

LifeSafety Power[®]

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The Compelling ROI of Managed Power Solutions

Delivers intelligence and networking functionality for more reliable, consistent operations with greater system uptime for customers, better efficiency and cost savings for integrators



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Preface

Power The heartbeat of any integrated security and life safety system. LifeSafety Power[®] Inc., Mundelein, Ill., is a perpetual innovator in the power and networking category. We understand how the market is changing and the role that proactive alerts, health statuses and other managed power solutions lend in providing critical uptime to access control, video and other solutions riding on the network. Now, managed power provides a gateway to greater connectivity.

This white paper: “The Compelling ROI of managed power solutions,” provides detailed costing and potential pricing so specifiers, integrators and end users can realize greater profitability and return on investment with their integrated solutions implementations. Our first white paper: “Why Specify Managed Power Solutions,” is an essential primer, providing an in-depth look at the critical need to include managed power in every integrated security specification.

For more information, visit www.lifesafetypower.com.

Introduction

The Return on Investment (ROI) is perhaps one of the most overused and misused terms in our language. In financial terms, ROI is the financial benefit of an investment and is commonly measured in time to pay back the investment or as an annual rate of return, similar to an interest rate. Unfortunately, ROI can be difficult to quantify because equating it to a dollar amount can be difficult.

Managed power is an area where the benefits are both attainable and extensive, though quantifying these benefits in financial terms can be challenging. This white paper presents a framework for accomplishing attainable ROI from managed power solutions.



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What is Managed Power?

Managed Power is a power solution that delivers intelligence and networking functionality to make it capable of monitoring, analyzing and controlling system power in a proactive fashion. In doing so, managed power provides more reliable and consistent operations, with greater uptime for customers and better efficiencies and cost savings for integrators.

From its inception, LifeSafety Power has designed its product line with the flexibility, modularity and scalability to be offered as a standard system or upgraded to a managed solution, at the time of sale or at any time in the future. Managed power allows the system integrator to manage their support services by gathering live system data over an intelligent network and assuring a quantifiable ROI in the process.



- Local or enterprise power management
- Remote servicing / Remote reporting

What Factors Contribute to ROI?

In a managed power solution, there are many factors that contribute to ROI centering on the ability to be alerted to problems, remotely diagnosing those problems and maximizing system uptime without having to dispatch a service vehicle. Other factors to consider are the profitability loss to the business as a result of system downtime or malfunction, or having to hire security personnel.

Monitored Parameters

The enhanced monitoring provided by managed power allows immediate notification of current or impending problems. Once notified, the monitored parameters allow basic troubleshooting remotely without sending a technician to the site. Some of the most common monitored parameters include:

| Power Supply Monitored Points | | Individual Monitored Outputs |
|-------------------------------|------------------|------------------------------|
| AC Loss or Brownout | System Fault | Over / Under Current |
| Over Temperature | Battery Status | Over / Under Voltage |
| Earth Ground Fault | Tamper Switch | Blown Fuse |
| Fire Alarm Input Status | Battery Presence | |

The Return on Investment with Managed Power

Typically, the payback period for a Managed Power system investment is recouped in short order from increased operational efficiencies for the integrator and the end user. We will analyze the math later in this paper, but for now let's briefly consider two common scenarios where remote power management replaces a traditional on-site service.

Output Power Cycle / Device Reboot

All security system installations have devices such as a readers and locks, controllers or cameras that “freeze up” from time to time. Traditionally a technician would need to be sent to the site to momentarily remove and reapply power to reboot devices. This translates to service or warranty cost, the technician's time and the loaded hourly rate to dispatch a service truck to the site location.

Managed Power solutions allow the technician or office service coordinator to remotely log into the power supply, assess the health of the system and conduct power cycles on individual outputs. This can be accomplished from any computer or mobile device with an internet connection in a few minutes.

