



THE CLOUD ADVANTAGE

Benefits, Compliance, And Security

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Things have changed.



Digital transformation is about changing business models and about companies not just taking advantage of the huge opportunities created by these latest technologies but preparing for their constant evolution.

While the introduction of cloud-based data management systems has caused a bit of a culture shock for manufacturers, the benefits are far too significant to ignore. Increasingly more companies are developing or moving their workloads to the cloud by the day, aiming to migrate everything onto the cloud over the next few years. This digitization of data has enabled them to deliver competitive advantages in an ever-competitive landscape.

However, as businesses become more digital, there are more inherent cybersecurity risks, and the problem is growing. Further scrutiny has been placed busi-

ness's ability to develop and maintain their IT security throughout this transition period.

Simply put, businesses can no longer afford to sit idly by and accept their current security status quo.

As moving to cloud software requires a willingness to move potentially sensitive production data beyond the safety of the businesses' four walls, many companies will need to usher in a company-wide IT culture change. Despite those hurdles, organizations that have adopted cloud are finding that when it comes to the benefits, the sky's the limit.

Security vs. SECURITY.

In the past, blanket statements suggesting cloud-based software presented additional security risks had no trouble finding support, but now that's changing.

Experts at the RSA Security Conference in San Francisco agree that the cloud now offers safe options for corporate data management, often providing better security than companies' private infrastructure. The fact that giants like Amazon and Google have embraced Cloud/SaaS-based platforms strongly suggests that security is no longer the concern it once was.

As with internal networks, cloud-based systems depend on organizations to implement in-house security measures and train employees on best practices to keep data safe. The simple fact is that the Cloud is more secure than ever: Most cloud security incidents result from a combination of misconfigurations or inadequate protections put in place by the businesses themselves, and this suggests they need to better

understand the risks of the cloud. Availability and minimal infrastructure costs are important benefits, but they don't necessarily ensure data security.

Many cloud providers are not the ones actively managing the data, they are simply providing an infrastructure, leaving the management and security of data to their customers. Thus, manufacturers must make sure they are performing quality assurance on configurations and policies, maintaining access control lists properly, and auditing anyone who has access.

Good security practices are essential to any IT framework, whether it be the frequency of changing passwords, locking the door behind you, or logging out of public kiosks.



An Example: Equifax

A good example can be found in the Equifax breach. In an attempt to skirt responsibility for the largest data breach in American history, Equifax executives say their on-premise infrastructure's breach boiled down to one person not doing their job. A few weeks before the breach, the company sent out an internal email to deploy a specific software security update. However, when their system failed to identify any vulnerabilities and the IT department (who also ran scans) failed to recognize the vulnerability, the responsibility apparently ended up on one person. The notion that just one person didn't do their job and led to the biggest breach in history shows a fundamental lack of good security practices that would be an issue for any company regardless of whether they used on-premise or cloud solutions.

Even the most secure in-house systems can become compromised. Despite that, the words "in-house" often inspire a misleading sense of invincibility. By partnering with the right cloud service provider and having a proper transition strategy in hand, small and medium sized business often gain a wealth of security expertise superior to that of their own tech teams.

Cloud Advantages: Tangible and Intangible.

When considering Smart Manufacturing technologies like machine monitoring or ERP systems, security isn't the only advantage that SaaS and the Cloud have to offer. Here are just some of the not-so-obvious tangible and intangible advantages that SaaS offers when held up against its on-premise alternative.

→ **1. Less Resource Costs**

Companies often get a false reading because they don't take into account the real cost of on-premise software. According to a white paper by Intacct Corporation titled, 'Moving to the Cloud: Understanding the Total Cost of Ownership', companies can spend up to 75% of their total IT budget just to maintain and run existing systems and infrastructure. Cloud-based applications eliminate the need to purchase and maintain expensive servers - minimizing internal resource costs and further adding to their economic advantage. And, with no support, training or integration services costs to take on, it's even more attractive.

