ENGINEERING EXPERTISE & PROVEN SUPPLY CHAIN SYSTEMS DRIVE LARGE-SCALE RACK INTEGRATION SUCCESS

Driven by rising consumer demands for data storage capacity, a leading Internet Company needed to quickly expand the capacity of its data centers and data storage operations. With Sanmina's extensive BTO/CTO, test and engineering expertise, the company chose Sanmina to build, configure, test and ship their storage servers in high volume, reducing failure rates; and improving efficiency while meeting a very narrow delivery schedule.

THE CHALLENGE

In order to keep up with increasing data storage and bandwidth requirements of it's customers, a leading internet services company had to:

- Expand capacity of it's data center by up to 200 storage server racks each quarter.
- Maintain seamless operations of the existing data center infrastructure.
- Deliver new racks within a 4 hour daily delivery window over a two week period each quarter.
- Manage the supply chain of server components with very short lifecycles.
- Partner with a company having demonstrated experience in large scale BTO/CTO of computing and storage systems using robust processes for reduced failure rates and costs.

WHY SANMINA

Sanmina was selected because of:

- Extensive experience in the build-to-order of large scale rack systems for the computing and telecommunications markets.
- Robust engineering approach to custom functional test and burn-in solutions.
- Expertise in quality, logistics and supply chain management. Sanmina was equipped to manage the complexity and size of these operation to ensure high quality and on time delivery.
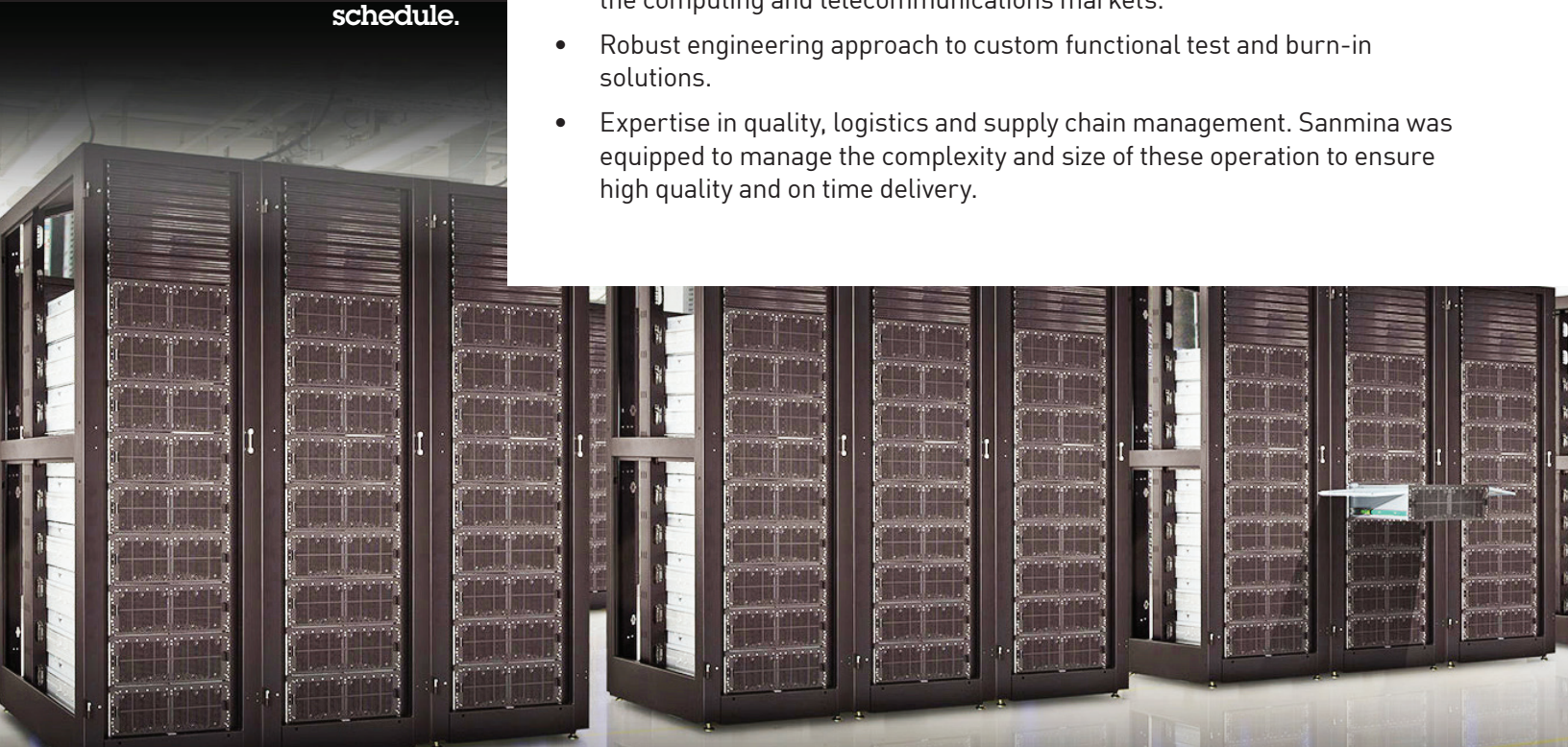
SANMINA'S APPROACH