Remote Battery Testing

If a project installation does not have devices that routinely require a reboot, there's still the advantages and investment payback in a managed system through other service functions such as periodic testing of battery health and viability. Traditionally a technician would be sent to the site to perform a stand-by battery load test annually or semi-annually. If the test is performed by removing power and letting the batteries discharge via system load, the technician time on site could be as little as four hours but as many as eight.

Consider this test being managed remotely by controlling the power supply so the batteries discharge via the system load. This command could be provided to the power supply via office staff, central station personnel or preset on schedule and repeated automatically, eliminating the need to send the technician to the site. In a multi-building or campus setting, remote battery load testing could be staggered or run simultaneously, effectively testing an entire security installation over a short time frame. Whatever the scenario, the total investment in a Managed Power solution is completely paid back the first time a remote battery load test is run.

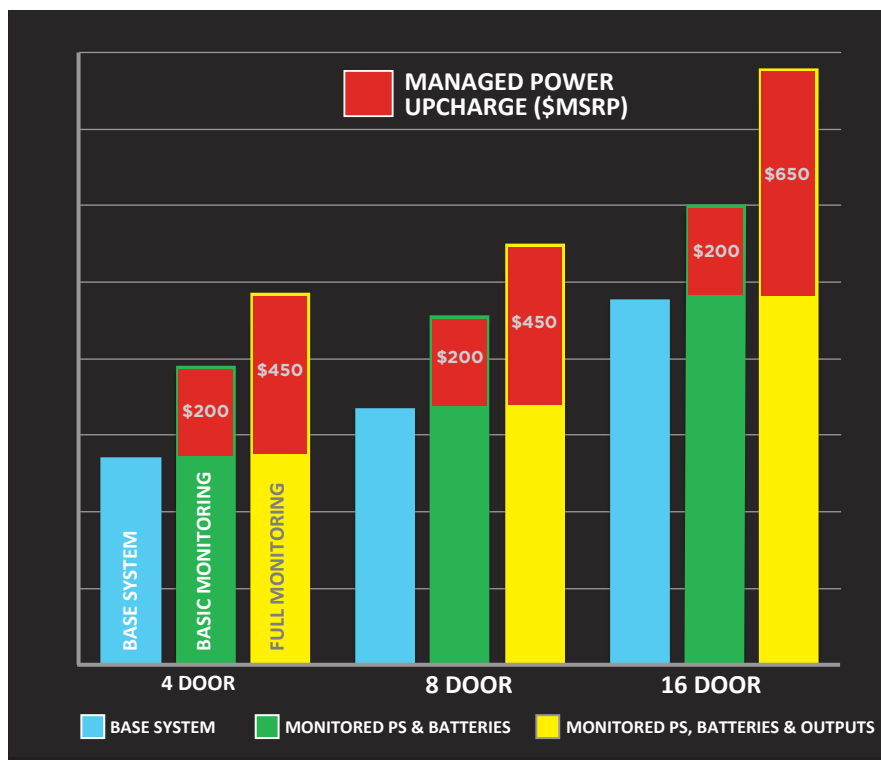
Service Features

A fully Managed Power system also provides other valuable functions that contribute to ROI. In addition to remote power reset and battery testing, on site visits can be minimized with remote diagnostics which allow the servicing technician to immediately log in to any system, analyze fault conditions, view real-time parameters and download that site's history report - all from their office or smart phone.



Investment

While managed power may not be right for every project, the added cost is relatively low when compared to the overall cost of the job. The chart below shows the relative costs of typical 4-, 8- and 16-door power systems in base system (non-managed), basic monitored and fully monitored. Typically, the added cost for managed power deployment ranges from \$200 to \$650 depending on the level of monitoring required, the number of doors being managed and other specifics of the protected premises.



Relative Cost of Managed vs. Base Systems

Looking at the 8-door example, the base system uses an isolation relay board (C8) for 8 lock outputs but has no network connectivity. To implement basic monitoring, the NL2 network communications module which manages the power supply and battery set is added. A full managed system replaces the C8 isolation relay board with the M8 managed version and the NL2 with the more advanced NL4 network module. The basic power supply and enclosure are consistent across all three systems, so in an 8-door system for example, the only added cost for basic monitoring is \$200 and for full management \$450.

