

REDEFINING SAP INFRASTRUCTURE WITH EMC XTREMIO

Implementing SAP Infrastructure with EMC XtremIO All Flash Arrays is a Game Changer

EMC Global Solutions Group

Abstract

This White Paper provides examples of how the extraordinary capabilities and benefits of SAP infrastructure on XtremIO are causing Enterprise customers to redefine their SAP environment and running it with XtremIO.



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EXECUTIVE SUMMARY

Companies using SAP constantly face challenges in running a very complex infrastructure while meeting their most critical business service levels and operational goals at lower costs.

Since its launch, EMC XtremIO has achieved market leadership with its all-flash scale-out enterprise storage architecture by providing predictable and consistent performance to meet the demanding workloads required by SAP customers. Implementing SAP on XtremIO challenges the status quo resulting in dramatic performance gains, significant cost savings and operational efficiencies without modifications to SAP applications or its code.

This white paper explains how SAP customers can gain the confidence to run SAP Production, Development, and Test environments entirely on the XtremIO platform without worrying about the impact on performance and with a lower Total Cost of Ownership. For instance, deploying SAP on XtremIO can:

- Improve performance for SAP applications working together in a typical modern environment without modifying or tuning databases or SAP applications
- Provide better consolidation with inline deduplication and space efficient snapshots
- Improve TCO with lower OPEX and lower CAPEX
- Leverage simplicity on setups for optimized implementation and operations

It is not uncommon these days for an SAP customer to have ECC, BW, CRM, SRM, EP, XI, and Solution Manager running side by side, so all these SAP applications need to work together. EMC XtremIO can not only improve the performance of each individual SAP application, but can also improve the performance of the interaction between them. For example, data transfer between SAP ECC and SAP BW via InfoCube extractions can be accelerated significantly on XtremIO as compared to modern enterprise-class storage arrays commonly found in SAP shops. XtremIO also improves the performance of individual SAP applications, such as long running batch jobs and reports, a concern for all SAP customers.

Due to larger and larger landscapes needed to support a modern SAP implementation, SAP customers must address this “infrastructure sprawl”. Concerned about growing storage costs and the impact on performance caused by the mixing of Production and non-Production workloads on the same storage array, SAP customers have traditionally put Production on Tier 1 storage while non-Production environments are put on so-called Tier 2.

XtremIO offers industry-leading efficient copy management and data reduction capabilities which enables SAP customers to reduce their storage capacity requirements resulting in huge savings from storage costs in their SAP environments. For example, customers see an average of 35% savings in storage utilization as the result of a 6:1 data reduction due to inline deduplication and compression when consolidating all SAP environments on XtremIO. Furthermore, its snapshot functions create instantly useable copies of SAP environments without any penalty on performance and space utilization, significantly reducing CAPEX.

EMC XtremIO also brings down the overall TCO because of environmental savings and operational efficiency improvements. The simplicity of setup and operations with EMC XtremIO in SAP environments compared to traditional storage has proven to be remarkable. That's another compelling reason for implementing the entire SAP environment on XtremIO.

Customers have been very pleased that significant benefits can be quickly realized even without making any modification to their SAP code or tuning to the database, or even to the rest of their SAP environment. Depending on the scale and complexity of a customer's existing SAP environment their results may vary. However, migration to XtremIO could be as simple as a restore from backup infrastructure such as Data Domain, although EMC Professional Services is ready to assist customers in any aspect of their data migration.

INTRODUCTION

Purpose

To provide real world customer examples that will demonstrate the extraordinary capabilities of SAP on XtremIO

To share data points that will help customers redefine their SAP Infrastructure by deploying on XtremIO

To build the case for why customers should implement their SAP environments on XtremIO

Scope

This white paper serves the following objectives:

- Informs about the challenges facing SAP customers
- Describes specific SAP customer examples of using XtremIO to:
 - Improve Performance within SAP customer environments
 - Deliver better Consolidation
 - Lower TCO
 - Leverage the Simplicity of setup and operations
- Recommends next steps for customers to benefit from running SAP on EMC XtremIO

Audience

This white paper is intended for all technical customers including SAP Basis Administrators, Storage Architects, DBAs, and SAP Infrastructure Team members who are seeking ways to improve performance and lower the TCO of their SAP environments.

TIME TO REDEFINE SAP INFRASTRUCTURE WITH EMC XTREMIO

As companies work to address the complexities and challenges of running their SAP environments more efficiently and cost effectively while struggling to meet their business SLAs, they are being presented with opportunities to truly redefine their SAP Infrastructure through the use of XtremIO. This white paper highlights four areas in which XtremIO has delivered dramatic improvements and has caused companies to completely rethink (and hence redefine) their SAP implementations by using XtremIO to deliver the following results.

