

ZERODOWN
S O F T W A R E

HA for Azure Stack Playbook

2019

ZERODOWN SOFTWARE: AZURE STACK PLAYBOOK



Version 1.0

01/01/2019

 zerodownsoftware.com

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About this Playbook

This High Availability (HA) for Azure Stack playbook contains tools and resources to enable Microsoft Partners, OEMs, and Systems Integrators to drive cloud migration and modernization for their customers. It will help you understand how to accelerate your customers' cloud journeys by adding an essential safety net to Azure Stack deployments and operations associated with technical and business transformation. The goal of this playbook is to describe how our technology delivers differentiated 1+1=3 solutions to accelerate your sales cycles, power rapid Azure adoption, and maximize consumption of your cloud-based offerings and services.

The playbook is divided into three parts:

- **Part 1: HA for Azure Stack Overview** explains the **business and technical problems that the ZeroDown® Software solution addresses for customers.**
[Start here](#) for a solution overview.
- **Part 2: Deployment** explains how to implement the **ZeroDown® Software** HA for Azure Stack solution.
[Start here](#) for the steps required to deploy the solution within a customer environment.
- **Part 3: Partnering with ZeroDown Software** explains how to engage with us on building a total solution for your customers.
[Start here](#) to understand how to partner with us.

Solution Demo

For an introductory demo of the ZeroDown Software HA for Azure Stack solution, go to:
<http://www.zerodownsoftware.com/azure-stack/>

Additional Information

For additional information on ZeroDown Software, please visit us at www.zerodownsoftware.com. There you will find Customer Presentations, Solution Briefs, White Papers, Video Demos, and more.

ZeroDown Software is a Co-sell ready Microsoft partner. Our Business Continuity as a Service (BCaaS™) solution is featured on Microsoft's One Commercial Partner (OCP) portal and on the Azure Marketplace at the following URL:

https://azuremarketplace.microsoft.com/en-us/marketplace/apps/zerodown_software.bcaasforazure?tab=Overview

To download a copy of Microsoft's Cloud Migration & Modernization playbook, visit:
<https://partner.microsoft.com/en-us/campaigns/cloud-practice-playbooks>

To share feedback on how we can improve this ZeroDown Software playbook, please email your suggestions and questions to sales@zerodownsoftware.com.

Part 1: HA for Azure Stack

Executive Summary

Customers move to the cloud to achieve increased availability and scalability for their products, solutions, and services. They may be motivated by considerations such as lower cost, increased IT agility, application modernization, or to accomplish strategic goals and fuel business growth through digital transformation. ZeroDown Software's HA solution provides added value to customers by ensuring that, when their platform of choice is Microsoft Azure Stack, high availability of their data and applications will remain an integral part of their cloud journey. For partners and service providers, HA for Azure Stack delivers a unique control point for the intelligent cloud edge.

Whatever their reasons for changing IT environments, your customers will need to be certain that risks in areas such as regulatory compliance, business continuity and business assurance are adequately addressed. When moving to a new environment, the last mile is crucial. [For Systems Integrators \(SIs\) and Cloud Service Providers \(CSPs/Telcos/MSPs\), the ability to pin up applications rapidly with full business assurance is a necessary condition for building a successful cloud migration practice](#) that augments existing SLA engagement models. Unfortunately, this is exactly where many of today's migration offerings fall short with unanticipated or undisclosed risks resulting in deployment delays, cost overruns and business disruption, all hard and fast recipes for failure and customer dissatisfaction.

This playbook will focus on the most effective way to mitigate such risks using ZeroDown Software's patented solution for high availability. Beyond providing application migration with business assurance, [HA for Azure Stack also provides the ability to stand up workloads rapidly to run/operate applications from the cloud and provides the enabling technology to deliver a new set of Azure Stack managed services](#). This high availability solution covers both Azure Stack to Azure Stack and Azure Stack to Azure implementations. Other scenarios such as hybrid DevOps, cross-cloud scaling, data sovereignty, and geo-distributed apps are also described showing how you can leverage ZeroDown Software to advance a diversified set of hybrid and multi-cloud managed services and offerings for a broad range of customers.

About Azure Stack

Microsoft Azure Stack is a hybrid cloud platform that allows customers to deliver Azure services in their datacenter. This platform is designed to support customers' evolving business requirements. Azure Stack can enable new scenarios for modern applications, such as edge and disconnected environments, or meet specific security and compliance requirements.

