

Product Benefits by Major Versions

Below you will find a guide to help summarize the most significant features and enhancements made to Rocket's MultiValue releases over time. Please click on the product you are interested below:

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U2 Family of Products

UniVerse

We are continuously working out potential kinks with specific customer application functionality.

Version	Component / Feature	Benefit	Date
14.1	Replication enhancement	Facilitate Replication recovery with the enhanced uvreptool. When Replication has stopped processing due to the current flags word value, the uvreptool now gives you the option to change the current value of the flags word for a replication LSN, so you can attempt to resume processing.	26-Jun-2024
14.1	Replication enhancement	A new uv_repadmin option has been added to allow for skipping an incomplete transaction that has caused replication to stop processing.	26-Jun-2024
14.1	Improved performance with the intelligent queue manager.	Intelligent Queue Manager for replicationupdates. Queue manager recognizes when there are multiple updates inthe queue for the same file. Rather than write each change to disk, onlythe most recent change is written.	26-Jun-2024
14.1	Field-level updates in the replication process. For customers who use HA/DR, only updated fields are written to replication logs instead of entire records.	Replication is faster and disk space usage is decreased. Replication protects your system in case of disaster and system outage. Replication optimization is important and ensures overall application performance is not negatively impacted.	26-Jun-2024

14.1	Replication performance improvement	The new Field Level Replication BASIC function, FieldWrite, and the enhanced WRITEV function allow you to read and write multiple attributes in a single command.	26-Jun-2024
14.1	uvrepmanager script	Stop and restart the uvrepmanager process using a script included with UniVerse 14.1.1 without having to stop and restart UniVerse if uvrepmanager becomes unresponsive.	26-Jun-2024
14.1	Mixed Replication protocol level.	Test your upgraded system with ease. You can now test UniVerse 14.1.1 on a subscribing server while maintaining an older version of UniVerse on your production server since UniVerse 14.1.1 allows subscribers to receive logs from older protocol levels.	26-Jun-2024
14.1	Python Upgrade	Python 3.11, part of UniVerse 14.1.1, includes the Python OpenSSL extension, meaning it no longer depends on UniVerse's built-in OpenSSL version. Like other third-party libraries, the Python OpenSSL extension relies on the OpenSSL version provided by the operating system.	26-Jun-2024
14.1	OpenSSL upgrade	Enhanced security features, with OpenSSL v3.0 UniVerse supports a wide array of protocol levels.	26-Jun-2024

14.1	Architecture changes	UniVerse 14.1.1 only has RFS OFF mode.	26-Jun-2024
14.1	Two-process mode	UniVerse 14.1.1 does not include the two-process mode we introduced in version 12.	26-Jun-2024
14.1	Default uvconfig	During installation, you'll notice a default uvconfig file in uvhome allowing you to compare your current parameters with the latest default settings.	26-Jun-2024
14.1	trunclog command	You can now truncate active UniVerse log files with the trunclog command, which allows you to reduce the size of the current log files by appending the existing information to the log files in the saved_logs directory.	26-Jun-2024
14.1	Improved installation diagnosis	Enhanced installation process to help you diagnose any license related issues you may encounter during the installation process.	26-Jun-2024

12.2	BASIC compiler directives	The BASIC compiler directives identify the 12.2 release, and the Geospatial and UTC Datetime functionality have been included with the 12.2.1 release.	18-Oct-2022
12.2	UTC Datetime support	Multiple improvements supporting UTC DATE and TIME.	18-Oct-2022
12.2	FIPS Support	The OpenSSL with FIPS functionality implemented at UniVerse v11.3.4 is now included in v12.2.1.	18-Oct-2022
12.2	OS Certification	UniVerse has been certified for RHEL Linux 8.	18-Oct-2022
12.2	OpenSSL upgrade	OpenSSL upgrade to version 1.1.1, including support for TLSv1.3.	18-Oct-2022

12.2	Python upgrade	Python has been upgraded to version 3.9.	18-Oct-2022
12.2	Python environment preservation when upgrading.	You can now preserve your existing python environment during a UniVerse upgrade.	18-Oct-2022
12.2	Security enhancement providing the ability to upgrade to a newer minor revision level of OpenSSL.	You can now upgrade to a newer minor revision level of OpenSSL without the need to upgrade UniVerse.	18-Oct-2022
12.2	Geospatial enhancements	The GCDISTANCE() function has been added to BASIC. The function calculates the distance between two points based on supplying the longitude and latitude coordinates of each point.	18-Oct-2022
12.1	Enhanced Auditing - Change Data Capture (CDC) - CDC lets you see exactly what changed in a record, the original value and what it was changed to.	Data change is a requirement of security regulations (like PCI and HIPAA). Some of these regulations require that the change itself be logged, not just the fact that a change was made to a file.	2-Jul-2019

12.1	Recoverable file system (RFS) - RFS maintains a persistent change log (journal) so that when an unexpected outage takes place the file system can always quickly restore to the last complete transaction.	RFS ensures full data integrity. Every database transaction is committed to the journal prior to being written to disk, allowing full replay of system events. RFS automates fast restoration. It can be costly for a business to weed out and repair damaged files. RFS avoids lengthy manual intervention for file repairs.	2-Jul-2019
12.1	Rearchitect the core database processing engine - A "System Buffer" was added to the core database processing engine. The Buffer manages file updates and stores frequently accessed files.	Reading from memory versus disc means end-users experience faster response time, thus supporting higher levels of transaction processing.	2-Jul-2019
12.1	Intelligent Queue Manager for Replication updates. The queue manager recognizes when there are multiple updates in the queue for the same file. Rather than writing each change to disk, only the most recent change is written	Improved performance	2-Jul-2019
12.1	Field-level updates in the replication process. For customers who use HA/DR, only updated fields are written to replication logs instead of the entire record.	Replication is faster and disk space usage is decreased. Replication protects your system in case of disaster and system outage. Replication optimization is important and ensures overall application performance is not negatively impacted.	2-Jul-2019
12.1	Intelligent Query Optimization - After a user writes a SQL Query statement, the processing engine evaluates the statement and sequence, refines the order, then executes the query.	Queries return results 10 – 26% faster. Existing queries that use indexed fields will run quicker. This applies to program code that performs queries or reports. This benefit does not require any code changes.	2-Jul-2019

12.1	JSON Format for Retrieve – The standard query language has been extended to provide output in JSON format	By extending data output to JSON we've expanded the accessibility of MV data to more applications, markets and functionality.	2-Jul-2019
11.4	OpenSSL upgrade	The version of OpenSSL shipped with UniVerse 11.4.1 has been upgraded to 3.0.	17-Aug-2023
11.4	Dictionary Compiler upgrade	The dictionary compiler has been upgraded and now supports many BASIC functions such as NOW(), TODATETIME(), TODATE(), TOTIME(), and CHANGE() in l-type dictionary expressions.	17-Aug-2023
11.4	New RW_QUEUE_SZ parameter in the repconfig file	The repconfig file has been updated in v11.4.1 to accommodate a new parameter, RW_QUEUE_SZ. RW_QUEUE_SZ defines the size of the intelligent write queue. The intelligent write queue is used to optimize update locks and record updates on the subscriber when repeated updates of the same record are detected.	17-Aug-2023
11.4	Replication enhancement	A new uv_repadmin option has been added to allow for skipping an incomplete transaction that has caused replication to stop processing.	17-Aug-2023
11.4	Subscriber accepting logs from an older protocol level	Previously, when using U2 Replication, the publisher and subscriber were required to be running the same Replication protocol level for Replication to function correctly. U2 Replication has been enhanced to allow a subscriber to accept replication logs from a publisher system running 11.3.1 or later.	17-Aug-2023
11.4	UVREP package configuration	When licensing UniVerse you now need to set the UVREP flag for replication to be activated. Be aware that the UVREP package must be properly configured to use replication.	17-Aug-2023
11.4	BASIC Profiling	With applications that have millions of lines of BASIC code, it is challenging to add features while maintaining performance. UV BASIC Profiling provides application performance analysis and insight to help you quickly determine bottlenecks and performance improvement areas.	17-Aug-2023

11.3	New uvconfig parameter to turn off the requirement for WRITE permission on catdir	Eliminates the requirement for all users to have write permissions to the global catalog space.	05-Jan-2023
11.3	uvinstall.log file now available for UniVerse installations on Unix	The installation and upgrade scripts for Unix and Linux systems now capture installation information in an installation log rather than on the screen.	05-Jan-2023
11.3	callHTTP PATCH method added	The PATCH method has been added to the BASIC CallHTTP functionality. The PATCH method provides the ability to modify an existing HTTP resource as compared to the PUT method, which only allows a complete replacement of a document.	05-Jan-2023
11.3	Subscriber accepting logs from an older protocol level	When using U2 Replication, the publisher and subscriber were required to be running the same Replication protocol level for Replication to function correctly. U2 Replication has been enhanced to allow a subscriber to accept replication logs from a publisher system running 11.3.1 or later.	05-Jan-2023
11.3	Printer Performance improvement	Changes have been made to the UniVerse spooler which can improve the performance in a high volume spooler configuration.	05-Jan-2023
11.3	OpenSSL upgrade	The version of OpenSSL shipped with UniVerse 11.3.5 has been upgraded to 1.1.1n.	05-Jan-2023
11.3	Python upgrade	The version of Python shipped with UniVerse 11.3.5 has been upgraded to 3.11.	05-Jan-2023
11.3	OS Certification	UniVerse 11.3.5 is now certified on AIX 7.3 and RHEL 9.	05-Jan-2023

