

Minimizing Cost of Downtime

Includes Downtime Calculator

Deploying and managing kiosks, digital signage and other remotely managed systems require a significant investment, with a potential for significant return. Unplanned downtime can severely impact that return on investment and turn promising projects into cost disasters. Learn how to minimize downtime and keep your customers happy.



We Keep Planes in the Air and Lights on in Times Square

dataprobe



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Introduction

Digital media projects represent an opportunity for substantial rewards. The benefits of customer engagement, advertising revenue and brand awareness are obvious. That said, the investment needed for digital media projects is also great. In order to maximize the return on this substantial investment, steps must be taken to ensure maximum exposure and rewards while minimizing the costs.

No cost can be more significant than unplanned network downtime. While there are a number of variable costs to any project, the unpredictable nature of downtime can be devastating to your bottom line.

This paper will look at the sources and costs of downtime and what you can do to minimize their impact. We will offer a simple way to quantify the costs and show you concrete ways to minimize those costs. By clarifying the costs of unplanned downtime, it will be easier for you to understand and appreciate the value of preventative measures.

When your customers see an error screen instead of your message or advertisement, the impact reaches beyond the cost of recovery. In order to prepare for these occurrences, each project should be evaluated with an eye towards the costs of downtime. In that way, efforts to minimize the impact can be evaluated for their own return on investment.



Causes of Downtime

Evaluating the causes of downtime, which can be categorized into four major areas, is the first step towards minimizing its impact. Careful consideration of each of the areas outlined below provides an opportunity to slow the frequency and minimize the duration of network downtime.

Environmental: Heat and power anomalies are the most likely causes of downtime in digital media. Ensuring proper ventilation or cooling when required is the key to minimizing downtime due to high heat. Heat problems can occur when a heat spike above tolerable levels causes a sudden network shutdown, or when high temperatures cause accelerated equipment decay.

Computing: Both hardware and software problems can bring your system to a standstill. Most often the operating system, including device drivers or application software, is the likely cause. That said, not only Windows based systems are subject to crashes. Every firmware upgrade is a potential opportunity for systemic failure.

Networking: Cable and DSL modems are notorious culprits of network downtime. Moreover, your wireless system, whether it's WiFi or cellular-based networking, is also a potential point of failure.

Human: Human error cannot be discounted as a source of network downtime. Vandalism and failure to restart systems properly after maintenance are typical causes of downtime in this industry.



Look at environmental, computing, networking and human causes of downtime

Costs of Downtime

Once you have a good handle on the areas where downtime can occur it's a good idea to take a look at where the costs will impact your bottom line should a fault happen.

Hard Costs

These costs can be easily calculated. Each environment and application will yield different results, but you can measure these costs and build a predictive model around them. Some are per occurrence and some are a function of the duration of the cost.

Lost revenue due to lost sales or transactions: If your digital media project is part of a transaction system, any downtime means loss of direct sales revenue. Here the longer the outage, the greater the cost.

Lost revenue due to undelivered advertising: If your system delivers paid advertising, your revenues go down when that advertising is not delivered. Again, this cost will be a factor of the duration of the outage.

Costs for on-site service calls: On-site service calls are very expensive. **Dataprobe's survey of customers puts the average at \$350.00.** The Technology Services Industry Association calculates it at over \$1,000*. If your system is in a hard to reach location, that cost can skyrocket. We have customers that service remote environmental stations throughout Alaska, where the costs per call are even higher.

Personnel costs: Are your team members idled while the network is down because they don't have the information they need? Are they re-directed from profitable tasks to deal with the increase in support calls or customer complaints that the downtime has generated? Do you have to put on extra sales people to offset the loss in self service sales, as in ticketing kiosks or self checkout? For each labor type, calculate the hourly or contract cost per occurrence.

* www.tsia.com/documents/Field_Service_Power_Hour_Slow_your_Roll

Try our online cost of downtime calculator.
[Click Here](#)

Downtime occurrences include both fixed and variable costs



The Champion in Dataprobe's Cost of Service Calls survey manages geo-sensors in Alaska.

Three plane rides and a snowmobile to reboot one GPS receiver.

Cost: \$ 27,000

Soft Costs

These costs are harder to quantify and may not be apparent until long after the damage has been done.

Loss of customer loyalty: When your current or prospective customers see your brand name associated with a technical failure, your corporate image suffers. Is there a long term impact on sales due to the perception of unreliability of your system or product?

Opportunity costs: There are probably many things you and your team can be doing that are more profitable than making service calls and assuaging unhappy customers. Even for a sole proprietor handling a home theater call, the opportunity costs of making that call have to be considered.

