ClearPath Forward MCP Update 2016

Steve Koss
Distinguished Engineer
Solutions Architect Team Lead and MCP Chief Architect
Product Services Solutions Office

September, 2016
Unisys is committed to evolve ClearPath Forward through engineering inspiration and innovation for unmatched security, performance & confidence
ClearPath Forward™ Clients Want…..

**APPLICATIONS!**
- Clients want to control the application layer
- Application layer = clients unique business value
- Applications need to be easy to develop, change, run and manage

**INFRASTRUCTURE?**
- Applications need optimum operating environment
- Some clients want to focus on their business and not on IT; they want others to manage or provide and manage the infrastructure
- Other clients continue to want to own their IT
Standard Tools Accessing ClearPath
Solving the Skills Issue & Simplifying Operations

- **Presentation Layer**
  - Issue: Aging Skills
  - Solution: Standardized Development

- **Application Layer**
  - Issue: Hard Coded application logic
  - Solution: Logic Discovery Tools

- **Data Layer**
  - Issue: Replication Time
  - Solution: Single Data Repository

- **Simultaneous External Database Posting**
  - SQL, Oracle, BI, BA Support

- **Java Web/Services Enablement**
  - AB Suite

- **e-Portal**
  - Mobile/Web/Service Delivery

- **JAVA Platform**

- **Java Platform**

- **.NET Platform**

- **Eclipse / Visual Studio Platform**
Standard Tools Accessing ClearPath

Solving the Skills Issue & Simplifying Operations
Value

Business Value

- Enable focus on the business, not IT
- Maintain control of applications
- Easy to develop, change, deploy and manage applications
- ClearPath premium operating systems
- Use any Intel platform = ClearPath Forward software only deliverables
- New Business and pricing models
- Lower cost of operation
- Premium security
ClearPath Forward Hybrid Cloud
Software Focused Strategy

Enabling clients to focus on their applications.

Hardware Defined Forward Today

ClearPath

Application Value

ADC
(Application Defined Cloud)

ADD
(Application Defined Datacenter)

Optimized Infrastructure

• For clients who want to own their infrastructure
• Client can leverage any Intel system

Off premise
Private cloud

Unisys Managed Services
ClearPath Forward Road to Software
Transitioning to the Software Defined Future

- ClearPath move to Intel: Delivering the first all Intel based ClearPath platform

2008

- Introduction of the Fabric, New business models: ClearPath Dorado and Libra systems include a high speed, highly secure private cloud

2014

- Complete move to Intel: ClearPath Forward platforms surpass performance of all CMOS based systems

2015

- ClearPath begins the transition to Software Editions: Introducing Software Edition environments, MCP & OS 2200 Express — targeting academia and skills! ClearPath MCP Bronze & Silver — SW only replacements for entry platforms including deployment on industry virtualization

2015 – 2016

- OS 2200 begins the transition to Software Editions: ClearPath OS 2200 Developer Studio, entry level development including deployment on industry virtualization

2018

- Cloud Enablement Begins: ClearPath Forward Hybrid Systems client fabric; hybrid or private cloud, location agnostic

2020

- ClearPath MCP completes move to Software Edition: Software Edition environments; MCP product line supplanted with Software-only stacks

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The SDDC will provide the “software engine” and agility for enabling Hybrid IT with an integrated cloud experience – and control over all IT assets.

**Evolution of the Cloud**

Software Defined Data Centers
Simplifying the “Engine Room” of IT to make Hybrid Computing and Cloud Delivery Simple

Software defined data centers and their accompanying software stacks represent the next generation of hybrid cloud computing:

- All x86 data center is borderless, partitioned, virtual, automated, secure and ClearPath Forward

**Private Cloud**
(Internal, Hosted)

**Public Cloud**
(SaaS, PaaS, IaaS)

**Cloud Ecosystem**
(Niche Providers, PaaS, Industry PaaS)

**Hybrid Computing**
(Provisioning, ITSM, Identity)
ClearPath MCP Bronze and Silver
Thinking Outside the “Box” – MCP Goes Virtual
Addressing the Challenges of the Future

ClearPath Software Series

...because [IT]'s a different world out there

Unisys Takes Flagship ClearPath MCP Software Virtual with Hardware-Independent Version

Powerful operating environment runs on popular VMware without dedicated system hardware, simplifying clients' use of IT resources and enabling cost reduction

BLUE BELL, Pa., April 27, 2016 – Unisys Corporation (NYSE: UIS) today announced a hardware-independent version of its ClearPath® MCP operating environment software. The rollout marks the first time that Unisys has offered one of its flagship ClearPath operating environments independently of a ClearPath Forward™ large-system platform.