11.3	FIPS Support with OpenSSL 1.1.1 on RHEL 8	FIPS Support is now available with OpenSSL 1.1.1 with the 11.3.4 version of UniVerse running on RHEL 8. Python and u2py functions are also available when using the RHEL 8 OpenSSL libraries with FIPS.	31-Aug-2021
11.3	MVX:P GA release of UniVerse	The 11.3.4 release of UniVerse is the base server release for the MVX:P GA release. Several new uvconfig parameters for configuring performance monitoring have been added at 11.3.4 to support MVX:P.	31-Aug-2021
11.3	UniVerse AUDIT logging for Client updates	The UniVerse AUDIT data event DAT.CLIENT, which previously was only available in the 12.1.1 release, has now been included in the UniVerse version 11.3.4.	31-Aug-2021
11.3	ADE tool to validate encryption.	A new ADE tool that enables you to validate that encryption components are synchronized has been added to UniVerse.	31-May-2021
11.3	Python upgrade	Python version 3.9.2 is now bundled with this release of UniVerse and supported on the AIX, Linux, Solaris Sparc, Solaris X86, and Windows platforms.	31-May-2021
11.3	Replication of Sequential I/O	Replication has been enhanced to include the replication of Sequential I/O.	23-Jan-2020
11.3	OpenSSL Upgrade	UniVerse 11.3.2 has been upgraded to support OpenSSL version 1.1.1.	23-Jan-2020
11.3	Default Root Certificate	A default root certificate with basic protection is now available. The UPDATE.CER command has been added for installing the certificate.	23-Jan-2020

11.3	EDA Support for MySQL and Postgres	Windows and Linux versions of UniVerse now support the use of EDA with MySQL and Postgres.	23-Jan-2020
11.3	OS Certification	UniVerse 11.3.2 is supported on RHEL 8.	23-Jan-2020
11.3	Python Upgrade	Python version 3.7 is now bundled with UniVerse 11.3.2 and supported on the AIX, Linux, Solaris Sparc, Solaris X86, and Windows platforms.	23-Jan-2020
11.3	Index based triggers	The new keyword ALL.NULLS has been added to the CREATE.INDEX command to support the use of an index subroutine to perform trigger like behavior.	23-Jan-2020
11.3	UTC DATE TIME support	Multiple improvements supporting UTC DATE and TIME.	23-Jan-2020
11.3	Geospatial support	The new GCDISTANCE() function has been added to BASIC. The function calculates the distance between two points based on supplying the longitude and latitude coordinates of each point.	23-Jan-2020
11.3	TCL online HELP	The information displayed by the TCL HELP command has been updated at this release to sync with the current documentation set.	23-Jan-2020
11.3	Python Support (Windows/Linux only)	Attract and retain new development talent for your MultiValue applications. Easily extend UniVerse applications with a simple and easy to learn object-oriented programming language. Prototype new features and applications quickly.	20-Oct-16
11.3	Audit Logging Performance	In addition to the features delivered in 11.2, 11.3 now offers a new streamlined audit architecture and processes and supports sequential file logs for a significant performance improvement.	20-Oct-16

11.3	(HADR) U2 Replication Enhancements	1) Cross-Group Transaction (CGT) performance improvements. 2) Delayed Standby Replication - keep the subscriber a defined time period behind the publisher to protect against malicious changes and recover to a safe point in the past. 3) Replication Pacing - Publisher adjusts speed to keep pace with subscriber which prevents overflow and increases reliability.	20-Oct-16
11.3	FIPS 140-2	Arm your business to meet FIPS 140-2 security and compliance regulations when certifying your own application. (HIPAA, HITECH, SOX, PCI-DSS)	20-Oct-16
11.3	UniVerse Credential Manager	Simplify Single Sign On (SSO) access to the database server. In addition to LDAP, or OS- level authentication, UniVerse now offers its own credential manager.	20-Oct-16
11.3	OpenSSL Upgrades & Agility	OpenSSL libraries are released often and you need to be able to easily protect your business from the latest security threats. UniVerse has been enhanced to easily accommodate future OpenSSL updates without having to update UniVerse itself.	20-Oct-16
11.3	NLS/I18n Support (National Language Support)	Enable applications to be globalized using the latest modern techniques and standards to support multiple languages. The BDT Editor, Command Prompt, and Debugger now support NLS.	20-Oct-16
11.3	IPv6	Be ready for the Internet of Things! As the world is running out of IPv4 Internet addresses for all web-enabled devices, IPv6 compatibility provides the ability to create more IP addresses for years to come and utilizes a more secure data pack in the process. UniVerse is dual-stack capable IPv4 / IPv6.	20-Oct-16

11.3	64-bit Architecture (no 32-bit ports)	Take advantage of the most current hardware without the memory limitations posed by 32-bit software! Eliminate the need to maintain a mixed-architecture environment and see a potential performance benefit when the database is fully cached in memory.	20-Oct-16
11.2	Audit Logging	Manage the auditing requirements of regulations such as HIPAA/HITECH and Sarbanes-Oxley in addition to internal auditing. Once licensed and configured, UniVerse always audits certain security related events. UniVerse ensures that the audit log files are valid and ready at startup, and these hashed log files are protected by the system.	14-Nov-13
11.2	U2 Dynamic Objects	Easily create and consume Web Service data in both JSON and XML formats.	14-Nov-13
11.2	Account Based Licensing	Manage database licenses for a multi-account based environment by allocating licenses to each account to ensure availability and access based on service level agreements. For example, this makes it easier to manage multi-tenancy in a SaaS environment	14-Nov-13
11.2	(HADR) U2 Replication Fixes	Stability improvements and bug fixes for replication.	14-Nov-13
11.2	Single Server Replication with EDA	Replicate and transform your data on a single server to populate an external database for data warehousing and integration.	14-Nov-13
11.2	Local subroutines and functions	Create modular, reusable code that is free from defects.	14-Nov-13
11.1	Index and Key Encryption	Protect sensitive customer data in any field and comply with government, health and financial regulations without modifying your application	22-Oct-10
11.1	(HADR) U2 Replication	Replicate your data to one or more subscribers to off-load reporting from your on-line server or to provide a backup system for high availability.	22-Oct-10
11.1	External Data Access (EDA)	Access external databases like Microsoft SQL Server, Oracle, and DB2 from the comfort of your U2 Basic programs and queries to provide interoperability or integration while leveraging your U2 knowledge.	22-Oct-10

11.1	Extensible Administration	A graphical administration console to manage and monitor your UniVerse system, XAdmin can also be extended to administer your application or embedded within your own Eclipse-based tools.	22-Oct-10
10.3	Basic Developer Toolkit introduced	Graphical tool for exploring, developing and debugging UniData accounts, file and Basic program, BDT improves productivity and satisfies new programmers with the latest look and feel.	20-Oct-09
10.3	Extensible Administration (XAdmin) Tool introduced	Graphical administration tool for administering and monitoring the database application system. View UniVerse resources (servers/accounts/files) in a table/tree view, manage licensing for users and features, all with the familiar look and feel of Eclipse.	20-Oct-09

UniData

Version	Component / Feature	Benefit	Date
8.3	Licensing	UniData licensing has been enhanced to include a configuration package for Replication (REP) allowing you to easily identify if Replication is enabled.	25-Apr-24
8.3	MVX	UniData 8.3.2 is the first release certified with MVX:Performance, if you rely on Replication you can now monitor UniData replication with MVX:P 1.10.	25-Apr-24
8.3	Error reporting	<ul style="list-style-type: none"> When an error is encountered when opening a dynamic file the related error message has been expanded to detailing the reason for failure, assisting with file issue diagnostics. If UniData fails to start due to a problem with one or more parameters in the udtconfig file, the incorrect parameters are now reported within the error message for easier diagnostics. Users are now given the option to specify how minidump files, used for troubleshooting purposes, are handled during the initial installation. 	26-Feb-24
8.3	U2 BASIC enhancements	U2 Basic enhancements include the ability for the 'RETURN' command to allow a file variable to be returned, improved error reporting and consistent left-justified sort with the SORT() function.	26-Feb-24
8.3	Query enhancements	Ability to now escape quotes in a query and support list numbers.	26-Feb-24
8.3	OS upgrades	Ability to upgrade to the latest, most secure OS versions including certification for Redhat 9 and AIX 7.3.	26-Feb-24
8.3	Python Upgrade	Python has been upgraded to version 3.11.	26-Feb-24
8.3	OpenSSL Upgrade	OpenSSL has been upgraded to version 3.0 for increased security, adding more modern cryptographical algorithms and cipher suites support, as well as the latest TLS 1.3 protocol.	26-Feb-24

