Delphix Engine 4.1

Release Notes

July, 2014

Delphix Engine 4.1 Release Notes

You can find the most up-to-date technical documentation at:

What's New for Delphix Engine 4.1

The Delphix Engine 4.1 provides a wealth of features, bug fixes, and performance improvements.

- **SAP ASE Support**
- **Amazon Web Services / EC2 Support**
- **Oracle 12c Pluggable Database Support**
- **Application Data Virtualization on Windows**
- **SQL Server AlwaysOn Availability Groups**
- **Red Gate SQL Backup Support**
- **Removal of Reservations Feature**
- **Additional Security Settings**

SAP ASE Support

Support for virtualizing the SAP ASE database platform is new in Delphix Engine 4.1. Existing Delphix workflows are supported, including **Linking**, **VDB Provisioning**, **VDB Refresh**, **VDB Rewind**, and **V2P**.

Amazon Web Services / EC2 Support

Support for **running in the Amazon cloud** is new in Delphix Engine versions 4.0.4.0 and 4.1. All existing Delphix workflows are supported.

Oracle 12c Pluggable Database Support

In the previous release, the Delphix Engine's support of Oracle 12c was limited to virtualizing databases which did not use the new pluggable database feature. Oracle 12c pluggable databases are now fully supported in Delphix Engine 4.1. Existing Delphix workflows are supported, including pluggable database **Linking**, **Provisioning**, **VDB Refresh**, and **VDB Rewind**.

Application Data Virtualization on Windows

In the previous release, the Delphix Engine expanded its data management functionality beyond the database by supporting unstructured file virtualization for UNIX environments. In Delphix Engine 4.1 the ability to virtualize unstructured files on Windows environments was added, and the existing **Linking** and **Provisioning** workflows are supported.

SQL Server AlwaysOn Availability Groups

Support for linking to SQL Server AlwaysOn Availability Groups is new in Delphix Engine 4.1. All existing SQL Server Delphix workflows are supported.

Red Gate SQL Backup Support

In the previous release, the Delphix Engine supported native SQL Server backups and Quest/NetVault LiteSpeed backups. New in the Delphix Engine 4.1, backups taken with the Red Gate SQL Backup Pro product **are also supported**.

Removal of Reservations Feature

In previous Delphix Engine releases, the Delphix Engine provided the infrequently used **Reservations** feature that allowed for setting the minimum amount of storage space that is allocated to an object, such as a dSource or VDB, or to an entire group. The feature is managed on the **capacity screen** accessed through the **Resources** menu in the **Delphix Admin** application. Ostensibly this feature was to provide a capability for guaranteeing the availability of storage for an object or group, but it instead created confusion around capacity management and usage thresholds in the Delphix Engine. Consequently, the feature was removed in this release of the Delphix Engine.

Capacity management remains an important function in the Delphix Engine, and the removal of **Reservations** will enable frequently requested enhancements to be included in future releases, including the ability to move objects between groups and enhanced management capabilities at the user or project level.

Additional Security Settings

A **security banner** can be configured to display customized text whenever a user logs in via the CLI or web UI.

Release Notes

Welcome to the 4.1 release of the Delphix Engine database virtualization system.

Upgrades to Release 4.1 are supported for Release 3.2.0.0 and above.

- **Tested Browser Configuration Matrix**
- **Supported Oracle DBMS Versions and Operating Systems for Source and Target Environments**
  - **Supported DBMS Versions**
  - **Supported Operating Systems**

- **Supported SQL Server Versions, Operating Systems, and Backup Software**
  - **Supported Versions of Windows OS**
  - **Supported Versions of SQL Server**
  - **Supported SQL Server Backup Software**

- **Supported PostgreSQL Versions and Operating Systems**
  - **Supported DBMS Versions**
  - **Supported Operating Systems**

- **Supported SAP ASE Versions and Operating Systems**
  - **Supported DBMS Versions**

- **Licenses and Notices**

Tested Browser Configuration Matrix

OS Supported	Browsers Supported	Adobe Flash/Flex	Minimum Memory
Windows XP Professional SP3	Internet Explorer 8.x	10.x	4GB
Windows XP Professional SP3	Firefox, Chrome	10.x	4GB
Windows Vista SP2	Internet Explorer 8.x, 9.x	10.x	4GB
Windows 7	Internet Explorer 8.x, 9.x, 10.x, 11.x	10.x	4GB
Windows 7	Firefox, Chrome	10.x	4GB
Windows 7 x64	Internet Explorer 8.x, 9.x, 10.x, 11.x	10.x	4GB
Windows 7 x64	Firefox, Chrome	10.x	4GB
Mac OS X	Firefox, Chrome	9.0.3 (6531.9)	4GB

Supported Oracle DBMS Versions and Operating Systems for Source and Target Environments

> ☑ **Source and Target OS and DBMS Compatibility**
>
> The source and target must be running the same DBMS/Operating System combination (for example, Oracle 10.2.0.4 on RHEL 5.2) in order to successfully provision a VDB to the target. If the DBMS versions are compatible, the OS version on a target host can be different from the OS version on the source host.

Supported DBMS Versions

- Oracle 9.2.0.8
- Oracle 10.2
- Oracle 11.1
- Oracle 11.2
- Oracle 12.1

> ⚠ **Oracle 9.2.0.8**
>
> The Delphix Engine has limited support for Oracle 9.2.0.8 and cannot link to a database that has a compatibility setting lower than 9.2.0.8.

> ⚠ **Oracle 10.2.0.4**
>
> The Delphix Engine does not support Oracle 10.2.0.4 databases using Automatic Storage Management (ASM) that do not have the patch set for Oracle Bug 7207932. This bug is fixed in patch set 10.2.0.4.2 onward.

Supported Operating Systems

Operating System	Version	Processor Family
Solaris	9, 10, 11	SPARC
Solaris	10, 11	x86_64
Red Hat Enterprise Linux	4.7, 4.8, 4.9 5.3 - 5.10 6.0 - 6.5	x86_64
Oracle Enterprise Linux	5.3 - 5.10 6.0 - 6.5	x86_64
Novel SUSE Linux Enterprise Server	10, 10SP1, 10SP2, 10SP3 11, 11SP1	x86_64
AIX	5.3, 6.1, 7.1	Power
HP-UX	11i v2 (11.23) 11i v3 (11.31)	IA64

Delphix supports all 64-bit OS environments for source and target, though 64-bit Linux environments also require that a 32-bit version of glibc installed

> ⚠ **Required HP-UX patch for Target Servers**
>
> PHNE_37851 - resolves a known bug in HP-UX NFS client prior to HP-UX 11.31.

Supported SQL Server Versions, Operating Systems, and Backup Software

Supported Versions of Windows OS

- Windows Server 2003 SP2, 2003 R2

- Windows Server 2008
- Windows Server 2008 R2
- Windows Server 2012, 2012 R2

> ⚠ Delphix supports only 64-bit versions of Windows on target hosts and validated-sync-target hosts.
>
> Target hosts and validated-sync-target hosts running Windows Server 2003 SP2 or 2003 R2 should have the hotfix documented in **KB 943043** installed.