The new version of the premier MCP operating environment is designed to provide a production-ready, entry-level instance of the full software stack running on any Intel x86 server under VMware ESXi™ or a client-chosen system conforming to a reference specification.

This unprecedented move enables Unisys ClearPath Forward Libra system clients to deploy their critical MCP application workloads using Intel x86-based infrastructure of their choice without the potential need to incur capital and maintenance costs for additional hardware.
Today’s Reality
Pressure on IT to Deliver Business Value While Adhering to Industry Standards

What are the challenges?

“Our company has standardized on specific hardware vendors and operating platforms.”

“We need to maximize the investments that we have already made”

“I need to retain the business logic in my applications while modernizing IT”

“I need to pay attention to total IT costs and ensure the ROI of my IT investments”

“How do I ensure I have the resources to maintain my enterprise applications and operations for the long term?”

ClearPath MCP Software Series – Thinking Outside the “Box” – MCP Goes Virtual
ClearPath MCP Entry Level Transformation

Building on Intel-based x86 Reference Architecture

- **April 2016**
  - ClearPath MCP Silver
  - ClearPath MCP Bronze
  - ClearPath MCP Express
  - ClearPath MCP Dev Studio
  - Libra 470 Series
  - Libra 460 Series
  - Libra 450 Series
  - Libra 400 Series

- **Software Generation**
  - 4th Generation
  - 3rd Generation
  - 2nd Generation
  - 1st Release

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# ClearPath Software Series Versions

<table>
<thead>
<tr>
<th></th>
<th>Express</th>
<th>Developer Studio</th>
<th>Bronze</th>
<th>Silver</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workload</strong></td>
<td>Education</td>
<td>Development</td>
<td>Production</td>
<td>Production</td>
</tr>
<tr>
<td><strong>MCP Processors</strong></td>
<td>1</td>
<td>1 or 2</td>
<td>1</td>
<td>1 or 2</td>
</tr>
<tr>
<td><strong>Memory (max.)</strong></td>
<td>4GW</td>
<td>4GW</td>
<td>4GW</td>
<td>4GW</td>
</tr>
<tr>
<td><strong>Use Case</strong></td>
<td>Education and Training</td>
<td>Developer Environment</td>
<td>User-Based Production</td>
<td>Entry Level Capacity Based Production</td>
</tr>
</tbody>
</table>
Reference Operating Environments

Requirements – Bare Metal and Hypervisor

• x86 Server
• Microsoft Windows Server 2012 R2

Options

• Bare-Metal Deployment (No Hypervisor) / Reference Architecture
• VMware ESXi 5.5 or 6.0
• Hyper-V
ClearPath Bronze & Silver Advantages
Architectural Direction Maintains ClearPath Values

• Security
• Core Integrated Stack
• High-Volume Transaction Processing
• Enterprise Class system and mind-set
• System Operations and Management nearly the same as previous systems
  – Continue to use all tools and processes
• Take advantage of Intel Xeon and it’s investment and market dominance
Advantages and Cost Savings Benefits

• Use your existing hardware or purchase new
  – Configure only the resources you need. (Processors / Memory, etc.)

• Fits in with a Software Defined Data Center / Private Cloud
  – Integrated Disaster Recovery Replication and Tooling
  – Common Backup and Archiving System

• High Availability supported via vMotion or LiveMigration.

• License can be used in conjunction with VMware or Hyper-V DR Tooling
  – Zerto or other similar tools (Veeam, VMware SRM+VR)
  – No added software charge for DR and DR testing with this tooling.
Hypervisor Configuration Considerations

• Only Logical Disks are supported. VSS is not supported on hypervisor-based systems.