Developed a Modular and Highly Scalable Test System

Due to the narrow delivery window requirements, Sanmina developed an efficient solution for testing 72 rack systems in parallel. Sanmina's test facility included a:

- System for revision control of firmware and software to efficiently manage hardware & software updates.
- Customized software image generation and Nagios management software.
- Consistent communication with the customer providing testing status in real time enhancing their product deployment.

Implemented an Efficient Assembly Process

Sanmina enabled the delivery of up to 200 rack systems within a 2 week window by:

- Configuring efficient power and air conditioning systems that accommodate the peak demands of 72 racks powered at the same time.
- Creating a process for the configuration and placement of each rack within the system. Systems leave Sanmina marked for their exact placement in the customer's data centers.
- Managing suppliers at the integration facility enabling immediate replacement of failing components.

Created a Customized Supply Chain Management Process

To manage the short timeframe for assembly, test and delivery, Sanmina created a customized supply chain solution which included a:

- Flexible tools to effectively manage the program across three different time zones.
- Detailed tracking of component delivery to ensure on time arrival.
- Daily customer supply chain status update to identify potential delivery issues.
- Process that forecasted replacement parts and enabled them to be purchased at the same time as components for the new build. This accommodated very short server component lifecycles, eliminated the risk of parts becoming obsolete and minimized potential excess and exposure for the customer.

Designed a Flexible Logistics System

Sanmina's supply chain management responsibility extended all the way to the customer's data center floor. A logistics system capable of transporting rack systems through different climate extremes at various times of the year was designed by Sanmina. We did this by:

- Selecting freight providers with air ride suspension and climate control. This was vital to eliminating the risk of failure due to extremes of temperature and humidity.

- Developing a detailed labeling system for each rack crate. This helped designate specific racks for delivery within a four hour window onto the data center floor.

- Designing and testing reusable packaging for the racks with robust protection. The design enabled very efficient delivery and unpacking by eliminating the need for handling equipment and tools to unload the systems in the data center.

RESULTS

By developing the facility and tools to configure and test 72 rack systems in parallel, Sanmina is able to deliver 200 systems in a two week time window each quarter. Most importantly, we exceeded customer expectations by:

- **Reducing the failure rate and optimizing overall system cost.** Increasing the test coverage of the scalable rack systems significantly reduced early life failures, eliminated all dead-on-arrival events and reduced the total cost.

- **Creating a superior management process.** Due to Sanmina's experience, we were efficient in solving issues and required less management supervision from the customer compared to other suppliers. As a result, the customer selected Sanmina as a sole source supplier for integrated racks and asked that the program be replicated at other Sanmina facilities in other locations.

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.