Calculating ROI

To determine the ROI for managed power, the factors that will be improved through remote management capabilities need to be determined. The cost of dealing with these factors with a traditional (non-managed) power system can then be compared with the additional cost of the managed system. The factors to consider will vary based on the specific installation, a company's business model as it relates to servicing and maintenance and the customer's needs. In addition to direct factors such as troubleshooting time and cost, indirect factors such as system downtime and the potential of lost productivity should be weighed.

Below are examples of factors to consider and a suggested formula for calculating the cost, along with the mathematical calculation for each. Note that throughout the calculations the time period being analyzed needs to remain consistent. The "Occurrence" variable is used to determine how frequently each factor happens during that time period. So for example, if you are calculating on a per-year basis, an occurrence of 1 means you expect this to happen once during a year. An occurrence of 2 would mean it happens twice a year and an occurrence of 0.5 means it will happen once every two years.

The example calculations are based on a one-year time period and assume a \$105/hr. technician cost and a \$50 service trip fee (based on industry averages*).

**CE Pro White paper: Are My Prices Right? 2015 Labor Rates Study, CePro Your True Cost of Labor Is ... October 2015, IPVM Security Integrator Hourly Rates, February 2016*



| Direct Factors | | |
|--|---|---|
| Factor | Definition/ Cost Formula | Example |
| Troubleshooting Time | The time required to determine the cause of failure Occurrences per year x technician cost per hour x number of hours | 1 x (\$105 x 2) = \$210 |
| Truck Roll to Investigate Problem | Dispatch to site due to lack of problem visibility Occurrences per year x cost/deployment | 2 x \$50 = \$100 |
| Utility Issues | Additional troubleshooting time due to inconsistent utility power that causes intermittent equipment issues Occurrence x [(Tech Cost x Hrs) + Truck roll] | 0.5 x [(105 x 6) + 50] = \$340 |
| Damaged Power Supply Equipment | Replacement of power supply equipment damaged due to lack of advance warning of impending problems Occurrence x [(Tech Cost x Hrs + Truck roll)] + Material cost | 0.25 x [(105 x 5) + 50] = \$144 + material cost |
| Damaged Connected Equipment | Replacement of equipment powered by the PS which failed due to lack of advance warning of impending problems Occurrence x [(Tech Cost x Hrs + Truck roll)] + Material cost | 0.50 x [(105 x 6) + \$50] = \$340 + material cost |
| Damaged Non-Connected Equipment | Replacement of equipment which failed due to inability to see over temperature in surrounding area (Servers, etc) Occurrence x [(Tech Cost x Hrs + Truck roll)] + Material cost | 0.25 x [(105 x 4) + \$50] = \$118 + material cost |
| Cost to Provision Security Guards | Cost of deploying security guards to an unprotected area because of system failure Occurrence x Guard Cost x Number of Hours | 0.25 x \$40 x 8 = \$80 |

| Indirect Factors | | |
|-------------------------------------|--|--|
| Factor | Definition/ Cost Formula | Example |
| Service Level Agreement Cost | Lower Cost Service Level Agreement due to reduced service hours and truck rolls due to remote service abilities | \$50 |
| Lost Productivity | Additional transit time for employees who need to use an alternate door due to system malfunction Occurrences x Traffic x Hours per Trip x Wage x Hours out of Service | 1 x [(20 people x 0.1 Hours) x \$50 x 2] = \$200 |

Calculating Time for Payback of Investment

Once the factors are calculated, determining the time until payback of the added cost of a managed power system is straightforward. After calculating all of the factors, add them up and divide this into the added cost of a managed power system. For example, assume the sum of all of the factors comes to \$1582 for a year and the total added cost of adding management to the power system is \$450.

| |
|------------------------------------|
| \$450 / \$1582 = 0.28 years |
|------------------------------------|

In this example, the cost of adding remote management to the power system would be recovered in less than three months.