• No tape or optical devices are supported on hypervisor based systems.
  – Backup is via WRAP or Logical Disk (.asd file) Copies

• Features not supported when using a hypervisor:
  • MCP Based Disk Encryption
  • MCP TapeStack
  • Tape Encryption
### ClearPath MCP Developer Studio

<table>
<thead>
<tr>
<th>What is it?</th>
<th>Enables development, maintenance, staging and modernization of applications for ClearPath servers, including distributed applications that leverage the fabric infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Initial availability</td>
</tr>
<tr>
<td></td>
<td>✓ MCP</td>
</tr>
<tr>
<td></td>
<td>✓ EPPs</td>
</tr>
<tr>
<td>Primary Use Case</td>
<td>Development and test, User based licensing</td>
</tr>
<tr>
<td>Innovation</td>
<td>Multi-Partition Based Options</td>
</tr>
<tr>
<td>Pricing Model</td>
<td>Named User</td>
</tr>
</tbody>
</table>
## ClearPath MCP Express

| What is it?                                                                 | • Enables students and others to become familiar with and use ClearPath technology  
|                                                                           | • Initial availability  
|                                                                           | ✓ MCP  
|                                                                           | ✓ Customer-supplied reference architecture PCs |
| Primary Use Case                                                         | • Learning and leisure activities, No charge, single user |
| Innovation                                                               | • Teaching, expanding population of ClearPath skills, improve visibility of Unisys technology innovation |
| Pricing Model                                                            | • No Charge, Download from Unisys.com  
|                                                                           | • No Unisys Support |
ClearPath Forward MCP Systems
Libra 4300 / 6300 / 8300
Increased Processor Performance
- Single-thread 700 MIPS
- Single-image 9000 MIPS

Growth (Single Image MIPS)
- 55% vs. Libra 800
- 88% vs. Libra 600

MCP Mem 16GW
Full redundancy
Transparent Migration

Libra 8300 I/O performance
- Delivers 200,000 IOPS
- 349% IOPS increase vs. Libra 800

High Performance I/O
- 8Gb/16Gb Fibre channel
- 1Gb/10Gb Ethernet

Large-scale Transformation
Mid-range Platform: Libra 4300

- Single-thread performance exceeding the Libra 4200
  - 550 MIPS single thread
  - 2,200 MIPS single Image
- 6GW memory
- (1) to (2) I/O subsystems
- 90000 IO/Sec
- High Availability Option
  - Redundant, parallel ISM’s
  - Redundant PMM modules with transparent failover
- Requires MCP 16.0 software
- s-Par support for multiple secure partitions across platforms
- Operations Server provides high level MCP monitoring and Call Home

Large Platform: Libra 6300

- Performance exceeding the Libra 6200
  - 600 MIPS single thread
  - 4800 MIPS single Image
- 12GW memory
- (2) I/O subsystems
- 180000 IO/Sec
- Standard High Availability implementation
  - Redundant, parallel ISM’s
  - Redundant PMM modules with transparent failover
- Requires MCP 16.0 software
- s-Par support for multiple secure partitions across platforms
- Operations Server provides high level MCP monitoring and Call Home
ClearPath Libra 4300 / 6300 / 8300
Platform and Secure Partitioning

- Unisys Intel Platform Complex
  - Fabric-based integration for high performance, reliability and security
- s-Par Secure Partitions enable multiple operating environments
  - ClearPath MCP, Windows, Red Hat and Suse Linux
  - Predictable Performance
  - Secure Partitions have dedicated resources (processor cores, memory, I/O and networking)
## Disk Encryption for 4300 / 6300 / 8300 and MCP SE

| What is it?                          | • A new host-based disk encryption product for the MCP operating environment  
                                   | • Encrypts all of the data on a disk (VSS2/VSS3)  
                                   | • Encryption and decryption is completely transparent to application programs |
|-------------------------------------|-----------------------------------------------------------------------------|
| Primary Use Case                    | • Protect data from unauthorized access and tampering in the event the disk is lost, stolen, or decommissioned |
| Target Market                       | • Clients who have a need to efficiently protect sensitive data stored on disk  
                                   | • Need to satisfy requirements of  
                                   | ✓ Legislation  
                                   | ✓ Regulators  
                                   | ✓ Auditors |

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2016 Storage Solutions Overview
# 2016 Storage Solutions

