



GROUNDING & BONDING

RECOMMENDATIONS AND CONSIDERATIONS

GENERAL

1. Lightning is the most obvious and destructive environmentally (i.e. Not manmade) generated electrical transient. In addition, large-scale, rapidly occurring no arcing atmospheric charge redistribution and ground-based electrostatic discharges (ESD) involving arcing are significant contributors to data disruption and damage to equipment. In minor cases data is disrupted or devices are reset. In major cases damage to equipment can occur. Grounding and bonding and controlling the ESD/Surge paths will aid in minimizing the impact and or damage.
2. A grounding and bonding system will aid in controlling negative influences such as electromagnetic interference, or electromagnetic pulse.
3. Bonding of metallic pathways, cable shields, conductors, and hardware at telecommunications rooms, equipment rooms, and entrance facilities are elements of the grounding and bonding system.

FACILITY

1. A ground (earth) reference should be in place for telecommunications systems within the telecommunications entrance facility, the telecommunications room, and equipment rooms.
2. Telecommunications grounding and bonding components are intended to work in concert with telecommunications pathways and spaces, cabling, and administration, including, when present:
 - a) Telecommunications Entrance Facility (TEF);
 - b) Telecommunications Equipment Room (TER);
 - c) Telecommunications Room (TR);
 - d) Telecommunications cable and connecting hardware;
 - e) Telecommunications labeling and record keeping.
3. Although the electrical closet and associated panel board(s) is not part of the telecommunications infrastructure, they are an integral part of the telecommunications grounding and bonding system.
4. Grounding systems are an integral part of the signal or telecommunications cabling system that they support. In addition to helping protect personnel and equipment from hazardous voltages, a proper grounding system may **improve the EMC performance of the** cabling system. Improper grounding can produce induced voltages and those voltages can disrupt other telecommunications circuits.
5. The computer room grounding infrastructure creates an equipotential ground reference for computer room and reduces stray high frequency signals.

EQUIPMENT

1. Proper planning should include grounding and bonding arrangements to accommodate telecommunications equipment installation.
2. A uniform telecommunications grounding and bonding infrastructure should be followed within commercial buildings where telecommunications equipment will be installed.
3. Consideration should be given to installing a common bonding network (CBN) such as a signal reference structure for the bonding of telecommunications and computer equipment.
4. Telecommunications equipment is often connected to both the electrical power and telecommunications grounding systems. It is important that both grounding systems be at the same reference potential. This is critical for implementation of shielded/screened twisted pair cabling systems in order to limit the potential difference between power and telecommunications ground references to a maximum of 1 volt for shielded/screened cable applications.
5. Electrical disturbances may appear at operator-type equipment positions arising either from electrostatic discharge (ESD), or from sources that are internal or external to the building such as lightning or ac power disturbances.
6. Each equipment cabinet and equipment rack requires its own grounding connection to the data center grounding infrastructure.
7. It is recommended that rack-mounted equipment be bonded and grounded via the chassis in accordance with the manufacturer's instructions. Provided the rack is bonded and grounded, the equipment chassis should be bonded to the rack.