Real World Examples

Now that we understand the benefits of Managed Power and how to calculate ROI, we will analyze real-world examples. The example calculations all assume a \$105/hr. technician cost, \$50 trip fee and is based on a one-year time period. Also assumed is an 8-door Managed Power system which is \$450 above the cost of the equivalent non-managed supply.

Power Cycle Frozen Device

We will start by revisiting one of our previous examples where a camera, reader or controller periodically locks up and needs to have its input power cycled to perform a reboot. Let's assume this device locks up once a year. Without Managed Power, a truck would need to be sent to the site and a total of two hours of technician time is required.

| Occurrence / Year | Tech Hours @ \$105 | Formula | Reboot Cost / Year | 8 Door Managed Power Upgrade |
|-------------------|--------------------|---|--------------------|------------------------------|
| 2 | 2 | $2 \times [(2 \times \$105) + (1 \times \$50)]$ | \$520 | \$450 |

This formula tells us that without Managed Power, rebooting this device will cost \$540 per year. With Managed Power, the device reboot is performed over the network and the initial \$450 investment is repaid within a year.

$$\mathbf{\$450 / \$520 = .86 \text{ Years (approximately 10 months)}}$$

Viewed another way, when the two remote services are performed the initial \$450 investment in Managed Power is completely returned in addition to a net \$70 savings:

$$\mathbf{\$520 \text{ (for on-site service)} - \$450 \text{ (MP investment)} = \$70 \text{ saved on first remote service}}$$

If a third remote power cycle occurs, the Managed Power Managed Power upgrade will have saved the service department \$330 in dispatch expenses:

$$\begin{array}{r} 3 \text{ site visits @ } \$260/\text{each} = \$780 \\ - \$450 \text{ managed power investment} \\ \hline = \$330 \text{ in saved on-site service fees} \end{array}$$

All future remote services performed during the life of the system will continue to increase the service department's operating margins.

Yearly Battery Testing

Next, let's evaluate how stand-by battery testing benefits from remote management. Assume a once per year battery test, where the requirement is to remove AC power and verify a four-hour standby time.

| Annual Battery Testing | | | | |
|------------------------|--------------------|---|--------------------------|-----------------------|
| Occurrence / Year | Tech Hours @ \$105 | Formula | Battery Test Cost / Year | Managed Power Upgrade |
| 1 | 6 | $1 \times [(6 \times \$105) + (1 \times \$50)]$ | \$680 | \$450 |

$$\text{\$450} / \text{\$680} = \text{0.6 Years (7 months)}$$

Pay back for the battery test occurs in approximately seven months –and more importantly, the first time a remote test is performed (saving at least \$680 for the equivalent on-site trip), the \$450 managed upgrade investment is repaid.

Impending Device Failure

A fully managed power system can also be used as a diagnostic tool, giving the user the ability to monitor the voltage and current of powered devices. High and low trigger points can be set on each device to warn of immediate or impending problems. In this example, a 24V lock has a normal current draw of 250mA when active. Unfortunately, the coil winding of this lock is beginning to short internally and will fail soon. With a traditional power system, this failure will not be known until the customer calls after their door lock will no longer operate.

A truck would be dispatched and a technician sent to troubleshoot the system to find the failed lock. A lock would then need to be procured and a return trip to the site scheduled for installation. We will assume a lock failure such as this might occur once every 4 years.

| Impending Device Failure | | | |
|--------------------------|--------------------|---|-------------------------|
| Occurrence / Year | Tech Hours @ \$105 | Formula | Device Fail Cost / Year |
| 0.25 | 5 | $.25 \times [(5 \times \$105) + (2 \times \$50)]$ | \$156 |

With a managed power system, however, an upper current threshold limit can be set for each zone. If an upper limit of 350mA is set, an email notification is sent when the current increases beyond this point as the coil begins to fail. In that email the device operating history can be analyzed and the rising current over time would be an indicator of a failing lock. At this point a call can be made to the customer to inform them that their lock, while still operational, is failing.



