Future Matters 2024

ClearPath® OS 2200 Roadmap and Strategy Update

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SEPTEMBER 26, 2024

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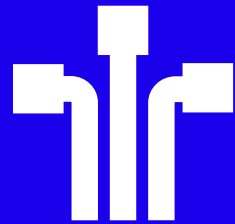
Statements about future product releases are based on current plans that are subject to change and non-binding.

SAFE HARBOR STATEMENT

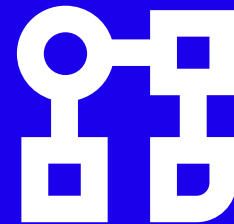# ClearPath Forward® Strategy and Direction

Hybrid/Diverse Workload Execution

Unlock Data Value

Expand Application Compatibility

Secure for the Future

Roadmap Subject to Change. Updated September 25, 2024. Expires December 31, 2024
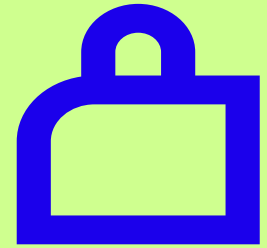
ClearPath Forward Platforms

Systems and Software

01

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ClearPath Forward® Fits Your Current Needs

PRE-INTEGRATED SYSTEMS
on-premises, Unisys or co-location hosted

PRIVATE CLOUD
deployment on VMware or bare-metal on-premises, Unisys or co-location hosted

PUBLIC CLOUD
deployment on Microsoft Azure 2022-2023 AWS 2024-2025

Unisys ClearPath Managed Services Available

ClearPath OS 2200

Systems and Software

02

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ClearPath Forward® OS 2200 / Dorado Product Portfolio