*Portfolio to meet Storage Requirements*

## ClearPath and Open Systems

<table>
<thead>
<tr>
<th>Enterprise</th>
<th>Mid Range</th>
<th>Backup and Archival</th>
<th>File</th>
<th>Data Protection</th>
<th>Virtualization</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC VMAX 3</td>
<td>EMC VNX</td>
<td>DSI VTL</td>
<td>DSI LTO tape, Libraries, autoloaders</td>
<td>EMC RecoverPoint</td>
<td>EMC Symmetrix Remote Data Facility (SRDF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EMC DataDomain</td>
<td>Oracle Libraries SL8500/SL3000</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Oracle LTO Drives</td>
<td></td>
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</tr>
</tbody>
</table>

- Most Storage can be shared between ClearPath and other Server environments

## Open Systems

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>EMC Unity</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>EMC DataDomain</td>
<td></td>
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<td></td>
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<tr>
<td>EMC Avamar</td>
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<tr>
<td>EMC Atmos</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EMC VNX</td>
<td></td>
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<tr>
<td>EMC Isilon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>EMC V-Plex</td>
<td></td>
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</tr>
</tbody>
</table>
VMAX³
Ultimate Performance Machine

- **Low Predictable Response Times**: Global Cache Smooths & Speeds
- **Unleash Flash Performance**: Every CPU Available to Every Port
- **No Impact Data Services**: No Front-end or Back-end Contention
- **Linearily Performs Into Cloud Scale**: Designed for Up To 1 Million Devices
Go Anywhere with VNX

The Flexible Unified Hybrid Flash Array

FLEXIBLE DEPLOYMENTS

MIXED WORKLOADS

UNIFIED STORAGE

CLOUD READY

HYBRID FLASH

BEST ECONOMICS

VIRTUALIZATION

HYBRID CLOUD
DSI VTL Update

NEW DSI Restore Solution

» Software only version of VTL
» Bare metal or virtualized (VMware, cloud)
» Targeted at smaller environments (2-12TB deduped)
» Based on DSI420 solution (deduplication platform)
» Qualified with MCP SE Silver/Bronze (VMware)
» Planned availability for Q1-2017

Reduced Pricing for MCP SE (TapeManager, LibraryManager, FileManager)
# ClearPath MCP Release Schedule

<table>
<thead>
<tr>
<th>Release</th>
<th>Release Date</th>
<th>End of Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCP 14.0</td>
<td>April 2012</td>
<td>October 2015</td>
</tr>
<tr>
<td>MCP 15.0</td>
<td>April 2013</td>
<td>October 2016</td>
</tr>
<tr>
<td>MCP 16.0</td>
<td>April 2014</td>
<td>October 2017</td>
</tr>
<tr>
<td>MCP 17.0</td>
<td>April 2015</td>
<td>April 2020</td>
</tr>
<tr>
<td>MCP 18.0</td>
<td>April 2017</td>
<td>April 2022</td>
</tr>
<tr>
<td>MCP 19.0</td>
<td>2Q 2019</td>
<td>2Q 2024</td>
</tr>
</tbody>
</table>

*Future dates are subject to change*
MCP Release Timelines

-New-

Old: One major release a year
42 month support lifecycle

New: One major release every 24 months (2 years)
60 month (5 years) support lifecycle

Benefit:
- Longer release life
- Can still skip a release (waiting up to 1 year after its initial release)
# MCP 17.0 Key Benefits

| Applications       | • Business process integration  
|                    | • Improve developer productivity 
|                    | • Improve end-user productivity  
|                    | • Support business growth        |
| Security           | • Protect sensitive data         
|                    | • Audit and compliance automation|
| Data Center        | • Operations skills issues and costs 
|                    | • Application availability      
|                    | • Efficient data transfer        |
## Applications
### Improve Developer Productivity

<table>
<thead>
<tr>
<th>Key Benefit</th>
<th>Improve developer productivity by using contemporary tools and technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How It Is Delivered</strong></td>
<td><strong>Product</strong></td>
</tr>
</tbody>
</table>
| Relational Database Server for ClearPath MCP | • ODBC driver  
• Stored procedures  
• SQL functions  
• Other enhancements | |
| ClearPath MCP IDE for Eclipse Phase 17 | • Eclipse 4.4/4.2 (Luna) support  
• Java 8 support  
• View MCP printer backup files in Eclipse  
• View MCP log records in Eclipse  
• Editing ease-of-use and productivity improvements | |
Security Protect Sensitive Data