Supported Versions of SQL Server

SQL Server Version	Delphix Version
SQL Server 2005 (9.0)	Delphix 3.x
SQL Server 2008 (10.0)	Delphix 3.x
SQL Server 2008 R2 (10.5)	Delphix 3.x
SQL Server 2012 (11.0)	Delphix 3.1.2 and beyond

Supported SQL Server Backup Software

Delphix interacts with source database backups in the following ways:

1. When linking a new source database into Delphix: Here Delphix can use an existing full backup to load the source database data.
2. When performing a sync of an existing dSource: Here again Delphix can use an existing full backup.
3. After the dSource is created, Delphix picks up any new backups (transaction log backups for databases in Full or Bulk-Logged recovery models, differential and full backups for databases in Simple recovery model) that are taken on the source database and applies them to the copy of the source database on Delphix.

Delphix currently supports the following backup software for source database backups:

1. SQL Server native backups.
2. Quest/NetVault LiteSpeed: If the source database is backed up with LiteSpeed, the source and the staging environments must have LiteSpeed installed on them. The version of LiteSpeed on the staging environment

needs to be same or higher than that on the source. Delphix currently supports LiteSpeed v5.0.0.0 and onwards.

3. Red Gate SQL Backup Pro: If the source database is backed up with SQL Backup Pro, the source and the staging environments must have SQL Backup Pro installed on them. The version of SQL Backup Pro on the staging environment needs to be same as that on the source. Delphix currently supports SQL Backup Pro v7.3 and onwards.

> ⚠️ Delphix does not support encrypted backups.

Supported PostgreSQL Versions and Operating Systems

> ☑️ **Source and Target OS and DBMS Compatibility**
>
> The source and target environments must be running the same DBMS/Operating System combination (for example, PostgreSQL 9.2 on RHEL 6.3) in order to successfully perform linking and provisioning.

Supported DBMS Versions

DBMS	Version	Processor Family
PostgreSQL	9.2	x86_64
EnterpriseDB Postgres Plus Advanced Server	9.2	x86_64

Supported Operating Systems

Operating System	Version	Processor Family
Red Hat Enterprise Linux 5	RHEL 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10	x86_64
Red Hat Enterprise Linux 6	RHEL 6.0, 6.1, 6.2, 6.3, 6.4, 6.5	x86_64

Supported SAP ASE Versions and Operating Systems

> ☑️ **Source and Target OS and DBMS Compatibility**
>
> The source and target must be running the same DBMS/Operating System combination (for example, Sybase ASE 15.7 on RHEL 6.4) in order to successfully provision a VDB to the target.

Supported DBMS Versions

DBMS	Version	Processor Family
SAP Adaptive Server Enterprise (ASE)	15.0.3, 15.5, 15.7	x86_64

Supported Operating Systems

Operating System	Version	Processor Family
Red Hat Enterprise Linux	RHEL 6.2, 6.3, 6.4	x86_64

Licenses and Notices

- Highstock software products is owned and licensed through Highsoft AS.

Release 3.1 - 3.1.x.x Known Issues and Changes

These are the known issues and workarounds for Delphix Engine Release 3.1 - 3.1.x.x

Release 3.1.3.0 Changes

Bug Fixes

Bug Number	Description
24248	Creating cluster environment needs to ignore environments in namespaces
24339	Should not be allowed to resume initial load while the dSource is disabled.
24471	Confusing error message during Oracle cluster discovery when users have a database with duplicate db unique name in another environment.
24528	delphix still tries to provision if the validate_host.sh script fails
24532	replication log spew at default level
24549	Cannot log in to the CLI via console when the stack is down
24618	Powering off Delphix Engine while snapsync is running causes zero blocks in datafiles
24622	incremental replication of SQL Server is slow
24688	session stats dump with jmxtool
24689	replication throughput tracking
24694	IndexOutOfBoundsException when enabling a dSource after deleting its most recent snapshot
24707	sysadmin and delphix_admin are able to sftp into the delphix appliance
24714	recovery fails when we create a new datafile in a new subdir
24764	provisioning fails post 3.1.2. upgrade
24791	event init.ora parameter has incorrect quoting when provisioning VDBs
24804	Unable to provision VDB duplicate end points discovered on host
24833	Expand single thread dispatch to include policies that spawn jobs
24836	panic from dbuf_free_range() while doing a zfs receive
24840,25189	The Performance UI is completely blank.
24871	Space in the shared backup location breaks sync from existing backup
24879	JVM is consuming 100% of CPU on dlpx-scale1
24881	bad monitor requests filling log file
24888	Attaching dSource fails when source.name are not set

24890	VDB unavailable when failed to create control file.
24894	Multiple Workers for VDB Logsync prevents stack from coming up
24895	Initial load fails with ORA-01013
24922	Provisioning a vdb after upgrade fails with ORA-350
24952	Timeflowranges are asked for too aggressively
24962	VDB Refresh permissions in GUI should match permissions in backend
24965	ztest failure: assertion refcount_count(
24969	After upgrade 2.7.x to 3.0.6.0 no JDBC string works
24981	db_domain not used in JDBC connection entry when using wildcard notation in VDB config
24988	GUI object filtering based on search string
24999	IntroView can be very slow when gui starts up
25000	DatabaseNavView takes a lot of time at startup time
25001	Performance: Replication Spec Component calls way many invalidations
25012	Incremental replication failed on longevity java.io.FileNotFoundException
25050	SQL Server Linking from Environment Management screen does not select the database
25065	stmf_itl_task_start() must check for ilu->ilu_kstat_io is non-null
25066	Possible memory leak in the iSCSI code
25067	stmf_do_itl_dereg() has mysterious drv_usecwait(10)
25072	Refreshing the source environment gets rid of the LiteSpeed version on the source
25107	leaked hold from dmu_send_impl() if dump_bytes() fails
25108	zfs recv of a send -RD stream panics
25199	Oracle VDB snapshot fails with exception.oracle.vdb.snapshot.missing_archivelogs
25381	Delphix VM shoots up to 100% utilization, with large number of UCP java threads spinning on locks
25465	Upgrade fails due to unlinked dSource with snapsync policy

Upgrading to Release 3.1.3.0

Upgrades to Release 3.1.3.0 are supported for Release 2.7.2.0 and above.

Delphix Customer Support will provide and install any patch or upgrade that is needed for an existing Delphix Engine installation.

> ⊖ • All dSources must be suspended and VDBs shut down prior to an upgrade or patch.
> • Suspended or in-progress jobs will be removed, and cannot be resumed after upgrade is complete.

Release 3.1 Known Issues

Installation and Configuration Issues

Don't Change the Time Zone of the Delphix Engine

There is a known limitation with changing the time zone of the Delphix Engine after user data objects and snapshots have been created.

In particular, if the time zone is moved backward (e.g., Pacific Time to Hawaiian time), events and snapshots can appear out of order.

This limitation will be addressed in a future release.

Solution

Retain the original time zone specified during initial configuration.Source and Target Environment Issues

Host Checker Script Requirements

Running the Host Checker Script, `chkHost.pl`, requires Perl, and Java release 1.5.0_22 or higher.

Do not run `chkHost.pl` as the superuser (root). Run this script as the Oracle user.

Linux Systems: Shared Memory Size and SGA_TARGET

On Linux systems that are used as target hosts: before provisioning, compare the `SGA_TARGET` configuration parameter for the VDB with the shared memory size in `/dev/shm`. The shared memory configured on the target host should match the SGA memory target. You can check the value of the configuration parameter during the VDB provisioning process. In the **Target Environment** screen of the provisioning wizard, click the **Advanced** link, and then scroll down to view the value of the parameter under **DB Configuration**. See **Provisioning an Oracle VDB** an d **Customizing Oracle VDB Configuration Settings** for more information.