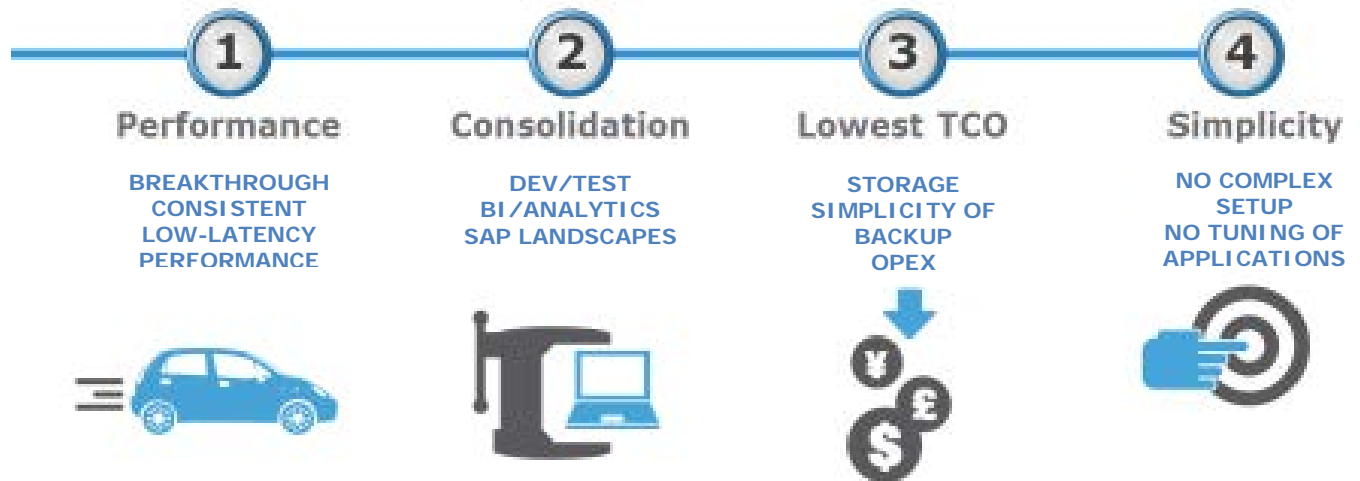


Figure 1. Four Key Areas for Redefining SAP Infrastructure with XtremIO

Improving Performance

For individual SAP applications and working together across ECC, BW, CRM, SRM, EP, XI and Solution Manager application platforms with low latency for faster queries and faster batch processing. XtremIO on SAP has also shown substantial improvements in Production performance without any code changes, database tuning, or operational process changes of any kind.

Better Consolidation

Delivering better consolidation of multiple copies for Production, Test, Development, and Quality Assurance by consuming less overall storage capacity through inline deduplication & inline compression, space efficient snapshots, and scale-out architecture.

Lower TCO

Lowering Total Cost of Ownership with storage consolidation, server infrastructure reductions, lower power and cooling costs, and lower database licensing costs leading to lower OPEX and CAPEX.

Leveraging Simplicity

With simplicity of setup, backups, and operational process improvements such as simplified storage provisioning requiring no extra time for complex tuning of databases, or modifying SAP applications.

APPROACH

For this white paper, we used real-life SAP customer experiences and reported measurements with key SAP applications, reports, or transactions and then compared the results of using XtremIO on SAP to those of using a robust enterprise-class legacy storage array.

The following sections will also show specific examples of how and why SAP on XtremIO is delivering dramatic results in:

- **Performance gains**
- **Operational efficiencies**
- **Cost savings**
- **Simplification**

And these proof points will further reinforce the reasons why XtremIO has achieved its market leadership position in such a short timeframe.

IMPROVING PERFORMANCE WITH SAP ON XTREMIO

Improving the Interaction between SAP ECC and SAP BW

Any all-flash array (AFA) will run faster than traditional storage configurations under most conditions, and it is expected that XtremIO would improve the performance of individual SAP applications like SAP ECC, SAP BW, and SAP CRM and so on. But would XtremIO have any impact on the interaction between the various SAP applications so commonplace in a modern SAP environment? This first example describes how XtremIO can have a significant impact on the regularly performed tasks of extracting data from SAP ECC using a BW process chain. SAP process chains are robust graphical scheduling and monitoring tools that automate complex tasks or process scheduling, visualize those processes, and centrally control associated tasks such as loading or extracting data.

The following customer experience shows an SAP process chain involving Production Planning Control between SAP ECC and SAP BW which is an important component of any SAP ERP customer system. These results show that this **SAP process chain ran twice as fast on XtremIO** compared to previously used legacy storage methods and that the legacy storage configuration was an auto-tiered flash with Fibre Channel drives while the XtremIO cluster configuration is on 2 X-Bricks.

By using transaction code ST03N, part of the SAP Workload Monitor which provides performance data on SAP systems, we are able to measure performance improvements using DB Time, also known as the Average Database Time per Dialog Step to SAP Basis people. DB Time is the amount of time needed for data to be read from storage into the buffers of the database server and the key metric to measure performance improvement or degradation caused by a storage subsystem. This metric is a far more accurate measurement than Average Response Time which measures the time it takes for data to move through the network tier, application tier, server tier, and storage tier with the wait times between those sessions also counted.