Dorado Integrated Systems

OS 2200 Software Series
Private Cloud   Public Cloud

Dorado 8690
1400 MIPS Single Thread
22,000 MIPS Single Image Consumption
Premium

Dorado 6690
600 MIPS Single Thread
6,000 MIPS Single Image Consumption
High-end

Dorado 4690
450 MIPS Single Thread
2,000 MIPS Single Image Consumption
Mid-range

Available through 2026, supported through 2031

Dev Studio

OS 2200 Platinum
Capacity or Consumption

OS 2200 Gold
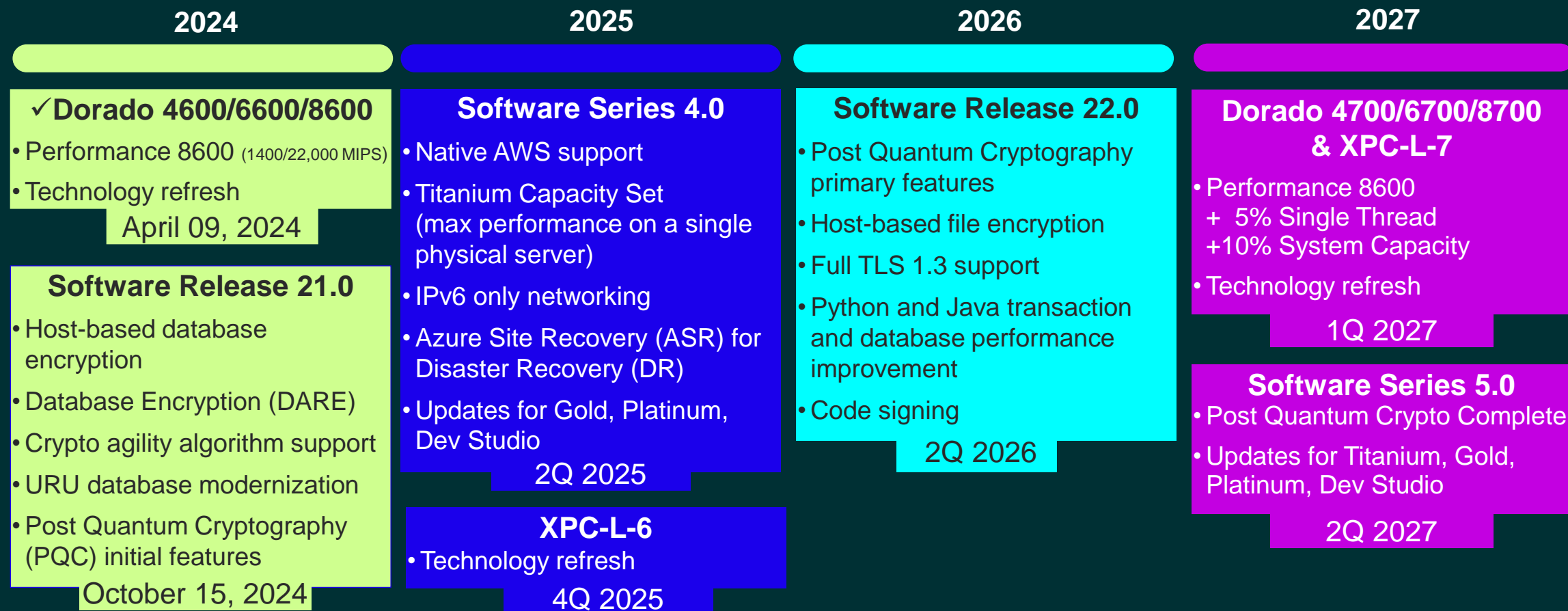Capacity or Consumption

SAIL Linux
VMware

Dev Studio

OS 2200 Platinum
Capacity or Consumption

OS 2200 Gold
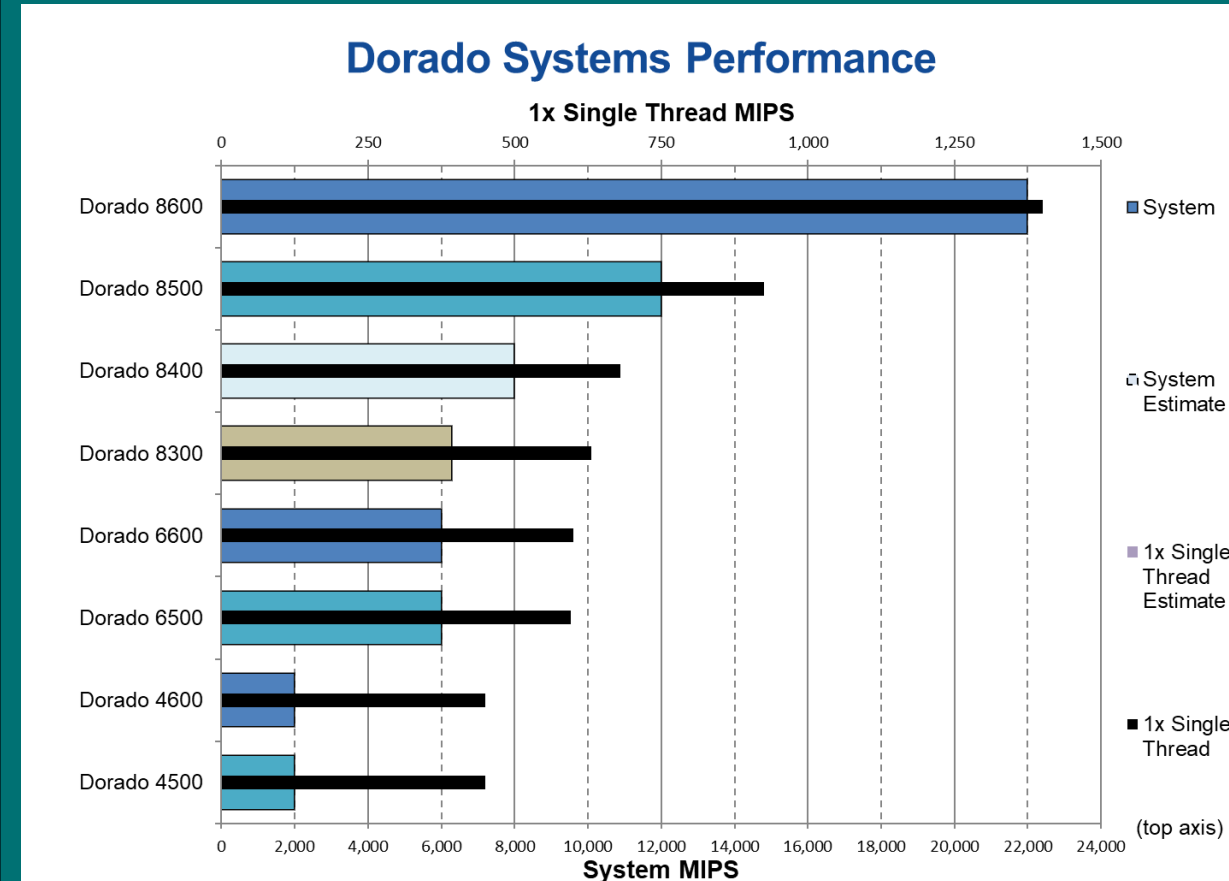Capacity or Consumption

SAIL Linux
Azure, VMware on AWS

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ClearPath Forward® – OS 2200 Systems and Software

4 YEAR ROADMAP

2024

✓ Dorado 4600/6600/8600
- Performance 8600 (1400/22,000 MIPS)
- Technology refresh

April 09, 2024

Software Release 21.0
- Host-based database encryption
- Database Encryption (DARE)
- Crypto agility algorithm support
- URU database modernization
- Post Quantum Cryptography (PQC) initial features

October 15, 2024

2025

Software Series 4.0
- Native AWS support
- Titanium Capacity Set (max performance on a single physical server)
- IPv6 only networking
- Azure Site Recovery (ASR) for Disaster Recovery (DR)
- Updates for Gold, Platinum, Dev Studio

2Q 2025

XPC-L-6
- Technology refresh

4Q 2025

2026

Software Release 22.0
- Post Quantum Cryptography primary features
- Host-based file encryption
- Full TLS 1.3 support
- Python and Java transaction and database performance improvement
- Code signing

2Q 2026

2027

Dorado 4700/6700/8700 & XPC-L-7
- Performance 8600 + 5% Single Thread +10% System Capacity
- Technology refresh

1Q 2027

Software Series 5.0
- Post Quantum Crypto Complete
- Updates for Titanium, Gold, Platinum, Dev Studio

2Q 2027

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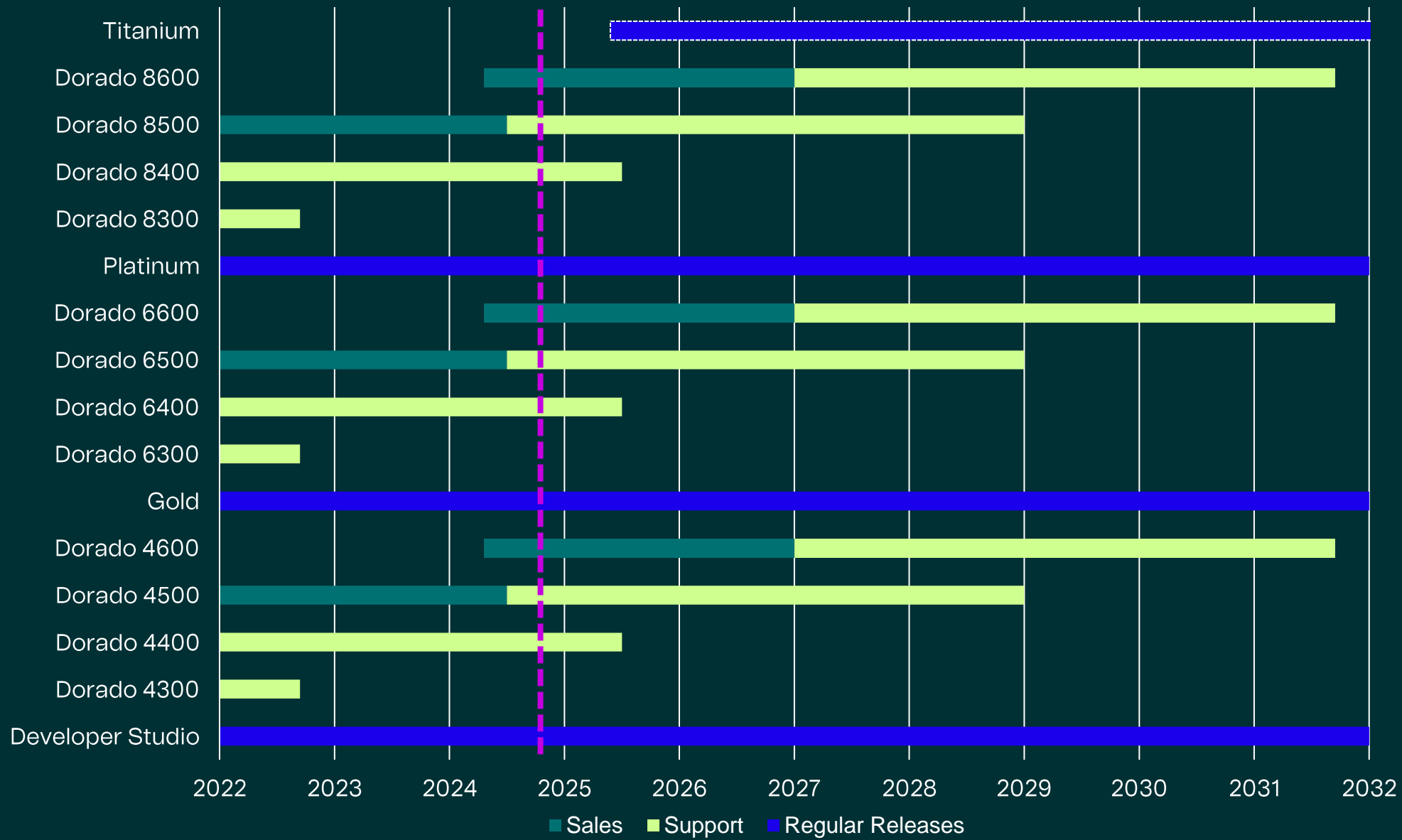
CLEARPATH FORWARD DORADO INTEGRATED SYSTEMS