Solution

If the size of `SGA_TARGET` is larger than `/dev/shm`, the administrator should reduce `SGA_TARGET` in the VDB configuration parameter, and save a named template for use in provisioning other VDBs.

Alternatively, increase the `/dev/shm` size in `/etc/fstab`.

HP-UX Systems: Cannot locate db Instances in a Custom SQL*Net Configuration

When SQL*Net configuration files are not located in their standard location on the host, the Delphix Engine db_ins

`tance_inspector` cannot locate instances, including for provisioned VDBs.

The `TNS_ADMIN` environment variable is used to override the default location, usually `$ORACLE_HOME/network/admin` on UNIX hosts. On many platforms, the Delphix toolkit is able to extract the TNS_ADMIN variable from running listener processes. On HP-UX, however, this is not done as there's no public interface available for accomplishing this.

Solution

In some cases, it may be possible to add the TNS_ADMIN to the ssh environment that Delphix Engine uses:

1. Set `PermitUserEnvironment` to `yes` in `sshd_config`.
2. Restart `sshd` daemon
3. Add `TNS_ADMIN=<loc>` to `~/.ssh/environment` for the respective OS user used by Delphix.

Delphix Engine Must be an Invited Node

If the network administrator has defined `TCP.INVITED_NODES` and `TCP.VALIDNODE_CHECKING` in `$ORACLE_HOME/network/admin`, make sure that the IP address of the Delphix Engine is included in the list of invited nodes.

For example:

```
TCP.INVITED_NODES=(172.18.100.52,172.16.100.217)

TCP.VALIDNODE_CHECKING=yes
```

If Delphix Engine is not included in the list of invited nodes, there will be an error:

```
ORA-12537: TNS:connection closed
```

Workaround

Add the IP address of the Delphix Engine to the list of invited nodes in `$ORACLE_HOME/network/admin`.

Archive Log Issues

Failure in Fetching Missing Archive Logs

The "Fetch missing archive log" operation might fail if the target path (e.g. a path to the Flash Recovery Area) points to files that cannot be read by the OS user given to Delphix Engine for dSource creation or VDB provisioning.

Solution

Make sure all files in the target path are readable by the OS user given to Delphix Engine.

Best Practice for Fetching Archive Logs

Instead of using the **Repair** tool to fetch missing logs automatically, create a temporary directory and copy the necessary logs (specified by the "i" information icon) into the temporary directory. The Repair tool can then be pointed to that location and will repair the snapshot. This method is much more efficient than using the Repair tool alone.

Online Redo Logs on Raw Devices

The LogSync feature **is not available** in Archive + Online Redo mode if your Oracle source database stores online redo logs on a raw device.

When adding a dSource choose the **Archive Only** mode for **LogSync**. For an existing dSource, the LogSync mode can be set on the back of the dSource card.

VDB and dSource Issues

Sample Schemas on Oracle 11.2 (11.2.0.1)

If the Oracle examples that come with 11.2.0.1 are installed in your source database, Delphix Engine VDB provisioning produces a number of error messages. No data loss is associated with these errors.

 Workaround

Remove the Oracle sample schemas from the source database before provisioning VDBs.

Ulimits for the Linking or Provisioning User

If a non-Oracle install user is being used for either adding a dSource or provisioning VDBs, make sure that the `ulimit` settings for this user match those for the Oracle install user on the remote host, and are sufficient to run Oracle instances.

Take New Snapshots after Changing Database Configuration Parameters

After changing a database configuration parameter on a VDB or dSource (such as setting `db_16k_cache_size` to support new 16KB block size tablespaces), immediately take a snapshot to capture the new configuration parameters.

A Full Audit Directory Causes VDB Provisioning to Fail

Delphix Engine sets the Oracle database parameter `audit_trail` setting to `none` and the `audit_sys_operations` parameter to `false` so that VDB provisioning will not generate any audit files. However, VDB provisioning may still fail with `ORA-09817` if the `$ORACLE_HOME/rdbms/audit` directory fills up.

Standby Database Support

> ⚠️ Many prior limitations with linking physical standby databases have been lifted in the Delphix Engine 3.0 release. See **Linking Oracle Physical Standby Databases** for details.

Provisioning Can Fail if the `_fix_control` Parameter is Set in the Primary

In some cases, the primary database has the undocumented `_fix_Control` parameter set as a result of patches applied on the primary that have not been applied to the Oracle Home on the standby.

Where `_fix_Control` has been set on the primary but not on the standby, VDB provisioning can fail with an error from Oracle: `'ORA-00940: invalid ALTER command'`.

Known issues in SQL Server Support

Source database upgrades

If a source database linked as a dSource gets upgraded to a higher SQL Server version, you will need to go through the standard upgrade process outlined in **Upgrading a dSource after a SQL Server Upgrade** and perform a sync on the database after the upgrade.

Provisioning to a higher SQL Server version if the source is SQL Server 2005

If the source for a VDB is SQL Server 2005, then you can't provision to SQL Server 2008 or 2008R2 directly.

SQL Server 2005 databases with Full Text Catalogs

We currently don't support SQL Server 2005 databases with full text catalogs. This will be supported in a future release of the product.

Running the manual recovery script after V2P

Running the manual recovery script `Provision.ps1` after V2P may receive the following error message:

```
The term 'dlpxzfree' is not recognized as the name of a cmdlet, function, script
file, or operable program. Check the spelling of the name, or if a path was included,
verify that the path is correct and try again.
```

This is because the utility `dlpxzfree.exe` is not in path. It does not affect the execution and functionality of the script.

This error message will not be shown in a future release of the product.

Release 3.2 - 3.2.x.x Known Issues and Changes

These are the known issues, workarounds, and changes for Delphix Engine Release 3.2 - 3.2.x.x

- **Release 3.2.7.0 Changes**
  - **Bug Fixes**
  - **Upgrading to Release 3.2.7.0**
  - **Upgrading MS SQL Server dSources**
  - **Upgrading with Replication**

- **Release 3.2.6.0 Changes**
  - **Bug Fixes**

- **Release 3.2.5.1 Changes**
  - **Bug Fixes**

- **Release 3.2.5.0 Changes**
  - **Bug Fixes**

- **Release 3.2.4.2 Changes**
  - **Bug Fixes**

- **Release 3.2.4.1 Changes**
  - **Bug Fixes**

- **Release 3.2.4.0 Changes**
  - **Bug Fixes**

- **Release 3.2.3.1 Changes**
  - **Bug Fixes**

- **Release 3.2.3.0 Changes**
- **Release 3.2.2.1 Changes**
  - **Bug Fixes**

- **Release 3.2.2.0 Changes**
  - **Bug Fixes**

- **Release 3.2.1.0 Changes**
  - **Bug Fixes**

- **Release 3.2.0.0 Changes**
- **Release 3.2 Known Issues**
  - **Installation and Configuration Issues**
    - **Don't Change the Time Zone of the Delphix Engine**
      - **Workaround**
    - **Host Checker Script Requirements**
    - **Linux Systems: Shared Memory Size and SGA_TARGET**
      - **Solution**
    - **HP-UX Systems: Cannot locate db Instances in a Custom SQL*Net Configuration**

- **Solution**

- **Delphix Engine Must be an Invited Node**
  - **Workaround**

- **Archive Log Issues**
  - **Failure in Fetching Missing Archive Logs**
    - **Solution**

  - **Best Practice for Fetching Archive Logs**
  - **Online Redo Logs on Raw Devices**

- **VDB and dSource Issues**
  - **Sample Schemas on Oracle 11.2 (11.2.0.1)**
    - **Workaround**

