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ClearPath Forward® Dorado 8590

Product Information Sheet

ClearPath Forward Dorado 8590 Premium Performance ClearPath OS 2200 Processing

- Highest performance levels of ClearPath® OS 2200 application processing and I/O throughput
- Unmatched Security delivered though integrated hardware and software design
- Advanced system availability with multiple levels of component redundancy
- Flexible Pay-for-Use licensing
- Optional OS 2200 QProcessor platform for advanced system interoperability
- Fully compatible with existing OS 2200 application and data formats

Unisys has a commitment to provide OS 2200 transaction processing systems that keep pace with our clients' expanding core business workloads. The ClearPath Forward® Dorado 8590 system delivers on this commitment by providing significantly improved levels of OS 2200 single thread, single image, and single system performance. Increases in the I/O subsystem throughput have been incorporated to maintain a balance with the main processing capacity.

Performance improvements are but one aspect of the ClearPath Forward Dorado 8590 systems. These systems are designed with the highest levels of system resiliency and availability in mind. Each of the primary system components include high availability features for power, cooling, and internal disks.

The Dorado 8590 system architecture further enhances the overall system resiliency through the inclusion of redundant OS 2200 application processors, I/O subsystems, and supporting infrastructure components.

The ClearPath Forward Dorado 8590 systems provide a complete unified solution where all components are designed, developed, integrated, tested, and supported by Unisys.

New Levels of ClearPath OS 2200 Performance

The premium high-end ClearPath Forward Dorado 8590 systems are the latest generation of enterprise-class systems to support the OS 2200 operating system on Unisys Intel® platforms. The main Processing Memory Module, or PMM, provides a single thread performance of 925 MIPS and a single OS 2200 image up to 12,000 MIPS. Separate Intel based I/O Storage Modules, or ISMs, can be combined to deliver over 590,000 I/Os per second.

The Dorado 8590 may be configured with two independent OS 2200 partitions, each capable of full processor and I/O performance. A two partition system effectively doubles the performance of a Dorado 8590 providing up to 24,000 MIPS, and nearly 1.2 million I/Os per second, all in a single standard cabinet. Metering software features allow dynamic MIPS allocation between the two OS 2200 partitions as workload demand changes.

The **Dorado 8590** system is licensed following the Unisys **Pay-for-Use** business model and utilizes our advanced metering technology.

Metering technology enables you to instantly take advantage of the Dorado 8590 full processing capacity while only being charged for the resources used. Pay-for-Use licensing allows a reduced capital investment, with a better match of revenues to expenses.

Flexible and Secure Architecture

The ClearPath Forward Dorado 8590 system architecture utilizes multiple Unisys Intel based components integrated through a high-speed, private LAN interconnect. This modular design provides inherent redundancy of all components and allows scalable configurations of the I/O subsystem.

The **Processor Memory Module**, or PMM, executes the ClearPath OS 2200 instruction set, and includes a full 24GW of memory. An additional 24GW is optionally available to support enhanced UDS performance.

Multiple high-speed Ethernet connections are maintained within the PMM to provide OS 2200 network connectivity. A full range of 1Gb and 10Gb NICs are available, including a 40Gb NIC card to allow the Dorado 8590 to be part of a high-speed client network.

Two PMMs are included in every Dorado 8590 OS 2200 partition. As one PMM is actively processing the OS 2200 workload, the second PMM acts as a warm stand-by. This two PMM design allows a quick failover of the OS 2200 processing environment; and improves system availability during scheduled maintenance.

Each of the Dorado 8590 partitions includes two **I/O Storage Modules**, or ISMs. Each ISM supports multiple high-speed I/O connections to a variety of storage types. The latest card options for dual port 32Gb or quad port 16Gb Fibre Channel, and a new dual port 16Gb FICON connection are available for the ISM.

The two ISMs may be configured each with a connection to a shared storage device. This redundancy helps balance I/O flow and insures that an OS 2200 workloads will continue even if an ISM is unavailable. Two more ISMs may be added to any partition for additional storage connections, I/O capacity, and redundancy.

Unique Dorado firmware has been developed for the Dorado 8590 PMM and ISM modules to provide compatibility with previous Dorado architectures. Existing OS 2200 application code will run without re-compiling or relinking. Supported storage devices may be connected to the Dorado 8590 I/O subsystem and data formats will be maintained.

The Dorado 8590 systems demonstrates the Unisys ClearPath commitment for unparalleled security. Multi-layered security is inherent to the architecture; providing protection that helps you maintain data integrity, reduce operational costs, and minimize the risk of lost revenue, regulatory sanctions, or a diminished reputation.

ClearPath OS 2200 Integrated Stack

The ClearPath Forward Dorado 8590 system delivers an integrated stack consisting of hardware, software, middleware and applications optimized for reliability, security, scalability and performance.

A set of powerful Enterprise Integration capabilities allow existing ClearPath OS 2200 applications and data to expose new services; and enable the Dorado 8590 system to participate in digital transformation initiatives. In addition, a rich set of industry-standard middleware technologies are available for integrating ClearPath OS 2200 data and transactions – including JDBC, ODBC, .NET, Java, and Open DTP.