8.3	Replication enhancements	<ul style="list-style-type: none"> • The ud_repadmin command now has a skip option to facilitate the recovery from stalled subscriber groups. • The repmanager can now be stopped and restarted with a new script, removing the need to stop and restart UniData if the repmanager becomes unresponsive. • An enhanced "invalid log sequence" message now includes the actual and expected LSN number. • Enhanced replication reporting 	26-Feb-24
8.2	Audit enhancements	Enhancements have been made to allow a consolidation type based upon Record Id.	17-Aug-22
8.2	Enhanced EDA TRANS function	The EDA TRANS function now allows the specification of the remote key id instead of or as well as the default ID.	17-Aug-22
8.2	Python Upgrade	In UniData 8.2.4 the Python libraries were upgraded to 3.9.12.	17-Aug-22
8.2	Enhanced UDT.OPTIONS reporting	Ability to report on UDT.OPTIONS by state, adding the option ON or OFF only to the UDT.OPTIONS command will report only the options in the specified state.	17-Aug-22
8.2	OpenSSL upgrade	Improved security with the upgrade of OpenSSL libraries to version 1.1.1n	30-Apr-21
8.2	Python Component Upgrade	Improved security with components of u2py upgraded to work with the new version of OpenSSL 1.1.1n.	30-Apr-21
8.2	Enhanced performance monitoring tool	An enhanced UniData Performance Monitoring tool, udtpm, has been added, this command-line driven monitoring tool provides information about UniData users and system activity.	29-Sep-20
8.2	OpenSSL upgrade	Improved security with the upgrade of OpenSSL libraries to version 1.1.1b.	29-Sep-20

8.2	Python Support (Windows/Linux only)	Attract and retain new development talent for your MultiValue applications. Easily extend UniVerse applications with a simple and easy to learn object-oriented programming language. Prototype new features and applications quickly.	26-Jul-17
8.2	Audit Logging	Manage the auditing requirements of regulations such as HIPAA/HITECH and Sarbanes-Oxley in addition to internal auditing.	26-Jul-17
8.2	(HADR) U2 Replication Enhancements	1) Cross-Group Transaction (CGT) performance improvements. 2) Delayed Standby Replication - keep the subscriber a defined time period behind publisher to protect against malicious changes and recover to a safe point in the past. 3) Field-Level Replication - Significant performance improvement for applications with large record sizes, only replicate the field changes and reduce resource overhead.	26-Jul-17
8.2	FIPS 140-2	Arm your business to meet FIPS 140-2 security and compliance regulations when certifying your own application. (HIPAA, HITECH, SOX, PCI-DSS)	26-Jul-17
8.1	64-Bit File Support	Experience increased I/O performance and work with larger file sizes than ever before! No more 2GB limit on file sizes!	9-Feb-15
8.1	64-bit Architecture (no 32-bit ports)	Take advantage of the most current hardware without the memory limitations posed by 32-bit software! Eliminate the need to maintain a mixed-architecture environment and see a potential performance benefit when the database is fully cached in memory.	9-Feb-15

8.1	(HADR) U2 Replication "Pacing"	Replication Pacing - Publisher adjusts speed to keep pace with subscriber which prevents overflow and increases reliability.	9-Feb-15
8.1	Account Based Licensing	Manage database licenses for a multi-tenant based environment by allocating licenses to each account. This ensures availability and access based on service level agreements. It also prevents lower priority accounts from consuming licenses intended for higher priority accounts.	9-Feb-15
8.1	Install / Upgrade improvements	UniData 8.1.0 has overhauled its installer and update process in this release, with significant customer input into the design changes.	9-Feb-15
8.1	MQI	Add support for current, supported IBM WebSphere MQ API.	9-Feb-15
8.1	U2 Dynamic Objects	Easily create and consume Web Service data in both JSON and XML formats.	9-Feb-15
8.1	Local subroutines and functions	Create modular, reusable code that is free from defects.	9-Feb-15
8.1	IPv6	Be ready for the Internet of Things! As the world is running out of IPv4 Internet addresses for all web-enabled devices, IPv6 compatibility provides the ability to create more IP addresses for years to come and utilizes a more secure data pack in the process. UniData is dual-stack capable IPv4 / IPv6.	9-Feb-15
8.1	Security enhancements	Secure your data with the latest in OpenSSL updates, @ID & Index encryption, and other Automatic Data Encryption (ADE) improvements.	9-Feb-15
8.1	One pass re-encryption	For systems using Automatic Data Encryption (ADE), this provides a faster way to re-encrypt data to refresh security levels.	9-Feb-15
8.1	OpenSSL upgrades & agility	OpenSSL libraries are released often and you need to be able to easily protect your business from the latest security threats. UniData has been enhanced to easily accommodate future OpenSSL updates without having to update UniData itself.	9-Feb-15
7.3	(HADR) U2 Replication	Replicate your data to one or more subscribers to off-load reporting from your on-line server or to provide a backup system for high availability.	30-Mar-12
7.3	U2 Dynamic Objects	Easily create and consume Web Service data in JSON format.	30-Mar-12
7.3	External Database Access (EDA)	Access external databases like Microsoft SQL Server, Oracle, and DB2 from the comfort of your U2 Basic programs and queries to provide interoperability or integration while leveraging your U2 knowledge.	30-Mar-12

7.3	Automatic Data Encryption (ADE)	Protect data automatically by securing it on disk. Help prevent identity theft and comply with government and industry regulations. Configure at record and field level. Set up keys, multiple passwords and policies.	30-Mar-12
7.3	Data Type Enforcement	Ensure data integrity by defining data fields as integer, numeric, date, times, etc. Save programming time and make sure data is correct. Optional setting, configured using U2 MDM.	30-Mar-12
7.2	Basic Developer Toolkit (BDT) introduced	Graphical tool for exploring, developing and debugging UniData accounts, file and Basic program, BDT improves productivity and satisfies new programmers with the latest look and feel.	22-Aug-08
7.2	Extensible Administration (XAdmin) Tool introduced	Graphical administration tool for administering and monitoring the database application system. View UniData resources (servers/accounts/files) in a table/tree view, manage licensing for users and features, all with the familiar look and feel of Eclipse.	22-Aug-08

U2 Common Clients

Version	Component / Feature	Benefit	Date
5.4.1	OpenSSL upgrade	OpenSSL has been upgraded to v3.0	26-Feb-2024
5.4.1	UniObjects	UniObjects for .NET has been upgraded to .NET6	26-Feb-2024
5.4.1	Installation	All U2 Clients and APIs component version numbers inside the installation package (with the exception of Dynamic Connect) have been standardized in this release. This means that certain component versions have been downgraded in release. As a result, direct upgrades are not possible, and users will need to uninstall and reinstall.	26-Feb-2024
5.3.0	JDBC	The U2 JDBC driver was previously delivered as two components: Java.zip and unijdbc.jar. In this release, these two components are now delivered in a single .jar file in the format Uni-jdbc-<version>.jar. This updated method of delivery significantly reduces the setup time for the U2 JDBC driver.	18-Oct-22
5.3.0	UOJ/JDBC	The U2 Clients UOJ and JDBC components now support OpenJDK11 or higher with TLSv1.3 protocol for connections to the U2 databases.	18-Oct-22
5.3.0	JDBC	The U2 Clients JDBC component now supports Java 9 and higher.	18-Oct-22
5.3.0	ODBC/JDBC	U2 ODBC and JDBC clients have added support for the TLSv1.3 protocol.	18-Oct-22
5.3.0	TIMESTAMP support	U2 Clients has added support for the new TIMESTAMP data type. This is supported only for UniVerse 12.1 or higher.	18-Oct-22
5.2.1	JDBC	The U2 Java driver is compiled with OpenJDK 1.8 and U2 Java libraries are compatible with both Oracle JDK8 or later and OpenJDK8 or later.	23-Jan-20
5.2.1	UniObjects	The new UniObjects for .NET Standard 2.0 driver has been implemented in the U2 Common Client version 5.2.1. Please note this driver does not support performance counters, Windows terminal server, or configuration file and logging.	23-Jan-20
5.2.0	ODBC	The U2 ODBC driver has changed the uci/unirpc layer that is transparent to the Client application. The new driver can be run as thread-safe in a multi-thread environment.	27-Jun-19
5.2.0	Installer	The new U2 Client installer now uses InstallShield.	27-Jun-19
5.2.0	Certificate Management Tool / SSL Setup Tool	Starting with this release, you can optionally install both the Certificate Management Tool and the U2 SSL Setup Tool.	27-Jun-19
5.2.0	SSL Setup Tool	The U2 SSL Setup Tool 1.0.0 has been added at this release.	27-Jun-19

5.2.0	Certificate Management Tool	The new Certificate Management Tool 1.0.0 has been added at this release.	27-Jun-19
July 2014	IPv6 Support	Be ready for the Internet of Things! As the world is running out of IPv4 Internet addresses for all web-enabled devices, IPv6 compatibility provides the ability to create more IP addresses for years to come, and utilizes a more secure data pack in the process. IPv6 support added to all U2 Common Clients (except Dynamic Connect).	16-Jul-14
Mar 2013	64-bit ODBC for UniData	Now UniData and UniVerse both have 32 and 64-bit ODBC driver. Previously, UniData only had a 32-bit ODBC driver.	5-Apr-13
Nov 2012	U2 ODBC 64-bit thread safe	Stability improvements. ODBC can now run safely in a multithreaded application. (However, the ODBC driver itself is NOT multithreaded).	30-Nov-12
Nov 2011	InterCall, UCI, UniObjects, VSG, ODBC, JDBC, U2 JPA, OLEDB, Dynamic Connect	U2 Clients include standards-based drivers for ODBC, JDBC and OLEDB to connect to U2 via a wide variety of standards-based tools. UniDK includes the UniObjects family of APIs for COM, .NET and Java for high-speed, native access as well as the U2 Java Persistence API (U2 JPA) functionality.	30-Nov-11