  - **Ulimits for the Linking or Provisioning User**
  - **Take New Snapshots after Changing Database Configuration Parameters**
  - **A Full Audit Directory Causes VDB Provisioning to Fail**
  - **Standby Database Support**
  - **Provisioning Can Fail if the `fix control` Parameter is Set in the Primary**

- **Known issues in SQL Server Support**
  - **Source database upgrades**
  - **Provisioning to a higher SQL Server version if the source is SQL Server 2005**
  - **SQL Server 2005 databases with Full Text Catalogs**
  - **Running the manual recovery script after V2P**
  - **Single Quotation Marks (') in File Names and File Paths**

Release 3.2.7.0 Changes

Bug Fixes

Bug Number	Description
26227 28456 31134 31134 31135 31136 31137 31220 31221 31223 31226 31226 31461 32266 32268 32269 32342 32290	MSSQL fixes and improvements
28456 29555 29792 29861 31694 30110 31573	Snapsync fixes and improvements
31142	Security fix
31153	Support for 12 character SIDs on Oracle
31908	Fix an issue where the Delphix Engine management service could hang
31989	Performance fix for cached reads

Upgrading to Release 3.2.7.0

Upgrades to Release 3.2.7.0 are supported for Release 3.0.1.0 and above.

Delphix Customer Support will provide and install any patch or upgrade that is needed for an existing Delphix Engine installation.

> ⊖ All dSources must be suspended and VDBs shut down prior to an upgrade or patch.
>
> Suspended or in-progress jobs will be removed, and cannot be resumed after upgrade is complete.

Upgrading MS SQL Server dSources

> ⊖ After upgrade to 3.2, a new snapshot must be taken on any MS SQL Server dSources with no snapshots or dSources that are under replication. Until a new snapshot is taken disabling the dSource will fail.

Upgrading with Replication

> ⊖ In 3.2, authentication to the replication target no longer uses NDMP user credentials. This requires the user to manually update an existing replication configuration on the replication source with a desired Delphix user with admin privileges on the replication target after upgrade.
>
> Replication is configured through the **System > Replication** screen (or **replication spec** in the CLI). Under **Replication Target Settings** make sure you set the username and password to a user that has admin privileges on the target.

Release 3.2.6.0 Changes

Bug Fixes

Bug Number	Description
26741, 27779, 30748	Fixes for database delete on SQL Server
28221	Fixed a GUI issue when adding LUNs
30812, 30576	Replication fixes
30763	Fixed an issue where provisioning a single instance dSource to a RAC target would fail
30617	Fixed an issue where rollback of a VDB would fail with RMAN-07517
30450	Fixed an issue with CLI validation of non-sys user fields fails on existing valid connection string
30412	Lowered the frequency of notifications requested by the GUI
30366	Fixed a GUI issue related to unlinked SQL Server dSources
30161	Fixed an issue where the management stack could run out of memory

29964	Fixed an issue with displaying times and SCNs from the latest archive logs
29960	Fixed an issue with the test JDBC connectivity API
29905	Improved error messages
29850, 30552	Windows connector fixes
29698	Fixed an issue where point-in-time provisioning to a bookmark would fail
28622, 30027	Fixed issues with scroll bars in the GUI
29373	Fixed an issue with icons on the capacity screen

Release 3.2.5.1 Changes

Bug Fixes

Bug Number	Description
29978	Fixes an issue related to Oracle standby database where datafiles are added during a dSource SnapSync
30109	Fixes an issue where connecting to a VDB (created from a standby dSource) fails when using a non-sys user
30147	Fixed an issue where provision from the last SCN of a dSource (created from a standby database) might fail
30148	Increases a timeout for starting up a VDB
30149	Fixes an issue where provision may fail when using file mapping when mapping with a large # of datafiles with long names
30245	Fixes an issue where the VDB status is shown as unknown on Solaris and HP-UX platforms.

Release 3.2.5.0 Changes

Bug Fixes

Bug Number	Description
29499	Fixed an issue with SQL Server VDBs not starting automatically following a reboot of the target host.

29991, 29758, 29853, 29854, 29855	VDBs are now stopped at 95% of storage capacity and automatically restarted once storage capacity drops below 90%. dSources will stop pulling new data from sources at 85%. Once the usage goes below 82%, we will resume pulling data again.
29359	Fixed an issue with iSCSI target being offlined due to task abort timeouts
29662	Fixed an issue with retention policy execution sometimes resulting in fault.policy.log.retention.old.snapshot
29156	Fixed a problem where you would get exception.oracle.dbc.query.failed during SnapSync if v$rman_configuration has more than one entry for snapshot controlfile
29050, 29049	Fixed user permissions related issues
29539	Fixed an issue where a running job would not be recorded in job history
29881, 29696	Fixed a issues with logfile retention related to multiple TimeFlows
28972, 29657, 29686, 29688	Fixes to address naming and structure of Oracle data files and temp files
30010	Fixed an issue where RAC VDB rollback would fail due to "Failed to apply logs in database recovery"
27633, 29540	Fixed issues that could result in ORA-00600 during provisioning
29207	Fixed a GUI issue where updating the source database user credential from the dSource cards could give an error message
29687	Fix to workaround Oracle note 387210.1 which restricts the value of MAXLOGHISTORY on Oracle versions 10.2-10.2.0.0 ans 11.1-11.1.0.6
29321	Fixed a GUI issue with updating the target principal of an existing replication configuration
29697	Fixed an issue where VDB log retention could fail to delete a log
27478, 27388	Fixed issues with setting the prefix length of an static addresses
29584, 29566, 28998, 28598	Performance improvements
28540, 28541, 29426	Improved error messages

29274, 29275,	Improvements to No Open Resetlogs VDBs

Release 3.2.4.2 Changes

Bug Fixes

Bug Number	Description
29386	Fixed an issue where SnapSync would fail
29273	Fixed an issue where certain characters in VDB config templates would cause provisioning failures

Release 3.2.4.1 Changes

Bug Fixes

Bug Number	Description
29301	Fixed an issue where replication would unexpectedly fail
29286	Improved performance when provisioning when RAC is enabled

Release 3.2.4.0 Changes

Bug Fixes

Bug Number	Description
29100	SQL Server VDB status now monitors more states
28707	Fixed an issue with SQL Server LogSync where provisioning needed the stopat to be in the source's timezone
28474	Improved performance of VDB snapshots under load
28962	Fixed an issue where Pre-Provisioning against a standby would generate an error
28904	Provision a VDB from a standby should allow the user to specify a non-SYS user
28821	Fixed an upgrade where VDBs would not start after upgrade
28741, 28742	Improved error messages related to VDB startup
28466	Fixed an issue where RAC discovery would fail
28870, 28894	Snapshot control file on non-ASM path now supported

28934	Fixed an issue where the management stack could run out of memory
28916	Fixed an issue where the GUI could disable the staging source instead of the linked source
28867	Fixed an issue where the database management screen would display garbled data
28684	Fixed an issue where the GUI's might not handle timezones with half hour offsets properly
28878	Fixed an issue where NotificationDrop objects got sent to old clients
28780, 28792, 29058, 29082, 28479	Delphix Session Protocol Enhancements
28779	Replication performance improvements
28526	Fixed an issue where upgrade would fail

Release 3.2.3.1 Changes

Bug Fixes

Bug Number	Description
28559, 28050	Fixed issues related to SQL Server environment timezones

