

THE CHALLENGE



Aging Network Causes Unplanned Downtime

A multinational manufacturing plant unexpectedly shut down causing production to cease, staff to stand by idle, and product to slowly degrade.



The assets upstream from the process were experiencing network issues. Clearly, the company's aging network was at fault.



Securing the Digital Workplace



Over time, the company added networked laptops, new plant equipment, and other technology. However, these advancements were not added in an



organized, documented way to best support a robust and secure digital workplace.

New Network Standard

Solution: New Standard to Upgrade Network

The single existing network was split into two separate networks that were redesigned to add separation between the two operating functions. With the new standard and upgraded network in place, the electrical team can focus on keeping production running efficiently, while IT will take care of network issues remotely.



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EXECUTIVE SUMMARY

► Implementing the New Network Standard

Client: Fortune 500 Manufacturer

Challenge:

- Excessive downtime impacting OEE and ROI
- Old network hobbled by years of ad hoc changes and quick fixes
- Unexplained equipment and computing problems
- OT and IT networks vulnerable to viruses, hackers, industrial espionage

Solution:

- Document current state of the entire network
- Define requirements for updating technology and architecture to be compliant with manufacturer's new standard
- Document full cost of upgrade and substantiate cost of previous downtime episodes to show evidence that garnered stakeholder buy-in

Results:

- Risk of downtime reduced
- Network secured against internal and external risk
- All stakeholders gained confidence in the project, securing full cooperation and trust
- Success of the project has prompted plans for three additional sites to become compliant to the new standard

Network Issues Causes Unexpected Disaster

An unplanned downtime event at a multinational personal care manufacturing plant had created a situation no one wants to see:

- Production dropping to zero
- Staff being paid to stand about idly
- Customer orders waiting to be filled
- Product slowly degrading
- Communication between operations and enterprise disabled

It turns out that assets upstream from the process were experiencing network issues. This event, and a variety of other unexplained equipment and computing problems over the previous year, suggested that the company's aging network was at fault.

Over time, as technology advanced, the company added networked laptops, new plant equipment, printers, and other digital devices including new next generation PLCs. The OT network had expanded, but not in the organized, documented way that best supports a robust and secure digital workplace.

Ad hoc changes added up. Problems like undocumented, one-off quick fixes and different pieces of equipment with the same IP addresses, or rogue, unsecured devices and equipment, meant the entire company was vulnerable to viruses and hackers – or even industrial espionage.

Business Enterprise and Operations Floor Running on Same Network

With the company's plants and corporate offices relying on the same network, risk was compounded; an issue with operating technology could create problems on the enterprise side – and vice versa. Imagine a problem with a printer driver in someone's office shutting down production!

The unplanned downtime event had started leadership down the road to the conclusion that patching the network was no longer a sustainable approach.

The company's electrical team lead was charged with implementing a completely new network standard. He chose Polytron because of the long history of trust his company had established with the system integrator through multiple successful projects together.

Plotting a Road Map to Success

The team lead needed to determine how the manufacturer's current web of hardware and software could be upgraded – to untangle what needed to be replaced, updated, and redesigned.

To meet these new standard, the following was considered:

- What hardware and software is currently in place?
- Will these be compatible with needed component upgrades?
- What new technology should replace older, incompatible solutions?
- Who should be engaged to run new wires and install new technology?
- How much will it all cost?

Polytron's work was to document the current state of the entire network and define the requirements for bringing the network in line with technology and architecture that is compliant with the new standard. To support the change, Polytron also would formulate recommendations on the new technology.

Polytron worked with certified installation contractors to determine costs for installation based on what equipment is available and the lead time needed. Polytron also conducted the leg work to collect specifications.

Getting All Stakeholders Onboard

The new standard was developed by the manufacturer two years prior, but motivation to implement the standard was not high among stakeholders. Although the risks of doing nothing was high, taking on this potentially disruptive and capital intensive project was seen as low priority by many. The electrical team lead needed to show why this project was important. Polytron documented the full cost of upgrading, but also substantiated cost of previous downtime episodes. This allowed the electrical team lead to show evidence that garnered stakeholder acceptance of the project.

Securing the Business Enterprise and Plant Operations Network

Beyond becoming compliant, the single network needed to be separated into two separate networks to reduce company vulnerability. The existing network was redesigned based on the new standard to add separation between the two operating functions.

Both sides are to be managed by a central IT team, who will be responsible for security, troubleshooting, and resolving any issues with the network. With the upgraded network and new standard in place, the electrical team lead and his group can focus on their task of keeping production running efficiently, while IT remotely takes care of network problems.

Benefit of Economies of Scale

Plans call for an additional three sites to become compliant to the new standard. Polytron has written detailed specification plans and negotiated with vendors for volume discounts to reduce project costs.

The electrical team lead became a champion by persuading those outside IT of the value of the project and has secured full cooperation and trust. With Polytron's support, the upgrade is underway, reducing the risk of downtime and securing the network against internal and external risk.



PLANS FOR MORE SUCCESS

With Polytron's support, risk of downtime was reduced, and the network was secured. Project success prompted plans for 3 additional sites to become compliant with the new standard.

Industrial Network and Security Solutions (INSS)

Developing a robust and secure network infrastructure requires protecting the integrity, availability, and confidentiality of control and information data. When starting the industrial network journey, it is important to address the resiliency of the network infrastructure, consistency of the data, and security from manipulation of the data. The methodology for assessing INSS includes:

- Understanding application and functional requirements
- Developing a logical framework
- Developing a physical framework to align with and support the logical framework
- Determining security requirements
- Applying best practices and industry standards



About Polytron, Inc.

Since 1983, Polytron has been an industry leading system integration and engineering consulting firm delivering a broad spectrum of innovative manufacturing solutions. Polytron serves manufacturers in the food, beverage, consumer packaged goods, chemical, and life sciences industries across North America.

To learn more about Polytron, visit us online (www.polytron.com) or contact us (www.polytron.com/contact-us) to talk to a specialist today.

Polytron Roadmap to INSS