The **ClearPath OS 2200 release 18.0** is the minimum release level required to support the ClearPath Forward Dorado 8590 system. Each OS 2200 release is comprised of more than 100 integrated system software products, delivering the operating system, databases, transaction management, development, and many other software elements to support enterprise-class solutions.

OS 2200 Multi-Host Clustering Support

When used with the **Unisys eXtended Processing Complex Locking 5.0 (XPC-L-5)** platform, the ClearPath Forward Dorado 8590 can work with other qualified Dorado systems in a multi-host cluster to provide superior business continuity; and an expanded scale-out processing capacity.

The ClearPath OS 2200 XPC solution protects the integrity of data being updated in a multi-host environment. As part of a cluster, up to six Dorado systems can all operate against a shared database even accessing the same record.

The combination of the Dorado 8590 system high-availability features and Unisys eXtended Transaction Capacity software provides virtually non-stop OS 2200 application support. Fully redundant configurations and extensive scale-out processing capacity provide a transaction processing resource with availability measured in years.

ClearPath Forward Dorado OS 2200 QProcessor 5.0 Platform

A new implementation of the OS 2200 QProcessor is available exclusively for this generation of ClearPath Forward Dorado 8590 systems.

The **ClearPath Forward Dorado OS 2200 QProcessor 5.0** is based on the latest OS 2200 QProcessor 5.0 firmware, combined with Unisys supplied hardware to provide a complete processing environment.

This infrastructure provides a secure extension to the OS 2200 environment to support connections to other hosts via IBM® MQ message queueing architecture.

Interoperability between the Dorado 8590 system and the QProcessor 5.0 infrastructure is maintained through private 10Gb optical Ethernet connections. The complete OS 2200 QProcessor 5.0 Infrastructure includes fully redundant dedicated Ethernet switches and cabling. Multiple QProcessor instances can be deployed in a High Availability cluster to perform failure detection and provide automatic failover of the OS 2200 MQ resources.

The OS 2200 QProcessor is integrated with the ClearPath OS 2200 and enables OS 2200 applications (TIP/HVTIP, Open DTP, or batch) to take advantage of the high levels of performance, reliability, and security of the OS 2200 operating environment.

Software Interdependencies

The ClearPath Forward Dorado 8590 systems require the following software products:

- ClearPath OS 2200 Release 18.0 or later
- ClearPath OS 2200 QProcessor supports the following software levels:
  - WebSphere MQ for ClearPath OS 2200 version 9.0 or later
  - Interconnect 1R4C.1 or later
  - CIFS 9R1 or later

Maximizing Your Dorado Investment

Unisys recognizes that you are looking for a complete end-to-end solution to their critical IT needs. For ClearPath Forward Dorado systems, Unisys offers a single source for integration, support, education, and services.

Additional **ClearPath Forward Services** maximize your investment in ClearPath Forward systems, applications, tools, and skills. These services help you to implement our solutions, increase the value of your core business applications, and simplify the operation and administration of your ClearPath Forward installation.

Technical Specifications

Key Hardware Solution Features	ClearPath Forward Dorado 8590 system	
Form factor	*Cabinet*	42U rack
	OS 2200 Partitions	Single or dual Partition option
MIPS Performance Level (See Note 1 below)	*Single Thread Processor MIPs*	925
	Pay-for-Use business model	Dorado 8590 (200 - 8,400 MIPS/month with 12,000 MIPS Ceiling) per OS 2200 Partition
Processor Memory Module (PMM), I/O Storage Module (ISM)		**Quantity (2) Processor Memory Module (PMM) One Active, One Standby per partition**
	Sockets / Processors / Chipset	(2) / (2) Intel® Xeon® processor Gold family - 6154 3.0GHz, 25M LLC, 10.4GT/s UPI, HT, Turbo, 18 Cores, 160W
	Memory	384GB; (12) 32GB, Low Volt, Dual Rank x4, 2666MT RDIMMs (with memory mirroring)
	Internal storage	(8) 300GB 15K RPM 2.5" SAS 12Gbps Hot-plug (note: no user internal storage) RAID 10 for H730 Controller
	User I/O ports	24 Communication Ports (max) per partition
		Quantity (2) I/O Storage Module (ISM) Two additional ISMs may be purchased per partition
	Sockets / Processors / Chipset	(2) / (2) Intel® Xeon® processor Gold family - 6154 3.0GHz, 25M LLC, 10.4GT/s UPI, HT, Turbo, 18 Cores, 160W
	Memory	128GB; (4) 32GB, Low Volt, Dual Rank x4, 2666MT RDIMMs
	Internal storage	(6) 300GB, 15K RPM, 2.5" SAS, 12Gbps Hot-plug (note: no user internal storage) RAID 10 for H730 Controller
	User I/O ports	28 Storage Ports (max) per ISM
		Common Attributes – PMM and ISM
	Form Factor	2U
	Internal interconnect	2 x Intel QuickPath Interconnect (UPI) links
	RAID controller	PERC H730P Integrated RAID Controller, 2GB NV Cache
	Ext Drive Bay(s)	DVD+/-RW, SATA, Internal
	Power	Dual, Hot-plug, Redundant Power Supply (1+1), 1100W
	Availability and Maintainability features	Hot-plug drive bays Hot-plug redundant fan ECC memory, Interactive LCD screen; Extended thermal support; ENERGY STAR® compliant, extended power range