- Integrated systems remain a key element of our portfolio

- Tracking workload growth of large clients to ensure we introduce new systems before they are needed

- Projected need and new premium performance systems by mid-2024

- Targeted
  - 50% capacity growth, approaching 32 IPs
  - 5-10% single thread improvement

- Realized results for the Dorado 8690 release:
  - 22,000 MIPS system capacity – 83% increase
  - 1,400 Single Thread MIPS – 51% increase

Dorado Systems Performance

1x Single Thread MIPS

Legend:
- System
- System Estimate
- 1x Single Thread Estimate
- 1x Single Thread

Systems (top to bottom): Dorado 8600, Dorado 8500, Dorado 8400, Dorado 8300, Dorado 6600, Dorado 6500, Dorado 4600, Dorado 4500

(top axis)

System MIPS

OS 2200 System Portfolio Sales and Support Life

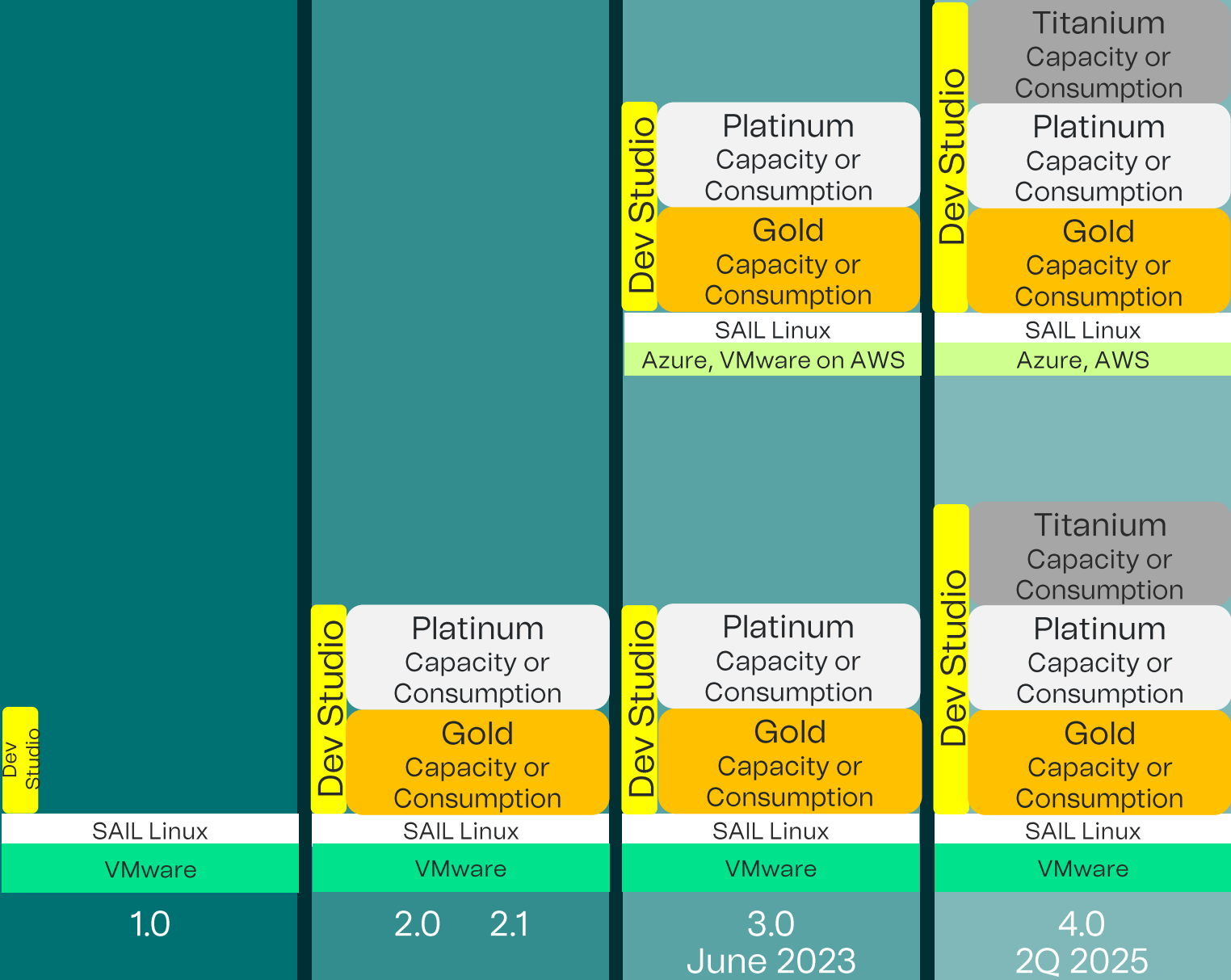Official end support dates documented here:
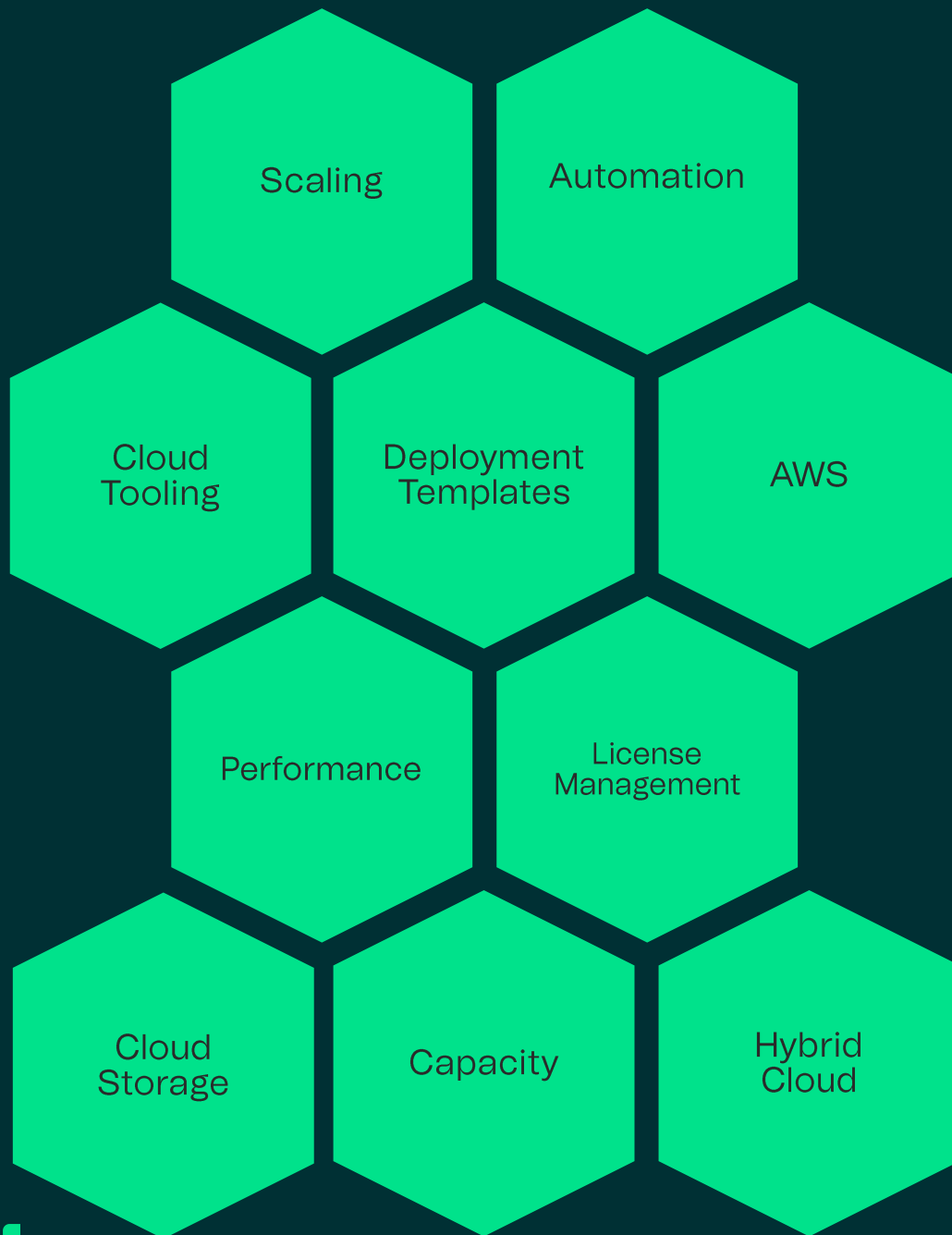OS 2200 Based Systems Hardware Support Plan
OS 2200 Software Series Support Plan

