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Optica Technologies: zVT Introduction
A Granular, Modular & Scalable IBM Mainframe VTL

IBM Mainframe VTL Marketplace: A Brief Reprise

In September 1996 IBM announced the IBM TotalStorage Virtual Tape Server Model B16 (3494-B16), typically known as the VTS. This solution addressed a fundamental requirement to optimize the capacity utilization of the 3590 high capacity cartridge media (I.E. 10 GB raw) to reduce physical cartridge storage requirements in the associated IBM 3494 Automated Tape Library (ATL). This primary objective was delivered, where the previous generation 3490E tape device was emulated, storing 800 MB logical tape volumes on an intermediate RISC based disk cache, before final offload to physical 3590 tape. Typical physical cartridge reduction was ~60:1, optimizing customer investment in physical tape media, drives and supporting ATL structures. StorageTek (AKA Oracle) quickly followed suit with their Virtual Storage Manager (VSM) offering and from 1998 onwards, the IBM Mainframe VTL structure became the ubiquitous tape storage media choice.

In the next 20 years the IBM Mainframe environment has experienced a revolution in the amounts of data stored and associated availability requirements. In the first instance, the larger IBM Mainframe customer safeguards data availability with numerous copies of business data on disk resources, synchronously replicated in grid configurations. Therefore, the base requirement for tape processing has evolved accordingly, being an extra and indeed unique data copy, typically to provide recoverability for logical data corruption. It therefore follows that the larger IBM Mainframe customer has demanded similar synchronous and grid type architectures for their VTL solutions, but of course, tape data processing is fundamentally different when compared with disk. Disk processing requires random access data to be synchronised at the millisecond level, whereas tape data is processed sequentially, typically requiring a valid copy of disk data for backup or archive purposes.

The consolidation of the IBM Mainframe VTL marketplace in the ~2017-2019 period is notable. IBM have consolidated their options to the high-end TS7760, retiring their TS7720 and TS7740 models. Similarly, Oracle have also delivered significant performance and enhancements to their VSM offering, where the latest VSM 7 delivers significant resource when compared with the VSM 6 and older predecessors. Similarly, EMC have consolidated their DLm offerings to the DLm8500, retiring their DLm1000, DLm1020, DLm2000, DLm2100, DLm6000 and DLm8000 models.

In a marketplace with limited Mainframe VTL suppliers, primarily EMC (DLm), FUJITSU (ETERNUS), IBM (TS7760) and Oracle (VSM), all providing high-end offerings, competition and diversity is required, supporting the small to medium sized IBM Mainframe customer, with continued innovation to challenge the long-term incumbents.

Optica Technologies zVT is a Granular, Modular and Scalable IBM Mainframe Virtual Tape Library, delivering a variety of latest technology and flexible solutions, suitable for the smallest to largest IBM Mainframe user. Scalability is from 1 to 8 nodes, delivering ~500-4,000 MB/S performance, supporting capacities measured from tens of TB to tens of PB. Such modular scalability is ideal for all IBM Mainframe users, who can benefit from the same underlying architecture and leverage from modular increases in performance and capacity, for an acceptable cost.

Optica Technologies: Company Introduction

Optica Technologies is a privately held technology company headquartered in Louisville, Colorado, USA. Optica have been providing high-quality data centre infrastructure solutions since 1967. Optica has been an IBM strategic partner since 2002 and has received the most extensive IBM qualification available for third party solutions. Optica products have been successfully deployed in many major enterprise data centres worldwide.

The Optica Prizm FICON to ESCON Protocol Converter designed to enable IBM mainframe customers to invest in the latest System Z platforms (I.E. zEC12/zBC12 upwards), while preserving the ability to connect to critical ESCON and Bus/Tag device types that remain.

zVT Family Introduction

The next generation zVT Virtual Tape Node (VTN) exploits the latest Intel server technology, delivering outstanding performance, resiliency and scalability to serve a broad range of IBM Z customers. Each zVT VTN is modular and packaged efficiently with (2) FICON channels in an industry standard 2U rack format. The zVT VTN supports up to 512 3490/3590 Virtual Tape Drive (VTD) resources, delivering ~500 MB/S performance for the typical IBM Mainframe tape workload. As per some of the architectural design characteristics of the IBM Z Mainframe server (I.E. z13, z14), the zVT VTN server is enabled for operation in warmer environments than traditional data centres and engineered for extreme conditions such as high humidity, earthquakes and dust. To support the diversity of IBM Z Mainframe customer environments, from the smallest to largest, the flexible zVT solution is available in three different formats:

