



# COPA-DATA Case Study: Built Scalable and Efficient Data Center with Microsoft Hyperconverged Platform and Mellanox Networking

More and more manufacturing businesses operate around the globe. To manage their local equipment and operations effectively, these companies resort to industrial automation to control, monitor and streamline their geographically diverse manufacturing operations. COPA-DATA, headquartered in Austria, is one of the technological leaders for such automation solutions. COPA-DATA develops its software, zenon, for ergonomic and highly dynamic process solutions. zenon gives users access to all data relating to individual machines, assembly lines, or a company's entire production site from a single system. Additional services such as predictive analysis, machine learning, cross-site reporting, remote maintenance, and control can be fully cloud-based using Microsoft Azure or implemented in hybrid scenarios – opening the door to service-oriented business models. Recognized by its innovations and software solutions, COPA-DATA won the 2017 Microsoft Internet of Things (IoT) Partner of the Year award.

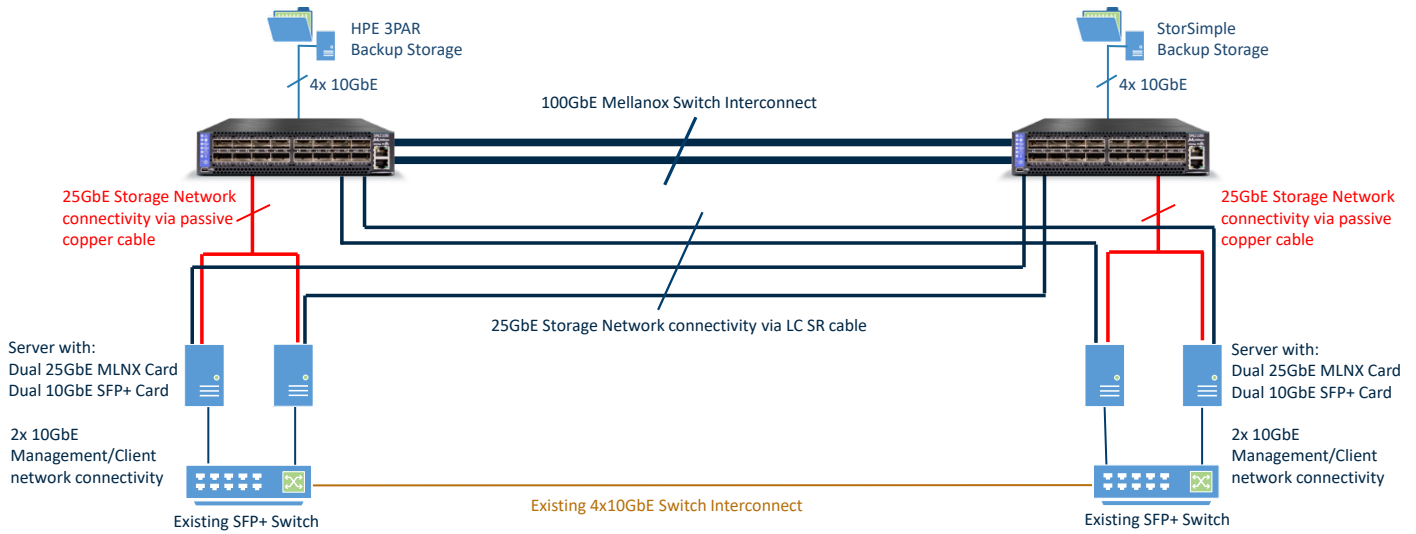
COPA-DATA has over 135,000 installed systems worldwide and serves companies in the Food & Beverage, Energy & Infrastructure, Automotive and Pharmaceutical sectors. To better support its customers with local contact persons and local technical support, COPA-DATA has established offices in Europe, North America and Asia, and collaborates with partners and distributors throughout the world.

As business grows fast and new services are added to keep abreast of market trends, COPA-DATA has found itself limited by its old IT infrastructure. The internal infrastructure was served by a 5-year-old system built on a 4-node cluster with Windows Server 2012 R2 and Hyper-V. The system was overloaded – significant delays were experienced that threatened to hurt the business bottom line, e.g., creating a daily incremental backup from their internal mail server took nearly 3 hours. To fulfill the growing demand, COPA-DATA IT had to put non-critical applications on standalone servers, thus resulting in a fragmented and non-scalable infrastructure prone to low efficiency and security risks.

To meet its current and future needs, COPA-DATA wanted to build a future-proof scalable and robust infrastructure which supports operations and development with enough performance for years to come.

