Rocket UniData

New Features Guide

Version 8.1.1

New features in v8.1.1

This section summarizes the significant changes and updates for Rocket UniData. If you are familiar with previous releases of UniData, and you want to know the new features and enhancements for newer versions, you can use this section to assist you.

Replication pacing and disablement

Replication pacing allows U2 Data Replication to gracefully slow down the pace of publisher database updates when replication falls behind. This prevents the replication system from overflowing and ultimately disabling U2 Data Replication.

Pacing gracefully slows the database updates to prevent too many replication overflows to the log files. As the publisher process slows the updates, the subscriber is able to catch up according to priorities set by the administrator. Administrators can define a session priority level that ensures critical updates are replicated faster than non-critical updates or background processes.

Replication disablement is an enhancement to U2 Data Replication that allows a database administrator to temporarily disable the replication system and stop generating unnecessary replication logs for better performance, and to avoid running out of disk space which could trigger system crash.

For more information, see the *U2 Data Replication User Guide*.

REPLOGGER

REPLOGGER is a replication utility that allows you to monitor replication. The REPLOGGER collects information from the replication system using the replication administration reptool and writes the information to a sequential log file. The information logged by the REPLOGGER records how the replication system performs over a period of time. Using REPLOGGER helps you understand and analyze how your replication system responds to changing workloads. The REPLOGGER can produce a large amount of data, so to aid in analyzing and visualizing the data, a Java tool is available from U2 Support to graph the result sets.

For more information about how to use REPLOGGER, see the *U2 Data Replication User Guide*.

U2 servers token-based authentication

As customers are moving to a cloud-based Identity Management (IdM) system for user authentication in their application, the current user ID and password method of connecting to U2 servers is becoming less appropriate or even possible. At UniData 8.1.1, token-based authentication is available to provide security and future extensibility for IdM systems.

For more information, see the UniData *Security Features Guide*.

ServerName authentication rule

A new authentication rule, the ServerName rule, is introduced at 8.1.1 for use with the `addAuthenticationRule()` function. The ServerName rule is an extension to the TLS computer networking protocol by which a client indicates which hostname it is attempting to connect to at the start of the handshaking ("client hello") process. This rule allows a server to present multiple certificates on the same IP address and TCP port number. As a result, it allows multiple secure (HTTPS) websites or any other service over TLS to be served off the same IP address without requiring all those sites to use the same certificate.

For more information, see the UniData *Security Features Guide*.

OpenSSL 1.0.1m

Starting at this release, UniData uses OpenSSL 1.0.1m. In addition, SHA-256 has been added to the DIGEST function.

New features in v8.1.0

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64–bit application support

64–bit architecture

- Beginning at this release, UniData has migrated to a 64–bit architecture for all available platforms. A fully 64-bit architecture allows customers to take advantage of the most current hardware without the memory limitations imposed by 32-bit. It also allows UniData to interact well with other 64-bit software, eliminating the need to maintain a mixed-architecture environment. Reliability is enhanced by allowing application programs to access more memory without unexpectedly faulting due to memory limits imposed by 32-bit memory address model.

- 64-bit application support. If your installation requires a remake of the udt executable, ensure any linked libraries, code, DLL's, are all 64-bit compatible. This upgrade also requires a 64-bit compiler that is compatible with the compiler used by UniData. The UniData compiler and version information is contained in the `port.note` file, which is stored the bin directory of the product and is also normally published with the release notes on the PAM.

Performance and reliability features

File improvements

- Prior to this release, an individual UniData file could not exceed 2gb in size. Starting at this release, UniData files can support a 64-bit data model, which has virtually no restrictions on file size and block size. For more information, refer to *UniData Commands Reference.*

  > **Note:** You must use the `RESIZE/MEMRESIZE` commands to convert 32–bit files to 64–bit files. For more information, refer to *UniData Commands Reference.*

- An enhancement has been made in UniData 8.1.0 to create a new hash type of 3, giving database administrators more options for configuring files for optimum performance and data storage. This will become the new default hash type when creating a file if one is not specified. This can be changed via the DEFAULT_HASH_TYPE configurable in the `udtconfg` file.

  > **Note:** If moving files back to an older UniData version, then the files will need to be resized back to 32bit and hash type 0 or 1.

  For more information, refer to *UniData Commands Reference*.

- Starting at this release, an enhancement was made which introduces a new Dynamic File Split Type based around the loading of the file as a whole rather than individual groups. This new type is known as WHOLEFILE. For further information, see *Administering UniData on UNIX Platforms* or *Administering UniData on Windows Platforms.*

Recoverable File System

- UniData 8.1 includes a tool called scanfor_RFS_hash_prob, that can be used to identify dynamic files that could encounter a hashing issue leading to missing records (the profile of the files that could be affected are hashtype-1 dynamic files with a modulo greater than 16777215 and have been converted to or marked as recoverable or converted back to non-recoverable). The tool will report on any potential problems and inconsistencies that are found.