zVT 3000i

For IBM Mainframe users with more limited requirements, the fully integrated zVT 3000i model leverages the same Enterprise Class zVT VTN, incorporating 16 Virtual Tape Drive (VTD) resources and 8 TB of RAID-6 disk capacity, delivering 20 TB of effective capacity via the onboard hardware compression card (2.5:1 compression). The fundamental cost attributes of the zVT 3000i make a very compelling argument for those customers on a strict budget, who still require an Enterprise Class IBM Mainframe storage solution.

zVT 5000-iNAS

The flagship zVT 5000-iNAS solution is available in a fully redundant, high availability (HA) base configuration that combines (2) VTNs and (2) Intelligent Storage Nodes (ISNs). Advanced hardware compression, deduplication, encryption and replication are included as standard features. AES 256-bit inline Data At Rest Encryption (DARE) protects data against unauthorized access to lost or stolen disks by encrypting data prior to being written to disk. Intelligent replication software delivers WAN optimized data replication for disaster recovery and business continuity. Transmitting only unique compressed data and newer reference metadata to the remote zVT 5000-iNAS disk array via asynchronous replication significantly reduces network bandwidth requirements. Combined with in-flight encryption, the data transfer between zVT 5000-iNAS systems is protected from unauthorized access.

The fundamental design principle for zVT 5000-iNAS is an ability for modular, granular and flexible expansion of capacity and performance. The entry-level zVT 5000-iNAS HA offering incorporates 512 (256 per VTN) Virtual Tape Drive (VTD) resources, delivering ~1 GB/Sec performance, 144 TB RAW and ~288 TB of effective capacity using a conservative 4:1 data reduction metric. zVT 5000-iNAS disk capacity is configured and priced using a conservative 4:1 data reduction metric, however mainframe customer data sets often deliver higher levels of data reduction up to and beyond 8:1.

IBM Z customers can scale zVT 5000-iNAS performance by increasing the number VTN and ISN resources from 2 to 8 for granular performance improvements to a maximum performance rating of ~4 GB/Sec. For additional capacity requirements, a capacity only, cost-optimized Capacity Storage Node (CSN) allows for modular additions of 72 TB RAW to a maximum capacity in excess of 11 PB RAW. The recent IBM z14 ZR1 announcement and the available 16U of contiguous rack space provide an ideal location for the zVT 5000-iNAS HA system (9U).

zVT 5000-FLEX

For IBM Mainframe users wishing to leverage their investments in IP (NFS) or FC (SAN) disk arrays, the zVT 5000-FLEX offering can be configured with (2) 10 GbE (1 GbE option) or (2) 8 Gbps Fibre Channel ports. Virtual Tape Drive (VTD) flexibility is provided with VTD options of 16, 64 or 256.

zVT Family Summary

The zVT next generation modular VTN design allows for easy expansion of performance, capacity and field upgradability for any member of the zVT family. As IBM Z Mainframe customers, including new z14 ZR1 users, experience change and growth in their workload, the flexible zVT VTN architecture offers the optimal mix of features, price and performance.

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zVT Benefits

Ultimately zVT is just another IBM Z Mainframe tape (I.E. 3490, 3590) device, benefitting from the latest IT market place technologies, packaged with a flexible architecture for affordable granular growth in terms of capacity, performance and availability:

- ***Interoperability***: seamlessly works with all IBM Z disk and tape hardware and software storage solutions
- ***Standard Support***: supports all major IBM Z operating systems, Linux on z, z/OS, z/VM and z/VSE
- ***VTL Filesystem***: uses industry standard AWS file format, simplifying VTL migration considerations
- ***Performance***: modular scalability from ~500-4,000 MB/S performance, in 500 MB/S increments
- ***Availability***: the zVT 5000-iNAS model packages 2-8 VTN and associated capacity resources, for High Availability
- ***Investment Protection***: zVT benefits from regular field upgradable technology updates, eradicating EOS concerns
- ***Intelligent Support***: Streamlined 24*7 support, for simplified diagnostics collection and problem resolution
- ***Optimized Maintenance***: zVT leverages from the latest technologies to optimize on-going annual support costs

For more information please visit the zVT Portal or Email our Sales Team or call us on +44 (0) 845 0579386.

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