Table #1 below shows the results of an InfoCube extraction from SAP ECC as the info source to load data into the target area in SAP BW and the result was that the process chain for this cube extraction ran twice as fast on XtremIO, a 139% performance improvement over an enterprise class storage array.

Production Response time	XtremIO Response time	Improvement	%	Production DB time	XtremIO DB time	Improvement	%	
142,872	51,267			121,473	12,751			
471,415	377,148			455,136	220,797			
170,695	127,469			82,125	12,210			
9,453	3,536			8,280	1,492			
62,264	111,930			20,768	41,000			
TOTALS	856,699	671,350	185,349	28%	687,782	288,250	399,532	139%

Table 1. Improvement in performance of an InfoCube extraction from SAP ECC to SAP BW

This Production Planning and Control process chain involves SAP ECC working with SAP BW, and it is initiated by SAP BW. This process chain pulls data from ZPP PROD ORDERS in SAP ECC to update ZPP ORDR in SAP BW. The process chain selected 91,300 records which were loaded into the PSA (Persistent Staging Area) in SAP BW by the program SBIE001 running in 5 threads, as shown in the screen shots below which are the source of the results shown above in Table 1.

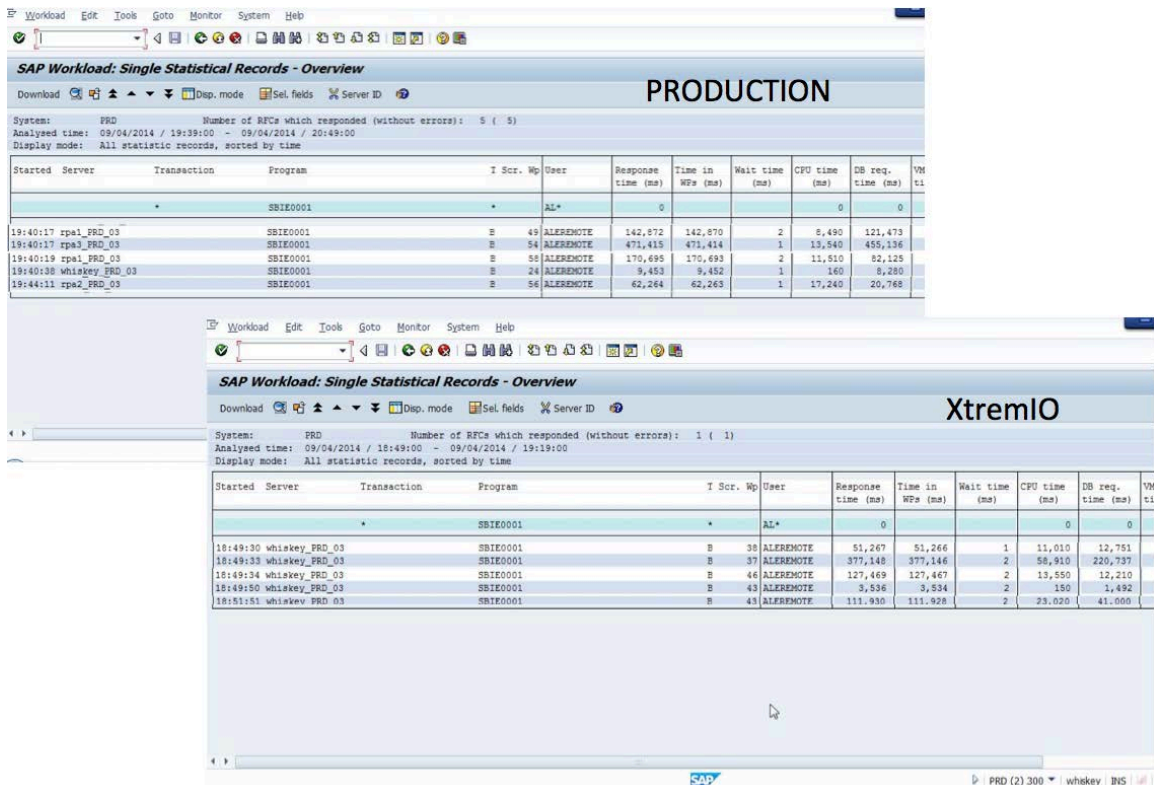


Figure 2. Results Comparison between Production & XtremIO in Table1

These performance improvements enable SAP Customers to rethink their data extraction strategy. By combining these SAP BW process chains and pulling in data from SAP ECC to SAP BW twice as fast, business users can run their reports with more current data on a more timely basis.

There are additional examples of performance improvements in data transfer between SAP ECC which is the data source for InfoCube extractions that are loaded into SAP BW for Reporting and Business Intelligence functions. These cube extractions are a major consumer of compute and storage resources.

