Hitachi Virtual Storage Platform and Virtual Storage Platform G1000 Mainframe Software Compatibility

New Hitachi Storage Series Builds on More Than 20 Years of Mainframe Storage Experience Working With IBM

For over 20 years, Hitachi, Ltd., has provided mainframe technology to business and industry, including solutions for IBM® z/OS®, z/VM®, z/VSE® and z/TPF. During this time, license agreements have provided Hitachi access to IBM APIs and interface specifications for mainframe storage platforms as well as IBM access to selected Hitachi APIs. The agreements ensure compatibility between Hitachi storage and IBM mainframes and allow Hitachi to deliver support for essential key mainframe technologies.

Hitachi participates in the IBM Early Ship program for z/OS, which means that Hitachi has early access to z/OS versions for testing. This access enables Hitachi to ensure compatibility with new versions of z/OS when they become generally available.
Hitachi mainframe enterprise storage is designed to provide the critical compatibility required for use as IBM mainframe storage along with Hitachi value-added technologies. In addition, Hitachi storage systems and features are tested and qualified with IBM mainframes, operating systems and critical features. This testing and qualification includes such features as support for IBM GDPS® PPRC and XRC, FlashCopy® and zHPF.

Hitachi Virtual Storage Platform and Virtual Storage Platform G1000: Ideal Enterprise Storage for Mainframe Environments

Hitachi Virtual Storage Platform (VSP) and Virtual Storage Platform G1000 (VSP G1000) are advanced storage services platforms. They offer the scalability, performance, high availability and advanced storage functionality to satisfy all data center storage requirements for mainframe environments. They feature lower power and cooling requirements, high-density packaging based on industry-standard 19-inch racks and fast microprocessors. They provide a choice of disk drives types, including solid-state disk (SSD), serial-attached SCSI (SAS), and nearline SAS. Both VSP and the newer VSP G1000 provide an industry-leading, reliable and highly available storage system for mainframes in IBM z/OS environments.

VSP and VSP G1000 provide the high performance that meets data storage requirements at the largest organizations. They excel at meeting critical, day-to-day needs for data storage, archiving and business continuity. They also let the administrators combine externally attached Hitachi and 3rd-party storage systems to create large storage pools. In addition to IBM mainframe compatibility, VSP G1000 provides Hitachi value-added solutions for mainframe storage. These solutions include Hitachi TrueCopy synchronous, Hitachi Universal Replicator, Hitachi Business Continuity Manager, IBM FICON® data migration, Hitachi Universal Volume Manager (Fibre Channel), Hitachi Dynamic Provisioning for Mainframe, and Hitachi Dynamic Tiering for Mainframe.

Standard Mainframe-Compatible Features Available on VSP G1000

Modified Indirect Access Word (MIDAW) Support

MIDAW enables reading from and writing to multiple locations in Extended CKD (ECKD) storage with 1 channel command. As a result, there is less movement of data and commands up and down the channel to move the same amount of data as older channel command words (CCWs). There can be multiple store or fetch operations to little blocks of storage. It helps reduce the problem of many Open Exchanges due to individual I/O requests (CCWs), which are typically due to small blocks of information.

Priority Queuing

Priority queuing enables the storage controller to use the priority passed to it by the Workload Manager (WLM) in the various LPARs of the connected Central Processing Complexes (CPCs). Disk availability tracking is offloaded to the storage controller and is managed by the controller.

Extended Address Volume (EAV)

EAV supports expansion of logical devices (LDEVs) beyond the traditional 64K cylinder limit by changing the addressing of tracks on ECKD volumes. Instead of a 16-bit cylinder and 16-bit track address, it uses a 28-bit cylinder and 4-bit track address.

/z/OS Discovery and Autoconfiguration (zDAC) Support

VSP G1000 works with an IBM System z® controller channel by allowing the channel to request control unit information. This information identifies logical paths that can be established between the channel and the control unit. This request returns information to the channel for all logical control units configured, accelerating the system configuration process.

1Additional charge features.
Optional Mainframe Compatible Features Are Available on VSP G1000

Hitachi Compatible PAV for Mainframe
Hitachi Compatible PAV for Mainframe provides full support for Parallel Access Volumes (PAV), HyperPAV and Multiple Allegiance. This support enables simultaneous access to different extents on the same logical volume. Access is from multiple applications on the same host and multiple hosts using the base and alias Unit Control Blocks (UCBs).

Dynamic Volume Expansion (DVE) Support
VSP G1000 implements DVE using Hitachi Data Provisioning. DVE enables a dynamic increase in the amount of allocated storage for a volume, transparently, and causes no disruption to the host or applications accessing the volume.

