

## Rack Fundamentals Transcript

### Slide 1

Welcome to Data Center University™ course on Rack Fundamentals.

### Slide 2: Welcome

For best viewing results, we recommend that you maximize your browser window now. The screen controls allow you to navigate through the eLearning experience. Using your browser controls may disrupt the normal play of the course. Click the attachments link to download supplemental information for this course. Click the Notes tab to read a transcript of the narration.

### Slide 3: Learning Objectives

At the completion of this course, you will be able to:

- Identify common rack types
- Identify and explain some common rack system challenges
- Explain ways to improve rack cooling
- Explain some of the physical considerations for rack layout

### Slide 4: Introduction

As technology compaction has evolved from mainframes to blade servers the need for power, cooling and space optimization has dramatically increased. In their simplest form, racks and enclosures are the building blocks of a data center. Cutting edge rack technology streamlines the cable management and affords the vertical stacking of IT equipment, reducing server sprawl and maximizing IT real estate. Therefore, the role of the rack has become strategic to the availability of a given network. How these racks and enclosures are selected and configured affects a data center's availability and agility for years after an installation is completed. This course will put you one step closer to understanding the importance and the impact racks have on a data center.

### Slide 25: Availability

The survey revealed that optimizing availability was also an important requirement. The most common problems that pose a challenge to optimizing availability are:

1. Inadequate airflow to IT equipment damages hardware. This problem has increased over the last few years with the dramatic increase in heat densities. And it is important to note that there is no standard for measuring cooling effectiveness when comparing enclosures.
2. Inadequate power redundancy to the rack. The solution is to bring dual power paths to single or dual-corded IT equipment.
3. Lack of physical security. Because of the increased demands to provide ample air, power, and data to racks, the number of individuals accessing enclosures for service tasks has increased, leaving the units more vulnerable to human error. Enclosures need to be physically secured with locking doors and locking side panels to prevent unauthorized or accidental access.
4. Non-compliance with seismic requirements. The solution is to have all racks that are located in Zone-4 regions to be in compliance with seismic building standards.
5. The following slides offer solutions for improving airflow as a means of increasing availability.

### Slide 26: Improving Airflow: Door Ventilation

Good front-to-back airflow door ventilation is critical to effective cooling. This slide shows examples of perforated front and rear doors that provide for maximum ventilation.

Perforated Doors



- Enclosures enhance rack system cooling by preventing hot and cold air from mixing
- Enclosures should be universal, modular, organized, and scalable
- Racks should be arranged to form alternating hot and cold aisles

**Slide 37: Thank You!**

Thank you for participating in this course.

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