→ **2. More Flexibility**

Most Cloud/SaaS software is modular in structure, meaning you can start with the functionality you need and add more as you move forward, or even remove it, over time. This software model is far less restrictive than an on-prem solution, giving you the freedom to customise your system to reflect your developing business.

→ **3. Data storage, backup and recovery**

Today's companies gather tremendous amounts of data, and they need not only storage of entire digital asset bases but also regular data backups to ensure the restorability of that data in the off-chance that disaster strikes. On-premise plat-

forms require huge amounts of server space for this, which is costly, challenging to find the physical space, and necessitates an on-premise staff to maintain it. As SaaS systems are hosted and backed up onto the Cloud, the cost of storage, maintenance, and restoration are prerequisite in the subscription costs, freeing companies from the associated costs and general complexion inherent to in-house IT infrastructures.

→ 4. Upgrades and New Features

In the age of technology, software capabilities are improving all the time and it's never been more important to stay up to date. While on-premise solutions can roll out improvements, there can often extra costs associated and the responsibility ends up on the internal team to seek out and apply them.

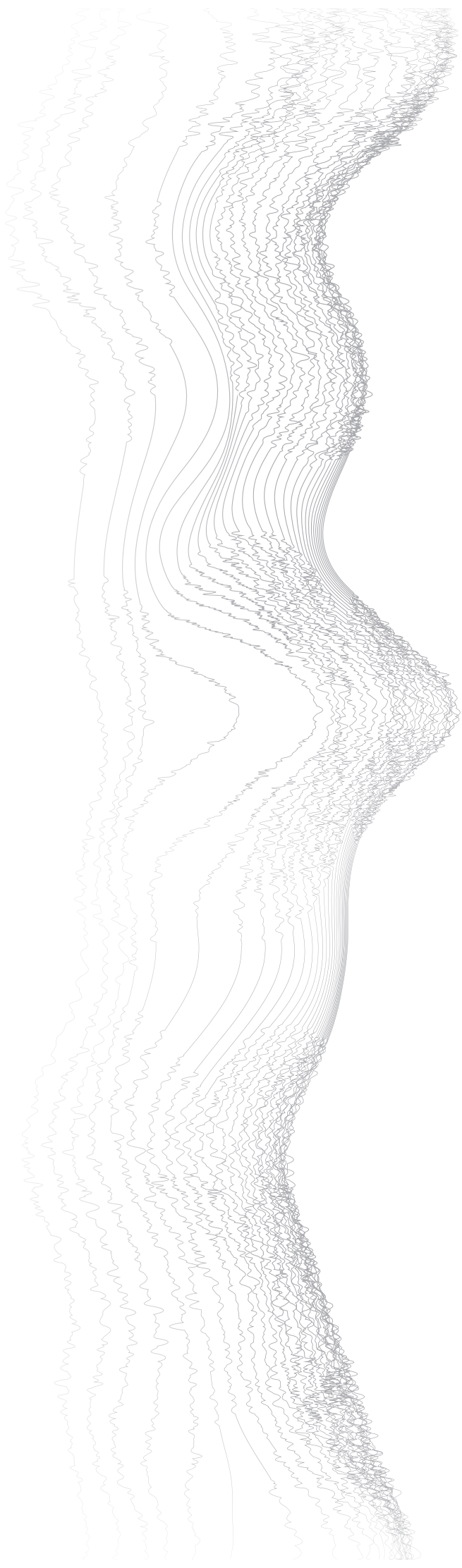
With teams of developers constantly adding new features, SaaS platforms can also roll out new features instantly upon approval.

→ 5. Enhanced Customer Support

On-premise software vendors charge large up-front license fees, and after deployment, it becomes your responsibility to maintain the software going forward. The Cloud/SaaS model ties a vendor to your ongoing success. Their success depends on yours, which means they are driven to ensure you derive real value from the application.

→ 6. Try Before You Buy

Many small and medium sized companies - particularly those without extensive IT specialists - make purchase decisions without a good understanding of the value the software will deliver to their business. That can be a risky and extremely costly move with such a large, time intensive investment. Most Cloud/SaaS applications provide companies with trial versions or pilot periods to test the application first and ensure there is business value in the application. If the software doesn't add value to your business, you need only cancel your subscription.