Calculating the Costs

Calculating the cost of downtime (CoDT) requires looking at all of these factors and determining both the potential frequency and duration of outages. Some costs are based on the duration of the downtime (e.g., ad revenue per hour) and others are per occurrence (e.g., service call fees). In simplest terms the cost of downtime can be expressed as:

$$\text{CoDT} = F \times (C_R + C_F + (C_V \times D)) \text{ where}$$

F = Frequency of Occurrence

C_R = Loss of Revenue

C_F = Fixed Restoral Costs

C_V = Variable Restoral Costs

D = Duration per Occurrence

C_R Loss of Revenue: If your deployment generates revenue, it is easy to calculate the hourly impact of the lost income. That could be from direct sales or from loss of advertising revenue. The user data collected from a kiosk or other interactive system also have value and should be evaluated.

C_F Fixed Restoral Costs: Costs that are incurred per event are considered here. Is there a truck roll cost? Are there performance penalties that occur per event? One customer who didn't meet their QoS agreements had to waive that month's entire fee per location.

C_V Variable Restoral Costs: Some costs are determined by the duration of the downtime. These are typically personnel costs that can be the result of either staff that cannot do their job because of the outage, or the added costs of personnel that have to be added or diverted from other, more profitable activities.

Some costs can be either fixed or variable. Loss of customer loyalty/satisfaction could be considered a percentage of sales and of course gets worse the longer the downtime. As mentioned, Any QoS penalties could be event or duration based. The Dataprobe Cost of Downtime Calculator takes all these elements into consideration.

Discover your cost of downtime with our calculator. [Click Here](#)



Example: From the Dataprobe Case Files:

Customer with approximately 1500 kiosks for ticket delivery

CoDT = F x (C_R + C_F + (C_V x D))	
F	= 27 Occurrences Per Month
C_R	= \$0 Ticket sales handled by staff, no lost sales
C_F	= \$ 725.00 Per Outage For Truck Roll Service Call
C_V	= \$ 76.00 Per Hour Personnel Costs 2 x additional staff members needed to handle what would have otherwise been self-service @ \$38.00 per hour loaded costs
D	= 6 Hours Average Time to Restoral
CoDT	= 27 x (0 + \$ 725 + (6 x \$ 76))
	= \$31,887.00 per month ROI for this example: Under 8 months

Use our Cost of Downtime Calculator to do your own discovery

[Click Here](#)

Minimizing the Costs

Minimizing the cost of downtime requires a two-pronged approach, with each prong designed to improve one part of the downtime cost equation: the frequency and the duration of downtime.

Minimizing the frequency of network downtime

requires attention to design and environmental issues. For example, are your network components rugged enough to withstand environmental and physical abuse (both incremental and acute) that the system might be subject to? Is the power clean enough to minimize downtime due to spikes and brownouts?

Minimizing duration of downtime requires early detection and rapid response. System monitoring and automatic action are the best ways to get your crashed system back on line as fast as possible. Systems for monitoring your network of displays can either be done in-house or contracted to third parties.

Additionally, the best way to minimize duration of downtime is to avoid a site visit. Site visits are expensive and require time for dispatch, diagnosis and problem resolution. That said, this is only if the needed equipment and components are readily available. While often times a site visit is required to replace a failed component, up to 72 percent* of downtime occurrences in kiosk and digital media applications can be solved with a simple reboot of either the local computer or networking equipment.

Minimize both the *frequency and duration of downtime* for maximum ROI

* "Server Technology" June 2000

Remote Power Control

72% of all
downtime events
can be solved with
a power reboot

Network attached power control, made possible either through a web-based portal or cloud computing can trigger an automatic reboot upon detection of failure of either the networking or computing systems. This reboot process can also be managed remotely by monitoring software or personnel.

Automatic monitoring of the network can be accomplished with a simple 'ping' to a system across the network, validating the network gear and transmission circuits. A simple ping test can also be used to check the computing system, but a more sophisticated test using a heartbeat that can be written into code can check the system at a deeper level and catch problems at the application layer.

Another advantage of remote power control is around energy savings and security, with the ability to turn off the power when a system is not in use or conduct scheduled restarts upon loading new software or contents.

Remote power control is an inexpensive way to get the most control over the cost of network downtime. When compared with the cost of a single service call, the hardware costs are minimal. Installation is easy and the return on investment is realized with the first service call saved.



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brand of remote
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downtime

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About Dataprobe

Who We Are

Dataprobe provides flexible, customizable power and network management solutions that minimize the duration and high cost of downtime. Our products give you the peace of mind that comes with knowing your systems are online when you need them.

Dataprobe's flagship product, iBoot®, is the leading single outlet networked power controller for remote reboot, energy management and security.

Our Approach

With more than 40 years of experience and two generations of family values, we have deep industry expertise and a strong commitment to our customers. Our culture and values are the essence of who we are and what we do. Whether we're developing a custom product for a large enterprise or a solution for a small branch office, we're committed to improving the reliability of every network we touch.

Find out more at dataprobe.com