Key Benefit

Updated products designed to help protect sensitive data from unauthorized access and tampering

<table>
<thead>
<tr>
<th>How It Is Delivered</th>
<th>Product</th>
<th>New Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transaction Server – CCF</td>
<td>• Enable applications to query client network addresses</td>
</tr>
<tr>
<td></td>
<td>Security Center</td>
<td>• Support multiple public keys per usercode for SSH authentication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• SSH keyscan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Option to force password change on first use</td>
</tr>
<tr>
<td></td>
<td>Web Transaction Server</td>
<td>• Allow users to change passwords from a Web browser</td>
</tr>
<tr>
<td></td>
<td>Enterprise Output Manager 12.0</td>
<td>• Web Assistant hides file names in URLs</td>
</tr>
</tbody>
</table>
## Security
### Audit and Compliance Automation

<table>
<thead>
<tr>
<th>Key Benefit</th>
<th>New and updated capabilities designed to help automate audit and regulatory compliance activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How It Is Delivered</strong></td>
<td><strong>Product</strong></td>
</tr>
<tr>
<td></td>
<td>Software Inventory Assessment Utility</td>
</tr>
</tbody>
</table>
| | Locum Safe & Secure | • AdminDesk’s new Configuration Wizard makes installation simpler and more flexible  
| | | • Improved customization |
| | Locum SafeSurvey | • Extension to Guardfiles report  
| | | • Multi-family browse and import of SSV files  
| | | • Reports available in PDF format |
| | Locum RealTime Monitor | • Advanced filtering to keep alerts focused  
| | | • Check for updates of the latest dashboard |
| | Locum SecureAudit | • Multi-family browse and import of SCA files  
| | | • Reports available in PDF format |
# DataCenter Operations Skills Issues and Costs

<table>
<thead>
<tr>
<th>Key Benefit</th>
<th>Reduce requirements for MCP-specific operations skills and related costs</th>
</tr>
</thead>
</table>

## How It Is Delivered

<table>
<thead>
<tr>
<th>Product</th>
<th>New Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>dbaTOOLS</td>
<td>• Automated on-line garbage collection</td>
</tr>
</tbody>
</table>
| Workload Management for ClearPath MCP | • Programmatic access to MIPS month-to-date value  
• Usability improvements |
| Operations Sentinel 15.0 | • Alert scheduling flexibility  
• Silent, automated installation of Windows, Linux, and Unix agents  
• SNMP v2 support  
• Ease of use enhancements |
## DataCenter
### Application Availability

<table>
<thead>
<tr>
<th>Key Benefit</th>
<th>Increase availability of mission-critical applications to end users</th>
</tr>
</thead>
<tbody>
<tr>
<td>How It Is Delivered</td>
<td><strong>Product</strong></td>
</tr>
</tbody>
</table>
|              | Unisys Business Continuity Accelerator | • Integration with Disk Encryption to support failover with encrypted disks  
|              |                                      | • Automated management of EMC SRDF  
|              |                                      | • Ease-of-use improvements |
Summary

• ClearPath MCP Release 17.0 is available today

• It is designed to help you
  – Develop and modernize your applications
  – Keep your data secure
  – Optimize the operation of your data center

• ClearPath services are available to help you
ClearPath Application Enrichment Tools

Guiding Principles

• Maintain ClearPath Values
• Integrate and Expand Application Functionality
• Better Maintain and Enhance Applications

Tools

• Data Exchange
• ClearPath ePortal
• Application Integration Services (AIS)
• Hatha Systems® Knowledge Refinery® (KR)
Unisys Data Exchange 3.0 Introduction
What is Unisys Data Exchange?

Data Exchange

Data Integration Tool

**Extract** **Transform** and **Load**

ClearPath DMSII Databases

Other Databases
## Major Benefits

<table>
<thead>
<tr>
<th>Integrate Business Processes</th>
<th>Reduce Software Development Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Integrate operational data between applications</td>
<td>• Avoid developing, testing, and supporting home grown ETL tools</td>
</tr>
<tr>
<td>• In near real-time</td>
<td>• Works with existing applications and databases</td>
</tr>
<tr>
<td>• Running on heterogeneous operating systems</td>
<td>• Utilize industry available .NET and SQL skills for applications</td>
</tr>
<tr>
<td>• Using heterogeneous data stores</td>
<td>• Minimize application and schema changes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Utilize ClearPath Data for Reporting and Business Intelligence</th>
<th>Maintain ClearPath Data Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Offload reporting, business intelligence from ClearPath systems and data stores</td>
<td>• Keep critical data in secure ClearPath operating system</td>
</tr>
<tr>
<td>• Integrate ClearPath data with SQL Server Business Intelligence tools</td>
<td>• Share only the data that needs to be shared through transformations</td>
</tr>
</tbody>
</table>
Why use Data Exchange?