Legend: Sales | Support | Regular Releases

Timeline (2022–2032):
- Titanium — Regular Releases (2025–2032)
- Dorado 8600 — Sales (2024.5–2027), Support (2027–2031.7)
- Dorado 8500 — Sales (2022–2024.5), Support (2024.5–2029)
- Dorado 8400 — Support (2022–2025.5)
- Dorado 8300 — Support (2022–2022.7)
- Platinum — Regular Releases (2022–2032)
- Dorado 6600 — Sales (2024.3–2027), Support (2027–2031.7)
- Dorado 6500 — Sales (2022–2024.5), Support (2024.5–2029)
- Dorado 6400 — Support (2022–2025.5)
- Dorado 6300 — Support (2022–2022.7)
- Gold — Regular Releases (2022–2032)
- Dorado 4600 — Sales (2024.3–2027), Support (2027–2031.7)
- Dorado 4500 — Sales (2022–2024.5), Support (2024.5–2029)
- Dorado 4400 — Support (2022–2025.5)
- Dorado 4300 — Support (2022–2022.7)
- Developer Studio — Regular Releases (2022–2032)

OS 2200 SOFTWARE SERIES EVOLUTION

Growing Capabilities & Confidence

Public Cloud

Dev Studio	Platinum Capacity or Consumption
	Gold Capacity or Consumption
	SAIL Linux
	Azure, VMware on AWS

Dev Studio	Titanium Capacity or Consumption
	Platinum Capacity or Consumption
	Gold Capacity or Consumption
	SAIL Linux
	Azure, AWS

Private Cloud

| Dev Studio |
| SAIL Linux |
| VMware |

1.0

Dev Studio	Platinum Capacity or Consumption
	Gold Capacity or Consumption
	SAIL Linux
	VMware

2.0   2.1

Dev Studio	Platinum Capacity or Consumption
	Gold Capacity or Consumption
	SAIL Linux
	VMware

3.0
June 2023

Dev Studio	Titanium Capacity or Consumption
	Platinum Capacity or Consumption
	Gold Capacity or Consumption
	SAIL Linux
	VMware

4.0
2Q 2025

Scaling

Automation

Cloud Tooling

Deployment Templates

AWS

Performance

License Management

Cloud Storage

Capacity

Hybrid Cloud

Transition from "on the cloud" to "in the cloud"

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Safe and Predictable Cloud Transition with ClearPath Forward

