



## Case Study

# INNOVATIVE DATACENTER RACK DESIGN INCREASES LOAD RATING BY 1,000 LBS AND CREATES 4U OF ADDED SPACE

A tier one enterprise computing and storage OEM needed a rack system enclosure redesigned to increase the load rating from 2,800 to 3,850 lbs, increase the form factor from 40u to 42u and accommodate 46u of capacity in a 42u volumetric space. Sanmina exceeded these design goals with a new and innovative rack design.

### THE CHALLENGE

A tier one enterprise computing and storage company needed a rack system enclosure re-designed to increase the load rating from 2,800 lbs to 3,850 lbs. They required the new design to successfully pass International Safe Transit Association (ISTA) testing and an additional (unpacked) fully loaded 10° tilt and drop test. This test is equivalent to a vertical drop of more than 6". In addition they wanted the capacity of the original 40u tall rack enclosure increased to accommodate 46u within a 42u form factor. The solution needed to be flexible enough for many applications including data storage, servers and networking equipment.

### WHY SANMINA

Sanmina had been this OEM's trusted manufacturing partner for many years. The customer recognized Sanmina's innovative design expertise. They wanted the benefits of both the design and manufacturing knowledge of Sanmina's engineers.



## SANMINA'S APPROACH

- Sanmina's mechanical design engineers analyzed the existing design, and conducted a finite element analysis to identify weak points.
- A new design was developed to strengthen these areas.
- Additional finite element analyses were iteratively conducted to verify the design as it developed.
- New material was used in specific locations to cost effectively strengthen the enclosure.
- An innovative design was developed to accommodate 46u within the dimensions of a 42u rack.
- The use of common components in different places within the rack enclosure minimized materials, logistics and manufacturing cost.

## RESULTS

- A ruggedized rack system enclosure was developed, meeting or exceeding all customer design requirements including a load rating of 3,850lbs.
- The form factor of the original 40u tall rack system was successfully re-designed to accommodate 46u (42u horizontally and 4 u vertically) within the volumetric space of a 42u rack.
- The new design successfully passed all ISTA tests including random vibration, an 8" rotational drop test and a 6 inch drop test at a 10 degree tilt in a third party test house.
- The new design is currently in production at Sanmina.



### ABOUT SANMINA

Sanmina makes some of the most complex and innovative optical, electronic and mechanical products in the world. Recognized as a technology leader, Sanmina provides end-to-end design, manufacturing and logistics solutions, delivering superior quality and support to Original Equipment Manufacturers (OEMs) primarily in the communications networks, computing and storage, medical, defense and aerospace, industrial and semiconductor, multimedia, automotive and clean technology sectors.

More information regarding the company is available at [www.sanmina.com](http://www.sanmina.com)