The results below show that the two daily extracts from SAP ECC to SAP BW could be improved by 280% and 70% with XtremIO. And these dramatic performance improvements were achieved without code changes, database tuning, or operational process changes of any kind.

SID	Extract From ECC to BW	No. of Records		Duration in secs	% Diff	Info Package
PRD-BWP	Z_TD_DAILY	45115		137		F T D PC OCO_OM_OPA_1
XIO-BWP	Z_TD_DAILY	45026		36		F T D PC OCO_OM_OPA_1
			Improv	101	280.56%	
PRD-BWP	Z_CO_DAILY	7227		522		F T D OCO_OM_OPA_2 Budget
XIO-BWP	Z_CO_DAILY	7194		307		F T D OCO_OM_OPA_2 Budget
			Improv	215	70.03%	

Table 2. Performance improvement for extraction from SAP ECC to SAP BW

With these significant performance improvements in the interaction between SAP applications, Business and IT users can gain significant benefits.

- The SAP process chain for Production Planning Control with an ERP system **runs twice as fast on XtremIO** thanks to a **139% performance improvement**
- A process chain InfoCube extraction from SAP ECC into SAP BW for Reporting and Business Intelligence shows that two daily extracts could be **improved by 280% and 70% with XtremIO**

Improving the interactions between SAP applications with XtremIO has proven to be sufficiently impactful to SAP system performance without any change being made to their code. Although every customer will have varying levels of improvement depending upon their specific environment, these performance improvements between SAP applications provide SAP Business users with the ability to utilize more up-to-date data from their SAP applications for reporting and decision support work. In addition, these improvements are an overall win for Business and IT users, which are causing SAP customers to redefine their SAP Infrastructure with XtremIO.

Improving the Performance of Long Running Batch Jobs with XtremIO

Every SAP customer works with long running batch jobs that perform operational, transactional, structural, or transformative updates which can impact the overall performance of their SAP environment. These batch jobs are background programs scheduled to run on a regular basis without any user intervention. However, SAP batch jobs process high volumes of data that would consume long term memory if run in foreground and can use up large amounts of computing resources in a Production SAP system. So it is common practice to run these large & long running batch jobs at night or during the weekend when there are few interactive users on the SAP system competing for resources.

Examples of SAP Functional Batch Jobs, which are operational or transactional in nature, include jobs that post recurring entries into monthly general ledgers (such as rent or insurance); jobs that perform inventory counts; jobs that open or close Materials Management (MM) periods; and jobs that reconcile inventory with goods being shipped during a particular settlement period.

Examples of SAP Basis and Technical Batch Jobs which are structural or transformative in nature include jobs that archive non-current Purchase Orders from the active tables; jobs that clean out the TemSe area (the temporary area where spooled print jobs are stored); and jobs that collect performance statistics of the database for the DBA to review and with which to take actions.

The following screens show an SAP ECC batch job *CAL BC ARC MM_EBAN* that archives old Purchase Requisitions so that the information is still available, but not found in active tables. This job helps to improve performance when running day to day business processes especially when working with current Purchasing Requisitions.

User	Name of Background Job	# Steps	T Response Time	Ø Time	Process.	Avg. Proc. Time	T CPU~	Ø CPU Time	T DB Time	Ø DB Time
CALBATCH	CAL BC ARCH MM_EBAN	1	104,568	104,568,038.0	68,675	68,674,810.0	23,102	23,102,030.0	31,598	31,598,200.0

User	Name of Background Job	# Steps	T Response Time	Ø Time	Process.	Avg. Proc. Time	T CPU~	Ø CPU Time	T DB Time	Ø DB Time
CALBATCH	CAL BC ARCH MM_EBAN*	1	46,663	46,663,029.0	30,439	30,439,277.0	19,188	19,188,190.0	14,258	14,258,062.0

Figure 3. Improvement of SAP ECC Batch Job using XtremIO

It is worth noting that this particular batch job took 29 hours (104,568,038 milliseconds) to run on the SAP Production system using legacy storage (see Table #3 and Figure #3 below) and it consumes significant system resources so it can only be run on the weekend.

Furthermore, because this job competes for system resources, the customer loses time for running other large monthly archive jobs and reorganizational batch jobs. A customer's SAP Basis team commented that if this job is run any less than once a month, the performance of their day-to-day operations begins to deteriorate too much and their business users will begin to take notice.

	Production	XtremIO	Improvement	%
Total Run Time	104,568,038	46,663,029	57,905,009	124%
DB Time	31,598,200	14,258,062	17,340,138	122%

Table 3. Performance Improvements for Batch Job in DB Time & Run Time

Table #3 and the above screens show that aforementioned batch job, which previously took 29 hours to run on robust legacy storage, can now be run in 13 hours on EMC XtremIO - this means that this resources consuming batch job ran more than two times faster! This notable **performance improvement was 122% in DB Time and 124% in Run Time** by running an unmodified copy of the Production SAP ECC system on XtremIO. Depending on the specific SAP environment in place, customer performance may vary from their use of XtremIO for these batch jobs and other long running jobs.