- UniData processes now have a page size of 64K which enables the OS to deal with the processes more efficiently. Changes were also made to allow the system administrator to specify priority for the UniData processes be lower than the system memory garbage collection process. At the same time it will allow the UniData daemon processes (sm, smm, sbcs, cm) to have a slightly higher priority than normal user processes (udt and tm).

- Starting at this release, an enhancement has been made for customers using U2 Data Replication and the `RFS 'dbpause -c'` will now report if replication is not suspended. If replication is not suspended before a `dbpause` is issued, then part of the RFS check-pointing process will wait until all active logs are committed on the subscriber and this could take some time. With replication suspended the logs are not considered active. `dbpause` now also has an option of '-s' to suspend replication before commencing the `dbpause` command. A `dbresume` does not resume replication. A manual `ud_repadmin sync` command will need to be issued if replication was suspended via the `dbpause -s` command.

For more information, refer to *UniBasic Extensions*.

Security and compliance features

Automatic Data Encryption

- Prior to this release, the master key itself was required as a password for privileged Automatic Data Encryption operations. The changing of the master key required all of the data be decrypted, the master key changed, and then all the data to be re-encrypted. This resulted in many sites not being able to change the master key due to the downtime required to do so. Starting at this release an enhancement has been added where these privileged commands require a different password(s) and not the master key itself. This will allow the easy adoption of current security and audit standards around the protection of these privileged ADE operations, in that the password(s) themselves can be subject to being changed frequently without the need for any downtime.

- Starting from this release, UniData now uses OpenSSL 1.0.1j. In addition, SHA-256 has been added to the DIGEST function.

- Starting at this release, UniData now supports the encryption of @ID and indexes.

- Starting at this release, when a file is re-encrypted in data encryption at rest, an option to complete it one-pass has been added, you can execute the new ECL command `REENCRYPT.FILE` to accomplish the task.

For more information, refer to *UniData Security Features*.

IBM WebSphere MQ API

Starting at this release, the interface from UniData to MQ Series has been enhanced to now support the MQI API. This should now be used instead of the AMI interface, as this is now deprecated by IBM. For more information, refer to *UniData UniBasic Extensions*.

IPv6

Starting with UniData 8.1.0, UniData supports both IPv6 and IPv4. As part of the enhancement for IPv6 support, two new functions have been added to UniBasic; `setlpv` and `getlpv`. These allow an outgoing connection on a socket to be set as IPV4 | IPV6 | IPVANY | IPV4_IPV6 | IPV6_IPV4. The default will be IPv4. For more information, refer to *Administering UniData on UNIX Platforms* or *Administering UniData on Windows Platforms*.

Security

- Starting at this release, the U2 root certificate store has been added. This file contains a metadata section that stores data such as version, creation and modification times, and more.

- Starting at this release, changes have been made to enhance the SSL certificate revocation list (CRL) processing, including handling of standard based CRL files, multiple CRLs (from different CAs), DER type CRL, delta CRLs, and improved error reporting during CRL verification.

- In previous releases, SSL configuration files contained cleartext passwords. These can now be encrypted to provide greater security. For details, see the description of the secuconf utility in the *Security Features* manual. In addition, XAdmin has also been modified to support automatic encryption and decryption of the configuration file.

- Starting at this release, the UniData Windows telnet service has the ability to enable or disable non-secure sessions, providing the ability to have only secure SSL connections.

- Beginning at this release, users have the ability to create a SHA-2 signed certificate from BASIC and XAdmin.

For more information, refer to *UniData Security Features*.

Usability updates

Account-based licensing

Starting at this release an enhancement has been made to allow licenses to be allocated based on the account being used. Using this, an application service provider can allocate a specific number of licenses for each of their clients, preventing one from using too many while denying access to another. For more information, refer to *Administering UniData on UNIX Platforms* or *Administering UniData on Windows Platforms*.

After-event triggers

AFTER UPDATE and AFTER DELETE triggers have been added to UniData 8.1.0. UniData after-event triggers fire after a change is made to the database, giving users a chance to perform various related operations, including auditing changes, propagating data to other sources, etc. For more information, refer to *Developing UniBasic Applications*.

