GROUNDING SYSTEMS: The purpose of a grounding system is to create a low impedance path to earth ground for electrical surges and transient voltages. Lightning, fault currents, circuit switching (motors turning on and off), and electrostatic discharge are common causes of these surges and transient voltages. An effective grounding system minimizes the detrimental effects of these electrical surges, which include degraded network performance and reliability and increased safety risk.

ELECTRICAL DISTURBANCES: Data center equipment is sensitive to electrical disturbances. While minimum grounding requirements are designed for personnel safety and fire prevention purposes, data center downtime and damage to equipment as a result of inadequate grounding can cost an organization millions of dollars.

According to insurance industry data, improper grounding of communication systems leads to $500 million per year of damage to property and/or equipment due to lightning.

ELECTRICAL NOISE: In a data center, electrical noise is introduced on data cables when surges are not properly dissipated by the grounding system, resulting in lost data and network inefficiencies.

Rack ground bonding improves data transmission efficiencies by reducing the “noise” polluting the computer network.

BEST PRACTICES: According to TIA-942 and the IEEE any metallic component that is part of the system including racks, cabinets, cable trays, servers and other equipment must be bonded to the grounding system.

TIA-942 requires each rack to bond directly to the grounding grid or common bonding network, directing current away from sensitive electronics.

Proper grounding is the most important factor in reliable network equipment performance. According to the IEEE the typical AC third prong ground is almost never sufficient to prevent damage to network equipment.

Establish electrical continuity throughout racks and cabinets for safety and electrostatic discharge (ESD) protection, and proper grounding and bonding of network equipment. The grounding should direct damaging currents away from equipment.

You want a grounding system that directs damaging currents away from equipment.
Data center grounding systems serve several functions; preventing electrical noise, providing surge protection and eliminating electrical disturbances.