U2 DBTools

Version	Component / Feature	Benefit	Date
4.5.0	Windows Only: Telnet	Windows Only. We have added the UD Telnet Disconnect Message dialog box to the XAdmin > Network Services > Telnet screen, allowing you to specify the message that is displayed when a user types OFF at TCL when connected via telnet on a Windows installation of UniData.	18-Oct-22
4.5.0	Security	We have added support for the TLSv1.3 protocol with OpenJDK- jdk8u292-b10.	18-Oct-22
4.5.0	OS Certification	DBTools 4.5.0 has been certified on Windows 2019.	18-Oct-22
4.5.0	Jetty upgrade	We have updated the Jetty version in DBTools to 9.4.25.	18-Oct-22
4.4.1	Python	Basic Developer Toolkit added support for the new @U2PY variable for both UniVerse and UniData.	31-Jan20
4.4.0	XML/DB Tool	The tool has been enhanced to handle sub-elements for complexType objects in schema documents.	27-Jun-19
4.4.0	RFS	<ul style="list-style-type: none"> You can now monitor RFS performance in XAdmin by selecting the RFS Performance tab. You can now unload RFS files from XAdmin. 	27-Jun-19
4.4.0	Replication	<ul style="list-style-type: none"> The TP Split (tpstat) configuration option is available to enable or disable on the Replication Tool tab of the Replication Configuration editor. Previously, users had to run a command on the publisher or subscriber to enable this option. 	27-Jun-19
4.4.0	Minidumps	Minidumps can be managed from the Admin Tasks view. Default values are established during installation.	27-Jun-19
4.4.0	Telnet	The XAdmin Telnet Service Administration window is available with UniData to configure event logging level. This option was previously only available in UniVerse.	27-Jun-19

4.4.0	Extensible Administration Tool Enhancements	<ul style="list-style-type: none"> • File containers display the number of objects they contain and the number of items filtered. These objects include files, servers, and accounts. • You can now add accounts to the list of UniData databases when creating new accounts. • DBTools supports RFS write-through recoverability for individual files. 	27-Jun-19
4.4.0	U2 REST Methods	U2 REST now supports the PATCH method allowing users to make partial changes to existing resources.	27-Jun-19
4.4.0	RESTful Web Services Enhancements	The U2 RESTful Web Services tool has been enhanced to allow multiple foreign keys to be mapped. Previously, only one foreign key could be mapped.	27-Jun-19
4.4.0	EDA Tools	New EDA Data Verify Tool functions are available in the EDA Schema Manager Tool, and nonconforming fields and their values display in the Verify Schema dialog box.	27-Jun-19
4.4.0	EDA Driver	Users can select EDA Common Driver for Windows platforms (in versions 8.22 and higher) when creating EDA data sources in the EDA Schema Manager.	27-Jun-19
4.4.0	EDA Schema Manager Enhancements	<ul style="list-style-type: none"> • The TRANS and DATA types can be mapped for the TRANS virtual field in the EDA Schema Manager. • Added functionality allowing users to save verification results to a file. 	27-Jun-19
4.4.0	BDT Enhancements	<ul style="list-style-type: none"> • BDT has been enhanced to allow problem filtering when users enter text into the text field at the top of the U2 Problems view. • BDT now cautions users before compiling a program if the source code on file is different. • The Terminate All button has been added to BDT in the U2 Debug Terminal. 	27-Jun-19
4.4.0	Build	Beginning at this release, DBTools is built with Eclipse platform version 4.9 (2018-09 release).	27-Jun-19
4.3.0	Memory	Starting at this release, the Java virtual memory heap size has been changed from 512MB to 1GB in all of the .ini files. This can be seen with the -Xmx1G parameter.	26-Jul-17
4.3.0	Build	Beginning at this release, the U2 DBTools product is built on Eclipse Neon 4.6.	26-Jul-17

4.2.0	Support for Rocket Discover	Rocket® Discover is a self-service data discovery and analytics solution for business users that make it easy to see what's happening with your business data. Discover offers simple drag-and-drop functionality, full drill-down capabilities and automatic alerts for critical reporting exceptions improve productivity. U2 RESTful services are now compatible with Discover.	20-Oct-16
4.2.0	Aldon LMe integration within BDT	Basic Developer Toolkit (BDT) has been overhauled to integrate with Rocket® Aldon Lifecycle Manager (LMe). You can easily manage your deployment tasks and get the latest status on your dictionary items and other artifacts seamlessly from within BDT.	20-Oct-16
4.2.0	Converged documentation	Easier to find information within one documentation set (previously several books were published separately and referenced each other).	20-Oct-16
4.2.0	NLS/I18N Support	Enable applications to be globalized using the latest modern techniques and standards to support multiple languages. The BDT Editor and Debugger now support NLS.	20-Oct-16
Dec 2015	Eclipse update to Luna 4.4	Compatibility with a newer, more modern version of the Eclipse environment. Take advantage of new Eclipse plug-ins and enhancements	9-Dec-15
Dec 2015	JVM update	Security updates to help meet PCI DSS 3.1 compliance and provide the latest security patches of POODLE, FREAK, etc.	9-Dec-15
Dec 2015	Jetty update for WSD and REST	Take advantage of enhanced security features and performance.	9-Dec-15
Dec 2015	XAdmin Replication Configurator	Easier setup of replication in a GUI user interface	9-Dec-15
Dec 2015	Documentation of Xadmin	Assist the user of XAdmin in setting up system administration functions for UniVerse and UniData.	9-Dec-15
Aug 2014	JPA Free RESTful Web Services		4-Sep-14
Aug 2014	External Database Access (EDA) improvements		4-Sep-14
Oct 2013	UniVerse 11.2 Compatibility	Enhanced BDT to support new BASIC functions. Enhanced XAdmin to support Audit Logging capabilities. Other 11.2 feature support in DBTools include: XML U2 Dynamic Objects, U2RESTful services, Account-based licensing, and more.	14-Nov-13

Nov 2012	Stability improvements	Numerous bug fixes for BDT, Xadmin, Web Services Developer, and U2 REST.	30-Nov-12
Mar 2012		U2 DBTools include the Eclipse-based tools for programming and administration. Discover the latest tools: U2 RESTful Web Services, Basic Developer Toolkit (BDT), XAdmin (Extensible Administration Tool), U2 Web Services Developer (U2 WSD), and more.	30-Mar-12

SB/XA

Version	Component / Feature	Benefit	Date
6.5	SB/XA Services	Take your existing SB application web or mobile using SB/XA Services with the new Rocket Connection Manager. Wrap SB processes in web services so that they can be exposed via REST. SB/XA Services natively understands your SB business logic and uses SB COMMON variables.	5/4/2017
6.5	Security	Latest versions of SSH and SSL components.	5/4/2017
6.5	DevOps	SB/XA now supports multiple Communications Servers on one system. Allows for easier DevOps in comparing and testing multiple versions of SB.	5/4/2017
6.5	Data entry	Built-in AutoComplete styles allow you to have auto-complete functionality on data entry in input fields. Use any of three built-in styles, or build your own. Makes data entry faster and easier.	5/4/2017
6.5	Logging Improvements	Automatic Log Collection. Set up automatic log collection so that, in the event of a crash, logs from all SB tiers are gathered, packaged, and shipped to a designated location automatically. Eases the diagnosis of application problems.	5/4/2017
6.4	Help	SB/XA offers built-in, context-sensitive video help. Access video help from the help menu or from specific fields and screens. You also can embed your own video help into your application.	4/28/2016
6.4	Performance	New form cache, grid paging and XPS report loading settings have been added to allow you to customize the performance of SB/XA along with several new performance changes to optimize the performance of SB/XA.	11/18/2015
6.4	Error Messaging	Partners can customize all client error messages to reflect their culture/language to their customers.	11/18/2015

6.3	Grid Enhancements	Update to Xceed Grid 5.3. Additional grid controls such as filtering, sorting and grouping have been provided.	2/19/2015
6.3	Logging Improvements	Logging and debugging enhancements provide better diagnosis of crashes and hangs in the Rich Client and Comm Server.	2/19/2015
6.3	Lifecycle Management Integration	Using Rocket Aldon Lifecycle Manager, specify and define multiple releases and manage all stages of the development lifecycle. Aldon with SB/XA helps you to move changes between environments and to manage multiple versions of the program/screen/paragraph available so that you can see each change and compare across versions.	2/19/2015
6.3	Services	Leverage SB processes, files and fields for the business logic behind mobile and web applications.	2/19/2015
6.3	New XAML Styles	Improve the look of your intuitive help selection forms by utilizing one of the new style examples and options as is or as an example to build your own style from.	2/19/2015
6.2	TCL Support	Access the SB+ command line from within the Rich Client or Browser Client	12/13/2013
6.2	National Language Support	Internationalize SB-developed applications for a diverse customer base	6/14/2013
6.2	Styling Options	Support for XAML styles that define the appearance of mandatory fields and fields with intuitive help. Additional support for writing custom styles.	10/15/2012
6.2	SB/XA Designer	Provides support for screen design in the SB/XA Rich Client. Functionality is nearly identical to that of the Form Painter running on SBClient.	10/15/2012
6.2	Microsoft Outlook-style Navigation	Option to navigate using Outlook-style menus and folders	10/15/2012
6.2	Business Intelligence Integration	Integration with CorVu NG business intelligence functionality for designing visually rich reports and deploying to desktop, web and mobile users.	10/15/2012
6.1	Usability Enhancements	Ability to perform spell checking in fields and employ auto-complete in combo boxes	6/24/2011
6.1	Microsoft Office Integration	Read and write to the Outlook calendar. Both query reports and the report writer are integrated with Excel and Word.	6/24/2011

