



ONware™

**The Most Direct Path to Relational Database Technology for
MultiValue Database Users**

A White Paper

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Table of Contents

<i>What</i> _____	1
ONware for Oracle _____	1
<i>How</i> _____	2
How ONware Works _____	2
The ONware Servers _____	2
The Login Server _____	2
The Application Server _____	3
The Virtual Run-machine _____	4
The Data Servers _____	4
Presentation Servers _____	4
<i>Why</i> _____	5
Save Years & Millions of Dollars	5
Migration Scenario _____	5



ONware

ONware ends real or perceived isolation of MultiValue data, dictionaries and programs by enabling them to live and breathe in a standard relational environment such as Oracle, SQL Server, and DB2.

ONware is uniquely designed for organizations with significant investments in mature and stable business applications developed on one of the common MultiValue platforms, to communicate with, migrate to and develop for Oracle, MS SQL Server and other relational and object-relational databases.

ONware allows the users of UniVerse, UniData, PI/open and D3 database management systems to run their programs, dictionaries, PROCs, paragraphs and sentences directly on the operating system, without re-engineering the code and without the need for the DBMS in which they were developed. ONgroup clients worldwide are using ONware to solve business problems such as:

- ❑ Migration of valuable and irreplaceable business systems,
- ❑ Integration of legacy systems and data with relational applications, such as Oracle Apps,
- ❑ Data sharing between Relational and Multivalued type databases
- ❑ Normalization of multivalued data to the relational, SQL compliant form,
- ❑ Re-use of mature and stable business logic on Oracle, SQL Server and other relational platforms
- ❑ Maintain a single set of source code while deploying applications on multiple O/S and DBMS platforms.

ONware provides a run-time and development environment with the editor, BASIC language compiler, Query language, Command language and GCI's familiar to the MultiValue professional. Your IT staff can continue to maintain and develop applications on SQL Server and Oracle just as they do now, and at the same time learn the new technology available in the world of relational tools and products.

How ONware Works

ONware operates on a network of underlying technologies, insulating the application layer from the limitations of any single platform.

ONware is a collection of servers that service application objects and insulates the objects from the specific differences in underlying technologies such as the type and location of operating system, database management system, network architecture and user interfaces.

The benefit is that an application can, for example, be developed on a PC with Windows and a MultiValue DBMS such as UniVerse and then deployed on a totally different platform such as LINUX or NT, running an Oracle or SQL Server DBMS and using Macintosh as the user interface.

The ONware Servers

- ❑ Login Server
- ❑ Application Server
- ❑ Virtual Run-machine
- ❑ Data Servers
- ❑ Presentation Servers

The Login Server

The Login Server is the component that starts up other servers and establishes modes of communication and operation. The role of the login server is to log into a server and verify the user ID and password. It provides a map to where other servers are running in the network and performs security services. A Login Server is required to be installed and started somewhere on your network. Regardless of where other components are located, only one login server is required.

The Application Server

The Application Server contains the system and user catalogs for the Run-Machines running somewhere on the network. It performs application logic that emulates UniVerse, UniData, PI/Open and D3. The Application Server provides some important capabilities beyond these other MultiValue environments as ONware's development and operation environment is performed on a foundation that insulates it from the underlying hardware and software on which it is deployed.

A Familiar Development Environment

This feature means that you can operate and continue to develop MultiValue applications using a wide choice of information technology, such as relational and object oriented databases, the Internet and graphical user interface software.

This also means that you can deploy legacy MultiValue applications without change on complex network topologies: multiple node types, multiple database types, multiple workstation types and multiple communication types. Multiple users can concurrently operate in different modes, such as standalone or multitier client/server.

