

# POWER PROBLEMS – THE THREAT, THE CAUSE, AND THE EFFECT ON YOUR NETWORK

When your organization experiences a power anomaly your first instinct is to probably find a dictionary. Surges, spikes, blackouts, brownouts, and any other “outs” might have you scratching your head. The reality is we live in a time of great technological innovation. Chances are, one of the below instances has happened to you. The most common types of disturbances are:

## Sags

**The Threat** — A sag is a decline in the voltage level. Also known as “brownouts,” sags are the most common power problem.

**The Cause** — Sags can be caused... locally by the start-up demands of electrical devices such as motors, compressors, and

elevators. Sags may also happen during periods of high electrical use, such as during a heat wave.

**The Effect** — Sags are often the cause of “unexplained” computer glitches such as system crashes, frozen keyboards, and data loss. Sags can also reduce the efficiency and lifespan of electrical motors.

## **Blackouts**

**The Threat** — A blackout is a total loss of power.

**The Cause** — Blackouts are caused by excessive demand on the power grid, an act of nature such as lightning or an earthquake, or a human accident such as a car hitting a power pole or a backhoe digging in the wrong place.

**The Effect** — Of course a blackout brings everything to a complete stop. You also lose any unsaved data stored in RAM and may even lose the total contents of your hard drive.

## **Spikes**

**The Threat** — A spike, also called an impulse, is an instantaneous, dramatic increase in voltage.

**The Cause** — A spike is usually caused by a nearby lightning strike but may also occur when power is restored after a blackout.

**The Effect** — A spike can damage or completely destroy electrical components and also cause data loss.

## **Surges**

**The Threat** — A surge is an increase in voltage lasting at least 1/120 of a second.

**The Cause** — When high-powered equipment such as an air conditioner is powered off, the excess voltage is dissipated through the power line causing a surge.

**The Effect** — Surges stress delicate electronic components causing them to wear out before their time.

## Noise

**The Threat** — Electrical noise, more technically called electromagnetic interference (EMI) and radio frequency interference (RFI), interrupts the smooth sine wave expected from electrical power.

**The Cause** — Noise has many causes including nearby lightning, load switching, industrial equipment, and radio transmitters. It may be intermittent or chronic.

**The Effect** — Noise introduces errors into programs and data files.

Any complex network is vulnerable to failure. Learning what the power issue is, why it happened, and how it influences your network, can help you monitor your equipment in a more efficient way.

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