External Database Access (EDA)

- Starting at this release an enhancement has been made to External Database Access (EDA) to allow users to alter or change existing schemas without having to reload the existing tables. There is a new ECL command, `ALTER.EDAMAP`, that allows users to add an attribute, such as a column, to the EDA Schema that will append the new attribute to the table without the table having to reload.

- The Oracle EDA driver now loads automatically.

- Starting at this release, a new udadm role has been added to UniData client/server processes (UO, UOJ, etc.), which allows non-root users to update data sources in the EDA Schema Manager. The udadm user or members of udadm group have special privileges that allow them to access UniData when they run BASIC programs. Beginning at this release, udadm or members of udadm group can successfully update EDA data sources.

- An enhancement was made so that the UniData EDA solution supports the date and time data field against SQL Server 2008 or later.

For more information, refer to the *UniData External Database Access* manual.

Installation and upgrade improvements

- Windows only. Starting with this release, custom configuration files can be implemented during an install or upgrade.

- Windows only. Starting with this release, custom user scripts can be actioned during an install or upgrade.

- Windows only. Starting with this release, a detail log was added for UniData installation. The `install.log` file is in the UniData home directory.

- Windows only. Starting with this release, users have the option to backup their entire UniData environment when upgrading. They can then use udrestore.exe to restore to the backup-ed version.

- Windows only. Prior to this release, installing UniData into a directory that included spaces would cause the installation to fail.

- Windows only. An enhancement was made to have UniData related event log entries written to a UniData specific application event log. This enables a system administrator to easily view UniData specific entries via the Windows Event Viewer.

- Windows only. Prior to this release, when UniData was upgraded, a message that the uniwincert.dll could not be copied to `C:\windows\syswow64` (or `C:\windows\system` for 32 bit) and needs to be manually copied from `C:\u2\ud`*nn*`\temp` could have been encountered. UniData now runs a check to see if any of the .dll files that need to be changed are in use prior to starting the upgrade. If they are, a message will display informing the user that the application using the .dll files should be closed before upgrading.

- Starting with this release, the `srchacct` command used in the udtinstall/updatesys script now uses a timeout function. If this process takes more than two minutes, then the `srchacct` process is killed. The `srchacct` command should then be executed after the install/upgrade has completed. The necessary steps will be displayed to the screen if this situation occurs. The `srchacct` command is used to update the UD.ACCOUNT file.

- Starting at this release, the UOJ and JDBC cpio packages are no longer included in the UNIX/ Linux installation media. These packages included outdated versions of the `asjava.zip`, `asava_p.zip`, and `unijdbc.jar` files. To get current versions of these files, install the UniDK product from the U2 Clients product onto a Windows PC. Look in the `uojsdk\lib` and `jdbc \lib` folders for these files. These .zip and. jar files work on all platforms.

- Starting at the 8.1.0 release, the default values for several existing udtconfig parameters have changed. The new values are:
    - NUSERS: 256
    - SHM_GNPAGES: 64
    - SHM_GPAGESZ: 2048
    - SHM_LMINENTS: 128
    - SHM_LMINENTS: 128
    - SHM_LPAGESZ: 16
    - SBCS_SHM_SIZE: 4 MB (4194304).

- Linux only. Starting at this release, the install and update processes will add the UniData bin directory to the shared library cache. This is to ensure that the LD_LIBRARY_PATH variable will no longer need to be set to use XML functionality.

- Linux and UNIX only. Starting at UniData 8.1.0, a new installation/upgrade script, udtsetup, has been included with the UniData media for UNIX and Linux platforms. This new script is an improvement over the existing udtinstall and updatesys utilities in many ways. This script is described in detail in Appendix A of the Installation manual.

For more information, refer to *Installing and Licensing UniData 8.1 Products*.

Local functions and subroutines

Starting with this release, support for local subroutines and local functions with their own variable scope within a main subroutine or function in UniBasic has been added. Please refer to the *Developing UniBasic Applications* manual for more detail.

Replication Performance Monitor

Starting with the release an enhancement has been made to include data link compression for U2 Data Replication. Data link compression in U2 Data Replication allows data to be compressed during the network transfer phase. The data compression can reduce the data volume being transferred and the overall transfer time. This enhancement is meant to reduce any problems that customers may experience due to slow network speeds.

XML support for U2 Dynamic Objects

Starting at this release, a new format of UDOFORMAT_XML has been added to UniBasic to support XML mapping with U2 Dynamic Objects. For more information, refer to *UniBasic Extensions*.

Notices

Edition

Publication date: December 2015
Book number: UDT-811-NF-01
Product version: Version 8.1.1

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Rocket Software, Inc. develops enterprise infrastructure products in four key areas: storage, networks, and compliance; database servers and tools; business information and analytics; and application development, integration, and modernization.

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