Note 1: *Performance information based on Unisys benchmarks under standard conditions.*

Operations Server		(2) Operations Servers (OPS) per system
	Form Factor	1U
	Sockets / Processors	(1) / (1) Intel® Xeon® E-2136 processor, 6 cores/12 thread, 3.3GHz, HT, Turbo, 80W
	Memory	16GB; (2) 8GB, UDIMM (with ECC)
	Internal storage	(2) 600GB, 10K RPM, 2.5" SAS, 12Gbps Hot-plug (Note: no user internal storage)
	RAID controller	PERC H330 RAID Controller - RAID 1
	Power	Dual Hot-plug Redundant Power Supply (1+1), 350W

Key Hardware Solution Features	ClearPath Forward Dorado OS 2200 QProcessor 5.0	
QProcessor 5.0 platform	*Sockets / Processors / Chipset*	(2) / (2) Intel® Xeon® processor Gold family - 6154 3.0GHz, 25M LLC, 10.4GT/s UPI, HT, Turbo, 18 Cores, 160W
	Memory	128GB; (4) 32GB, Low Volt, Dual Rank x4, 2666MT RDIMMs
	Internal storage	(6) 300GB, 15K RPM, 2.5" SAS, 12Gbps Hot-plug (note: no user internal storage) RAID 10 for H730 Controller
	Dedicated Network Connections	(2) quad port 10Gb optical fibre NIC (X710) (1) quad port copper NIC (i350)
	External Storage Connections	(2) dual port FC HBA (note: Requires SAN - No direct attachment)

Common Solution Attributes		
Environmental specifications (temperature, humidity, altitude de-rating)	*Continuous operation (PMM, ISM,OPS)*	10°C to 30°C (50°F to 86°F) at 10% to 80% relative humidity with 26°C (78.8°F) maximum dew point (maximum wet bulb temperature). De-rate maximum allowable dry bulb temperature at 1°C per 300m above 950m (1°F per 547 ft above 3117 ft).
	Storage (PMM, ISM,OPS)	-40°C to 65°C (-40°F to 149°F) with a maximum temperature gradation of 20°C per hour at 10% to 95% relative humidity at a maximum wet bulb temperature of 33°C (91°F); atmosphere must be condensing at all times.
	Expanded operation	When operating in the expanded temperature range, system performance may be impacted, and ambient temperature warnings may be reported on the LCD and in the System Event Log. **Expanded operation restrictions:** • No cold startup below 10°C • Maximum altitude for the operating temperature must be 3050m (10,000 ft)
Maximum Heat Dissipation		Single Partition, 2 PMM, 4 ISM, 2 OPS: 22,762 BTU/hr. (max) Dual Partition, 4 PMM, 8 ISM, 2 OPS: 41,870 BTU/hr. (max)

Cabinet	***External Metrics per cabinet***	US: H(78.39 in), W(23.62 in), D(47.25 in) / Metric: H(199.1 cm), W(60.0 cm), D(120.0 cm)
	Chassis Weight (max)	Single Partition, 2 PMM, 4 ISM, 2 OPS: 1101 Lbs. (499.42 Kgs), max Dual Partition, 4 PMM, 8 ISM, 2 OPS: 1449 Lbs. (657.27 Kgs), max
Power	***Supply Voltage***	100-240VAC
	Current Consumption	PMM / ISM / 12A–6.5A, OPS: 4.8A-2.4A@100VAC-240VAC Network Switch / KVM / LCD Monitor: 1.4A@100VAC / 0.3A@100VAC / 1.5A@100VAC
	Frequency	50-60Hz
Cooling		Capability to operate at excursion-based temperatures beyond the industry standard of 35°C (95°F). N+1 fan redundancy allows continuous operation with one fan failure in the unit.
Altitude	***Operating / Storage (PMM, ISM, OPS)***	-16m to 3,048m (-50 ft to 10,000 ft) / -16m to 10,600m (-50 ft to 35,000 ft)
Airborne contaminant level		Class G1 or lower as defined by ISA-S71. 04-1985
Thermal and Acoustics		Thermal management delivers high performance for the right amount of cooling to components at the lowest fan speeds across a wide range of ambient temperatures from 10°C to 30°C (50°F to 86°F) and to extended ambient temperature ranges.
Remote Management		Embedded Remote Management interface provides server-level management that monitors, reports, and controls power consumption at the processor, memory, and system level.
System Management		IPMI 2.0 compliant
Industry Compliance		Compliant with all relevant industry certifications and guidelines, including 80 PLUS, Climate Savers and ENERGY STAR.

NOTE: *These specifications do not provide a viable substitute for a detailed configuration, environmental, and infrastructure planning study.*

For more information on any of the products discussed in this document visit ClearPath Forward Dorado Systems.

Contact your Unisys Sales representative or email us at ClearPathForward@unisys.com.

For more information visit www.unisys.com

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