Automated Storage Tiering
Hitachi Dynamic Tiering (HDT) for Mainframe provides storage tiering on VSP G1000. HDT for Mainframe provides a similar but superior tiering capability as IBM Easy Tier®. It provides 3 levels of automated storage tiering, which can be made up of SSD, SAS and/or nearline SAS drives.

Extended-Distance FICON (FEDS)
Extended Distance FICON is a performance-enhancement mechanism for FICON DASD I/O over “long” distances IBM z/OS Global Mirror (XRC).

IBM Metro Mirror (PPRC)
Hitachi TrueCopy synchronous provides capability similar to IBM Metro Mirror and is fully compatible with both IBM GDPS/ HyperSwap® and Basic HyperSwap.

IBM z/OS Global Mirror (XRC), Including Multireader Supports²
Hitachi Compatible Replication for IBM® XRC® provides support for z/OS Global Mirror. It was developed and is supported under a licensing agreement with IBM to insure ongoing compatibility.

FlashCopy V02
Hitachi Compatible Mirroring for IBM® FlashCopy® provides function equivalent to IBM FlashCopy V02.

Remote Pair FlashCopy
Remote Pair FlashCopy supports FlashCopy to a TrueCopy primary volume with no impact to the duplex state of the TrueCopy volumes. When a Remote Pair FlashCopy copies data from 1 local volume (the source volume), to another local volume, the target volume, the remote paired volumes perform an equivalent operation.

FlashCopy SE
Hitachi Compatible Mirroring for IBM® FlashCopy® SE provides function equivalent to IBM FlashCopy SE.

IBM Geographically Dispersed Parallel Sysplex™ (GDPS) HyperSwap
GDPS on VSP G1000 uses Hitachi TrueCopy as a replacement for IBM Metro Mirror to copy data from source volumes.

Innovation is the engine of change, and information is its fuel. Innovate intelligently to lead your market, grow your company, and change the world. Manage your information with Hitachi Data Systems.

²Hitachi Compatible Replication for IBM XRC is only available on Virtual Storage Platform and Virtual Storage Platform G1000 with a license for Hitachi Universal Replicator (HUR), as a migration tool for organizations moving to HUR.
to target volumes. If a failure occurs, GDPS swaps many devices quickly. It substitutes TrueCopy on secondary disk storage system devices for TrueCopy on primary devices with minimal impact to application availability: Disruptions are measured in seconds, not hours. Hitachi Data Systems supports failover and failback with GDPS HyperSwap in a 3-data-center configuration with delta resync.

**Basic HyperSwap and IBM TotalStorage Productivity Center for Replication (TPC-R)**

Basic HyperSwap is a host-managed high-availability solution that uses IBM TPC-R software, which IBM updated to support Hitachi storage systems, to manage the HyperSwap. Basic HyperSwap can use Hitachi TrueCopy functionality to copy from source volumes in one storage system to target volumes in a second storage system. If a primary volume fails, the host automatically switches to the secondary volume. The source and target storage systems must be in same location.

**High-Performance FICON (zHPF) Including Multitrack**

These architecture and firmware enhancements leverage hardware assists developed for Fibre Channel Protocol (FCP). They transparently provide I/O improvements, including I/O rate, bandwidth and I/O service times, while preserving the quality of service. Hitachi VSP G1000 supports IBM: z/HPF; z/HPF for Basic and Queued Sequential Access Methods (BSAM and QSAM); z/HPF format write; z/HPF DB2® I/O; z/HPF bidirectional channel program; z/HPF DB2 list prefetch; and z/HPF list prefetch optimizer.

**Long-Term Agreement With IBM for Quick Problem Resolution**

Hitachi Data Systems and IBM have a long-term agreement to assist each other in quickly resolving any joint customer issues related to Hitachi storage and IBM mainframes and mainframe operating systems. The focus is on determining the source of the problem: The root cause and solution is provided by the vendor, whose product is identified as the source of the problem.

**Hitachi Commitment: Provide Compatibility With IBM zSeries® Mainframes**

Hitachi and Hitachi Data Systems are committed to providing industry-leading enterprise-class storage for IBM mainframe computing environments. With more than 20 years experience providing storage for mainframe systems, Hitachi is committed to delivering storage that provides essential compatibility with IBM mainframe capabilities. The Hitachi and IBM relationship is in place to enable the continued support of new features and functions of z/OS when they are delivered.

Hitachi and Hitachi Data Systems are top providers of leading-edge technology and storage solutions for both large and not-so-large enterprise customers with IBM mainframe infrastructures.