The Application Server provides the tools familiar to the seasoned MultiValue developer including:

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|--------------------------------|--|
| BASIC Language Compiler | The BASIC compiler compiles legacy and newly developed BASIC programs into pseudo-code, which can then be executed directly on the operating system of your choice. The BASIC compiler incorporates "flavor" switches to process the variations in syntax for the common MultiValue DBMS environments. |
| COMMAND Line Processor | ONware's COMMAND line processor offers commands familiar to the MultiValue developer, such as CREATE.FILE, DELETE, LOGTO, COPY and more. |
| QUERY Processor | The QUERY processor executes familiar retrievals such as PROCs, Paragraphs and Sentences as well as commands such as LIST.DICT, SELECT, SORT, SAVE.LIST, GET.LIST and more. |
| Line EDITOR | The ONware Line EDITOR provides the same editor features of the common MultiValue platforms. You may have your source code and data living in an Oracle table, but you can still use your trusty editor to write your BASIC CODE, perform maintenance and troubleshoot data. |

The Virtual Run-machine

The compilation of a BASIC program produces pseudo-code, which is executed by the run machine. ONware's Virtual Run Machine executes programs in the catalog on a foundation that insulates it from the underlying hardware and software on which it is deployed.

The Data Servers

No DATA Servers are required for access to relational and object relational databases such as Oracle and SQL Server. Vendors such as Oracle Enterprise Server provide the method of communication with these types of databases. However, for the PICK style databases, ONware provides DATA Servers to allow concurrent and native database access to MultiValue databases such as UniVerse, UniData, PI/open D3 and other PICK variations.

The use of ONware's Data Servers allow for a free flow of data between disparate databases located anywhere on the network. You can, for example use simple COPY, OPEN, READ and WRITE statements to pass data back and forth between UniVerse, SQL Server, and Oracle. It's as simple as creating file pointers to files and tables on the network and executing the familiar COPY command.

Presentation Servers

A presentation server is a type of user interface. ONware supports a choice of presentation options. Current examples of presentation methods used are Windows, Macintosh and various types of character terminals (e.g. VT100s, Wyse 50s and TV155s). The workstation software can be terminal emulators or products with graphical orientation such as FUSION, TERM, STERM, wIntegrate, Termite, Visual Basic and Java. Each user can choose the presentation technology for their session when they begin an ONware session regardless of the choice of the person sitting next to them.



Save Years & Millions of Dollars

ONgroup's team of experts and proven methodologies get you to relational technology in months vs. years, saving millions of dollars and with greatly reduced risk of organizational disruption.

Core business applications are difficult to replace. They are mature, stable and generally serve the needs of the organization. Flipping the switch overnight, to a package replacement, generally results in a loss of features and functionality and often causes significant operational disruption. Organizations should consider introducing new technology with a sane, systematic and controlled approach—reduce the risk of operational disruption, save years of effort and millions of dollars in reaching significant IT goals.

Organizations, both end users and VARs, who have investigated redeveloping their business applications, have generally concluded that the redevelopment effort in a new development environment would take many man-years. Often figures of 50 to 100s of man-years have been estimated. Such redevelopment projects, apart from requiring 10s of millions of dollars, pose a large risk to the business. Some organizations have made this investment and found that the resulting application could not be deployed and have since embarked on a migration strategy using ONware.

ON believes that organizations should be able to develop and maintain applications with a single source code version and deploy on various types of databases (concurrently) without having to modify the source. It is common to hear of MultiValue VARs (value added resellers) losing opportunities solely because they do not provide their solution on the de facto industry standard databases, Oracle for UNIX and SQL Server for Windows/NT. And of businesses losing months of orders when a trusted system is replaced by a packaged solution overnight...

Migration Scenario

Large-scale clients such as CitiGroup and Orange County Transportation Authority have used ON's proven tools and methodologies to move their business systems from MultiValue to Relational in as little as six months. As an example, an organization can go from UniVerse to Oracle very quickly using the following scenario:

1. Install and configure Oracle Server and Oracle Client

2. Install and configure ONware
3. Export UniVerse account (similar to account save)
4. Import to Oracle tables (similar to account restore)
5. Use ONware compiler to compile BASIC and dictionary objects
6. Begin Quality Assurance testing

Least Painful & Lowest Risk Migration

ONware provides some powerful features for organizations planning a migration to Relational technology or integration of their legacy MultiValue applications with Relational. With ONware, an organization can continue to run mature and stable business applications while moving one or all of the data files to Oracle, SQL Server, and DB2. ONware provides an application the ability to perform I/O with multiple DBMSs concurrently from a single application and without change.

Whether you are moving a few files to SQL Server, integrating with an Oracle application, or planning a complete migration to DB2, ONware will ease the process, speed up the timeline, reduce the risk, and maximize your financial and technical resources.