It is even more remarkable when we take a closer look at the details of this long running and resource consuming job, which are shown in the Table #4 below:

Oracle database rows read (total)	74,746,179
Oracle database rows - direct read	2,744
Oracle database rows - sequential read	74,703,260
Oracle database rows - Update	1,185
Oracle database rows - Delete	159
Oracle database rows - Insert	38,831

Table 4. Oracle level details of batch job CAL BC ARCH MM_EBAN

This job took so long to run because it read almost 75 million database rows, of which over 74 million rows were *sequential read* (a huge resource and time consumer), and it performed 38,831 inserts.

By using XtremIO to run these long running jobs, SAP customers can take significantly less time to run those jobs (in this case, it took less than half the time) allowing them more time and greater flexibility to run other programs. Since these SAP batch jobs are essential for every SAP customer to organize and operate their SAP environment, the increased efficiency and improved performance provides a fundamental advantage to every SAP customer who uses XtremIO. Achieving these results without making code changes, operational process changes or database tuning of any kind makes it that much more remarkable!

ACHIEVING BETTER CONSOLIDATION WITH XTREMIO

Why Architecture Matters

When it comes to running SAP landscapes on XtremIO, architecture does matter! XtremIO's real-time Data Services which incorporate "always running" thin provisioning, deduplication, inline compression, data protection, data-at-rest encryption, and writable snapshots bring huge impact on the consolidation of SAP environments resulting in significant savings due to reduced storage space consumption, optimum agility, improved availability, and security with every SAP application and for each user, during both peak and normal times.

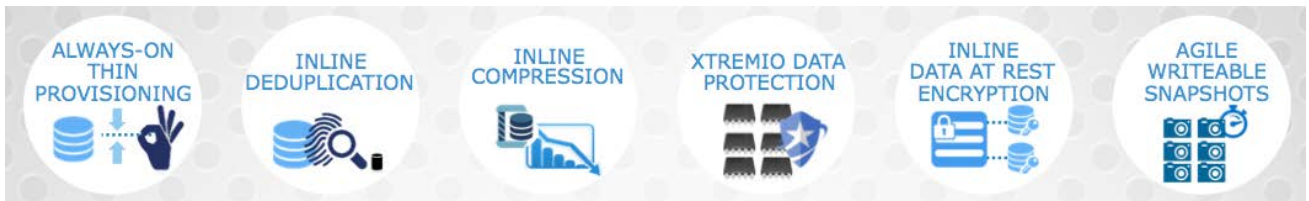


Figure 4. Data Services Components of XtremIO

With XtremIO's innovative architecture, incoming data streams are "finger printed" into the XtremIO Service Processor which compares that data for duplication and only writes that data once to the flash drive in a compressed format. These XtremIO Data Services enable inline deduplication and inline compression to work together at the time data is initially ingested. Therefore, this approach provides a much more efficient consolidation of data and expands the life of flash drives. In addition, it creates a more agile, writable snapshot which saves storage space. The way that inline dedup and inline compression work on XtremIO is significantly different than on legacy storage environments where dedup and compression are done only after the data has already been put on the disks, thus increasing storage array processing overhead.

Another differentiator is that XtremIO is 100% thin provisioned all the time in Production, and this capability provides unique space saving opportunities for SAP environments as compared to legacy storage where even thin-provisioned LUNs are "fully allocated" in Production.

Here are links to White Papers on XtremIO that further explain those advantages:

http://info.xtremio.com/rs/xtremio/images/H12453-1-so-pdf-xtremio-unstoppable_Data_Reduction.pdf

http://info.xtremio.com/rs/xtremio/images/Introduction-to-XtremIO-Snapshots_H13035_Rev-01_Draft_2014-06-29_1.pdf

http://info.xtremio.com/rs/xtremio/images/White-Paper_XtremIO_Data-at-Rest-Encryption_H13038-1_Rev-02.pdf

http://info.xtremio.com/rs/xtremio/images/White-Paper_Introduction-to-XtremIO-Storage-Array_Ver-3-0_H11752-5_Rev-06_Draft_2014-07-02_1.pdf

Always-on Inline Deduplication & Inline Compression

The concept of deduplication (dedup) is used for saving space on actual storage arrays by storing similar data blocks only once. It is a well-documented fact that SAP environments and databases share significant amounts of the same information because they are often duplicate copies of a source SAP instance.

XtremIO always-on inline dedup can bring tremendous savings because it is smart enough to only store the difference between a Production (PRD) copy and the User Acceptance Test (UAT) copy, thereby avoiding the storage of duplicate copies of those data files, resulting in smaller storage being consumed. XtremIO also offers data compression as a standard, real-time, always-on and automatic Data Services capability, without any performance penalty.

With XtremIO's inline dedup and inline data compression working together, EMC customers with SAP on XtremIO have consistently achieved **a 6-to-1 data reduction ratio on average**. This means that on an X-Bricks cluster with 30TB usable space, 6:1 inline dedup and data compression will in fact yield a possible 180TB of effective usable space.

