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A **Dataprobe** White Paper

Minimizing Digital Media Downtime

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Abstract

Digital signage represents a significant investment with the potential for a significant return on investment. Downtime can severely impact that return and turn promising projects into cost disasters. Remote management and recovery is imperative to minimize downtime and reduce costly service calls. Remote power control is the least costly and most flexible way to cover a majority of outages and provides the quickest path to return on investment.

February 19, 2011

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There are fixed and
variable costs to downtime
occurrences

Introduction

Digital media projects represent an opportunity for substantial rewards. The benefits in customer engagement, advertising revenue, and brand awareness are obvious. The investment in digital media projects is also great. In order to maximize the return on that substantial investment, steps need to be taken to insure maximum exposure and benefit while minimizing the costs.

No cost can be more significant than unplanned downtime. While there are a number of variable costs to any project, the unpredictable nature of downtime and its associated costs can be devastation to your bottom line. When your customers see an error screen instead of your message or advertisement, the effects reach deeper than the cost of recovery. Each project should be evaluated with an eye to the costs of downtime. In that way, efforts to minimize downtime can be evaluated for their own return on investment.

Major Costs of Downtime

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.

Lost revenue due to undelivered advertising; If your system delivery paid advertising, your revenues go down when that advertising is not delivered.

Costs for on-site service calls; On-site service calls are very expensive. A 2009 study by the Aberdeen Group calculated the average on-site service call at \$276*. If your system is in a hard to reach location, that cost can skyrocket.

Loss of customer loyalty; When your potential customers see your name associated with technological failure, your corporate image suffers.

Additional costs may include personnel time required to manage the service interruption to identify, diagnose and schedule a fix, as well as time to contact clients and explain the issues.

* "The Evolution of Remote Product Service"
Aberdeen Group, April 2009

Minimize both the
Frequency and Duration of
Downtime for Maximum
Impact on your Bottom
Line

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

$$\text{Cost of Downtime} = (O \times \$/O) + (D \times \$/Dt) + I$$

Where:

O	=	Number of Occurrences
\$/O	=	Fixed Cost per Occurrence
D	=	Duration of average Occurrence
\$/Dt	=	Cost per Duration Unit (hours)
I	=	Intangible Costs

Causes of Downtime

Evaluating the causes of downtime is the first step toward minimizing its impact. Careful consideration of each area provides opportunities to forestall the frequency and minimize the duration of downtime. The causes of downtime can be broken into four major areas.

Environmental – Heat, and power anomalies are the most likely causes of downtime in this area. Insuring proper ventilation or cooling when required is the key to minimizing downtime due to high heat. Heat problems can be either acute in nature – a sudden shutdown due to a spike in heat above tolerable levels, or the increase of degradation of components due to higher than ideal heat.

Computing – Both hardware and software problems can bring a system to a standstill. Most often the operating system, including device drivers or application software are likely causes. Not only Windows based systems are subject to crashes.

Look at Environmental,
Computing, Networking
and Human causes of
downtime

Remote Power Control provides energy management and power down security as well as remote reboot

Networking – Cable and DSL modems are notorious culprits of downtime. Wireless, either WiFi or cellular based networking are also potential points of failure

Human -- Human error and human maliciousness cannot be discounted as sources of downtime. Failure to restart systems properly after maintenance as well as vandalism are typical causes of downtime in this area.

Minimizing the Cost of Downtime

Minimizing the cost of downtime requires a two pronged approach, each designed to improve one part of the downtime cost equation. To minimize the cost of downtime, requires efforts to both minimize the frequency and minimize the duration.

Minimizing the frequency requires attention to design and environmental issues. Are the components rugged enough to withstand the environment and physical abuse (both incremental and acute) that the system might be subject to. Is the power clean enough to minimize downtime due to
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.

The best way to minimize duration is to avoid a site visit. Site visits are expensive and require time for dispatch, diagnosis and finally the solution. This is if the needed components are readily available. Sometimes a visit is required, as to replace a failed component, but 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.

Network attached power control can be automatically triggered to reboot upon detection of failure of either the networking or computing systems. It 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

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

*"Server Technology" June 2000

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 the energy savings and security aspects of turning off the power when the systems are not being used, or to do scheduled restarts upon loading new software or content.

Remote power control is an inexpensive way to get the most leverage over your cost of downtime. The hardware is very inexpensive when viewed against the cost of a single service call. The return on investment is usually immediate with the first service call averted.

Conclusion

Downtime is a key factor in the cost of digital media projects. Addressing the causes of downtime and planning steps to minimize both the frequency and duration of downtime events is essential for maximum return on investment in any digital media project.

Rapid notification and response are the keys to minimize the duration of downtime. Remote power control provides a low cost and effective means of recovering from a majority of downtime events.

About the Author

David Weiss is President and CEO of Dataprobe Inc.

Dataprobe helps network managers cope with the costs of downtime with automatic and managed recovery and disaster avoidance solutions.