WHITE PAPER

Tackling the Challenges of Legacy Hardware Failure

Why Waiting for It to Break Doesn't Make Sense

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When it comes to legacy systems, there are many variables: what hardware you're using, the legacy operating system running on top of it, and the application(s) running on top of that. You continue to maintain your legacy system for the reason that it is essential to your business. It is likely mission critical, and it enables your employees to accomplish organizational goals.

Yes, there are a lot of variables when it comes to legacy systems. All legacy systems have at least one thing in common, and it's a very important—perhaps the most important—factor: these legacy systems are aging.

As legacy systems grow older, they become less reliable. The lifetime of the hardware is limited, and the software and applications that run on top of it tend to have substantially longer lifetimes—often as much as three to five times the lifespan of the underlying hardware. You may already be encountering hardware failure or an increased need for hardware support. You may have searched for replacement parts or begun to investigate alternatives. And if you haven't yet had hardware difficulties, you are aware that it's only a matter of time.

For many companies, time is a major part of the problem. Knowing that it's only a matter of time means that there is still time, at least for now; companies de-escalate the project's importance in favor of projects that feel more urgent. We encounter many companies saying versions of the following: "This isn't a problem for us right now; we'll check in later." In so doing, they put it off while they can and push ahead elsewhere. The reality, though, is that when legacy hardware does fail, companies find themselves wishing they'd planned ahead. When legacy hardware breaks, there's no longer any time at all: getting the system up and running again is urgent, and it's crucial to the company's success.

So why do so many companies find themselves in this position? Why do businesses wait to adopt a plan for their legacy systems when there is revenue and even liability at stake? In this white paper, we address the most common reasons companies put off securing their legacy systems, and we cover why having a plan is the best way forward. We discuss the costs associated with waiting and how they regularly impact business. Finally, we share best practices for how your business can develop a customized plan to ensure that your legacy system becomes a source of business opportunity and improved ROI rather than a ticking time bomb.

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Why Companies Wait

Despite the risks associated with hardware failure, many companies put off taking next steps to secure the future of their legacy systems. Why?

Budget

Cost is typically the largest obstacle. Budgets are limited, and getting approval to further invest in legacy systems can be difficult. Often little or nothing is allocated for these backroom systems and, let's face it, it's not the most glamorous project to which a business can commit funds. In many cases the IT department has a track record of getting by with spare parts off eBay—small, incremental investments that have worked up to now—and it gives the impression of being easier on the purse strings than what a long term solution might cost.

Priority

Amid the challenges associated with keeping businesses up-to- date on the technology landscape, legacy system maintenance tends to fall on the backburner. It's not trendy, it's not new, and the jobs legacy systems do are often, while mission critical, taken for granted. And, of course, there's the "if it ain't broke, don't fix it" mentality at work. As long as the legacy system continues to run, other areas take priority.

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Why You Can't Wait

Ultimately, waiting comes at a cost. In many cases, the cost of waiting is greater than the cost of investing in a long-term solution. Here's why you can't wait:

The system is critical

When it comes down to it, your business needs this system. It's critical for the success of your operations and organization. If the system fails, you're in trouble. Take healthcare, for example, where legacy systems are hard at work maintaining patient records. If a hospital were to lose those records in the event of hardware failure, the hospital would be in violation of HIPPA laws and risk major consequences, including liability. Utilities or financial service companies could be hit with heavy fines if a legacy system failure left them without access to records they're required to hold onto for a set number of years.

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The costs add up

The cost of waiting comes with high premiums. Besides the risk of legal penalties or lawsuits if a company is found in violation of industry regulations, there's the cost of spare parts, not to mention the additional costs when, on occasion, those spare parts don't work as well as the originals. In some industries, including government and finance, 80-90% of IT budgets are dedicated to maintaining legacy hardware.[1] Beyond spare parts, there's the cost of support for legacy hardware, which is rising as the experts on these systems are leaving the workforce. And, finally, there is the actual cost of downtime when the legacy hardware fails. In manufacturing, for example, the cost of downtime could be a day or more's worth of production.