The Moral of the Story? Going SMART Means Staying Ahead.

Day by day, manufacturers are getting Smarter - elevating their operations to higher, more efficient levels.

While cloud and SaaS solutions may not be the answer (yet) for every organization, understanding the upsides and downsides to conventional software and on-premise infrastructure is imperative for savvy companies aiming to be both sustainable and competitive. It's not good enough for today's businesses to just keep up with the latest technological trends, it's essential to embrace their arrival, to plan for them, to prepare your team for them and to stay ahead of them.

So, with the knowledge that the cloud can be as secure as any private server while also being faster, more flexible and less expensive than any on-premise IT infrastructure, you might want to ask yourself this question: are my previous conceptions (or misconceptions) and fears of the cloud precluding me from transitioning my company toward future success? If the answer is yes, the time to reconsider is NOW.


It's like the ever-wise Sesame Street song says: "Things are always changin', so don't be sad and blue, change can make you happy, 'cause it brings you something new."



The Cloud Advantage: Benefits, Compliance, And Security



It's time to shift the focus from the future to the now.

An abstract graphic consisting of several thin, light-colored wavy lines that flow across the page. Small dots are scattered along these lines, creating a sense of movement and data points.

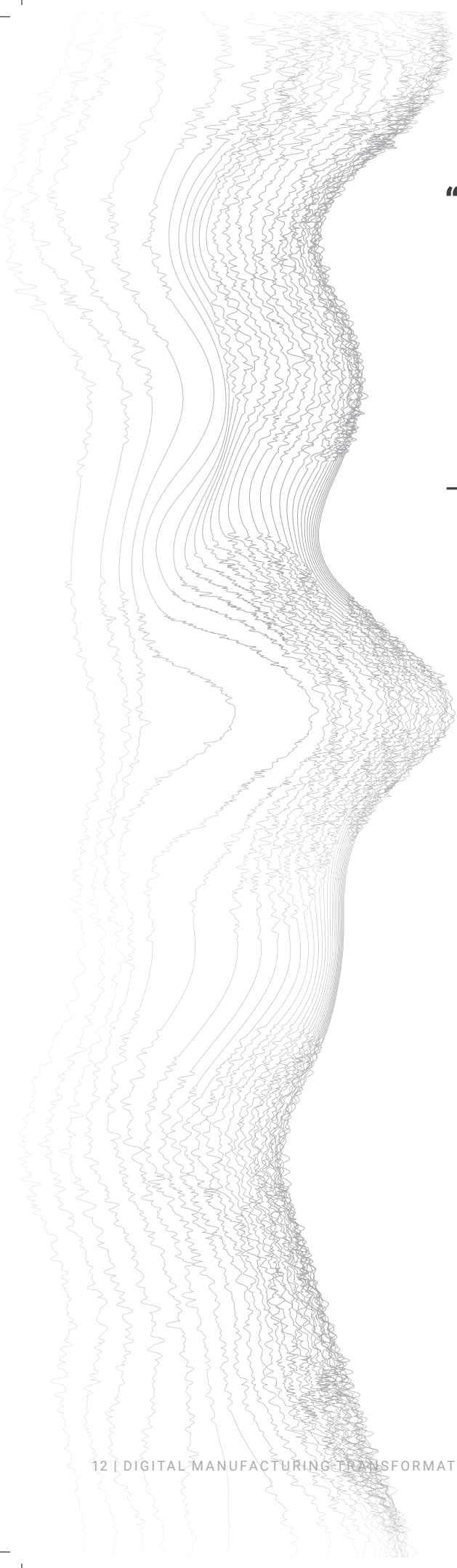
→ Our commitment to this objective requires that we provide our customers with the optimal tools necessary to achieve competitive advantages and success in an ever-competitive landscape.