Release 3.2.3.0 Changes

Bug Fixes

Bug Number	Description
28435	Fixed an issue with the GUI could show an action script error during the provisioning wizard
28364, 28373	Fixed issues related to block formatting during SnapSync
28261	SQL Server now supports backup paths which include $ and ' characters
28208	Fixed an issue when failing over a replicated Windows host
28160, 27881	Object notification enhancements
28085, 28077, 27931	Fixed security issues
27953	Fixed an issue where an exception would be raised in some cases when detecting database privileges
27926	Fixed an issue with attaching a VDB on SQL Server

27892	Fixed an issue where Delphix would pick the incorrect archive logs, causing provisioning to fail
27827	Fixed an issue where stopping the auth service would fail
27789	Monitor SQL Server VDBs to check if new data/log files have been added to non-Delphix storage
27738	Fixed an issue where Environment Management does not show correct version for SQL Server environment
27737	Fixed an issue where environment discovery would not identify disk space problem
27736	Fixed an issue with umask requirements when not using Oracle user
27652, 26880, 26879	Fixed issues with LogSync and usage of archive logs
27484	Fixed an issue where VDB enable would fail if the file list changed since the last snapshot
27432, 27386	Fixed problems related to iSCSI initiator IQN uniqueness
26951	Fixed an issue where system under extreme load could run out of heap space

Release 3.2.2.1 Changes

Bug Fixes

Bug Number	Description
28186	Fixed an issue with provisioning from VDB snapshots created in Delphix 2.7.x or earlier
27808	Fixed an issue when upgrading with domain and system users with the same name

Release 3.2.2.0 Changes

- Added support for Red Hat Enterprise Linux version 6.3 and 6.4

Bug Fixes

Bug Number	Description
27810	Fixed an issue with high SCNs having an incorrect range
27808	Performance improvement when provisioning VDBs from VDBs
27770, 27750, 27613	Fixed an issue where log retention on Windows did not free up space

27657	Fixed an issue where ORA-01152 error messages during provisioning would incorrectly display warnings
27636	Fixed an issue when doing initial load from an Oracle 9i database would fail
27624	Fixed an issue where the Delphix Engine could crash while receiving a replication update
27616	Fixed an issue with the SCN End stamp not displaying when taking a snapshot
27595	Fixed an issue where cached browser data could cause incorrect strings to be displayed in the GUI after upgrading a Delphix Engine
27582	Fixed an issue where resource monitor workers where not removed when restarting the management stack
27530	Destination port is now configurable for replication
27492	Fixed an issue where SQL Server pre-provisioning fails if a file is renamed on the source
27449	Fixed an issue where tab navigation skips "Toolkit Path" when adding "Standalone Host" in the "Add Environment" wizard
27445, 27208	Fixed an issue where an initial load does not generate a fault on a NOLOGGING operation
27443	Fixed an issue with not properly checking for X$KCCFE privileges on source databases
27420	Fixed an issue with deleting a namespace after replication failover when doing circular replication
27353	Fixed an issue where provisioning from SQL Server 2005 to SQL Server 2008 would be allowed
27261	Fixed an issue where the GUI would no longer require the email address to be set for delphix_admin
27230	Fixed an issue with the SCN range not displaying correctly on snapshots
26423	Fixed an issue where upgrading the staging instance would not be properly detected
24037	Fixed an issue when multiple SQL files with has the same physical file name

Release 3.2.1.0 Changes

Bug Fixes

Release 3.2.1.0 contains a fix for Internet Explorer running in IE7 compatibility mode not working with the Delphix GUI among several other fixes.

Release 3.2.0.0 Changes

- The Dashboard button has moved from the center of the upper page to 'Manage->Dashboards'.
- The Enabled/Disabled slider has moved to the back of the dSource and VDB cards.
- There is a new way to set up the initial network config, which is detailed upon first log in or at **Setting Up Network Access to the Delphix Engine**.
- The limit on the number of snapshots that can be retrieved by the GUI has been lifted from 250 to 1500.
- It is now possible to refresh a VDB that is a parent of other VDBs. The children VDBs are not affected by the refresh.

Release 3.2 Known Issues

Installation and Configuration Issues

Don't Change the Time Zone of the Delphix Engine

There is a known limitation with changing the time zone of the Delphix Engine after user data objects and snapshots have been created.

In particular, if the time zone is moved backward (e.g., Pacific Time to Hawaiian time), events and snapshots can appear out of order.

This limitation will be addressed in a future release.

Workaround

Retain the original time zone specified during initial configuration.Source and Target Environment Issues

Host Checker Script Requirements

Running the Host Checker Script, `chkHost.pl`, requires Perl, and Java release 1.5.0_22 or higher.

Do not run `chkHost.pl` as the superuser (root). Run this script as the Oracle user.

Linux Systems: Shared Memory Size and SGA_TARGET

On Linux systems that are used as target hosts: before provisioning, compare the `SGA_TARGET` configuration parameter for the VDB with the shared memory size in `/dev/shm`. The shared memory configured on the target host should match the SGA memory target. You can check the value of the configuration parameter during the VDB provisioning process. In the **Target Environment** screen of the provisioning wizard, click the **Advanced** link, and then scroll down to view the value of the parameter under **DB Configuration**. See **Provisioning an Oracle VDB** an d **Customizing Oracle VDB Configuration Settings** for more information.

Solution

If the size of `SGA_TARGET` is larger than `/dev/shm`, the administrator should reduce `SGA_TARGET` in the VDB configuration parameter, and save a named template for use in provisioning other VDBs.

Alternatively, increase the `/dev/shm` size in `/etc/fstab`.

HP-UX Systems: Cannot locate db Instances in a Custom SQL*Net Configuration

When SQL*Net configuration files are not located in their standard location on the host, the Delphix Engine `db_ins tance_inspector` cannot locate instances, including for provisioned VDBs.

The `TNS_ADMIN` environment variable is used to override the default location, usually `$ORACLE_HOME/network/admin` on UNIX hosts. On many platforms, the Delphix toolkit is able to extract the TNS_ADMIN variable from running listener processes. On HP-UX, however, this is not done as there's no public interface available for accomplishing this.

Solution

In some cases, it may be possible to add the TNS_ADMIN to the ssh environment that Delphix Engine uses:

1. Set `PermitUserEnvironment` to `yes` in `sshd_config`.
2. Restart `sshd` daemon
3. Add `TNS_ADMIN=<loc>` to `~/.ssh/environment` for the respective OS user used by Delphix.

Delphix Engine Must be an Invited Node

If the network administrator has defined `TCP.INVITED_NODES` and `TCP.VALIDNODE_CHECKING` in `$ORACLE_HOM E/network/admin`, make sure that the IP address of the Delphix Engine is included in the list of invited nodes.

For example:

```
TCP.INVITED_NODES=(172.18.100.52,172.16.100.217)

TCP.VALIDNODE_CHECKING=yes
```

If Delphix Engine is not included in the list of invited nodes, there will be an error:

```
ORA-12537: TNS:connection closed
```

Workaround

Add the IP address of the Delphix Engine to the list of invited nodes in `$ORACLE_HOME/network/admin`.

Archive Log Issues

Failure in Fetching Missing Archive Logs

The "Fetch missing archive log" operation might fail if the target path (e.g. a path to the Flash Recovery Area) points to files that cannot be read by the OS user given to Delphix Engine for dSource creation or VDB provisioning.

Solution

Make sure all files in the target path are readable by the OS user given to Delphix Engine.