- Utilize commodity Business Intelligence (BI), reporting and reasoning tools to analyze data without adversely impacting mission critical applications

- Provide Data Integration that minimizes disruption to normal business operations and overhead
# Design Goals and Principles

| **Source Database Updates** | • Guaranteed to appear in the target database  
|                           | • ‘Near Real-Time’ update propagation  
|                           | • Transactional updates processed in sequence to maintain information integrity |
| **System Overhead**        | • Minimize overhead and footprint on systems hosting databases (both ClearPath and SQL)  
|                           | • Most processing done on a Windows partition or server |
| **Recovery from Failures** | • Guarantee information consistency in target databases |
| **Performance**            | • Keep up with production application workloads |
## Data Exchange Release Schedule

<table>
<thead>
<tr>
<th>Release</th>
<th>Key Features</th>
<th>GCA</th>
</tr>
</thead>
</table>
| 2.0     | Initial Release  
• MCP DMSII to SQL Server | Sept. 2015   |
| 3.0     | Additional transformation  
• SQL Server to MCP DMSII | Jan. 2016    |
| 4.0     | Additional transformations  
• MCP DMSII to Oracle Client-written expressions to transform data  | 1Q 2017 (target) |

Future plans and dates are subject to change
Example: BI Reporting and User Interface Modernization

- ClearPath System
  - OLTP and Batch Applications
  - Enterprise Data Store

- Windows System
  - .NET and Mobile Data Applications
  - SQL Data Store

Data flow: ClearPath System → Data → Windows System
Example: Application Integration

ClearPath System

OLTP and Batch Applications

Enterprise Data Store

Windows System

.NET and Mobile Data Applications

SQL Data Store

Data

Data

Data

Data
ClearPath Forward Services for Data Exchange

**Assessment Service**
Unisys assesses the client requirements to see if Data Exchange is a possible solution to solve their problem.

**Installation and Configuration Service**
Unisys installs all DE components on the ClearPath Host and Runtime environments such that the provided sample transformation (BDT and CDT) is ready to run.

**Proof of Concept Service**
Unisys sets up and configures a running DE solution using a client-supplied **test environment**. Functional capabilities testing. Stress testing. Recovery testing. Performance testing.

**Implementation Service**
Unisys takes a successful Proof of Concept, completes all the required transformation definitions, and deploys the solution into a **production environment**.

**Administrator Training Service**
Unisys trains personnel to run and operate the Data Exchange environment. This includes creation of transformations, deployment of transformations, monitoring, maintenance and recovery.
Toward the Digital Enterprise
ClearPath Forward ePortal
ClearPath Forward ePortal for End User Interfaces and Application Integration

A single implementation
- Modernizes user interfaces
- Services multiple devices
- Integrates applications

Without application changes!

Open Development using Visual Studio

ClearPath Forward™ Applications

Browser

Web Enablement

Mobile Device Integration

Web Services (application integration)

Smart Phone / Tablet

SOA Services Consumers

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# ClearPath Forward ePortal - Benefits

## Extensive automation for superior business agility
- No user written code required for a complete solution
- Automated staging and deployment including OS loading and performance optimization
- Web based monitoring with automated alerts and remote monitoring options

## Accelerated time-to-market
- Completely eliminates the need for evaluating and sourcing integration technologies
- Applications do not need to be taken down for updates
- Mobile, Web, and Web Services options can be generated from one project giving high reuse

## No new skills required
- Application specific design tailored for the MCP architecture
- Web-based manager means no new operations skills are required
- Point-and-click developer generates a complete solution ready to deploy

## Increased ROI
- Reduced testing time and enhanced staff productivity
- Improved competitive posture
- Reduced costs compared with traditional middleware integration approaches