6.0	.NET Architecture	Using .NET, Windows Presentation Foundation (WPF) and Windows Communication Foundation (WCF) SB/XA gives you a brand new modern look and feel for your SB application, letting you compete head to head with all solutions.	1-Aug-08
6.0	Single Sign On	Use one login authenticated all the way from your PC to your application	1-Aug-08
6.0	Styles and Themes	Extend and customize your application using XAML (XML Application Markup Language)	1-Aug-08
6.0	SB+ Compatibility	Continue to deploy existing SB+ Character and GUI applications unchanged without needing to immediately move to the new architecture	1-Aug-08
6.0	One click deployment	Use the Microsoft ClickOnce technology in the .NET framework to install or upgrade client components on an end-user's system without needing to install local copies on each user's PC. This reduces the total administration costs and eases upgrades.	1-Aug-08
6.3	SSH support	SSH has become a common interface to connect to a server and most newer operating systems have the SSH service configured and running by default. SSH is also considered to be more secure and to perform better than SSL. Note that this is only available with SB+ and SBClient both at 6.3 version.	12-Feb-15
6.3	Lifecycle Management Integration	Using Rocket Aldon Lifecycle Manager, specify and define multiple releases and manage all stages of the development lifecycle. Aldon with SB/XA helps you to move changes between environments and to manage multiple versions of the program/screen/paragraph available so that you can see each change and compare across versions.	12-Feb-15
5.5	Btrieve removal	Less conflict with 3rd party tools that also use Btrieve	1-Sep-10
5.5	Security API improvements	Additional API slots to automate creating Menu and Process restrictions eases the facility to create all SB+ User IDs automatically	1-Sep-10
5.5	Additional SOX reporting	Additional SOX reporting capabilities when copying existing User or Group security records to completely see what is happening to your SB+ Security setup and administration	1-Sep-10
5.4	SSL Support	Secure connections for telnet users using U2 ssl_telnet	1-May-06

5.4	Audit log security	Ability to comply with corporate audits by being able to report on security changes at Group and User security level. Every report provided as a template to customize reporting to match corporate requirements	1-May-06
5.4	Personal Edition	SB+ version that runs on Personal Edition of the Database	1-May-06
5.4	Report Writer PDF output	Allows all reports to be output in PDF format and emailed to designated individuals	1-May-06
5.3	GUI Grid improvements	Multiple GUI Grid improvements such as auto-extending data, combo box focusing and preservation of column sizes and performance improvements	1-Mar-03
5.3	Multi-Language enhancements	Intuitive help and help reminders in translated language	1-Mar-03
5.3	Support for I-type dictionaries	Increase cross usage of SB+ virtual fields across database by allowing SB+ fields to be used at TCL	1-Mar-03

U2 Web DE

Please refer to the MVIS section for details on the next version of U2 Web DE. MVIS is the natural evolution of Web DE. Therefore, MVIS will be the integration solution we market moving forward. We will continue to support all Web DE customers, but will no longer actively market Web DE.

Version	Component / Feature	Benefit	Date
5.3	RESTful Services	Web DE RESTful services. Take your existing WEB DE application mobile with minimal application refactoring using new Connection Manager functionality.	13-Jul-17
5.3	Security	Upgrade to latest SSH and SSL. PCI DSS 3.1 compliance for processing credit card transactions.	13-Jul-17
5.3	Web Admin UI	Web UI that monitors connection status and performance metrics. It also contains admin functions such as account restarts and configuration changes.	13-Jul-17
5.3	New API	API to drive monitoring and logging. Customers can write their own programs to access these controls and features.	13-Jul-17
5.2	Monitor	Keep an eye on your web site responsiveness via traffic light indicators, troubleshoot when faced with high demand, and identify areas to improve or adjust license consumption. Monitoring is available via the Designer.	30-Jun-15

5.2	Logging	Quickly identify slow processes in the new logging functionality that traps processes and displays relevant information in a process table. Keep track of the distribution of requests across database licenses. All database and basic errors are logged along with the information about the instantiated RBO and method call that was occurring at the time to provide a single file point of reference. Logs can be set to gather statistics on an adjustable timed basis and can be turned on/off without restarting the scheduler. A full log of all the statistics being gathered can be exported to other tools for additional sorting and filtering.	30-Jun-15
5.1	Return of Webshares	Webshares allow for more efficient use of licenses when processing requests.	9-Sep-13
5.1	Scheduler	Better manage the routing of requests and web share consumption to keep your web site fast and responsive. Pause and restart of the database does not interrupt operations or allow requests to be lost. Upon restart, any cached object code is recognized. This administration is available via the Designer.	9-Sep-13
5.1	Performance	System overhead and OS level administration is considerably reduced while better throughput between the client and scheduler is achieved due to persistent thread pools that eliminate socket construction with every request.	9-Sep-13
5.1	Security	Enhanced security with SSL between the client/scheduler and scheduler/database means you can be confident that your data isn't being compromised.	9-Sep-13
5.1	RESTful Services	Expose your existing web logic and reuse Web DE RBOs as web services for use in other applications and processes via RESTful services. An integrated REST server is included with the Designer and can be implemented via drag and drop to easily expose existing RBOs to web or mobile applications.	9-Sep-13
5.0	Support for Global Languages	Leverage the power of UniVerse NLS and UniData I18N to handle languages and character sets from languages around the world to expand your market.	1-Nov-10
5.0	24x7 Support	Use pause capabilities in UniVerse or UniData to take a snapshot of your data without needing to bring down your web-site.	1-Nov-10
5.0	Ease of deployment	Deployment and enablement of u2 Web DE completely through the GUI Web Designer reducing administration and manual steps performed on the backend server.	1-Nov-10

5.0	.NET development	True .NET development is supported, no longer requiring you to use a COM interop layer when invoking your RBOs from .NET. The Native .NET library and easier to use API allows your development team to work more effectively with .NET.	1-Nov-10
4.4	GUI Administration	Integrated administration in the Web DE eclipse-based provides a consistent interface for administrators reducing the number of interfaces and manual steps needed to perform day to day tasks.	1-May-07
4.4	Improved Garbage collection	Removed need for a dedicated webshare for garbage collection and improved performance lowering total number webshares needed to run solutions thereby reducing costs.	1-May-07
4.4	Improved upgradability	Removed version check at patch level allowing versions higher than 4.2.6 to be mismatched so easing testing of different versions without having to upgrade both the web and application server at the same time.	1-May-07
4.4	64-bit platform support	64-bit JNI for Windows and Solaris allowing older RedBack versions to move onto newer platforms.	1-May-07
4.3	GUI RBO Designer	Modern look and feel, based on open standards and includes an RBOScope tool to expand capability for testing and debugging.	1-May-06
4.3	Improved Performance	Removed deprecated code used by older releases to improve efficiency, streamline license checking, remove unnecessary URL encoding and improve the SPIDER protocol.	1-May-06

wIntegrate

Version	Component / Feature	Benefit	Date
6.4	IPv6 Support	Be ready for the Internet of Things! As the world is running out of IPv4 Internet addresses for all web-enabled devices, IPv6 compatibility provides the ability to create more IP addresses for years to come, and utilizes a more secure data pack in the process.	9-Feb-16
6.4	R/Link Integration	Rocket R/Link is a secure online file sharing and managed file transfer solution that resides on your network. The Query Builder can send newly created files to R/Link folders. Also, scripting supports the R/Link API so you can build your own interfaces to R/Link functionality.	9-Feb-16
6.4	SSL Update	SSL supports TLSv1.1 and TLSv1.2 in compliance with PCI DSS standards.	9-Feb-16
6.3	Host Program Improvements	Multiple improvements and updates.	13-Apr-15
6.3	Scripting Enhancements	Multiple improvements and updates, plus error reporting/recording.	13-Apr-15
6.3	Documentation Overhaul	The documentation has undergone reorganization and includes many updates to the presentation. The Installation and User Guides have additional information.	29-Jul-14
6.3	D3 and mvBase Integration	All wIntegrate emulation, file transfer and scripting features are supported with D3 and mvBase. wIntegrate also supports D3 enterprise licensing.	29-Apr-14
6.3	Aldon Integration	Rocket's Aldon product family supports lifecycle management, source control, and automated live deployment to the rigorous standards required by today's auditing requirements. The wIntegrate Editor supports the Aldon LM(e) source control repository; continue to edit, compile, and run Basic programs while synchronizing the U2 host with the LM(e) repository and automatically deploy to production environments.	19-Nov-13
6.3	Support Excel .xlsx Files	Multi-valued data can be imported into .XLSX files much larger than previously supported. Formulas can be stored in MV data fields. Performance improvements.	29-Mar-13
6.3	Combine Dialog Designer and Editor	The Editor now incorporates the functionality of the old Dialog Designer. The Editor has usability enhancements related to the R/Link integration	29-Mar-13
6.3	Thin Client Deployment	Multiple improvements to administrative functions and the Monitor.	29-Mar-13
6.3	Auto-generate MV Basic	The Editor paints host-driven GUI forms and simultaneously creates MV Basic code.	25-Oct-12
6.3	Japanese Katakana Support	The character screen and keyboard input support Japanese Katakana characters.	7-May-12
6.2	Simplified Support for Universe NLS	New host encoding option simplifies use of UniVerse NLS.	28-Jun-10

jBASE Family of Products

jBASE Server

Version	Component / Feature	Benefit	Date
6.1.1	Improved security and compliance	For improved data security and reliance, jBASE 6.1.1 includes 300+ mitigated risks in accordance with the Polaris assessment metrics. Polaris, one of Rocket's robust 3rd party security scan suites, sets a standard for all future jBASE releases.	01/09/2024
6.1.1	OpenSSL support	OpenSSL 3.0 support available for compatible Linux users	01/09/2024
6.1.1	Additional C++ Compiler support	New support for Clang as free C++ compiler alternative for AIX	01/09/2024
6.1.1	RHL9 support	jBASE 6.1.1 is now compatible with RedHat Linux version 9	01/09/2024

