

### 3.3.4 Fire Protection Facts

This lesson covers the following topics:

- Fire suppression
- Fire suppression methods
- Fire extinguishers
- Fire response

#### Fire Suppression

A fire can be devastating to an organization. In a place like a server room, where rows of equipment are running, the risk is even higher. Fire suppression refers to the efforts made to reduce the overall impact of a fire should one start. Before looking at specific suppression methods, consider how a fire occurs. Fire requires these components:

- Something to burn or combust. This could be fuel or it could be a combustible material.
- Oxygen in order to maintain the level of combustion.
- Enough heat to raise the material to an ignitable temperature.
- The chemical reaction that occurs as the oxygen and the fuel ignite.

Coming up with a way to starve a fire of one of these things, will suppress a fire.

#### Fire Suppression Methods

Two primary fire suppression systems include:

Type	Description
Portable	<p>Portable systems are fire extinguishers that can be used to suppress small fires. When using a portable fire extinguisher, be aware of the following facts:</p> <ul style="list-style-type: none"><li>▪ A pin is inserted in the handle of most fire extinguishers to prevent the extinguisher from being accidentally triggered. Remove the pin to use the fire extinguisher.</li><li>▪ The PASS method (Pull, Aim, Squeeze, and Sweep) is the best method to administer the fire suppressant. Aim toward the base of the fire.</li><li>▪ Fire extinguishers usually have a limited effective range of 3-8 feet.</li><li>▪ Fires spread quickly. In most cases, you will be unable to control a fire with only a portable system.</li></ul>
Fixed	<p>A fixed system is part of a building and typically combines fire detectors with fire-suppression technology. Fixed fire suppression systems usually use water or gas to extinguish fire.</p> <ul style="list-style-type: none"><li>▪ Deluge sprinklers have open sprinklers. The pipes are dry until the fire alarm causes the deluge valve to open and send water to all the sprinklers.</li><li>▪ Wet pipe sprinklers contain pressurized water that is released when initiated by a heat-sensitive device. Wet pipe systems respond to fire threats more quickly than deluge systems.</li></ul> <p>Be aware that a fixed system might only slow down a fire, but it gives you more time to evacuate. It might be incapable of extinguishing a fire.</p>

Extinguishing agents used to suppress fire include:

- Water to remove the heat. Water can cause damage to computer equipment, but it is harmless to people.
- Gas to displace oxygen. When extinguishing a fire around critical computer equipment, the best option is to eliminate oxygen because that would have the least damaging effect.
  - Displacing oxygen typically involves a gas (such as CO<sub>2</sub> and Halon) that does not leave a damaging residue.
  - Gas systems do not work well in an open environment and special ventilation may be required.
  - Use of gas suppression requires that you evacuate the room immediately; removal of oxygen can suffocate someone in the room.
- Dry chemicals (such as sodium bicarbonate), wet chemicals, and foam can be used to extinguish fuel from burning, but will leave a residue and cause damage to the computer equipment.

## Fire Extinguishers

The type of fire extinguisher you select should be based on the type of fire that is likely to occur in the area. The following table lists various U.S. fire classes and the appropriate suppressant type.

Class	Fuel Type	Suppressant Type
Class A	Wood, paper, cloth, plastics	Water or soda acid
Class B	Petroleum, oil, solvent, alcohol	CO <sub>2</sub> or FM200
Class C	Electrical equipment, circuits, wires	Halon or CO <sub>2</sub>
Class D	Sodium, potassium	Dry powders
Class K	Oil, solvents, electrical wires	Halon, CO <sub>2</sub> , or soda acid

## Fire Response

Be aware of the following facts regarding responding to fire emergencies:

- When a fire occurs:
  - The first action is to ensure the safety of the people and evacuate the area.
  - In most cases, you should not attempt to put out a fire yourself. Fires spread quickly and become out of control, placing you in danger.
  - Never go back into a burning building to retrieve data or computer systems. Performing regular backups and storing media offsite before the emergency is the best way to protect valuable data.
  - When exiting, face the fire. Do not turn from it; back away from it instead.
- Education is key to proper response in the event of an emergency. Be sure to train employees:
  - Fire moves quickly and there is little time to waste to ensure safety and protect assets.
  - They should always face the fire and back away from it.
  - Specific actions to take based on the suppression method used
- CO<sub>2</sub> suppresses fire by eliminating oxygen. In addition to smothering fires, CO<sub>2</sub> is toxic to humans. If you use CO<sub>2</sub> to suppress a fire, you must evacuate the area and exhibit extreme caution.
- You should inspect fire extinguishers regularly for proper pressure.
- You should never reuse a fire extinguisher. It could have inadequate pressure, or the nozzle could become clogged. It is usually less expensive to simply purchase a new fire extinguisher.

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