No third-party provider worries about how to balance cloud migration risk, time, and costs.
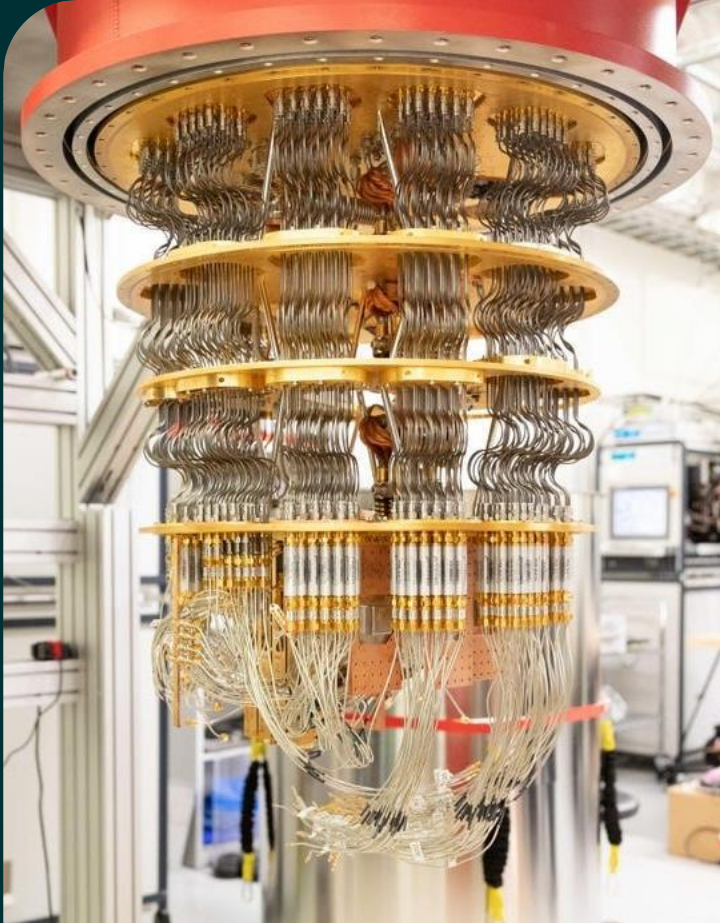
No worries about application code changes, refactoring, and re-architecting apps.

No worries about failed migrations and the effects it could have on business continuity and mission critical applications.

NO WORRIES

Addressing the Quantum Threat

- Today's encryption relies on computers being unable to solve certain kinds of problems through brute force

- Quantum computers solve problems that standard computers can't, including some securing encryption

- **The Quantum Threat:** as quantum computers increase in power, current methods of encryption will be broken

- To protect clients, Unisys is integrating **Post Quantum Cryptography (PQC),** encryption algorithms that are resistant to quantum attack, into ClearPath® platforms as early as feasible

Quantum Resistance and Beyond – Unisys Approach

Near Term: QRE Implementation

Phase 1: Crypto Discovery and Agility

Phase 2: Quantum Resistance

Long Term: Post QRE

Future Considerations

Phase 1: Crypto Discovery and Agility

- Achieve and maintain parity with **industry standards** and capabilities that maximize protection and compatibility

- Complete transition to **third party crypto APIs** to reduce support costs and to accelerate access to new crypto

- **Systemwide management of crypto policy** for ease of configuration, monitoring, and enforcement

Phase 2: Quantum Resistance

- **Adopt new NIST algorithms*** to provide quantum resistance. (Primarily for data in motion)

  - Module-Lattice-Based Key-Encapsulation Mechanism (ML-KEM) Standard (CRYSTALS-Kyber) (FIPS 203)

  - Module-Lattice-Based Digital Signature (ML-DSA) Standard (CRYSTALS-Dilithium) (FIPS 204)

  - Stateless Hash-Based Digital Signature (SLH-DSA) Standard (SPHINCS+) (FIPS 205)

- **Update data at rest encryption** to use algorithms and key sizes that are quantum resistant

Future Considerations

- Integrate with **quantum key distribution** services for keys that can't be intercepted or attacked. (Requires vendor proprietary infrastructure with limited availability)

- Increase overall strength of crypto by supporting **Quantum Random Number Generator (QRNG) devices.** (If required)

- *Three NIST algorithms achieved formal FIPS standardization August 13, 2024.
- *Current-generation QKD is shown to be underpractical for common cryptographic use cases. This opinion is shared by security organizations like the NSA as well as eminent cryptographers.*

ClearPath Forward® OS 2200 Software

RELEASE AND SUPPORT

RELEASE 18.0
Dorado x300, x400, x500,
4200, 800 Software Series 2.0

RELEASE 19.0
Dorado x300, x400, x500
Software Series 2.0

RELEASE 20.0
Dorado x400, x500, X600
Software Series 2.1, 3.0, 3.1

RELEASE 21.0
Dorado x500, x600
Software Series 3.1, 4.0

RELEASE 22.0
Dorado x500, x600
Software Series 3.1, 4.0, 5.0

RELEASE 23.0
Dorado x600, x700
Software Series 4.0, 5.0, 6.0

TODAY

UPGRADES MAY SKIP ONE RELEASE LEVEL – PROVIDE ONE YEAR TO MIGRATE TO RELEASE N+2

LAST RELEASE THAT SUPPORTS PLATFORM

2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033

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ClearPath OS 2200 Software Release 21.0 Features

Post Quantum Encryption

- Crypto agility and security focus

- Host-based database and file encryption

- Protect data in motion with TLS 1.3 protocol support

- File sharing protocol support for Server Message Block (SMB) v3.1.1

- CIPHER-API additional algorithm support

- OS 2200 product upgrades to SHA-2 algorithm

- Operations Sentinel component secure communication

- General security upgrades

Detailed Information On New Features on www.support.unisys.com
OS 2200 SW Planning and Migration Overview for Rel 21.0 (section 2)
OS 2200 Technical Updates (voice over PPTs)

Modernization

- DTP RA capability to work in a non-managed environment

- URU more modern, better performing database

- EXEC file control update to support larger disk sizes of modern EMC and DSI storage devices

- WEB-SUPPORT addition of a system library to support JSON processing

- Upgrade WMQ2200 to the latest version of IBM MQ

Ease of Use

- Software Instrumentation Package (SPM) improvements
  - Error message handling for SLC/SLB key-ins
  - Modernize demand response statistics

- EXEC MU keyin enhanced memory allocation statistics

- Operations Sentinel improved restart handling

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Operations Sentinel Business Advantages

Operations Sentinel goes beyond server management to simplify the operations complexity of your enterprise-wide IT infrastructure.

As a fully featured solution, it automates, consolidates access, monitors, and manages multiple heterogeneous systems.

Access a unified, high-level topological overview with just one click.

Manage both local and remote servers and systems effectively.

Comprehensive audit trail of messaging and events across multiple systems.

Receive alert notifications on cell phones, via email, and through wall panel displays.

Features integrated self-healing capabilities for service recovery.

Offers seamless integration across a broad spectrum of systems.

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Operations Sentinel Roadmap

Operations Sentinel 20.0 (OS 2200 21.0)

✓ **Secure Communication:** All components now support TLS encryption for data in transit; optional self-signed certificates.