D3 Family of Products

D3 Server

Platform	Version	Component / Feature	Benefit	Date
Windows, AIX, Linux	10.3.1			AIX and Linux – Oct 2 nd 2019, Windows July 15 th 2019
All	10.3.1	Python – Python to D3 / D3 to Python	Introducing Python creates a new resource pool of developers since Python is one of the most popular development languages in use today and is well recognized by young developers attending Universities. Python provides a Package Index that provides over 180,000 packages that extend the features of Python which can directly enhance your exiting MV application.	AIX and Linux – Oct 2 nd 2019, Windows July 15 th 2019
All	10.3.1	mvBase Upgrade	mvBase customers can now upgrade to the D3 platform which will allow them to leverage all the great D3 features such as access to relational databases, HA/DR and connection pooling while keeping mvBase features that they've loved for years.	AIX and Linux – Oct 2 nd 2019, Windows July 15 th 2019
All	10.3.1	mvBase Workstation (now called mvWorkstation) components now included	Enables support for local telnet servers, local file interaction so you can create, read and write to files on local machines and copy D3 data into these files. You'll also be able to use local printers	AIX and Linux – Oct 2 nd 2019, Windows July 15 th 2019
All	10.3.1	Support for OpenSSL 1.1 dll filenames	Security enhancements that help protect confidential data which in turn improves customer trust includes the addition of STARTTLS for automated SSL connectivity and SSL support for HotBackup and OSFI for data encryption in transit. OpenSSL has been upgraded to v1.1.1	AIX and Linux – Oct 2 nd 2019, Windows July 15 th 2019
All	10.3.1	Performance	Improved existing application Query and Runtime performance through query caching. With the mvBase upgrade path to D3 performance improvements can be seen through enhanced D3 functionality and added mvBase features.	AIX and Linux – Oct 2 nd 2019, Windows July 15 th 2019

Windows	10.2	Performance	D3 Windows 10.2 introduced a true 64-bit release of D3 for the Windows platform, providing extended memory usage and enhanced of performance of D3 applications on 64-bit hardware platforms.	15-Apr-16
ALL	10.2	Monitoring	The d3watcher utility has been added to the base product and is now readily available for monitoring of your D3 environment.	Linux - 22-Mar-16, Windows - 15-Apr-16, AIX - 12-May-16
AIX, LINUX	10.2	Administration	The database pause/resume feature improves backup performance by allowing temporarily suspension of disk writes for the purpose of creating an external backup or snapshot of the current state of the disk, without requiring you to pause your D3 application.	Linux - 22-Mar-16, AIX - 12-May-16
AIX	10.2	Compliance	Supports ability to audit access to D3 data for compliance.	12-May-16
AIX	10.2	Administration	Configure D3 as a service to automatically start and shutdown in tandem with the AIX Operating System.	12-May-16
Linux	10.1	Installation	Select and use an existing logical volume during the D3 setup process, alleviating the need to manually create the disk statement in the pick0 file.	30-Mar-15
Linux	10.1	Administration	Configure D3 as a service to automatically start and shutdown in tandem with Linux Operating System.	30-Mar-15
Linux	10.1	Compliance	Supports ability to audit access to D3 data for compliance.	30-Mar-15
Linux	10.1	Performance	D3 Linux 10.1 introduced a true 64-bit release of D3 for the Linux platform, providing extended memory usage and enhanced of performance of D3 applications on 64-bit hardware platforms.	30-Mar-15
Linux	9.2	Installation	Enhanced the install of D3 so that all dependent packages are installed during D3 setup.	25-Mar-14

Linux	9.2	Licensing	Added Enterprise Licensing to allow multiple connections (5 or 10) from a client to share a single user license.	25-Mar-14
Linux	9.2	Licensing	Enhanced License Manager service to support D3 deactivation for improved experience when moving D3 from one server to another server.	25-Mar-14
Linux	9.2	Security	Added support for SSH connections on D3.	25-Mar-14
Linux	9.2	Security	Added support for file-level encryption with the new create-file (e option). Provided the ability to encrypt and decrypt existing files via the new encrypt-file and decrypt-file commands.	25-Mar-14
Linux	9.2	Security	Added support for %encrypt and %decrypt functions in BASIC to support the ability to manage field level encryption at the application level.	25-Mar-14
Linux	9.2	Host Authentication	Added support for host authentication for D3 to support single sign-on. Features such as setting a password to expire after a certain time period, locking out a user after a specified number of failed attempts or setting account lockout periods are available.	25-Mar-14
Linux	9.2	Security	Enhanced the MVSP server to support SSL connections.	25-Mar-14
Linux	9.2	Security	Added support for SSL connections using the %accept_ssl, connect_ssl, %read_ssl,%write_ssl and %close_ssl functions in BASIC.	25-Mar-14
Windows	9.2	Transactions	Added support for Transaction Bracketing to D3 ODBC.	25-Mar-14
Windows	9.2	Indexing	Added support for having both a case sensitive and a case insensitive index on the same correlative.	25-Mar-14
AIX	9.1	Performance	D3 AIX 9.1 introduced a true 64-bit release of D3 for the AIX platform, providing extended memory usage and enhanced performance of D3 applications on 64-bit hardware platforms.	28-Aug-13

AIX	9.1	Host Authentication	Added support for host authentication for D3 to support single sign-on. Features such as setting a password to expire after a certain time period, locking out a user after a specified number of failed attempts or setting account lockout periods are available.	28-Aug-13
AIX, Windows	9.1	Licensing	Added Enterprise Licensing to allow multiple connections (5 or 10) from a client to share a single user license.	28-Aug-13
AIX, Windows	9.1	Licensing	Enhanced License Manager service to support D3 deactivation for improved experience when moving D3 from one server to another server.	28-Aug-13
AIX, Windows	9.1	Security	Added support for SSH connections on D3.	28-Aug-13
AIX, Windows	9.1	Security	Enhanced the MVSP server to support SSL connections.	28-Aug-13
AIX, Windows	9.1	Security	Added support for SSL connections using the %accept_ssl, connect_ssl, %read_ssl,%write_ssl and %close_ssl functions in BASIC.	Windows - 6-Feb-13, AIX - 28-Aug-13
AIX, Windows	9.1	Security	Added support for file-level encryption with the new create-file (e option). Provided the ability to encrypt and decrypt existing files via the new encrypt-file and decrypt-file commands.	Windows - 6-Feb-13, AIX - 28-Aug-13
AIX, Windows	9.1	Security	Added support for %encrypt and %decrypt functions in BASIC to support the ability to manage field level encryption at the application level.	Windows - 6-Feb-13, AIX - 28-Aug-13
Windows	9.1	Replication	Enhanced FSI Hot Backup for administration and performance.	6-Feb-13
All	9.0	Introduction of MVS Toolkit	Introduced the MVS Toolkit to support development and deployment of web services to allow developers to access D3 multi-value data and business logic utilizing SOAP & RESTful web services. See the MVS Toolkit tab for follow on release features.	9-Feb-12
All	9.0	AQL	Enhanced AQL to utilize indexes when using >, >=, <, <= and # operators.	27-Sep-10
All	9.0	AQL	Implemented "eval", "conv", and "fmt" AQL modifiers.	27-Sep-10

All	9.0	Introduction of MVSP	Introduced MVSP .NET, and Java API's to allow developers to access D3 multi-value data and business logic utilizing .NET and Java. See the MVSP tab for follow on release features.	27-Sep-10
All	9.0	Performance	Added support for "DQ" file type to allow for sequential processing without lock contention and preventing processing delays.	27-Sep-10
All	9.0	IPv6 Support	Added support for IPv6 compatibility to address support more IP addresses. D3 now utilizes a more secure data pack and is dual-stack capable IPv4/IPv6.	27-Sep-10
All	9.0	Licensing	Enhanced licensing to allow 3 connections from one client IP address using a single license with a maximum of 2 connection of each type (RPC, ODBC or Telnet).	27-Sep-10
All	9.0	OSFI	Added the OSFI "binx" driver which allows reading, manipulating and writing D3 binary items.	27-Sep-10
Windows	9.0	Host Authentication	Added support for Windows authentication for D3 to support single sign-on. Features such as setting a password to expire after a certain time period, locking out a user after a specified number of failed attempts or setting account lockout periods are available.	27-Sep-10
Windows	9.0	Printing	Added support for Windows only printers.	27-Sep-10
Windows	9.0	Replication	Added the ability to replicate FSI data to another D3 Windows system.	27-Sep-10

mvBase Server

Version	Component / Feature	Benefit	Date
3.3	Remote File Access	Added the ability to access data stored on a remote mvBase system from within mvBasic. All statements in mvBasic that utilize a file variable are supported with the exception of CLEARFILE.	27-Jun-16
3.3	Administration	Enhanced the mvBase server service to invoke the virtual: POWERFAIL when Windows is being shut down or restarted.	27-Jun-16