Let's use an example of a **hypothetical SAP landscape** to illustrate the dramatic impact that XtremIO's inline dedup and inline compression can bring to a typical SAP environment, which is around 30% to 35% in space savings:

SAP Apps on Legacy Storage	PRD	Dev	QA	UAT	Total
SAP ECC	9	4	4	9	
SAP BW	8	3	3	8	
SAP CRM	6	2	2	6	
SAP SRM	7	3	3	7	
Total space consumed	30 TB	12 TB	12 TB	30 TB	84 TB

SAP Apps on XtremIO (6:1 dedup & compression)	PRD	Dev	QA (dedup from DEV)	UAT (dedup from PRD)	Total
SAP ECC	9	4	2.60	6.5	
SAP BW	8	3	1.95	5.0	
SAP CRM	6	2	1.30	3.9	
SAP SRM	7	3	1.95	4.5	
Total space consumed	30 TB	12 TB	7.8 TB	19.5 TB	54 TB

Table 5. Benefits of XtremIO's Inline Dedup & Compression

Table 5 is an example of a hypothetical SAP environment for illustration purposes only and results may vary depending on your particular environment. The assumption is that there was no dedup at all between the PRD and DEV environments, although there would likely be dedup between these two environments since there should be significant common data such as in the

Master Data tables. Therefore, the reductions in storage requirements described above become even more dramatic for SAP customers.

Please note that inline dedup is NOT a snapshot, but a full copy of a database which would have consumed actual disk space in a legacy storage environment – XtremIO's deduplication works without any SAP performance impact.

Writable Snapshots

The way that XtremIO handles snapshots elevates the status of snapshots from a data protection tool to be a key enabler with huge productivity gains for SAP customers by transforming their entire SAP environment to become more agile with better usage of data and resources. With XtremIO, snapshots become:

- Inherently writable with no cloning and very quick mounting of the snapshot so customers can get as many writable copies as they need of Production volumes on-demand
- Affordable and scalable with superior performance with smaller footprint
- Highly efficient space utilizers due to no metadata bloat

SAP customers can take a writable snapshot of the original copy and leverage that snapshot for Dev/Test, User Acceptance Test (UAT) and other purposes while achieving varying degrees of massive consolidations for their Data Warehousing and Business Intelligence copies.

Through these best practices, customers are better able to manage their database lifecycle with agility and flexibility using the real-time analytics and more accurate reporting of XtremIO. In the next section on lower TCO, there is also a discussion on EMC customers who have taken advantage of XtremIO's snapshot capability to implement a process improvement in their handling of logical corruption to their SAP databases.

Consolidation Summary

With the XtremIO's innovative architecture, specifically the always-on XtremIO Data Services, SAP customers can expect:

1. An average of 6:1 data reduction ratio achieved through the combination of inline deduplication and inline compression – in other words, a 30TB useable X-Bricks cluster is deployed a customer would yield 180TB of effective useable storage space
2. Easy to use snapshot solutions with no performance penalty which allows for everything from quick creation of new SAP environments for training or testing, to actual process improvements in how logical database corruptions can be more easily and quickly dealt with.

LOWERING TCO WITH LOWER OPEX AND CAPEX

Lower OPEX

XtremIO enables customers to have a smaller footprint than with legacy storage environments which means that they use less power and heat dissipation (cooling) while using less space in their data centers, resulting in a lower OPEX.

All EMC products utilize power-factor corrected power supplies. For purposes of estimating power usage, customers can assume the input Wattage (W) is equal to the input Volt-Amps (VA). However, a more accurate approach would be to take the power consumption in BTU per hour and then use the EMC Power Calculator to calculate the result in Kilowatts (KW). This EMC Power Calculator is a web-based tool available to all EMC employees, EMC partners and EMC customers with valid logins. This tool enables customers to calculate power requirements and then to make changes that positively impact their OPEX.

One customer has experienced annual expense savings of over **35% in reduced power consumption and lower cooling** bills after implementing XtremIO on SAP for the same amount of usable storage capacities, when compared to its existing enterprise legacy storage platform. These results are based on this customer's own calculations using the EMC Power Calculator.

Another customer example involves the European division of a global manufacturing company with a large SAP and Oracle implementation, converted its database environment from traditional enterprise storage to XtremIO's all-flash storage system with these objectives:

- Cost-effectively improve the responsiveness of their SAP/Oracle systems
- Allow new applications to be more rapidly deployed
- Utilize more advanced analytic queries
- Reduce power consumption and save limited space

Prior to conversion, this customer's SAP/Oracle application environment was made up of 6 database and 10 application servers. Their previous traditional storage system had two storage controllers and eight shelves of disk drives which required 40U of rack space to deliver 30,000 I/Os per second (IOPS) to their SAP/Oracle environment. And the power consumption of that storage system was about 3.85 kilowatts (KW) of electricity which used 13,100 BTU/hr (British Thermal Units per hour) to cool their data center.

