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PRESENTS

The
DATA CENTER
SAFETY
GUIDEBOOK



When most think of safety in a data center, they think of fire suppression systems and security but few think of much more. By many accounts, the safety protocols in a Data Center should follow the same requirements as a manufacturing facility or laboratory as the dangers are very similar though Data Centers are typically thought of as much safer places to work. In a data center, the danger from injury can be controlled by establishing processes to reduce the risk of injury and even though IT is considered to be a relatively safe occupation, the US Department of Labor still shows that injuries that will require medical attention still impact 4.7 out of every 100 IT employees over the course of a year.

Today's Safety Engineers or those who wear that hat, must consider new challenges that come from high density configurations that bring about increased concerns for physical injury from lifting and movement due to heavier IT equipment. Although, cuts and abrasions still hold the lead for on the job injuries, it's back injury and injury from falling objects that cost businesses the most.

For a small business, a single injury can mean disaster through:

- **Lost productivity**
- **Healthcare and workers compensation cost**
- **Damage to equipment or infrastructure**
- **Rehire and training cost**
- **Reduced quality of workmanship and performance**
- **Lower morale**
- **Sick leave**

- **High turnover**

Safety Systems are a lot like insurance in that it is something you plan but hope you never have to use however, there are many processes you can initiate that save on labor and increase productivity. Insuring a safer working environment isn't simple due to the impact of human error, however, it can be mitigated through proper planning. In designing your safety initiative, 9 simple steps should be considered when setting company policy and practice.

1. Take ownership in gaining a full understanding of your company's responsibility to create the safest possible working environment. Talk to others in management to help champion your cause, while providing compelling statistical evidence to back it up. In the end, safety is the responsibility of the employer, and without mandated safety processes in place, the employer assumes a significant amount of the overall liability. If an employee litigates against an employer and that employee was negligent, that employer will still most likely have to show were they took the proper precautions or provided the proper training, to prevent such an accident.

2. Develop a system. I can drive across town and reach nearly a dozen major data centers within minutes. I have been in most of them and I have not seen one that has an evacuation map in the data room. This is a perfect example of a common, overlooked safety issue. Data center footprints can be like Minecraft's worst nightmare when trying to find the way out, especially if the room were to be filled with smoke.

I use the above to make an example that you need to look at every process you engage in from installing cabinets to dropping in power supplies, to see where there might be safety issues. Never assume that since no one has ever incurred an injury from a specific action that it won't happen again. Have processes in place that include safety protocols and document them for every activity that takes place at your data center.

Conduct ongoing safety meetings on a regular base to recognize any changes in processes and their impact on your safety initiative.

3. Know the laws. We have federal standards for safety (OSHA) but many also have state and local standards as well. Failure to adhere may not only incur steep fines but in some cases, could even mean jail time for business owners. Contacting your states Department of Labor is a great start since many also offer Safety Audits. If you have Union workers, check with their local union since most have mandated safety practices.

4. Find the best solutions. Never focus on cost savings when getting your solutions in place. Try to explain to that Jury, when someone is suing you over a workman's comp claim, how it was a good idea to let two guys try to install a 500 pound CRAC unit with ropes and pulleys. (Yes, I

have seen this done). Or that how you were able to avoid buying fire extinguishers since you have an elaborate dry pipe suppression system. I have yet to see a court favor a defendant who tried to cut corners on employee well-being.

5. Create a safety culture. Incentivize employees for pointing out safety issues or when a process can be improved to increase safety. If an employee provides an idea, be open to that idea and reward them either financially or through recognition, or both. Empower everyone on your team to participate in the safety initiative. This will not only gain better sign-off from your staff, but will nurture a focus on a better working environment while improving morale.

6. Require Safe Practices Training. Review the User's Manual from every device that a tech would access in your Data Center and make sure the manufacturers processes are followed. These might include grounding server chassis before opening or touching a ground source to remove static electricity. Whatever the requirements are for that piece of equipment, mandate a prerequisite that all personal who will work on that equipment have read the manual first.

7. Celebrate milestones and accomplishments but ditch that "it's been XX days since our last injury" sign. Injuries will happen, and it is our goal to reduce their frequency and severity. You could conduct employee surveys and let them rate your overall safety efforts, as well as theirs. One question could be "do you feel [your company] is a safer place to work that it was a year ago". Do this on a scale and rank this scale while deducting for instances.

You could also rate by department. If you have someone responsible for safety, such as your facilities manager or director of ops, , score abuses against new solutions of your safety policies. Additionally, you can rank each department every month.

Winners get a pizza party!

8. Mandate the processes. A solid safety program is not an option, and it needs to be mandated. Write up employees who fail to follow the processes because they not only endanger themselves, but others. Put into place a specific HR policy on how disciplinary action is dispensed and make it known that no violation is tolerated. The common comeback that "no one got injured" should never fly, as it usually is just due to luck.