Best Practice for Fetching Archive Logs

Instead of using the **Repair** tool to fetch missing logs automatically, create a temporary directory and copy the necessary logs (specified by the "i" information icon) into the temporary directory. The Repair tool can then be pointed to that location and will repair the snapshot. This method is much more efficient than using the Repair tool alone.

Online Redo Logs on Raw Devices

The LogSync feature **is not available** in Archive + Online Redo mode if your Oracle source database stores online redo logs on a raw device.

When adding a dSource choose the **Archive Only** mode for **LogSync**. For an existing dSource, the LogSync mode can be set on the back of the dSource card.

VDB and dSource Issues

Sample Schemas on Oracle 11.2 (11.2.0.1)

If the Oracle examples that come with 11.2.0.1 are installed in your source database, Delphix Engine VDB provisioning produces a number of error messages. No data loss is associated with these errors.

 Workaround

Remove the Oracle sample schemas from the source database before provisioning VDBs.

Ulimits for the Linking or Provisioning User

If a non-Oracle install user is being used for either adding a dSource or provisioning VDBs, make sure that the `ulimit` settings for this user match those for the Oracle install user on the remote host, and are sufficient to run Oracle instances.

Take New Snapshots after Changing Database Configuration Parameters

After changing a database configuration parameter on a VDB or dSource (such as setting `db_16k_cache_size` to support new 16KB block size tablespaces), immediately take a snapshot to capture the new configuration parameters.

A Full Audit Directory Causes VDB Provisioning to Fail

Delphix Engine sets the Oracle database parameter `audit_trail` setting to `none` and the `audit_sys_operations` parameter to `false` so that VDB provisioning will not generate any audit files. However, VDB provisioning may still fail with `ORA-09817` if the `$ORACLE_HOME/rdbms/audit` directory fills up.

Standby Database Support

> ⚠️ Many prior limitations with linking physical standby databases have been lifted in the Delphix Engine 3.0 release. See **Linking Oracle Standby Databases** for details.

Provisioning Can Fail if the `_fix_control` Parameter is Set in the Primary

In some cases, the primary database has the undocumented `_fix_Control` parameter set as a result of patches applied on the primary that have not been applied to the Oracle Home on the standby.

Where `_fix_Control` has been set on the primary but not on the standby, VDB provisioning can fail with an error from Oracle: `'ORA-00940: invalid ALTER command'`.

Known issues in SQL Server Support

Source database upgrades

If a source database linked as a dSource gets upgraded to a higher SQL Server version, you will need to go through the standard upgrade process outlined in **Upgrading a dSource after a SQL Server Upgrade** and perform a sync on the database after the upgrade.

Provisioning to a higher SQL Server version if the source is SQL Server 2005

If the source for a VDB is SQL Server 2005, then you can't provision to SQL Server 2008 or 2008R2 directly.

SQL Server 2005 databases with Full Text Catalogs

We currently don't support SQL Server 2005 databases with full text catalogs. This will be supported in a future release of the product.

Running the manual recovery script after V2P

Currently running the manual recovery script `Provision.ps1` after V2P may get the following error message:

```
The term 'dlpxzfree' is not recognized as the name of a cmdlet, function, script
file, or operable program. Check the spelling of the name, or if a path was included,
verify that the path is correct and try again.
```

This is because the utility `dlpxzfree.exe` is not in path. It does not affect the execution and functionality of the script.

This error message will not be shown in a future release of the product.

Single Quotation Marks (') in File Names and File Paths

We currently don't support single quotation marks (') used in Delphix connector installation paths and database backup file names and paths.

Release 4.0 - 4.0.x.x Known Issues and Changes

These are the known issues, workarounds, and changes for Delphix Engine Release 4.0 - 4.0.x.x

- **Release 4.0.5.0 Changes**
  - **Management Service Fixes**
  - **DelphixOS Fixes**

- **Release 4.0.4.0 Changes**
  - **Amazon EC2 Support**
  - **Bug Fixes**

- **Release 4.0.3.0 Changes**
  - **Bug Fixes**

- **Release 4.0.2.0 Changes**
  - **Bug Fixes**

- **Release 4.0.1.0 Changes**
  - **Bug Fixes**

- **Release 4.0.0.1 Changes**
  - **Bug Fixes**

- **Release 4.0.0.0 Changes**
- **Release 4.0 Known Issues**
  - **Cross-Platform Provisioning Issues**
    - **Replica Provisioning Fails**
    - **VDB Refresh Takes a Long Time**

  - **Application Data Issues (EBS and Unstructured File Virtualization)**
    - **Detach of a dSource Fails**
    - **Oracle RAC Environments Not Supported**

  - **SQL Server Issues**
    - **Issues With Upgrades From Delphix 3.1**
    - **Issues With Upgrades From Delphix 3.2.3.0 or Older**

  - **PostgreSQL Issues**
    - **Replication is not Supported**
    - **Staging Environment Reboot Not Handled Correctly**

  - **Issues With Hooks**
    - **Script Output Not Included in Job Information**

  - **Performance Analytics Issues**
    - **Network Interface Statistics Occasionally Contain Invalid Values**

  - **Other Issues**
    - **Spurious Job in the Job History**

Release 4.0.5.0 Changes

Management Service Fixes

Bug Number	Description
35961,36089	Delphix Engine metadata can be corrupted when the system is restarted (see **technical bulletin**)
35554	ASM source datafiles can be deleted when provisioning a VDB back to a source environment (see **technical bulletin**)
33451	enable the configuration of SNMP TRAP instead of INFORM for Delphix alerts to workaround environments where TRAPs are not acknowledged
34030	SQLServer VDB refresh fails with a server error
35045,35449	fix a possible upgrade issue with Delphix Engines that have SQLServer dSources or VDBs
34220	GUI not rendering sources and groups properly after having popped up an error dialog
34332	cannot delete a VDB template when the template name is too long
35381	faults count on the menu bar does not matches the faults count in the active faults list
35466	add a scroll bar to the active jobs tab
35491	user alerted of a fault but the GUI faults list is empty
35540	increase SnapSync policy timeout limit from 24 hours to 168 hours (1 week)
35701	blank error popups sometimes displayed and eventually result in runtime exceptions
35704	GUI does not show error message when VDB provisioning fails due to a mount failure
35712	unable to set the SnapSync policy timeout to 0 using the GUI
34888	network outage can cause Oracle V2P job to fail with a server error
34884	canceling an Oracle V2P job hangs if the host is unreachable
34584	Oracle logsync can erroneously start fetching old logs resulting in missing log alerts
35439	Delphix Engine can generate a flood of alert emails if an alert profile contains an invalid email address

34786	analytics disk IO section is empty on IE 8 when Read or Write is selected
34471	unable to disable VDB when environment is unavailable
34583	the Finish and Back buttons do not work when provision a replicated VDB
35400	unable to scroll to bottom of environment list after 4.0.3.0 upgrade
35402,35488,35489	miscellaneous GUI fixes for faults
32735	filtering by job type does not work for certain values
35312	DSP performance improvement (impacts SnapSync, replication, and Oracle Export)
34766	Delphix Engine upgrade can fail if incremental SnapSync job is in progress
33717	Oracle VDB provisioning via CLI uses a listener from the wrong environment
34851	Oracle RAC attachSource failing with snapshot control file must be accessible to all nodes
35713	add the ability to launch a job via policy with no time limit
35044	the Delphix Management Service is not automatically restarted if it fails

DelphixOS Fixes

Bug Number	Description
33924	TCP performance problem causing low throughput for connections traversing one or more routers
35174	upgrade openssl to 1.0.1h (**security advisory**)

Release 4.0.4.0 Changes

Amazon EC2 Support

As the basis for the Delphix Compliance Engine, version 4.0.4.0 adds support for the Amazon EC2 platform.