Key features and benefits include:

- Run Azure consistent services in the data center using cloud functionality
- Deploy applications to an Azure private cloud
- Prevents exposure of company data in a public cloud
- Provide a simplified development, management and security experience that is consistent with Azure public cloud services
- Maintain data sovereignty and control of data
- Meet regulatory and compliance needs
- Run high performance AI, analytics, big data and low-latency applications
- Support edge and disconnected applications

- Implement a DevOps IT environment that is quicker to respond to business needs and realtime dev and test environment for application modernization
- Drive digital transformation by evolving business applications to a Software as a Service (SaaS) model

About ZeroDown Software

ZeroDown® Software enables customers to migrate to Azure and Azure Stack with zero downtime, protecting their operations from outages throughout their cloud journey. ZeroDown's patented technology eliminates the downtime risks inherent in typical migration solutions and provides an end-to-end solution to run/operate customers' critical apps in hybrid and multi-cloud environments. [This solution makes sense for any businesses who rely on software applications to serve their internal or external customers, manage operations, and communicate, and who cannot tolerate the high costs and severe business impacts of downtime.](#)

Key features and benefits include:

- Protects critical applications from network interruptions that would normally cripple the enterprise
- Lowers barriers to entry for cloud-based operations and services by ensuring continuous uptime
- Eliminates downtime risks typically associated with the shift to hybrid cloud environments
- Supports multi-cloud operations and prevents vendor lock-in
- Ensures regulatory and compliance needs are met
- Provides full business assurance
- No loss of in-flight transactions

Business Overview

Cloud adoption is a trend that applies to just about all business segments and verticals from SMB's to Large Enterprise. Telcos, MSPs and their customers have done the math and want to embrace either the public or hybrid cloud but are struggling with how to migrate workloads to the cloud without massive disruption to their business.

Once we double-clicked with customers on their migration challenges, we learned that a hidden roadblock to cloud adoption is the business risk associated with not fully understanding the potential costs associated with outages due to moving workloads and business applications to the cloud. [For IT organizations the unknowns and new technical skill sets required to run workloads in the cloud amount to a risk-reward calculation that more often than not favors delay rather than action.](#)

Costs of Downtime and Business Risks

Business disruption, lost revenue and loss of reputation

- Average costs of downtime is estimated at \$8,850 per minute¹
- 43% of SMBs go out of business immediately following a major data loss, with a mere 6% survival rate²
- If major cloud providers were to go offline for 3-6 days, US customers would lose \$6.9-\$14.7B in potential business³
- In March 2018, an AWS power outage shutdown hundreds of online services, one year after Amazon's S3 outage made unwelcome headlines for cloud customer disruptions worldwide⁴
- 77% of organizations remain unaware of the financial costs of cloud outages⁵

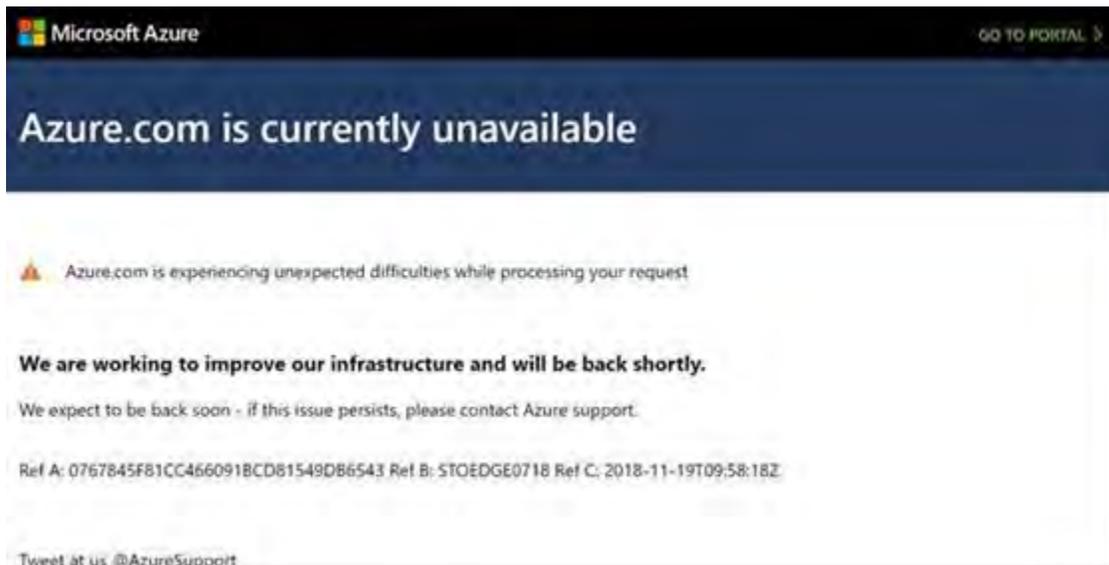


Enterprises unable to quantify business risk or overcome IT challenges DELAY their move to Cloud

References:

1. Ponemon Institute Research Report, Cost of Data Center Outages, January 2016
2. Gartner Group Research Study, February 2010
3. Lloyd's of London and AIR Worldwide joint report, 2018
4. [Computer Weekly News Article](#), March 2018
5. Veritas Truth in Cloud study, March 2017, global survey participated in by 1200 business and IT decision makers

One need only at the headlines to understand that downtime to IT services (cloud-based or otherwise) represents a significant threat to today's online enterprise. Recovery, by the time it is achieved, may come too late for business survival. Whatever the cause, outages of any kind represent a huge No, No for customers, current or prospective. The bottom line is that the following user experience must be avoided at all costs.