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Modernization Scenarios

- MCP COBOL/COMS
- MCP SDF Forms
- T27 Terminal Screens
- AB Suite/EAE ISPECs
- Open DTP Views

Application Assets

- Asset Capture
- **Orchestration**
- Presentation-Generation
- Deployment
- Management

Modernization

- Web and Responsive Web/Mobile
- Web Services (RESTful, SOAP)
- Multi-Device Native Apps

Modern Multi-Tiered Applications
Multi-Device App Cloud Build Service

- Cloud-Hosted Mobile App Build Service
- Apple iOS, Android, Windows Devices
- Community and Custom Plug-in Support
- Seamless IDE Integration
### ClearPath Application Integration Services

**What is it?**
- A new product designed to make cross-platform application development easier
- Provides value-added extensions to standards-based integration technologies

**Primary Use Case**
- Developing applications that have to leverage resources from multiple environments
  - ClearPath MCP
  - Microsoft Windows .NET Framework
  - Java
Using Application Integration Services
Windows .NET and MCP

- .NET Runtime
- Application
- Application Integration Services
- Transactions
- Transaction Server (COMS)
- Libraries
  - COBOL85
  - ALGOL
  - NEWP
- Files
- Transactions

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Using Application Integration Services
Java and MCP
### ClearPath Application Integration Services

#### Deliverables - MCP

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows .NET</td>
<td>Access MCP files</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Call MCP libraries</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Call COMS transactions</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>MCP Security</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Java</td>
<td>Access MCP files</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Application integration via Java Native Interface</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>MCP login</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>MCP time function</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
ClearPath Visual IDE
**ClearPath Visual IDE**

**What is it?**
- Workstation-based product that enables developers to use Microsoft Visual Studio to develop MCP applications
- Implemented as a plug-in to Microsoft Visual Studio

**Primary Use Case**
- Enable developers who are familiar with Microsoft Visual studio to develop MCP applications
## Why use ClearPath Visual IDE?

<table>
<thead>
<tr>
<th>Benefit</th>
<th>How Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce the cost of bringing new ClearPath developers on board</td>
<td>• Microsoft Visual Studio has a very large user base</td>
</tr>
<tr>
<td></td>
<td>• Developers having experience with it will require less training to become</td>
</tr>
<tr>
<td></td>
<td>productive ClearPath developers</td>
</tr>
<tr>
<td>Reduce the cost of developing distributed applications</td>
<td>• Use a single tool to develop distributed applications that use 2 or more</td>
</tr>
<tr>
<td></td>
<td>application environments</td>
</tr>
<tr>
<td></td>
<td>✓ ClearPath MCP</td>
</tr>
<tr>
<td></td>
<td>✓ Microsoft Windows</td>
</tr>
<tr>
<td></td>
<td>✓ ClearPath ePortal</td>
</tr>
<tr>
<td></td>
<td>✓ Agile Business Suite</td>
</tr>
<tr>
<td></td>
<td>✓ Many others</td>
</tr>
</tbody>
</table>
## ClearPath Visual IDE Release Schedule

<table>
<thead>
<tr>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Release</strong></td>
</tr>
<tr>
<td>• Edit and build MCP COBOL74, COBOL85, ALGOL, NEWP</td>
</tr>
<tr>
<td>• Syntax Highlighting</td>
</tr>
<tr>
<td>• Run/debug for MCP</td>
</tr>
<tr>
<td>• Source control for MCP</td>
</tr>
<tr>
<td>• Patch for MCP</td>
</tr>
<tr>
<td>• Visual Studio 2013 and 2015</td>
</tr>
</tbody>
</table>
Knowledge Refinery® (KR) Overview
What is Knowledge Refinery® (KR)?

- An analysis environment and solution to enable Knowledge Management / Knowledge Discovery
- It is a team environment, allowing multiple people with different roles to perform activities at the same time
- It contains a vast number of tools and analytics which can be used for the discovery and management mission and business application knowledge
- It can be integrated with the development cycles of the organization
- It uses an international standard representation of the application (KDM)
- It is a platform which supports a variety of projects or activities
  - Documentation
  - Compliance
  - Business knowledge extraction (rules, terms, processes)
  - Application assessment
  - Modernization
  - Maintenance
Knowledge Refinery® Capabilities: Assess, Maintain, and Modernize

Application Assessment

- How complex is my system? What are my system risk? business risks?
- Are there enterprise or performance dependencies to consider before modernizing?
- What is the TCO to transform the system? What solution options can I use given assessment results?
- Do I Modernize or Maintain?