→ We recently discussed the constantly evolving IT landscape and the necessity for manufacturers to not just keep up with the latest technological trends, but to embrace their arrival, to plan for change, and to stay one step ahead. To recap: one way MachineMetrics helps our customers do this is by leveraging Amazon Web Services' Virtual Private Cloud and its capabilities.

Benefits of Partnership

By partnering with AWS, some of the benefits we are able to leverage include:

- **1. Keeping Our Customers' Data Safe**
The AWS infrastructure puts strong safeguards in place to help protect customer privacy. All data is stored in highly secure AWS data centers.
- **2. Meeting Compliance Requirements**
AWS manages dozens of compliance programs in its infrastructure. This means that segments of your compliance have already been completed.
- **3. Saving Our Customers Money**
Cut costs by using AWS data centers. Maintain the highest standard of security without having to manage your own facility.
- **4. Helping our Customers Scale Quickly**
Security scales with your AWS cloud usage. No matter the size of your business the AWS infrastructure is designed to keep data safe.
- **5. Providing Upgrades and New Features Instantly**
AWS is constantly upgrading and adding the latest security capabilities to their product, which updates automatically.



“The fact that we can rely on the AWS security posture to boost our own security is really important for our business. AWS does a much better job at security than we could ever do running a cage in a data center.”

—Richard Crowley, Director of Operations at Slack, best summarizes our feelings toward AWS.

Because MachineMetrics is cloud-based, there are minimal IT infrastructure requirements. MachineMetrics’ mobile friendly, secure cloud application allows you to access this data from anywhere and requires no servers and automatically updates with the latest features.

Thanks to the cloud, our mobile friendly software allows you to access your data from anywhere with a secure connection from your mobile phone or home PC without IT support or complicated home-baked firewalls and VPNs.

MachineMetrics has provisioned Amazon’s Virtual Private Cloud to ensure the utmost security for our customers. This allows us to provision a logically isolated section of the Amazon Web Services (AWS) cloud where we’ve launched AWS resources in a virtual network defined by MachineMetrics. We alone have complete control over the virtual networking environment, including the selection of IP address ranges, the creation of subnets, and configuration of and network gateways. Running on a dedicated Amazon VPC means that all data is housed on a dedicated instance of MachineMetrics that can be tightly controlled and only accessible through a secure VPN tunnel. Amazon VPC provides advanced security features such as security groups and network access control lists that enable inbound and outbound filtering at the instance level and subnet level.

Additional Security Options

Lately we've received a lot of questions about whether or not there are additional security measures that we can take to ensure and optimize cloud security for our customers.

To be clear, with internal networks, cloud-based systems depend on organizations to implement in-house security measures and train employees on best practices to keep data safe. The simple fact is that the Cloud is more secure than ever: Most cloud security incidents result from a combination of misconfigurations or inadequate protections put in place by the businesses themselves, and this suggests they need to better understand the risks of the cloud.

Secondly, there is no information that we are gathering through MachineMetrics that would create an issue with any level of government compliance. That said, there are a number of companies who may still want to utilize a governmentally compliant cloud. While we at MachineMetrics are more than confident in the AWS VPC's security which entails perhaps the most heavily invested in security for any cloud provider on the market (or for that matter, any data center of any type period), we are committed to ensuring both the safety and comfort of our customers.

ITAR COMPLIANT AWS GOV CLOUD

For our customers seeking additionally privatized/compliant cloud options, MachineMetrics leverages the ITAR Compliant AWS GovCloud to double-down on security and compliance concerns for their customers is to leverage the AWS ITAR-Compliant Gov-

ernment Cloud. ITAR compliance in the cloud focuses on ensuring that information considered technical data is not inadvertently distributed to foreign persons or foreign nations. In order for data to be subject to ITAR, an IT workload or type of data has to be deemed an export according to the US Munitions List (USML). Since AWS does not have any visibility into or knowledge of what customers are uploading onto its network, including whether or not that data is deemed subject to ITAR regulations, all customer data within the GovCloud region is treated as ITAR data.