Take the example of Wheeler Manufacturing, a jewelry manufacturer in the United States. When their legacy hardware failed, they lost several days' production as they waited for support personnel to get to their plant in the rural Midwest. Depending on the size of the manufacturing plant or the type of work it's doing, a day's worth of downtime could mean losing hundreds of thousands of dollars. It was this experience of lost production time that led Wheeler Manufacturing to invest in Charon-AXP, our solution for Alpha servers. Thanks to Charon-AXP, Wheeler Manufacturing has security, and production will no longer be affected by legacy hardware failure.

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The Cost of Waiting

The cost of waiting to virtualize your legacy hardware is high—and it comes with a number of components and variables, depending on your business and how the legacy systems are being used. This section highlights the key costs of waiting.

Downtime

So what does downtime cost? Obviously, it varies from business to business, but here are some numbers. One estimate from Gartner held that organizations can expect to face 87 hours of system downtime per year. They estimated the hourly cost of this downtime to be $42,000, which means total losses in excess of $3.6 million annually for these large corporations.[2] Consider the fact that other sources cite higher average hourly costs of downtime, as high as $84,000 to $108,000 per hour.[3] One USA Today survey asked 200 data center managers about downtime, and 80 percent reported an hourly cost exceeding $50,000. 25 percent reported that their hourly cost exceeded $500,000.[4]

A report from Forrester suggests that hardware failure accounts for 31 percent of unplanned downtime,[5] and Dunn and Bradstreet holds that 59 percent of Fortune 500 companies have, at minimum, 1.6 hours of downtime per week. One report went a step further to calculate the impact of downtime on labor costs alone, assuming that if every employee were affected by the downtime, it could cost the business more than $800,000 per week in labor alone-- totaling more than $46 million each year.[6]

While the numbers may be smaller for many companies not on the Fortune 500 list, are the consequences comparable? What amount of downtime can your organization tolerate? It's an important question to ask, especially when such downtime is preventable.

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Migration

But as astronomical as downtime costs may be, there are other costs incurred by waiting. Migrating to an entirely new platform can, of course, be very expensive. There is the cost of creating a new application; retraining employees; migrating, converting, and translating data from the legacy platform to the new one; and the possible costs incurred if data is lost during the migration process. All of these will vary from industry to industry and, within a vertical, from company to company.

According to a survey conducted by Softek exposing the hidden costs associated with data migration, 83 percent of migrations experience problems—with unexpected downtime being the leading issue. The other issues include technical compatibility issues, data corruption, application performance issues and data loss.[7] Furthermore, research carried out in 2011 by Bloor Research showed that migration projects regularly exceed time and budget constraints. The average budget for a data migration project is $875,000, but only 62 percent of such projects were brought in «on time and on budget.»[8]

Maintenance

Finally, there are the costs of waiting associated with maintenance. Even if your system is working properly and even if you're not considering migration, what does the legacy system cost your organization annually? As legacy hardware ages and attains End of Life status, support is becoming less readily available. Many legacy hardware experts are retiring from the workforce or moving into newer technological spaces. And as the number of available support technicians decreases, the cost to maintain these legacy platforms is rising. How much are you willing to pay to support your system? More than

that, what if you could pay significantly less and know that your applications would run more reliably than before?

Many companies are paying upwards of $50,000 annually for support on a single legacy system. What if you could reduce that by 50 percent in a single year, and by 95 percent annually thereafter? If you're running multiple legacy systems, imagine the budget that would free up for other initiatives in your department. With legacy hardware virtualization, this is possible. The numbers cited above come from a recent implementation of Charon-AXP for a customer in the higher education space.

Making a Plan

If you have a legacy system, the hardware is aging and in danger of failure. Replacement parts are harder to come by, and in-house knowledge is disappearing as legacy hardware experts enter retirement. With that in mind, it's essential to prepare a strategy for your system. To create a plan, businesses first assess their options:

Option A: Maintain the aging hardware

This generally means looking to eBay or other used part resellers, as mentioned above. It means staying ahead of breakdowns and being ready when a failure happens, ordering a spare part as quickly as possible and being comfortable with the potential downtime that entails. This option is typically most acceptable for business with a low cost of downtime or who only use their system in an archival capacity.