✓ **SNMP V3 Support:** Added support for SNMP V3 with TLS encryption; options for UDP and TCP protocols.

✓ **Enhanced User Authentication:** Access restricted to SPO Administrators/Users groups; supports Windows Autopilot without shadow accounts.

✓ **Enhanced Diagnostic Data Collection**: Improved trace configuration for better problem analysis and resolution.

✓ **Enhanced Error Handling:** Automatic restart of failed child processes; reset of restart count after seven days.

✓ **Dorado x600 Configuration:** New event IDs (1359, 10048) supported; Dorado Intel wizard updated for Dorado x600.

✓ **Third-Party Products Upgrades:** Updated to latest versions.

✓ **Unisys Branding Changes:** Product and documentation updated with new Unisys branding.

Operations Sentinel 21.0 (OS 2200 22.0)

✓ **TLS 1.3 Compatibility:** Enhance Operations Sentinel to support TLS 1.3, ensuring it is compatible with both Windows Server 2022 and Windows Server 2019, thereby bolstering security protocols and connectivity efficiency.

✓ **SHA224 Signature Algorithm:** Implement the SHA224 signature algorithm to facilitate Unix console automation, optimizing system interactions and operational flexibility.

✓ **Support for Quantum-Resistant Encryption (QRE) Algorithms:** Augment Operations Sentinel with Quantum-Resistant Encryption algorithms to significantly enhance data security measures against evolving cyber threats.

✓ **New Design Features:** Introduce new design enhancements such as a search filter in the Alert Window and robust improvements to alert management and load-handling capabilities, aiming for a more responsive and user-friendly interface.

✓ **IPv6 Support:** Implement full IPv6 compatibility within Operations Sentinel to ensure flawless and future-proof communication with MCP, aligning with modern network standards.

✓ **Post Quantum Encryption:** Expand cryptographic functionalities to include Discovery and Logging, alongside secure mechanisms for sensitive data writing to disk, preparing for the post-quantum era of cybersecurity.

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Digital System Administrator for ClearPath - POC

- This Gen AI based solution is a Digital Assistant helping human system administrators involved in configuring, managing, administering, and problem solving in the ClearPath environment

- Unisys relevant product documentation, and Unisys administration knowledge preloaded

- Augmented by client specific documentation and knowledge

- Chat based interface providing guidance, inputs on ClearPath administrative tasks

- Help clients retain knowledge of ClearPath System Administration and client specific procedures for managing ClearPath systems

- Increase productivity of the System Administrator

- Help train new members by answering their questions related to ClearPath system administration

OS 2200 Storage Roadmap

- Maintaining our partnerships with Dell and DSI as storage suppliers

- Evaluating Dell PowerStore as likely replacement for Unity (RecoverPoint appliance end of life) as second Dell storage offering

- Partnering with DSI to qualify new DSI Restore and VTL, including Restore in AWS

- Partnering with Dell to qualify DLm gen 7 for release with OS 2200 in 2Q 2025 (gen 5 end of sales end of 2024)

- Validate new software updates for Dell PowerMax, Unity, DLm

- Continued enhancement of services supporting CPF Cyber Recovery solution

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Unisys ClearPath OS 2200 Cyber Resiliency

What are the Key Threats to ClearPath?

- **Social Engineering Attack**
- **Surrounding ClearPath Servers**
- **Storage Arrays**
- **Backup Devices**
- **ClearPath Software Series on VMware**

What security actions should you take?

- **Establish a Cyber Resiliency Plan (required by DORA in 2024)**
  - **See the Unisys ClearPath Cyber Recovery White Paper**
- **Implement your plan in 2025. Budget accordingly.**
- **Implement ClearPath Security Best Practices**

What recovery actions should you take?

- **Ensure you are backing up all the data required to do a ClearPath bare metal rebuild**
- **Ensure your team is trained to perform a bare metal rebuild**
- **Ensure your backup data is free from malware**

Isolate a copy of your backup data off network

- **Implement a ClearPath Cyber Recovery Vault.**
- **Ensures you have a gold copy of data to perform the recovery**

Validate your ClearPath data is free from malware

- **Using CSS in your vault, the system in the vault is restored and the data is validated to be free from malware on a daily basis.**

Digital Operational Resilience Act

Passed on 16 January 2023, legislation becomes effective 17 January 2025

[white paper](#)

