

# Community Hospital Speeds EHR and SQL Applications with DymaxIO I/O Transformation Software



Community Medical Center (CMC) had one initial requirement – find a FAL remediation solution for their MEDITECH electronic health record (EHR) application to maintain 24/7 availability and avoid downtime. While turning to DymaxIO™ I/O reduction software for this purpose, what they didn't expect was the additional value it provided to their aging storage infrastructure, enabling CMC to squeeze significantly more performance from their existing systems. As a result, CMC deployed DymaxIO beyond their MEDITECH servers to improve the performance of all their Tier-1 applications.

## THE CUSTOMER

Community Medical Center in Falls City, Nebraska, is a general medical and surgical hospital. CMC offers hope, healing, and assurance through quality healthcare, engaged outreach, and faithful stewardship.

## THE CHALLENGE

CMC faced two key challenges. Firstly, they needed a FAL remediation (File Attribute List over expansion) solution to ensure 24/7 availability of their MEDITECH electronic health record (EHR) application. ConduSiv's DymaxIO I/O transformation software was the obvious choice to meet that requirement.

Secondarily, CMC's aging storage infrastructure was having difficulty meeting performance SLAs required by doctors and clinicians who rely on the MEDITECH application for all patient care needs.

"Our doctors and clinicians were losing too much time on basic tasks like waiting on medical images to load, or scanning images, or even just navigating from screen to screen within the application. The easy answer is to buy new server and storage hardware; however, that's also a very expensive answer. When you're a small hospital, you need to squeeze every last drop of performance out of your existing infrastructure. Since we don't have the budget luxury of doing hardware refreshes every three years, we need to get at least five years or more from our storage backend," said the IT Director at Community Medical Center."

The IT Director continued, "We initially purchased DymaxIO I/O transformation software to meet an availability requirement, but what surprised us the most was how much value it added to our aging storage infrastructure by offloading a significant amount of I/O traffic.

## CHALLENGES

- User complaints related to sluggish MS-SQL performance
- Expensive fork-lift upgrades to all-flash was not an option

## DYMAXIO BENEFITS

- 50% or greater application performance improvement, with no additional hardware
- Latency and throughput dramatically improved
- True "set and forget" management
- Compatible with all SAN/NAS systems
- Easily deploy to largest virtual, physical, or cloud environments in just 5 clicks
- Before-and-after performance reporting to validate performance gains
- Enterprise-wide visibility into I/O performance, from VM to storage

“There’s no way we would have achieved a 5-year lifecycle on our storage system without DymaxIO offloading so much I/O traffic from that subsystem.”

IT DIRECTOR

## ENVIRONMENT

- Key applications – MEDITECH EHR, NextGen EHR, MS-SQL, Citrix XenApp
- Servers – HPE DL380 Gen9 & HPE DL325 Gen10 Plus
- Operating System – Windows Server 2016, Windows Server 2019
- Hypervisor – VMware vSphere 7.0
- Storage – 3PAR

## DYMAXIO FEATURES

**IntelliWrite<sup>®</sup>** automatically prevents split I/Os from being generated when a file is typically broken into pieces before write and sequentializes otherwise random I/O generated by the “I/O blender” effect.

**IntelliMemory<sup>®</sup> intelligent caching technology** caches active data from read requests using only idle, available server memory.

**ConduSiv only File Attribute List (FAL) remediation technologies** to prevent and mitigate unwanted FAL growth.

**“Time Saved” Benefits Dashboard** shows ongoing benefit of the software by revealing the amount of I/O offloaded from storage and how much time that saves.

**Benefit Analyzer™ embedded benchmark** provides before/after performance comparisons prior to installing DymaxIO and after.

[Download a 30-day evaluation »](#)

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Not only did we get an immediate performance boost for MEDITECH, but we soon realized that we needed to try DymaxIO on our other Tier-1 applications like NextGen, MS-SQL, MS Exchange, Citrix XenApp, and others.”

## THE SOLUTION

ConduSiv’s DymaxIO I/O transformation software is “set and forget” software that runs transparently in the background on Windows servers and automatically offloads I/O from underlying storage, then streamlines the I/O traffic that remains. All of this is done with near-zero overhead to the CPU. First, DymaxIO eliminates excessively small, fractured writes and reads and displaces them with large, clean contiguous writes, so more payload is carried with every I/O operation to maximize server and storage performance. Second, DymaxIO establishes a tier-0 caching strategy by using idle, available DRAM to serve hot reads. Nothing has to be allocated for cache, since DymaxIO dynamically adjusts to only what is otherwise unused. With as little of 2GB of available memory, many customers serve as much as 50% of their read traffic. As a result, most DymaxIO customers experience at least 50% faster application performance, with many workloads getting much more, depending on the extent of Windows write inefficiencies and how much memory is available.

## THE RESULT

After seeing a performance boost on the MEDITECH servers, they were eager to try DymaxIO on their other Tier-1 applications. They identified 35 key virtual servers that ran an assortment of different applications, like NextGen EHR (supported by a MS-SQL database), MS Exchange, Citrix XenApp, GE Centricity Perinatal, and others. In aggregate, DymaxIO offloaded 43% of all read traffic from storage and 29% of write traffic. With well over half a billion I/Os eliminated from going to storage, the median latency savings meant an aggregate of 157 days of cumulative storage I/O time saved across all the servers over a three-month period.

When examining the last 24 hours from CMC’s single heaviest workload on a MS-SQL server, DymaxIO offloaded 48,272,115 I/O operations from storage (48% of read traffic / 47% of write traffic) – a savings of seven hours in storage I/O time.

“Regarding cost savings, the value we receive from DymaxIO in not having to worry about our MEDITECH systems crashing due to FAL growth is invaluable. It doesn’t take long for downtime to accumulate into hundreds of thousands in lost revenue. However, the real surprise was the performance gains on our heaviest workloads,” said the IT Director.

The IT Director continued, “There’s no way we would have achieved a 5-year lifecycle on our storage system without DymaxIO offloading so much I/O traffic from that subsystem. We had no idea how many I/O operations from virtual server to storage were essentially wasted activity due to Windows write inefficiencies chewing up IOPS or hot data that is more effectively served from available DRAM.”