Option B: Migrate the software

While often effective, this is costly and time-consuming. Migrations take months, if not years, and can require partial or full rewrites of the application. Further, there's employee retraining involved to get everyone up to speed on the new system. Migration can also be risky: the migration of data is accompanied by the reality that some information could be lost in the process. The time, costs, and risks involved can make this option prohibitive. Beyond those factors, migration loses sight of the fact that while the hardware may be failing, the applications themselves are still running strong. This option often necessitates "throwing the baby out with the bathwater" and giving up a great application in the process.

Without knowledge of hardware emulation, this is where planning ahead stops. Most companies consider one of these two options, or some combination of the two: maintain the system as long as they can before migrating. Organizations choosing between Option A and Option B often find themselves between a rock and a hard place.

Option C: Hardware emulation

With Charon legacy server emulation, there is an easier, more cost-effective, and better way. Charon virtualizes the legacy hardware, allowing legacy applications to run, unmodified, on industry standard servers. The headaches of Option A are eliminated: there is no need to look for spare parts for the legacy hardware, because Charon runs on modern Industry Standard hardware. And unlike Option B, Charon is low cost, low risk, and has a relatively short implementation process (a matter of days, often under a week)—and it means that businesses can keep their still reliable applications intact. Charon does not have to be an either/or decision. While many of our customers choose Charon as their long-term solution, others use Charon to give them more time as they consider other projects down the line. Businesses know they need to protect their software investments, and Charon releases them from the pressure of a ticking clock or a quick decision. In such cases, implementing Charon removes the stress associated with legacy hardware and can be a way to safeguard business interests for the future.

So what does the plan look like once an organization decides to implement Charon?

The first thing to do is talk to Stromasys. Our team of technical experts has a wealth of experience working with legacy hardware, applications, and operating systems. A Stromasys specialist with expert knowledge of your hardware and legacy OS will work with you to understand your goals and performance acceptance criteria and take an inventory of your system. From there, the specialist will analyze your environment to determine the product and host system that will be the best fit. You are involved all throughout this process, making sure our recommendations meet your business needs.

The next step is installation. We install Charon on your industry standard server or in the public cloud of your choice and then restore a full backup of your legacy system. In most cases, this is an opportunity to test fully your applications in the Charon environment. If there are any behavior differences, it is at this stage that they are analyzed and eliminated. When functional and performance testing completes successfully, we move on to the final step of the process: data migration. This is, of course, distinctly different from a software migration in that your applications are not modified in the process—because Charon allows your unchanged applications to run on the new platform just as it did on the original hardware.

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Your system remains supported. Immediately upon installation, the Stromasys Support team is available for diagnosis, troubleshooting, and general maintenance. Support plans are available for business hours or 24/7 support.

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With a Charon system migration plan, your pain points are gone. Your trusted legacy applications run just as they always have, users do not have to be retrained, your team doesn't live in fear of downtime, and business continuity is ensured.

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The Bottom Line

Your legacy systems are too important to leave them unprotected. The bottom line is that Stromays's Charon solutions and expertise help organizations to avoid IT disasters associated with legacy systems. Plan ahead. With Charon, organizations can quickly improve the ROI of their hardware systems by keeping mission-critical applications running, eliminating risks, reducing costs, and avoiding budget overruns. Investing in the future of your legacy systems is a gateway to the continued success of your business.

[1] http://www.nextgov.com/cio-briefing/2016/10/idc- report-legacy- it-in- agencies/132618/

[2] http://www.zdnet.com/article/average-large- corporation-experiences- 87-hours- of-network- downtime-a- year/

[3] https://www.evolven.com/blog/downtime-outages- and-failures- understanding-their- true-costs.html

[4] USA Today, page 1B; July 3, 2006 / http://www.availabilitydigest.com/private/0206/benchmarking.pdf

[5] https://www.forrester.com/report/The+State+Of+Business+Technology+Resiliency+Q2+2014/-/E- RES109224

[6] http://www.businesscomputingworld.co.uk/assessing-the- financial-impact- of-downtime/

[7] https://www-935.ibm.com/services/us/gts/pdf/hiddencostsdatamigration- wp-gtw01279- usen-01- 121307.pdf

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