Application Sustainment (Maintenance)

- What is the impact of the new functional update to the overall system?
- Will the new compliance requirement have an impact on my system and where? How much resource effort will the change take?
- How much did my system change over the course of this fiscal year? Is it the same as I planned?

Application Modernization

- What can I reuse and what do I retire from my ‘as is’ system?
- What are the services that I need to web service enable?
- Did I extract all the ‘as is’ business logic I need?
- Does my ‘to be’ system meet the modernization requirements? (reassessment post migration)
DevOps and ClearPath
Putting it all together
What is DevOps?

Unisys DevOps

Unisys defines DevOps as: “Services that are executed in support of the Development, Testing and Release functions of a software development project using Cloud or dedicated resources, promoting faster delivery, better quality products and better application stability while allowing developers and testers to focus on their primary functions (creating and testing software).”

…bridging the gap.
Why use DevOps

• Developer’s
  – Older Development Tools
  – Poor Source Control and Configuration Management
  – Lack of Test Systems

• If you use outsourcer for development resources
  – Lost of control over IP
  – Lack of Governance and Coding standards
  – Minimal ClearPath Specific Expertise

• Testing
  – Little/No Automation in build and test
  – Limited testing environments

• Deployment and Process Flow
  – Little/No Automation in Process Flow and Tracking
The Approach

Assess the current state
Roadmap to a future state
Plan in detail - transformation to the future state
Execute masterplan
Start operating in transformed mode

Unisys DevOps Capability Model

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Unisys DevOps Capability Model

The Unisys DevOps framework is comprised of multiple functions.

Enterprise DevOps Functions

- Service Request Management
- Technical Release Management
- Technical Liaison Between Project Teams and Operations
- Capacity Management
- Release Management Tools
- Release Coordination and Scheduling
- Application Lifecycle Management Tools
- Change Request
- Deployment Automation
- Auto-Regression Testing
- Test Data Management
- Test Environment Configuration
- Configuration Audit
- Change and Configuration Management
- Version Control/Software Asset Mgmt.
- Continuous Integration
- Build Automation
- Testing Lifecycle Management
- Testing Lifecycle Mgmt. Tools
- Test Automation Architecture
- Environment Management Tools
- Environment Configuration/Change Management
- Environment Monitoring
- Scheduling & Provisioning
- Access Control
- Environment Incident Management
ClearPath and DevOps

• Assessment – Where can process improvement help

• Development Process
  – Agile Development
  – Visual IDEs (Eclipse, Visual Studio)
  – Version/Source Control (Sure, TFS, …)

• Code Quality and Governance – Hatha KR

• Development Testing – MCP Developer Studio

• Build, Test, and Process Automation – SMA OpCon
ClearPath Forward Services
Advise, Implement, Manage: Thrive in the era of Disruptions
“Bimodal IT” posits that IT organizations of the future will have two separate flavors: **Type 1** is traditional IT, focused on stability and efficiency, while **Type 2** is an experimental, agile organization focused on time-to-market, rapid application evolution, and, in particular, tight alignment with business units.
ClearPath Forward Services
Enabling “Bimodal IT” supporting Innovation without risking Operations

Systems of Innovation
(Advise)

Systems of Differentiation
(Implement)

Systems of Record
(Manage)

Application Enrichment Services

Product Implementation Services

Managed Services & Outsourcing
Why Unisys?

- Installation by Unisys MCP software-only products skilled, knowledgeable consultants
  - Helps client successfully implement the solutions
  - Maximize the value of the investment
  - Address their critical business needs efficiently

- Same great service, delivered by the experts. Unisys has been doing this for decades.

- Unisys can help clients to tune their ClearPath MCP Bronze or Silver system for the hardware environment chosen by them
  (Note: Unisys does not guarantee performance with this offering)

- Engaging with Unisys implementation service allows client’s IT resources to stay focused on their core tasks and priorities

- Unisys performs verification prior to installation to ensure that all implementation prerequisites are met to avoid any business disruptions

**Unisys ClearPath Forward services helps in greater business agility and reduced TCO**
Thank You

Q&A