Bug Fixes

Bug Number	Description
34716	upgrade Tomcat to version 7.0.53
35012, 35018	stop exporting a writable /public filesystem

Release 4.0.3.0 Changes

Bug Fixes

Bug Number	Description
32600	alert sysadmin when logfile storage runs out of space
32952	add option to disable non-LDAP users
32955	mechanism for limiting which IP addresses are reachable via ssh
33306	infinite loop when enumerating storage devices
33338	GUI: vFiles migrate button should be enabled when vFiles is disabled
33351	runtime exception when migrating vFiles
33607, 33965	support for Compliance Engine
33652	renaming database files during provisioning can result in enqueue timeout
33686	"object already exists" error when failing over appdata with builtin toolkit
33788	Oracle logsync can fail with an internal error after upgrade to 4.0
33837	allow user with 'sudo mount' to be different from owner of provisioned appdata files
33864	non domain admin users don't get prompt back when they issue a DB_DELETE job (last notification does not arrive)
33903	internal error trying to provision appdata to s10 target because id doesn't support -u option
33904	cli error assigning an authorization on a target in a namespace
33937	updating AppData VDB parameters on vFiles card in GUI overwrites password with "*******"
33978	need to preserve case when editing and saving VDB config template contents
33989	EBS toolkit PATH should include /usr/ccs/bin
34058	after the currently selected VDB Template is saved, it should always be auto-refreshed
34059	GUI: problem editing a VDB template while creating a VDB
34064	storage device notifications posted before device cache set

34073	support for BoKS in target environments
34075	dSource name is shown instead of VDB name in Refresh VDB confirmation dialog
34388	updating hook operations on appdata in GUI fails with internal error
34427	EBS-app toolkit missing expect logic for db domain name, file system owner and startup
34509	stack-only upgrade

Release 4.0.2.0 Changes

Bug Fixes

Bug Number	Description
31280	problem creating two bookmarks with the same name
31454	improve efficiency of SQL query used by Oracle logsync
31695	container update notifications not being sent for enabling or disabling of Oracle dSources
32053	handle Postgres staging environment reboots
32059	cannot add an environment if it contains an Oracle database whose db_unique_name is equal to an existing dSource
32061	Delphix Engine now drops all IP packets containing source routes
32063	explicitly set the anon option on nfs shares
32420	fix out-of-range issue when upgrading from 3.2.3.0 or older and SQL Server environments are in different timezones than the Delphix Engine
32593	XPP log file path is displayed incorrectly in faults
32703	fix a panic in DxFS
32733	allow user to pick staging environment for replica XPP
32862	add support for Postgres replica provisioning
32973	collapsed groups spontaneously expand after 30-60 seconds
32992	expanding a group or container details should not expand any group folder
32994	add support for linux systems without stdbuf
33002	VDB migration fails when parent's archive logs have been removed

33072	can't start SQL Server VDB after upgrading with the VDB in a stopped state
33129	add support for hosts configured with Etc timezone format
33209	snapsync can fail with an internal error when linking to an Oracle database on AIX
33251	unable to disable VDB when its database on MSSQL does not exist
33252	add a delayed retry to SQL Server transaction log pickup before generating an alert
33352	renaming a group causes its folder to automatically expand
33373	fix GUI memory leaks
33388	grant permissions to SQL server instance owner during VDB enable
33389	unable to refresh SQL Server host - object already exists

Release 4.0.1.0 Changes

Bug Fixes

Bug Number	Description
31278	missing container name in the "add dSource" wizard
31279	GUI rendering issue when a long VDB note is used
31281	cross-platform provisioning from a replicated dSource
31392	restart SQL Server VDBs in RECOVERY_PENDING state following a target reboot
31398	fix a problem with RECOVERY_PENDING SQL Server VDBs not being restarted after a target reboot
31459	retention policy should use last change time instead of creation time for calculating snapshot retention eligibility
31648	hostchecker doesn't print an error if inventory.xml has the wrong permissions
31649	hostchecker should not query for BCT when Oracle version is 9.X
31650	hostchecker crashes if Oracle oratab does not exist
31687	analytics screen disk I/O graph loses its lower summary row when selecting a specific latency range

31728	hostchecker erroneously reports that Oracle may not be functioning properly
31754	disabling or enabling a system user is not reflected in the GUI until the browser is refreshed
31825	cannot manage both Postgres and SQL Server dSources from the GUI
32042	internal error during cross-platform provisioning due to a lower-case tablespace name
32110	'excludes' and 'followSymlinks' properties of AppDataLinkParameters do not appear in CLI while linking
32115	spurious jobs are executed as part of the management stack startup
32129	the capacity graph displays inconsistent data
32151	internal error during cross-platform provisioning
32188	errors during the export phase of cross-platform provisioning are not displayed
32227	reduce CPU impact of SQL command run on Oracle targets used to discover database user privileges
32250	cross-platform provisioning fails if the database has an offline datafile
32305	fix for point-in-time provisioning from a replicated Postgres dSource
32306	vfiles source is erroneously disabled following a failed provisioning job
32362	cross-platform provisioning user script is not replicated
32376	SQL Server snapshot corruption occurs if a source is disabled before Delphix Engine upgrade
32413	snapsync performance improvement
32435	failure provisioning an Oracle VDB if the source contains a datafile with spaces in the filename
32508	cross-platform provisioning experiences internal error if user script output is less than 256 characters
32512	network interface analytics graph doubles throughput and packet counts
32525	analytics screen cosmetic improvements
32526	analytics screen cosmetic improvements
32527	network interface analytics graph vertical axis scale is too large

32528	navigating on the analytics timeline erases graph data from the screen
32537	fix for Postgres point-in-time provisioning after replication
32614	GUI support for additional mount points for vfiles
32644	cross-platform provisioning does not save storage space
32704	scalability issue in the GUI that caused "Flash plugin not responding" popups in the browser
32766	GUI can become unresponsive for minutes after login
32858	fix for a Delphix Engine memory leak
32859	support for Oracle RAC to single instance in the EBS toolkit
32873	run adpreclone in the pre-snapshot EBS toolkit hook
32875	provide default values for EBS toolkit parameters

Release 4.0.0.1 Changes

Bug Fixes

Bug Number	Description
32755	fix for an OS panic in DxFS

Release 4.0.0.0 Changes

- Delphix network services are increasingly using the Delphix Session Protocol. In this release, SnapSync, V2P, and the Unix Connector (used to run Oracle and Postgres hooks) have been re-architected use the protocol. This places new network connectivity requirements on the product and the hosts that interact with Delphix Engines. See **Network and Connectivity Requirements** section of the documentation for details.
- VDB Pre/Post-Scripts have been superseded by the new **Hook Operations** feature. Any post-scripts configured on existing VDB will automatically be converted to Configure Clone hook operations as part of the upgrade to 4.0. Pre-scripts are no longer supported and will be removed on upgrade.
- Delphix Engine upgrade images are now signed by Delphix, and signatures are verified prior to upgrade. This ensures that only updates authorized by Delphix can be applied to a Delphix Engine.
- The Oracle and PostgreSQL VDB provisioning wizard includes a screen for configuring user-defined hooks to be run during specified VDB operations. See the **documentation** for further details.
- A summary of storage capacity metrics is now displayed on the main screen after login.
- Most of the performance monitoring functionality that was previously accessible via the Performance screen has been re-implemented and moved to the new **Performance Analytics** screen.
- New advanced data management options are available from the Oracle dSource wizard. See the **documentation** for further details.
- Policies may now be expressed using cron format. The Delphix Engine uses expressions compatible with the **Quartz CronTrigger scheduler**.
- New VDB Configuration Templates GUI screen.