3.3	Overflow Management	Changed how overflow is managed by select lists to prevent accumulation of overflow buffers.	27-Jun-16
3.3	Utilities	Added AUTO-RESTART command to define a verb to be executed when a process is going to TCL.	27-Jun-16
3.2	Tracing	Trace enabled versions of the mvWorkstation and mvServer components are now installed by default.	1-Sep-14
3.2	Authorization	Authorization keys can now be applied without having to shutdown & restart the mvBase server.	1-Sep-14
3.2	Overflow Management	Improved overflow and workspace management to minimize fragmentation and bottlenecks for improved performance.	1-Sep-14
3.2	Transaction Logging	Improved buffer management for transactions by utilizing reusable buffer space.	1-Sep-14
3.1	Licensing	Enhanced mvBase to support multiple user connections for a single mvBase user license for both mvTerm and telnet clients (connecting to the local mvBase Workstation component).	7-Feb-12
3.1	Spooler	Increased the number of printers to 1000 and the number of form queues to 1500.	7-Feb-12
3.1	Scalability	Added support for up to 2048 process lines.	7-Feb-12
3.1	Scalability	Added support for up to 15,990 BASIC variables.	7-Feb-12
3.0	Introduction of MVSToolkit	Introduced the MVS Toolkit to support development and deployment of web services to allow developers to access D3 multi-value data and business logic utilizing SOAP & RESTful web services. See the MVS Toolkit tab for follow-on release features.	9-Feb-12
3.0	Introduction of MVSP	Introduced MVSP .NET, and Java API's to allow developers to access D3 multi-value data and business logic utilizing .NET and Java. See the MVSP tab for follow-on release features.	9-Sep-10
3.0	Printing	Added support for Windows only printers.	9-Sep-10
3.0	BASIC	Enhanced Error Logger to allow logging Basic Runtime Errors.	9-Sep-10
3.0	Overflow Management	New CLAIM command was added to allow recovery of blocks of frames from the POVf linked space.	9-Sep-10
3.0	Administration	The power fail shutdown process was redesigned to ensure that a timely shutdown is performed.	9-Sep-10

MVSP (Client API's and Server)

Platform	Version	Component / Feature	Benefit	Date
MVSP Client APIs				
All	2.2.0	Connection Management	Added idle timeout mechanism for connection pooling in the MVSP .NET client that removes connections from the pool that have exceeded the maximum idle timeout.	Q4 2017
All	2.2.0	Connection Management	Added ForceClose and ForceCloseTimeout properties to allow the user to select a force close condition and timeout.	Q4 2017
All	2.1.1	Debugging	Support toggling the keep-alive function to allow basic programs to be debugged on the D3 server. This is controlled from the D3 server using the MVSP.DEBUG verb.	13-Jan-16
All	2.1.0	MVSP APIs	Allow developers access to MultiValue data from the PHP, C and C++ programming languages.	11-May-15
All	2.1.0	Encoding	Added -Dmvsp-encoding option to the Java API to handle alternate character encodings.	11-May-15
All	2.1.0	WCF Support	Enhanced connections from a WCF host to be able to utilize standard D3 user licensing.	11-May-15
All	2.1.0	Connection Pooling	Added the ability to configure a pool of connections that can be consumed by multiple threads within an application.	11-May-15
All	1.8.0	Security	Enhanced MVSP API clients to utilize SSL for secure socket communications.	15-Apr-13
All	1.8.0	Licensing	Enhanced MVSP API clients to support Enterprise Licensing.	15-Apr-13
All	1.4.0	Transaction Bracketing	Enhanced MVSP APIs to support transaction begin, commit, rollback and status.	11-Aug-11
All	1.0.0	MVSP APIs	Allow developers access to MultiValue data from any Visual Studio .NET programming language or their preferred Java IDE.	27-Sep-10
MVSP Server				
All	1.9.0	Connection Management	Implemented the MVSP.SEND.COMMAND to allow the application to disable or adjust the client ForceCloseTimeout value.	31-Oct-17

All	1.9.0	MVSP Options	Added option to MVSP server maintenance menu to allow setting MVSP runtime options.	31-Oct-17
Windows	1.9.0	Connection Management	Enhanced MVSP server on Windows to make use of the standard trap utility for cleaning up connections.	31-Oct-17
All	1.8.9	FlashBasic Object Code Refresh	Allow references to FlashBasic Object code to be flushed on a LOGTO, causing a new version of the code to be loaded.	23-May-16
All	1.8.9	Performance	Improved the performance transmitting large amounts of data to the MVSP server.	23-May-16
All	1.8.8	Performance	Improved the performance of releasing a connection from a connection pool.	22-Apr-16
AIX, Linux	1.8.7	FlashBasic Object Code Refresh	Added MVSP.REFRESH verb to allow restarting the MVSP server to release and refresh FlashBasic Object code for subroutines. Supported in D3 Linux and D3 AIX with no basic segment defined.	15-Mar-16
AIX, Linux	1.8.6	Non-FlashBasic Support	Enhanced MVSP to allow non-flashed subroutines to be used by MVS Toolkit web services on D3 Linux and D3 AIX.	13-Jan-16
All	1.8.6	Debugging	Added the MVSP.DEBUG verb to allow toggling of the keep-alive function in the .NET client, to support debugging Basic programs. This requires version 2.1.1 or later of the .NET client.	13-Jan-16
All	1.8.6	Security	Enhanced the MVSP setup to check for server.pem file when SSL connection is specified.	13-Jan-16
All	1.8.5	CorVU NG Support	Added MVSP server-side support for CorVU NG.	26-Jan-15
All	1.8.5	Licensing	Enhanced D3 to return "Too many users" message when no user license is available.	26-Jan-15
All	1.8.5	ExecuteQuery show-nulls	Added show-nulls modifier to the MVSP ExecuteQuery method to support displaying empty MultiValues.	26-Jan-15
All	1.8.0	Host Authentication	Enhanced MVSP for host authentication to support single sign-on when host authentication is enabled.	15-Apr-13
All	1.5.0	List Handling	Added the ability to have an active list passed to the ExecuteQuery and ReadNext methods.	10-Dec-11
All	1.5.0	Using Clause	Enhanced ExecuteQuery to support the Using keyword to allow the use of a dictionary of another file.	10-Dec-11

All	1.4.0	Subroutine Validation	Added support for subroutine call validated, to verify required parameters and return an error if validation fails.	11-Aug-11
All	1.0.0	Initial Release	MultiValue Server Protocol providing the server-side interface to all external MVSP APIs.	27-Sep-10

MVS Toolkit

Version	Component / Feature	Benefit	Date
2.3	Web service management	Web service definitions can be changed while running.	2H 2017
2.3	Connection Pooling	Greater flexibility when configuring connection pools during web service import.	2H 2017
2.3	Connection Pooling	Performance optimized when using connection pools.	2H 2017
2.2.1	Rocket Discover	Enhanced the MVS Toolkit to facilitate web service communication to Rocket Discover.	22-Jul-16
2.2	Web Service Management	Added the ability to import/export individual web service operations.	3-May-16
2.2	Web Service Response	Enhanced web service JSON response to include status and error messages.	3-May-16
2.2	CORS Protocol	Added support for Cross Origin Resource Sharing protocol.	3-May-16
2.2	Web Service Management	Added the ability to do a global replacement of the server name, host, port, user and password when importing a web service.	3-May-16
2.2	Subroutine Management	Added ability to utilize full path (account name, file name, subroutine name) to support subroutine web services with the same subroutine name in multiple accounts.	3-May-16
2.1	Connection Pooling	Connection pooling optimizes the use of connections. When the connection pool is configured the connection pool license type will be used if present.	5-Aug-15
2.1	HTTP Response Codes	Enhanced MV Toolkit to allow web service subroutines to set the HTTP response code using the value for the 'status' response header field.	5-Aug-15
2.1	Web Service Management	Added the ability for a web service operation to retrieve the requestor's IP address.	5-Aug-15
2.1	Web Service Management	Enhanced the MV Toolkit WSDL generation to recognize a web service subroutine as a request-only service if no output arguments are defined.	5-Aug-15

2.1	Web Service Management	Enhanced MVS Toolkit to support copying web services and dynamic arrays using drag-and-drop operations.	5-Aug-15
2.1	Subroutine Management	Added ability to send XML data to web service subroutine arguments.	5-Aug-15
2.0	Subroutine Management	Enhanced MVS ToolKit to allow subroutines to generate output directly to the web service client overriding the web service default output.	1-Jul-13
2.0	Security	Added support for SSL connections between the web service provider and the D3 database.	1-Jul-13
2.0	Security	Enhanced security options to include HTTP Basic and Digest security along with group-based security for access to a web service URL or resource.	1-Jul-13
2.0	REST protocol	Enhanced MVS Toolkit to support the REST protocol for web services, including JSON formatted output.	1-Jul-13
1.1	Subroutine Management	Enhanced MVS toolkit to allow setting multiple argument usage and type when creating or editing a subroutine based web service operation.	11-Jan-13
1.1	Web Service Management	Enhanced the MVS toolkit to allow editing an existing web service.	11-Jan-13
1.1	Dynamic Array Management	Enhanced the MVS toolkit dynamic array creation to display the array edit dialog after the array has been created.	11-Jan-13
1.1	Subroutine Management	Removed the auto-invocation of the subroutine list generation routine and added the ability to enter a subroutine name and optionally press the 'List' button to get a list of subroutines.	11-Jan-13
1.1	Dynamic Array Management	Enhanced the MVS Toolkit dynamic array editor to allow selecting multiple elements for edit and delete operations.	11-Jan-13
1.1	Dynamic Array Management	Enhanced the MVS Toolkit to allow renaming a dynamic array used in the web service definition.	11-Jan-13
1.0	MVS Web Services Toolkit	Introduced the MVS Toolkit to provide a facility for exposing D3/mvBase MultiValue data as web services.	9-Feb-12

MultiValue Platform Extensions

MultiValue Integration Server (MVIS)

MVIS is the natural evolution of Web DE, Connection Manager and U2REST. Therefore, MVIS will be the integration solution we market moving forward. While we will continue to support all Web DE customers, we will no longer actively market or enhance Web DE or U2REST.