For this same customer, the flash storage implementation of XtremIO on SAP/Oracle applications used just 3U of storage space, which translated to a 90% reduction in rack space compared to their previous storage system.

The significantly smaller footprint of XtremIO over traditional storage systems enables customers to also take advantage of dramatic reductions in floor space utilization. In this example, the customer needed a 3U rack for XtremIO which required 700 Watts of power and generated 2,388 BTUs for a significant savings in power, cooling and space. On average, customers are seeing roughly a 75% reduction in floor space consumption for the same amount of usable storage capacity through their implementations of XtremIO on SAP.

<i>TCO with:</i>	<i>Legacy Storage</i>	<i>XtremIO Array</i>	<i>Improvements with XtremIO</i>
<i>Space</i>	<i>40U Rack</i>	<i>3U Rack</i>	<i>35%* to +90%</i>
<i>Power</i>	<i>3.85 Kilowatts</i>	<i>700 Watts</i>	<i>35%* to +82%</i>
<i>Cooling</i>	<i>13,100 BTUs/hr.</i>	<i>2,388 BTUs/hr.</i>	<i>35%* to +82%</i>

Table 6. TCO Results for Space, Power, and Cooling with XtremIO

Table 6 above describes a customer example that resulted in a three-year ROI of more than \$750,000 from savings in space utilization, power consumption and heat dissipation. ***Note:** Another customer with a different legacy array saved 35% in OPEX per year from reduced space and power usage and cooling costs.

Lower CAPEX

By using XtremIO with SAP applications, backup procedures can be changed to improve how the SAP DBA, functional experts, and Basis expert can resolve specific SAP functional problems such as data corruption which would require time-consuming database restore and recovery from backup media.

Instead of keeping 7 days of backup on external media like a tape device, the required 7 days of database backup are kept on XtremIO as snapshots, with ONLY the latest snapshot being sent to a tape or other backup devices instead of keeping all 7 days of backup residing on such backup devices. This significantly reduces storage requirements through the use of XtremIO snapshots.

However, RTO (Recovery Time Objective) has been significantly improved with this new approach. Since the 7 days backup of the database are on the XtremIO array itself, SAP customers can now shift their data restore responsibilities from the Data Base Administrator to the Storage Administrator, although the DBA still needs to be involved in the recovery of the database to resolve any logical corruption on the database.

As a result, XtremIO has transformed backup procedures for SAP customers. By reducing backup windows and minimizing recovery times previously required for critical tasks, SAP Business and IT users are now experiencing less impact on their Production system performance. These simplified backup procedures also enable SAP customers to improve their backup strategies for non-Production.

The real value, which will be measured differently by every SAP customer using XtremIO, is that it takes significantly less time for a storage administrator to remount XtremIO snapshots to a server than to execute a restore from backup devices. As a result, the DBA only has to recover the database to a consistent state and open it. And since restoring the database from backup media is the most time-consuming part of any database recovery procedure dealing with logical corruption, this saves a tremendous amount of time and labor.

In summary, XtremIO has enabled customers to achieve faster recoveries from logical corruption incidents which means their SAP users have more time to complete other critical work activities and it also lowers their TCO.

LEVERAGING SIMPLICITY

Simplicity of Setup, Operational Processes, and Backups with XtremIO

Another challenge facing SAP customers today is their need to simplify the increased complexity of operating an SAP environment and their growing interdependencies of those systems. For many traditional SAP customers, the limitations of these interdependent infrastructure stacks supporting SAP systems makes those tasks either too time consuming or too difficult to achieve in a timely manner.

With SAP on XtremIO, the simplicity of setup, day-to-day operations, and backup procedures makes it possible to simplify SAP systems management and reduce man-hours needed for regularly scheduled tasks with no tuning of applications. In fact, simplicity is one of the overarching themes with XtremIO on SAP that can be applied to:

- Making it easier and faster to complete SAP system setups
- Reducing the time needed for operational processes
- Improving the data migration phase for better implementation results
- Reducing backup windows to minimize recovery times on critical tasks

Through the simpler user interface (UI) of XtremIO, less configuration time is now needed to setup and complete SAP implementations. In fact, XtremIO configurations are much simpler to implement than legacy storage. Through the use of XtremIO, this simplification has resulted in some of those SAP implementations being completed in less than one day, which is a significant improvement over traditional storage implementations for SAP that usually take several days to complete.

Another SAP customer estimated they had a 90% improvement in installation time due to XtremIO's simplicity in standing up their cluster. The setup and optimization phases of this SAP customer's implementation were all completed in 30-minutes compared to the time needed on their traditional storage array systems, which previously had taken more than a day to configure and setup.

In addition, there is simpler zoning to allocate data resources for load balancing since XtremIO scans the bus and the GUI is very intuitive to use (as an example, zoning work was done in one hour vs. four hours on legacy storage).