Release 4.0 Known Issues

Cross-Platform Provisioning Issues

Replica Provisioning Fails

Doing cross-platform provisioning of a VDB from a replicated dSource fails with an internal error. To work around this, create a VDB of the replicated dSource, and do a cross-platform provision of the VDB.

VDB Refresh Takes a Long Time

The time taken to refresh of a cross-platform provisioned VDB is similar to the time taken for cross-platform provisioning. This is because the refresh process re-provisions the VDB, including much of the cross-platform provisioning logic. We are investigating how to improve this in a future release.

Application Data Issues (EBS and Unstructured File Virtualization)

Detach of a dSource Fails

Detaching an Application Data dSource fails with an internal error. There is no workaround.

Oracle RAC Environments Not Supported

Application data repositories cannot currently be created in Oracle RAC environments.

SQL Server Issues

Issues With Upgrades From Delphix 3.1

If any dSource is disabled prior to upgrade and enabled after upgrade the following issues are seen:

- Validated sync might fail with a fault stating that the most recent transaction log failed to be restored.
- Even if validated sync succeeds, provisioning a VDB from a snapshot after the upgrade will fail with an internal error as the VDB cannot be recovered. Provisioning from any snapshot taken prior to upgrade continues to work.
- If a dSource is disabled after the upgrade, the subsequent enable can fail with an error stating that the dSource could not be enabled as the corresponding staging source could not be enabled.

This can be resolved by doing a sync on the dSource after the upgrade.

Issues With Upgrades From Delphix 3.2.3.0 or Older

If the source host and Delphix Engine are in separate timezones provisioning VDBs after upgrade from snapshots taken before upgrade may fail with timestamp out of range errors. Provisioning from snapshots taken after upgrade works correctly.

PostgreSQL Issues

Replication is not Supported

There are some problems associated with provisioning a VDB from a replicated PostgreSQL dSource. Replication is not yet fully supported with PostgreSQL.

Staging Environment Reboot Not Handled Correctly

If a staging environment is rebooted, the pg_receivexlog process starts writing log files to the local filesystem instead of the NFS directory mounted from Delphix. This results in missing logs, and the inability to re-enable the staging environment after it has been disabled.

Issues With Hooks

Script Output Not Included in Job Information

The output of user scripts is not included in the job information unless the script fails (exits with a non-zero exit code). This can make it difficult to diagnose problems with scripts if they are doing something unexpected but not failing.

Performance Analytics Issues

Network Interface Statistics Occasionally Contain Invalid Values

Statistics for network interface bytes/sec and packets/sec occasionally include invalid negative values. This is exhibited in the GUI as large spikes in the respective graphs. This has only been observed on systems with multiple network interfaces.

Other Issues

Spurious Job in the Job History

When the Delphix Engine starts up, a spurious job is always run with summary, "Restore the application containers to a consistent state in the event of a failure during an operation." This job is spurious and does not affect any system state. It can safely be ignored.

Release 4.1 - 4.1.x.x Known Issues and Changes

These are the known issues and workaround for Delphix Engine release 4.1 - 4.1.x.x

- **Release 4.1.0.0 Changes**
- **Release 4.1 Known Issues**
  - **Rebooting**
    - **Must Disable Performance Mode Before Rebooting**
  - **SAP ASE Issues**
    - **No Fine Grained Progress Monitoring**
    - **Must Disable "net password encryption reqd"**
  - **Oracle 12c Pluggable Database Issues**
  - **Cross-Platform Provisioning Issues**
    - **Source Validation First**
    - **Unsupported Oracle Features**
    - **VDB Refresh Takes a Long Time**
  - **Application Data for Windows Issues (Unstructured File Virtualization)**
    - **Toolkits and Hook Operations Not Yet Supported**

Release 4.1.0.0 Changes

- Delphix network services are increasingly using the Delphix Session Protocol. SnapSync, V2P, and the Unix Connector (used to run Oracle, PostgreSQL, and SAP ASE hooks) have been re-architected to use the protocol. This places new network connectivity requirements on the product and the hosts that interact with Delphix Engines. See **Network and Connectivity Requirements** for more details.
- A network benchmarking tool has been added to the Delphix Engine for testing network performance when setting up new environments and when debugging network performance anomalies. See **Using the Network Performance Tool** for more details.
- The queries that Oracle LogSync uses have been improved to be generate even less impact on the source database.
- If you mouse over an object that is showing a warning / fault, a tooltip will now appear with a description of the fault.
- Oracle V2P has new advanced data transfer options. See **the Oracle V2P documentation** for more details.
- Cross-platform provisioning has new GUI support for cross-platform script deletion and downloading, plus a new report which displays a summary of activity. Some additional unsupported Oracle setups are now noticed earlier in the process of performing a cross-platform transformation and reported as errors. See **the documentation** for cross-platform requirements.
- The "Provision" job in previous versions has been split into separate "Provision" and "Snapshot" jobs.
- It is now possible to launch a job from a policy without specifying an execution timeout limit.
- Performance and accuracy improvements were made for the **Performance Analytics** screen.

Release 4.1 Known Issues

Rebooting

Must Disable Performance Mode Before Rebooting

If there are any VDBs with performance mode enabled, performance mode must be turned off for those VDBs prior to reboots and upgrade. Otherwise, they may not be mounted correctly after the reboot. Performance mode can be re-enabled after the reboot has completed.

SAP ASE Issues

No Fine Grained Progress Monitoring

Fine grained progress monitoring of linking and validated sync operations is not supported. Progress can be determined by manually inspecting the log file of the ASE Backup Server process used for the link and validated sync operations.

Must Disable "net password encryption reqd"

The ASE **"net password encryption reqd" sp_configure** option must be disabled.

Oracle 12c Pluggable Database Issues

When using an Oracle 12c pluggable database (PDB) with your Delphix Engine, the following features do not work as expected:

- Virtual-to-Physical (V2P) functionality is not supported for PDBs.
- Pre-provisioning is not supported for PDBs.
- Virtual PDB migration to a different single container database (CDB) is not supported.
- Linking PDBs in physical standby or Active Data Guard CDBs is not supported.
- PDB source attach is not supported.
- The initial SnapSync for a PDB is not resumable.
- Provisioning a PDB Data Source linked from a RAC CDB to a non-RAC CDB is not supported.

Cross-Platform Provisioning Issues

Source Validation First

The Data Source / VDB validation has to run on the source first. Otherwise, you can replica provision a same-platform VDB from the source and run cross platform validation against that.

Unsupported Oracle Features

The **Oracle Label Security** and **Database Vault** features will cause cross-platform provisioning to fail.

VDB Refresh Takes a Long Time

The time taken to refresh a cross-platform provisioned VDB is similar to the time taken for cross-platform provisioning. This is because the refresh process re-provisions the VDB, including much of the cross-platform provisioning logic. We are investigating how to improve this in a future release.

Application Data for Windows Issues (Unstructured File Virtualization)

Toolkits and Hook Operations Not Yet Supported

Application Data for Windows only supports unstructured file virtualization. Additional Application Data features on UNIX platforms, such as hook operations on vFiles and toolkits, will be supported on Windows in a future release.