What is Cyber Resiliency...an isolated copy example

Data Center

Production

Backup

1 Replication

Cyber Recovery Vault

4 Analyze

2 Copy

3 Lock

5 Monitoring, Reporting and Administering

6 Recover and Restore
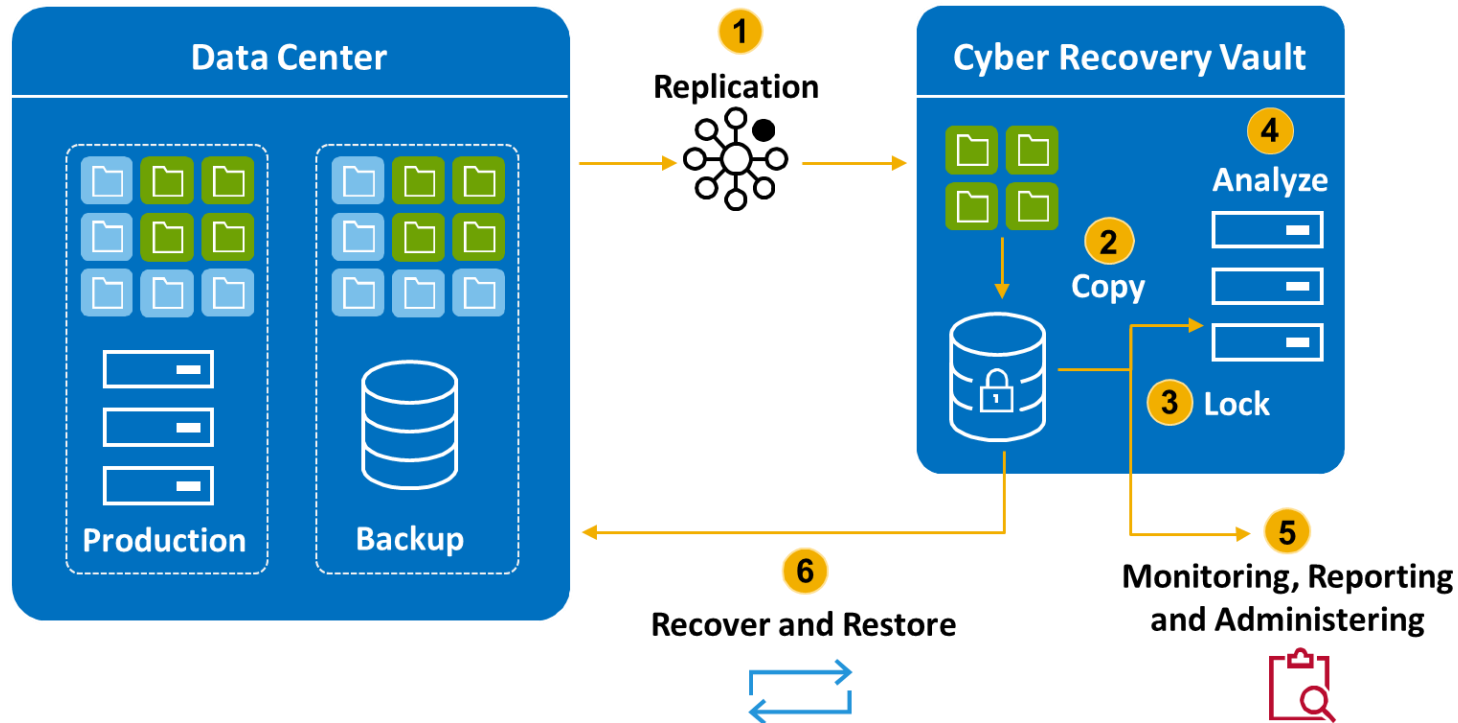
Secure 'Air Gapped' Vault:

Automation and operations **to collect, store, analyze, rebuild, test, and export** gold copies, critical data, and applications for recovery after ransomware breaches

Critical Attributes

•**Isolation:** Physical & logical separation of data

•**Immutability:** Preserve original integrity of data

•**Intelligence:** ClearPath analytics used to identify threats and determine the presence of malware

•**Security**: Vault protected by technologies like air gaps and unidirectional gateways

ClearPath Forward Integration Software

Enable digital transformation – transactions and data

03

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ClearPath ePortal

- ➤ ClearPath ePortal is an end-to-end solution that lets you to easily extend your existing applications to web, mobile devices and service-based clients

- ➤ "In-Place" application transformation

- ➤ Automatic application capture

- ➤ Web-Tier application generation

- ➤ Private PaaS deployment and provisioning

Clients
Terminals
Terminal Emulation
Client/Server

Monolithic Application
User Interface
Business Transactions
Data

Clients
Web, Web Service,
Mobile, Desktop, ESB, etc.

Web-Tier
Presentation
Data Transformation
Protocol Conversion
Orchestration
Application Integration

Application Tier
Business Transactions
Data

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Unisys Data Exchange

ClearPath Forward
Applications

Big Data
Applications

Data Exchange
Modern ETL with Streams

Databases

**ClearPath
Forward
Databases**

Kafka

Digital
Applications

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ClearPath Forward® – Cross Platform Software

4 YEAR ROADMAP

2024

✓ ePortal 12.0
- New HW appliance, 2x scaling
- Windows Server 2022
- Visual Studio 2022
- Developer and Runtime updates

April 18, 2024

Data Exchange 8.0
- Integration with Azure event Hub
- Veracity of data
- Improved Logging contents
- Database Replication
- Security Enhancements
- DEMS Security Report
- Enhancements to DDW

September 26, 2024

ePortal 12.1
- Active Directory Integration
- AWS Support

November 2024

2025

BIS 16.1
- MySQL 8.0 and Visual Studio 2022 qualification
- Additional database files (from 20 to 32 or 64)
- Support BIS MQ as well as IBM WebSphere MQ Remote Queue.
- Updates to Developer work bench
- Modifications to 'Optional Adjust run choices'

March 2025

AB Suite 10.0
- TLS 1.3 – MCP, OS 2200
- Signed components – MCP, OS 2200
- DMREORG DMSII reorganization
- IPv6 support for OS 2200
- .NET Core-based AB Suite client

4Q 2025

2026

ePortal 13.0
- Post Quantum Cryptography
- Agent monitoring flexibility
- Runtime updates
- Windows 2025 Support
- .Net 8.0 Support

1Q 2026

Data Exchange 9.0
- Integration with AB Suite
- Security Enhancements(PQC)
- Containerization of DE Windows component for cloud deployment
- Automatically create and maintain companion database
- Further integration with Sightline

2Q 2026

2027

AB Suite 11.0
- Generative AI Powered Development Experience
- Post Quantum Cryptography - Data at Rest and Data in Motion

4Q 2027

BIS 16.1
- TLS 1.3
- Post Quantum Cryptography

2206 / 2027

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AB Suite 9.0 Release (for MCP and OS 2200)

Ease of Use

- Refactoring & Static Code Analysis
  - Detect and Report elements that need to be fixed
  - Correct and fix elements
  - Protect the application
- Debugger Performance Enhancements

Increased runtime availability and developer productivity

- Minimize downtime during Interim Correction (IC) Upgrade for AB Suite MCP
- MCP Group Arrays and Class Arrays
- Duplicate DB Record handling
- Extract file scaling

Security

- Secured Connection for AB Suite OS 2200
- Secured FTP for AB Suite OS 2200

Client Requests

- DevOps Enhancements – Merge Utility
- Modelling and Language Improvements - AB Suite OS 2200
- Support for OS 2200 CSS 3.0 on Azure

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AB Suite 10.0 Release – Strategic Focus

Ease of Use

- .NET Core-based AB Suite client
- Latest version of Visual Studio Qualification

New Feature Suggestions

- DMS II Max Update Enhancement
- Increased AB Suite OS 2200 runtime availability
- DMS II support reorg scaling
- Improved Report Management during Reorganization with REORGDB

Enhanced Security

- Quantum Agility - TLS 1.3 Support for AB Suite
- Code signing of AB Suite Runtime binaries enables clients to validate that software is authentic

Generative AI Capabilities

- Create sample data through GenAI – XML/JSON (Windows)
- Other GenAI features being explored

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ClearPath Forward ePortal 12.0

- New HW appliance (R660) and Dell Switches
  - Introduction of new powerful HW appliance (R660)
  - New Enterprise Class Dell switches

- Windows Server 2022
  - ePortal HW, ePortal Software Edition and ePortal Azure can operate as expected on WS2022

- Visual Studio 2022
  - ePortal developer tech-ups ; 64-bit Support for ePortal Developer

- Windows 11
  - ePortal Developer 12.0 can be used on Windows 11

- New Runtime Management CLI
  - Manage and automate aspects of ePortal Runtime environment