<i>Simplicity for:</i>	<i>Legacy Storage</i>	<i>XtremIO Array</i>	<i>Improvements with XtremIO</i>
<i>Implementations</i>	<i>>3 Days</i>	<i><1 Day</i>	<i>+66%</i>
<i>Setup, Tuning & Layout</i>	<i>>8 Hours</i>	<i>30 Minutes</i>	<i>+94%</i>
<i>Zoning Work</i>	<i>4 Hours</i>	<i>1 Hour</i>	<i>+75%</i>

Table 7. Leveraging Simplicity for Implementations, Setup, & Zoning

The implementation of SAP systems is the most critical phase facing any SAP customer in terms of saving resources (people, money, and time) and improving business processes. One of the most important aspects of this challenge and a key to its success is data migration. Previous implementations of SAP have shown that data migration can amount to 40% of the entire project in resource utilization. And a poor data migration phase can make the “Go Live” extremely difficult to successfully complete. With XtremIO, the process of data migration is a simple restore from backup.

SAP customers must also be able to properly test changes, deploy new test environments, and have Production copies quickly available for stress tests and debugging. In addition, SAP Infrastructure Teams and Business Users must effectively manage risk on their complex change projects, like creating rollback points for critical phases of system upgrades or simply to ensure a production backup immediately before transport requests are passed to Production.

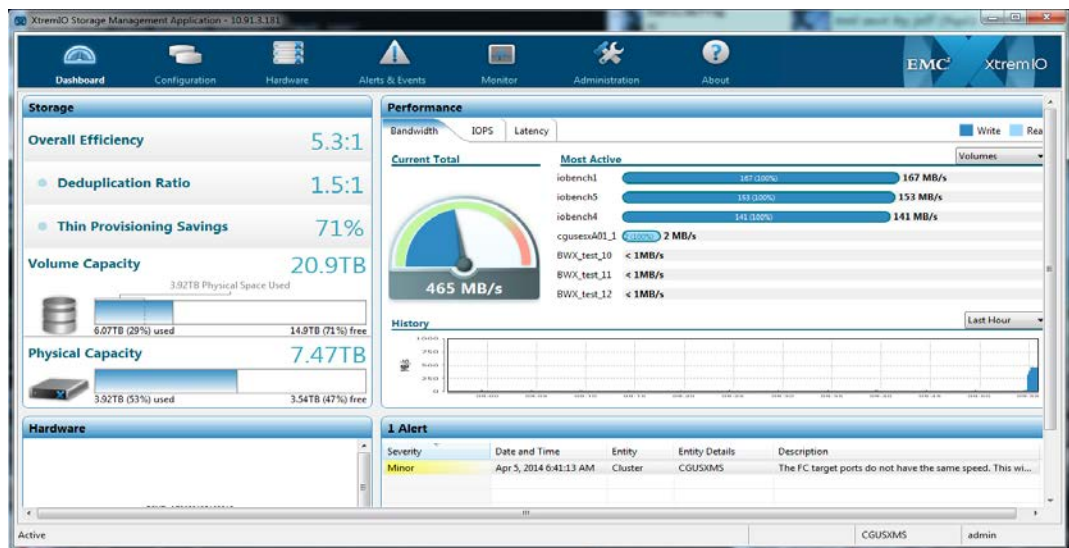


Figure 5. XtremIO’s Storage Administrator Console & Dashboard

This screen shot above (Figure 5) shows the actual XtremIO dashboard. At-a-Glance, this dashboard provides an XtremIO System Administrator with simple to read, understand, and operate gauges that enable them to manage the data requirements and storage configurations of their SAP systems from an easy to use, single console. Again, SAP on XtremIO delivers with a simple to operate model that is unmatched in the marketplace today.

There is also simpler and more efficient monitoring, better storage provisioning, and automated configuration capabilities that further reinforce this simplification message with XtremIO.

When most customers replace their traditional storage systems with the XtremIO all-flash storage system, that implementation is completed without any complex setup or application tuning and is fully deployed within a few days. This is possible because XtremIO arrays do not require facility changes—they can utilize the same racks, power connections, and networking that had been in place previously. Once again, the simplicity of XtremIO saves the day and saves our customers significant time and money.

Each SAP customer will benefit in their own ways from leveraging simplicity through XtremIO. However with XtremIO, simplicity applies to system setup, to operational processes, to data migration and through to backup routines which allows SAP Infrastructure Teams and Business Users to work faster while getting more work completed quicker.

RECOMMENDED NEXT STEPS

Next Steps

There are numerous ways to benefit from the tremendous advantages of implementing XtremIO for SAP. Please consider the following next steps:

- Contact your EMC Sales Team or EMC Business Partner
- Visit our XtremIO for SAP Resources Page on Everything SAP at EMC at: <https://community.emc.com/docs/DOC-38703>
- Refer to: www.xtremio.com/ for relevant materials within the XtremIO Resource Library
- Request an XtremIO demo from your local XtremIO representative or go to www.xtremio.com/demos

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