9. Gain a full understanding of the benefits that come from creating a safer workplace. How does it benefit the community, the business, families of employees and your customers? A full understanding of the value from a safer workplace helps the person driving these initiatives to communicate the urgency in a better way. At nearly \$200 billion a year in cost, on the job injuries and illnesses nearly equal the health cost for cancer, according to the National Institute for Occupational Safety and Health.

For years, the Bureau of Labor Statistics has been tracking work-related injuries, where it has been shown, that overexertion from lifting is the most costly, in terms of medical care and sick days. However, companies whose employees do not make contact with objects (use of automated lifting equipment versus hand lifting) show a nearly a 50% decrease in overall injuries.

According to the Bureau of Labor Statistics:

“Musculoskeletal disorders (MSDs), commonly known as ergonomic injuries, accounted for 34 percent of all workplace injuries and illnesses requiring days away from work in 2012. There were 388,060 MSDs in all ownerships (state and local government and private industry) with an incidence rate of 38 cases per 10,000 full-time workers. Workers who sustained MSDs required a median of 12 days to recuperate before returning to work, compared with 9 days for all types of cases... MSDs involving the back required a median of 7 days to recuperate and accounted for 41 percent of the MSD cases.”

Additional Safety Tips:

- ✓ Insure that all employees wear adequate clothing. If you operate a cold chilled data center, make sure they have warm clothes or jackets to use, when entering a cold data room. A cold technician is a clumsy technician and never a good combination in a mission critical environment.
- ✓ Make sure that everyone wears closed-toe, nonconductive shoes to protect the feet. Preventing the buildup of static electricity is imperative, but also requires that shoes have non-slip soles. Sandals, clogs and clunky slip-ons (like Crocs) should never be allowed and all shoes should have a closed back.
- ✓ Put down dirt and static mats at each entrance to make sure contaminants do not get tracked into the data room, which not only harm computes but can create debris to slip on.
- ✓ Never allow food or beverages in the data room. This is not only a safety issue but can become a serious contamination issue.
- ✓ Use crash carts and keep all tool organized. Without a crash cart, tools often end up on the ground, on top of a piece of equipment or in someone’s pocket.
- ✓ Hard hats are recommended especially if overhead cabling is being built or managed. Whenever you have equipment or overhead infrastructure, hard hats will provide for a safer environment.
- ✓ Any place that is working with tools of any type should be wearing safety glasses. I have been in hundreds of data centers and seen many technicians with power driver in hand, and no eye protection.
- ✓ Most data centers register at 70-80 dB for sounds. While safe by OSHA standards that comes very close to the point where ear protection is mandated by OSHA at 85dB. At 80dB,

hearing is at risk when exposed over long term. The closer to the source and the less insulated the room, the higher the sound level and as such, many data rooms can easily exceed 85dB.

- ✓ Never let an employee lift anything over 50 pounds. This means that 4 people together cannot lift more than 200 pounds. Removing the blades and power sources to reduce weight only compounds the risk from human error as well as potential for damage to your devices. It is also costly in manpower and time. Using a lifting device that has been certified for Data Center use is the most cost effective and the only solution that will reduce the likeliness of injury while reducing personnel requirements.
- ✓ Enact a buddy program. A data center can be a cold and lonely place with few other people working in a large space. Making sure that there is a system in place to track workers and to occasionally check in, insures that if there is an issue, it will be detected quicker.

The good news is that workplace injuries and fatalities have been on a steady decline for many years. In large part due to advanced technologies that mitigate injuries and fatalities. A failure to take advantage of these shows a lack of respect for the wellbeing of employees and if not addressed voluntarily, it more than likely will be imposed through necessity though usually at a much higher cost.

Today, with the high cost of labor, regulations, payroll taxes and health care cost, the need to have a well-planned safety policy is nearly as important as a business or marketing plan. A safe workplace greatly contributes to a business' bottom line by mitigating lost revenues through the reduction of downtime, increased productivity and boosted morale. Employers can save \$4.00 to \$6.00 per every dollar spent according to OSHA.

About the Author

Randall Crockett is the Marketing Director of ServerLIFT Corporation, the leader in data center lifting devices. Randall has been in the data center/internet services industry for nearly 20 years and has been featured as a moderator, panelist and key note at CES, NAB, Digital Hollywood, Internext and many other events worldwide.

ServerLIFT designs and builds data center lifting equipment to insure safer and more efficient management of rack mounted infrastructure assets. Today nearly 20% of all data centers now use some form of lifting device. To learn more about selecting the best lifting device for your data center, visit:

<http://info.serverlift.com/acton/media/10990/data-center-lift-buying-guide>