As a part of managing a comprehensive ITAR compliance program, companies subject to ITAR export regulations must restrict access to protected data to US Persons as well as restrict the physical location of that data to the US. Fortunately, AWS GovCloud provides an environment physically located in the US where access by AWS Personnel is limited to US Persons, thereby allowing qualified companies to transmit, process, and store protected articles and data subject to ITAR restrictions. The AWS GovCloud environment has been audited by an independent third-party to validate that proper controls are in place to support customer export compliance programs.

Additional Resources

With the help of our friends at Amazon, MachineMetrics has put together a list of resources for our potential manufacturing customers considering the switch to cloud:

- General Electric's Digital Transformation: <https://aws.amazon.com/solutions/case-studies/general-electric/>
- General Electric (GE) is migrating more than 9,000 workloads, including 300 disparate ERP systems, to AWS while reducing its data center footprint from 34 to four over the next three years.
- GE Oil & Gas Case Study: <https://aws.amazon.com/solutions/case-studies/ge-oil-gas/>
- The GE Oil & Gas cloud migration project is helping the General Electric division achieve a 52 percent decrease in IT costs, greater speed to market, and the agility to compete even better in an industry experiencing immense market challenges.
- AWS Case Study: GE: <https://aws.amazon.com/solutions/case-studies/ge/>
- GE took advantage of AWS GovCloud (US) to develop a new manufacturing platform that connects a global network of people and machines in a secure, compliant, and distributed environment.
- AWS Overview of Security Processes Whitepaper: <https://aws.amazon.com/whitepapers/overview-of-security-processes/>
- AWS Cloud Security site: <https://aws.amazon.com/security/>

Factory Floor Monitoring and Analytics

Because MachineMetrics is cloud-based, there are minimal IT infrastructure requirements. MachineMetrics' mobile friendly, secure cloud application allows you to access this data from anywhere and requires no servers, automatic updates, and minimal IT expenses. All that's required is that machines are networked and accessible from our gateway device. Since we pull data directly from the machine controls, all computers in the plant are separate from the monitoring system. Though (as we've learned above) it's good practice for any business to keep up with updates, password protection, etc - it has no impact on the security of MachineMetrics.

Our mobile friendly software allows you to access your data from anywhere with a secure connection from your mobile phone or home PC without IT support or complicated home-baked firewalls and VPNs. We can also roll out new features instantly upon approval.

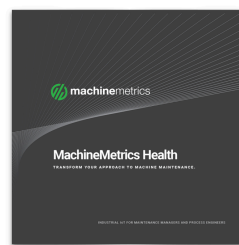
MachineMetrics is easy to integrate, simple to use, and produces powerful results. By closing the communication gap between machine operators, managers, and the front office, we're driving production output by more than 20% on average for our customers.

MARKETING MATERIALS

BROCHURES



MachineMetrics Production



MachineMetrics Health



MachineMetrics Service

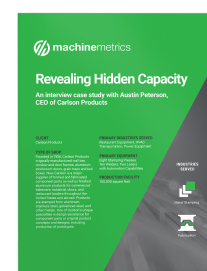
CASE STUDIES



Carolina Precision Manufacturing
SWISS CNC



Fastenal
PRECISION METALWORKING



Carlson Products
METAL STAMPING AND FABRICATION

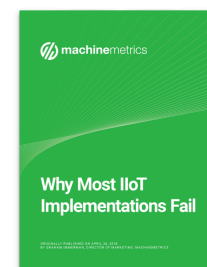
EBOOKS



Digital Transformation



The Cloud Advantage

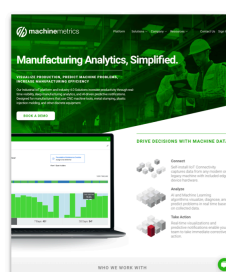


Why most IIoT implementations Fail

MARKETING



MachineMetrics Presentation Slides



MachineMetrics Website
RUNNER-UP, HANNOVER MESSE
"BEST MANUFACTURING
WEBSITE OF 2018" AWARD



MachineMetrics Blog
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