A technician can then be scheduled for a convenient time to arrive, replacement lock in hand, for a quick change out with essentially no down time and no 10 p.m. emergency calls. Managed power reduces this event to one truck roll and one (1) hour of technician time to replace the lock, bringing the cost down from \$156 per year to \$51 per year: $.25 \times [(1 \times \$105) + \$50] = \$51$.

Multiple Factors - High Security Area

The previous examples examined individual factors related to ROI. In reality, there may be many factors combined that contribute to ROI. This example will take several factors into account regarding a 16-door access control system protecting a high-security area powering controllers, locks and cameras.

Analyzing this system, we assess the risks and determine the probable frequency of the following:

- ▷ Periodic Battery Test Twice per year
- ▷ Failed Lock Requiring Replacement Once every four years
- ▷ Frozen Camera Requiring Reboot Once every two years

In addition to the above occurrences, any area which becomes unsecured in this facility will require a full-time security guard to watch the unsecured area.

| Battery Test | | | | |
|-------------------|--------------------|--------------------|---|-------------|
| Occurrence / Year | Tech Hours @ \$105 | Truck Rolls @ \$50 | Formula | Cost / Year |
| 2 | 6 | 2 | $2 \times [(6 \times \$105) + (2 \times \$50)]$ | \$1460 |

| Failed Lock | | | | |
|-------------------|--------------------|--------------------|--|-------------|
| Occurrence / Year | Tech Hours @ \$105 | Truck Rolls @ \$50 | Formula | Cost / Year |
| 0.25 | 4 | 2 | $0.25 \times [(4 \times \$105) + (2 \times \$50)]$ | \$130 |

| Security Guard Cost due to Failed Lock | | | | |
|--|-------------|---------------------|-------------------------------|-------------|
| Occurrence / Year | Guard Hours | Guard Cost per Hour | Formula | Cost / Year |
| 0.25 | 8 | \$60 | $0.25 \times (8 \times \$60)$ | \$120 |

| Frozen Camera | | | | |
|-------------------|--------------------|--------------------|--|-------------|
| Occurrence / Year | Tech Hours @ \$105 | Truck Rolls @ \$50 | Formula | Cost / Year |
| 0.5 | 2 | 1 | $0.5 \times [(2 \times \$105) + \$50]$ | \$130 |

All total, these costs average \$1840 annually and if we assume a \$650 upgrade cost for a 16-door fully managed system, we get:

$$\mathbf{\$650 / \$1840 = 0.35 \text{ Years (approximately 12 weeks)}}$$

As we have examined before, performing the first remote service recovers the initial investment for managed power.

Conclusion

Because system requirements and benefits vary widely from one site to another, so will the ROI. However this mental framework can help security professionals understand and gauge the value of their investments. Power supplies are the heartbeat of every system but unfortunately managed power is often viewed as an option. In addition to tangible examples presented in this paper, intangible examples that make a case for managed power include:

- Loss of customer goodwill because service responses are reactive, not proactive
- Lost opportunity costs when skilled technicians are reassigned from productive and profitable tasks to emergency work that could have been managed remotely
- Lost time traveling to sites in remote locations
- Challenging environments where getting local access to equipment is difficult

Most often, analysis proves that a managed power solution will increase the efficiency and profitability of the service operation, bringing a significant financial return on investment to the integrator and a viable new service strategy that yields predictable and profitable results.

About LifeSafety Power — Power is Knowledge™

LifeSafety Power is the leader in Smart Power Solutions and patented remote monitoring capabilities, providing modular AC, DC, and PoE power systems that meet the growing needs of the life safety and security industries. Realizing that network technology presents new opportunities for active monitoring and management of power supplies connected to access control systems, fire systems, video surveillance and more, the company has built its products from day one with intelligence and functionality in mind. LifeSafety Power's current product offering and planned future innovations in battery test, display and diagnostics represent an important step in providing overall system reliability and uptime.

All of the product features discussed in this white paper are available within LifeSafety Power's product line.

Visit www.lifesafetypower.com for more information.

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