbacks:
 - Slow
 - Linux/Unix only
 - GUI only – no scripting is possible

- **Michael Pepler's SybPerl**

- Most popular Perl module for accessing Sybase databases

Migrating Stored Procedures

- **There are no known issues if you have the source for the stored procedures available.**
- **If the source of the stored procedures is not available:**
 - You will need to contact the 3rd party that you obtained the stored procedures
 - If the source is not available from any location, you will need to try to reverse engineer them. This can be a long and involved process.

Users & Passwords

- **master..syslogins.password column uses a one way hash**
- **The hash is platform specific**
 - Use Trace Flag 1650 for ASE on Linux 12.5.1+ to read ASE on Sun Solaris syslogins
 - Covered under CR #324847:
 - *Passwords from Solaris 32-bit/64-bit can be migrated to Linux using BCP or other data migration tools and used as such. Trace flag 1650 will turn on the compatibility mode. This compatibility mode is available only on Linux platform and only passwords from Solaris 32-bit/64-bit can be migrated.*
- **Use LDAP user authentication instead of migrating master..syslogins See the slide “A Quick Low-Down on LDAP User Authentication”.**

A Quick Low-Down on LDAP User Authentication

- **Hybrid mode: If user does not exist in LDAP server, use info in master..syslogins.**
 - Optionally update master..syslogins with info from LDAP server
- **Exclusive mode: If user does not exist in LDAP server, deny login.**
- **A word of warning: The connection between ASE and the LDAP server is unencrypted.**
 - LDAP records are transmitted in clear-text across the network. Depending on your environment, this may be a security issue.¹
 - Workarounds:
 - Encrypt the connection manually by using SSH Tunneling (or similar)
 - Place the LDAP server on the same machine as ASE. ASE should connect to the LOCALHOST, port to the LDAP server

¹ If it is a security issue for your environment, please inform Sybase.

The Real Issues of Migrating to Linux

- **Moving the data and the definitions is easy**
- **The real problems are not with the Linux port of Sybase ASE**
- **Things to watch out for:**
 - Shell script differences
 - Return codes may be different
 - Shell script tricks on Solaris, AIX, HP-UX, etc. may not work exactly as on their open source equivalents (BASH, tcsh, pdksh, etc)
 - The infamous GNU C Library (GLIBC)
 - The GLIBC has had a history of not being 100% backward compatible.
 - Sybase, Oracle, IBM, Sun and others have been bitten by slight behavior changes by either the GLIBC maintainers or the various distributions
 - Remember RedHat breaking the ASE with a customized GLIBC patch in RedHat Linux version 9? Once discovered, RedHat quickly fixed the patch in a later customized release of the GLIBC.

- Device drivers
 - Specifically with drivers for SAN and Baydel disk arrays
 - Many of the enterprise storage system providers are relatively new to Linux
 - Their drivers may work in their labs under low or medium loads but you may discover flaws under heavy and/or sustained usage.
- Blades
 - The good stuff
 - Reduces need of valuable space in the computer room
 - Lower cost
 - Problems
 - Heat dissipation while all blades are in heavy use
 - Shared network, disk I/O can be bottlenecks
 - Lock into a single hardware vendor

More Information

- **ASE on Linux FAQ**
 - <http://www.peppler.org/FAQ/linux.html>
- **ISUG Sybase FAQ**
 - http://www.isug.com/Sybase_FAQ
- **Sybase Newsgroups**
 - <http://forums.sybase.com>

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About this presentation

- It came about from the need of my client to migrate ASE databases on the Sun Solaris platform to RedHat Linux for increased performance for less \$\$\$ (ROI).
- Written with OpenOffice 1.1 on Mandrake Linux 10.