Version	Component / Feature	Benefit	Date
2.1	OpenAPI 3.0	<ul style="list-style-type: none"> Upgrade from OpenAPI 2.0 to 3.0 OpenAPI 3.0 is the first major release since 2015, when Swagger was adopted as an open standard and transitioned to the OpenAPI Initiative. The 3.0 spec includes numerous changes including a simplified structure for increased reusability. You can find additional details in this blog post https://swagger.io/blog/news/whats-new-in-openapi-3-0/ 	Jul 2024
2.1	Enhanced OpenAPI integration (previously Vanity URLs)	<ul style="list-style-type: none"> In MVIS 1.3, we introduced the notion of Vanity URLs that provide limited support for top-down scenarios. Support for top-down APIs assumes an API developer uses the OpenAPI standard to define an API with full control of the API endpoints as well as a rich typing system based on JSON Schema. In MVIS 2.1, we're replacing the proprietary Vanity URL specification format with an OpenAPI integration that relies on the built-in extensibility of the standard to support vendor specific extension tags. In v2.1, developers can link (bind) MV resources (files, subroutines and programs) to API endpoints using MVIS specific extensions to OpenAPI. The integration also opens the door to leverage third-party tools such as API gateways, API hubs, API testing tools, source control systems and more. 	Jul 2024
2.1	Modularity and self-containment	<ul style="list-style-type: none"> A common modernization requirement we've heard from customers is support for more modular development in the MV platform as well as the ability to integrate with third party software. Today MV systems need to use APIs to integrate and work with offerings such as Salesforce, Workday, ServiceNow and other API first business applications. MVIS 2.1 allows API developers to modularize and modernize MV code by promoting the concept of an API as an MV microservice. 	Jul 2024
2.1	Observability (Monitoring & Tracing)	<ul style="list-style-type: none"> OpenTelemetry Integration. OpenTelemetry (also known as OTel) is a vendor neutral open-source observability framework for instrumenting, collecting, and exporting telemetry data such as traces, metrics and logs. You can read more about OTel at https://opentelemetry.io/. MVIS 2.1 provides out-of-the-box integration with OTel that produces traces and metrics that can be consumed by any observability tool compatible with OTel. Third party support. OTel is supported by more than 40 observability vendors 	Jul 2024

		<p>including Datadog, Dynatrace, Grafana Labs, Red Hat, Fluentd and many more.</p> <ul style="list-style-type: none"> • Cloud and Distributed Telemetry Support. Cloud systems, typically distributed and networked, demand observability solutions that aggregate telemetry data across a network of components. With the support for OTel, MVIS can now be monitored as part of a larger ecosystem that includes other application components. 	
2.1	Integration of MVConnect (for Rocket UniVerse and Rocket UniData)	<ul style="list-style-type: none"> • Top-down Support. With the integration of MVConnect in MVIS, developers can now expose BASIC programs that support RESTful endpoints as part of an OpenAPI definition. • OAuth Support. With MVIS, MVConnect developers can benefit from the built-in support for OAuth to integrate with identity providers to secure access to API endpoints. • OTel Support. Another benefit of the integration is the support of observability requirements through OTel. • Future releases of MVIS will expand the integration to include Rocket D3 and Rocket jBASE and make MVConnect a built-in component of MVIS. 	Jul 2024
1.3.2	REST	<ul style="list-style-type: none"> • Support for passing request IDs in a REST payload header allows applications to improve logging and observability by associating individual MVIS calls to specific application requests. 	Feb 2023
1.3.2	Security	<ul style="list-style-type: none"> • Security is paramount to us and our customers, with each release we scan our software to ensure third-party components are up to date with critical fixes. 1.3.2 provides security updates to base components such as Swagger UI, the spring framework, spring boot and others. 	Feb 2023
1.3.2	Cloud	<ul style="list-style-type: none"> • Enhancements for deployment into Microsoft Azure. MVIS uses the Azure Service Bus for inter-process communication. To avoid naming collisions, version 1.3.2 now creates service bus topics using a UUID (universal unique ID) as part of the name, as well as periodically purges un-used topics to keep the environment tidy. 	Feb 2023
1.3.2	Admin API	<ul style="list-style-type: none"> • Added new operations to the MVIS admin API to allow developers more granular access to API metadata. 	Feb 2023
1.3.1	Vanity URLs	<ul style="list-style-type: none"> • Passthrough parameter support • Allows developers to return complex JSON/XML structures in an API endpoint 	Jun 2022

1.3.1	Request TTL timeouts	<ul style="list-style-type: none"> • Allows administrators to deal with an unresponsive MV server • A Time-To-Live setting prevents stale requests waiting in queue at the MVIS server longer than a set threshold from being sent to the MV server. At peak load times this setting can prevent overwhelming an MV server that is not able to keep up with the load. 	Jun 2022
1.3.1	OAuth 2.0 Support	<ul style="list-style-type: none"> • Enhanced OAuth 2.0 provide generic out-of-the-box support any vendor • Eliminates the need making modifications in MVIS to support new OAuth providers 	Jun 2022
1.3.1	Windows 2022 Support	<ul style="list-style-type: none"> • Support for MS Windows Server 2022 	Jun 2022
1.3.1	Web DE RBO Designer	<ul style="list-style-type: none"> • Fully functional RBO designer desktop application • Removes the need for a Web DE (or Web share) license to be able to author RBOs • Eliminates any remaining MVIS dependencies on Web DE. Customers with Web DE 5.0 or later can fully migrate their web DE installations to MVIS 	Jun 2022
1.3.0	Vanity URLs	<ul style="list-style-type: none"> • Support for custom paths for API endpoints • Ability to customize the supported operations (GET, POST, PUT, PATCH and DELETE) for API endpoints for both MV files and subroutines • Ability to customize endpoint parameters (both input and output) 	Mar 2021
1.3.0	OAuth 2.0 support	<ul style="list-style-type: none"> • Support for most popular authorization standard for web APIs • Integration with 3rd party identity providers • Role-based access control for REST API endpoints • Granular control at the API endpoint path and operation (GET, POST, PUT, PATCH and DELETE) • Ability to define authorization roles 	Mar 2021

MultiValue Performance Experience (MVX: Performance)

MVX: Performance is a performance monitoring tool, available with active maintenance for Rocket® UniVerse and Rocket® UniData.

Version	Component / Feature	Benefit	Date
1.10	UniData 8.3.2 support	<ul style="list-style-type: none"> Improved Error Handling Supports UniData 8.3.2 	Apr 2024
1.9	Replication charts	<ul style="list-style-type: none"> Replication responsive charts with historical data showing concurrency trends and estimated time to catch up 	Jan 2024
1.8	Replication Monitoring Feature User-Specified Event Graceful versioning System Crash/Restarted Notifications	<ul style="list-style-type: none"> Replication monitoring has Improved display Statistical summary of multiple distributions Identification of LSNs causing subscribing group to stop processing Trend information: pacing, time behind, time to catch up, etc. 	Oct 2023
1.7	Replication Monitoring, connection pool and device licensing events Improved installation documentation, video available	<ul style="list-style-type: none"> Added events for replication Additional events for connection pool processing including time warning, refused warning Additional events for dynamic file, split/merge, rotating file pool and device licensing 	Aug 2023
1.6	Visual Redesign Certify MVX can monitor up to 100 instances Complete task from Event Manager	<ul style="list-style-type: none"> “Cyclical” navigation for any UV instance from anywhere in the MVX application No performance impact on monitoring up to 100 UV instances Ease of use when completing a task directly from the Event Manager Window 11 Support for UV 11.3.5 Certified on Rocky Linux 8.x and Alma Linux 8.x (using Docker 20.10.22 or higher) 	Apr 2023

1.5	Thresholds Monitoring	<ul style="list-style-type: none"> • View the default settings for all event thresholds • Set new thresholds preferred by the user • Automatically clear events either by thresholds parameters or time durations 	Jan 2023
1.4	Improved Installation and Upgrade Process Improved MVAdmin	<ul style="list-style-type: none"> • Provides InstallShield wizard using Windows, and an automated installation and upgrade script for customers using Linux • Ability to identify the current version of MVAdmin and check user credentials 	Oct 2022
1.3	Eleven new OS-related events Increased security requirements	<ul style="list-style-type: none"> • UV file pool usage, Virtual memory usage, Process memory usage, Cache faults, Process handle usage, System non-paged pool usage, Disk usage, Disk Queue length, and Process CPU usage. • Anti-CSRF protection added to installation script; MVX component and Java upgrades now comply with security requirements and verifies if using Docker or Podman 	July 2022
1.2	Host CPU/Memory Tile Additional Events	<ul style="list-style-type: none"> • Added Host CPU/Memory Tile • Added Memory, CPU and Process events for monitoring alerts 	April 2022
1.1	Performance monitoring of UniVerse	<ul style="list-style-type: none"> • Dashboard consisting of three tiles: Events, Session and Locks • Escalates more than 35 UniVerse-specific events that could impact performance • Free to UniVerse customers with active maintenance 	Jan 2022