## HIGHLIGHTS

- Hyperconverged platform built on Microsoft Windows Server 2016 and Storage Spaces Direct with RoCE
- Mellanox Ethernet Storage Fabric of 10/25/100GbE for compute and storage
- Cost efficient and scalable for future expansion
- Over 90% reduction in backup time
- Up to 820K IOPS (read only) and up to 500K IOPS (70% read, 30% write), tested with VMFleet



## THE MICROSOFT HYPERCONVERGED CLUSTER SOLUTION WITH MELLANOX ESF

Given COPA-DATA's business objectives, SecureGUARD, a builder of rack-level converged appliances for cloud infrastructures, has designed a solution leveraging Microsoft Windows Server 2016 and technologies such as hyperconverged clustering with Storage Spaces Direct. The hyperconverged cluster consists of 4 nodes with tiered storage of approximate 53TB useable capacity.

The cluster is connected by Mellanox Ethernet Storage Fabric (ESF). The Mellanox ESF consists of two best-in-class SN2100 storage switches. The SN2100 fits in a hyperconverged rack perfectly with 16 switch ports capable of running 1GbE to 100GbE speeds, in a unique half-width, 1 rack-unit (RU) form factor. In this implementation, 10GbE connections are used for the compute and management traffic, and 25GbE for the storage traffic. And 100GbE capability is used for inter-switch links for HA and ensures future growth. Also critical in this implementation is the RoCE acceleration and optimization in both Mellanox network adapter cards in the servers and the SN2100 switches. With the best RDMA technology, the Mellanox ESF delivers the most consistent, high-performance, low latency RoCE solution to meet the requirements from Microsoft Storage Spaces Direct which uses RoCE by default.

The results have shown as expected. With the Mellanox ESF and the Microsoft hyperconverged cluster with RoCE, storage performance (tested with VMFleet) reaches 820K IOPS (100% read) and 500K IOPS (70% read and 30% write). Backup time is reduced by more than 90%! For the incremental backup of COPA-DATA's mail server the time came down from 3 hours to 8 minutes.

In addition COPA-DATA implemented Microsoft Project Honolulu (which is currently in preview) for managing their Windows Server 2016 based hardware. This led to an optimized management handling and massive time savings in maintain and update of the server hardware.

Platform	Featuring
Server Configuration	2x Intel XEON E5-2620v4 8C
	512GB RAM
	2x 240GB SSDs for OS (RAID1)
	2x 800GB NVMe SSDs for cache tier
	4x 960GB SSDs for performance tier
	4x 8TB HDDs for capacity tier
	1x dual Mellanox 10GbE SFP+ interface card for management and compute traffic
Ethernet Switches	1x dual Mellanox 25GbE SFP28 interface card for storage traffic
	2x Mellanox SN2100 switches (16x 10/25/40/50/100GbE)

“To serve our customers worldwide optimally, it’s very important to provide continuous services. SecureGUARD designed a high-performance and expansible solution based on the latest Microsoft technologies, and implemented on the most reliable and cost-effective Ethernet Storage Fabric from Mellanox Technologies. In addition, Microsoft delivers with Project Honolulu; which is currently in Public Preview; an easy to use and time-saving management software for Windows Server, Clusters and HCI,” said **Robert Ficker, IT System Engineer, COPA-DATA**.

**Claus Joergensen, Principal Program Manager at Microsoft**, added, “It’s wonderful to see our leading partners working together in a project leveraging latest state-of-the-art functionalities like Storage Spaces Direct in combination with RDMA from Mellanox Ethernet Storage Fabric. With the solution based on Windows Server 2016 the customer is now able to serve their internal infrastructure on a high performance and easy to scale system.”

**Markus Grudl, Program Manager at SecureGUARD**, also commented: “Using the right network solution is critical. We had many problems with the network implementation of 3rd party switches. Mellanox switches are simply working perfect, a big help for us!”

---

### About COPA-DATA

COPA-DATA develops the powerful software zenon that allows for complete end-to-end industrial IoT solutions – from the field level up to the cloud and to mobile devices. Over 135,000 installed systems worldwide provide companies in the Food & Beverage, Energy & Infrastructure, Automotive and Pharmaceutical sectors with new scope for efficient automation.

Find out more at [www.copadata.com](http://www.copadata.com)

### About Mellanox

Mellanox Technologies is a leading supplier of end-to-end Ethernet interconnect solutions and services for enterprise data centers, Web 2.0, cloud, storage and financial services.

More information is available at [www.mellanox.com](http://www.mellanox.com)

### About SecureGUARD GmbH

SecureGUARD GmbH helps companies solve their complex IT problems in security and cloud infrastructure with a series of products and custom engineering services. Headquartered in Linz, Austria, SecureGUARD has been building IT security appliances for over fifteen years, and Microsoft Windows Server based appliances for over ten years, more recently building rack-level converged appliances for cloud infrastructures. SecureGUARD is a Microsoft Gold Partner.

### About Microsoft

Microsoft (Nasdaq “MSFT” @microsoft) is the leading platform and productivity company for the mobile-first, cloud-first world, and its mission is to empower every person and every organization on the planet to achieve more



350 Oakmead Parkway, Suite 100, Sunnyvale, CA 94085

Tel: 408-970-3400 • Fax: 408-970-3403

[www.mellanox.com](http://www.mellanox.com)