- Support .NET 6.0
  - ePortal Platform software 12.0 supports the installation of .NET 6.0 packages

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Data Exchange 8.0 Features

Data Veracity
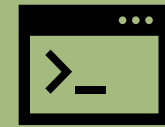
Support Azure Event Hub

Logging Enhancements

Database Replication

Security Improvements and Reporting

Upgraded DDW

ClearPath Forward Application Development

Extend MCP & OS 2200 applications with Python

04

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Modern Languages

Significant need to bridge the old with the new

~100B
Lines of COBOL

58

8.2M

Drive more than 70% of the global transactions

Average age of a COBOL programmer

Python developers in the world

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Modern Languages

ClearPath Forward®
Server systems and operating system software and services that are secure, innovative, and reliable for mission-critical solutions

Disruptions and challenges our clients face	What we do to support ClearPath Forward® clients
Erosion of COBOL skills	Provide the ability to utilize Python as a peer to COBOL
Novice to Expert takes too long	Provide infrastructure to enable industry standard, open-source technology
Innovation is hindered by legacy solutions not being written in modern languages	Provide application modernization services utilizing most-modern programming languages (e.g. Python)

Available today for MCP Software Series, Dorado and OS 2200 Software Series
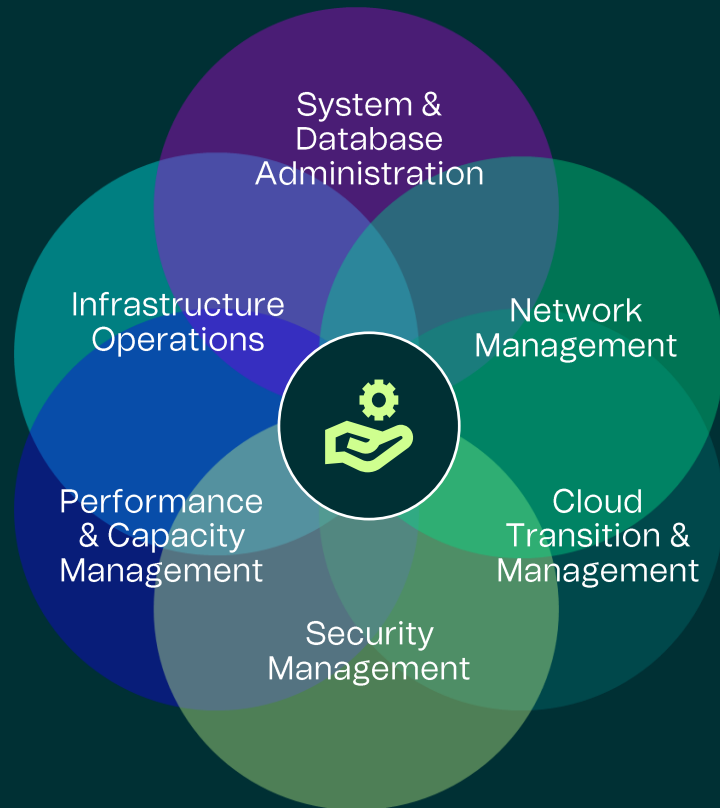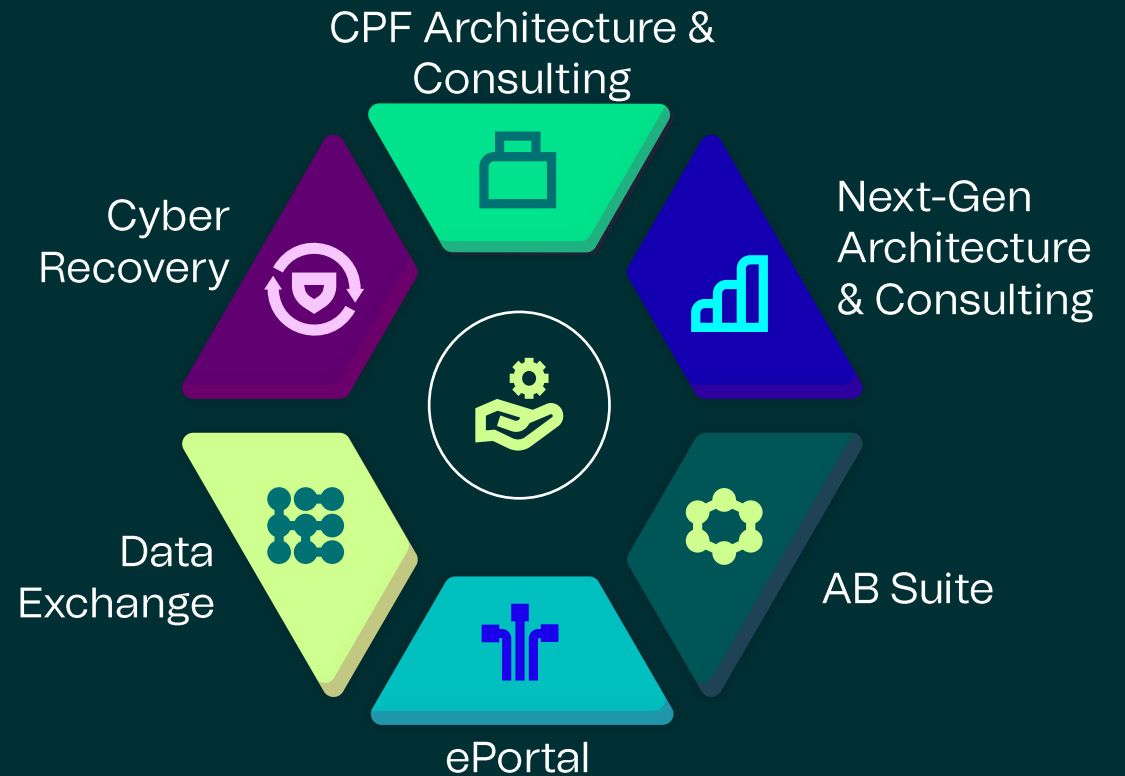
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Unisys ClearPath Forward Services

05

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Unisys ClearPath Forward Product Services

Infrastructure Managed Services

- System & Database Administration
- Infrastructure Operations
- Network Management
- Performance & Capacity Management
- Cloud Transition & Management
- Security Management

Technology Consulting Services

- CPF Architecture & Consulting
- Cyber Recovery
- Next-Gen Architecture & Consulting
- Data Exchange
- AB Suite
- ePortal

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Thank You

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