In fact, guaranteeing high availability is critical for your clients' business and their customers. Unplanned outages have negative impacts on revenues and profits, cause brand damage, and undermine customer confidence. A powerful answer for organizations running their operations on private or hybrid clouds is to ensure HA for business-critical and mission-critical applications.

How HA for Azure Stack Addresses Business Risk

ZeroDown's patented solution eliminates downtime risks, enabling IT organizations to move their workloads and data safely and securely with full business assurance. The software is designed to support operations across mixed on-premises, private, hybrid cloud, or multi-cloud environments.

TRUE BUSINESS CONTINUITY requires the capability to process active-active critical applications across different clouds or platforms. ZeroDown's Business Continuity as a Service (BCaaS™) provides this simple, easy and secure solution to ensure your apps are up and running continuously. All application instances are hot-hot **and** active-active, making everything equally and simultaneously available across multiple locations in real time. If one instance goes down, the others will continue to function with no customer impacts or operational disruptions. Since live transactions and data are being synced up continuously, applications can be rolled back to any available site, providing the optimal failover or fallback solution to the transaction for hybrid IT or multi-cloud deployments.

"Protection of resources and resource data in Azure and Azure Stack is a user responsibility. While Microsoft supports the Azure Stack software, it is up to you to protect your data in Azure Stack."

~ Microsoft

The Problem We Solve for Microsoft Azure Customers

Migrate in a flash with zero disruption and no data loss. Multi-cloud style.

We enable customers to migrate to Azure and Azure Stack with zero downtime, protecting their workloads and services from unforeseen disruptions in private, hybrid, and multi-cloud environments.



The Value We Provide to Partners

Here are some of the boxes we tick for Systems Integrators (SIs), Cloud Solution Providers (CSPs), Telcos, and Managed Service Providers (MSPs) looking to provide differentiated and compelling Azure Stack solutions for their business customers

- ✓ Accelerates Azure Stack consumption by enabling migration of customers' application and data with full business assurance
- ✓ Client end customers retain control of their applications and data at all times

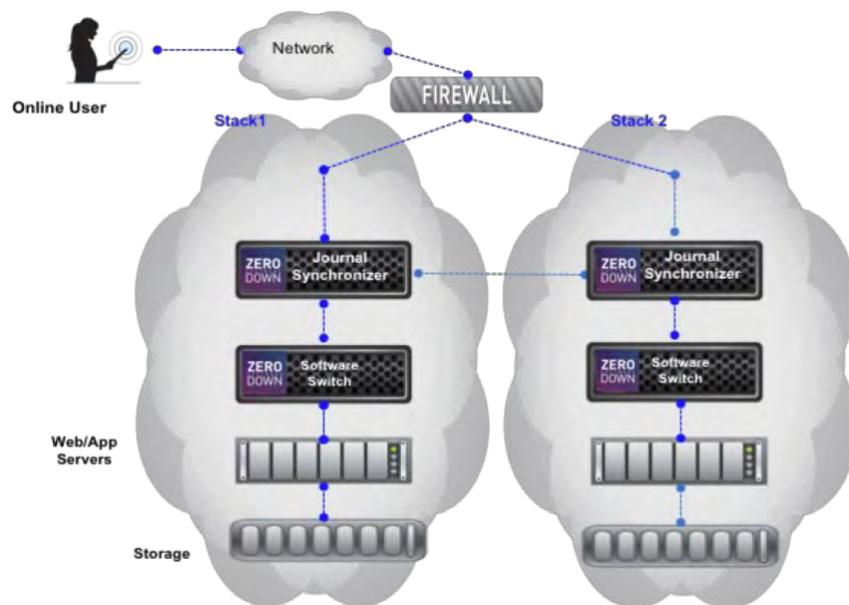
- ✓ No special cloud expertise, training of IT staff, or investment in DR planning is required
- ✓ Reduce the cost to customers of cloud acquisition and capabilities
- ✓ No vendor lock-in for critical business services: customer can run their applications in any target cloud environment and failback to the original source environment if needed
- ✓ CSPs, Telcos and MSPs can offer stronger SLAs for business applications running in the cloud
- ✓ Scale up capabilities geared to cloud adoption: Azure Stack customers can simply set up their account, then decide how many applications they need to support with HA for Azure Stack
- ✓ Enable CSPs, Telcos, and MSPs to build new managed service revenue streams, including PaaS/SaaS offerings

Technical Overview

This section provides a walkthrough of the Azure Stack HA Solution, its architecture and its benefits.

How Does ZeroDown Software Work?

The core function of ZeroDown's Always Available™ multi-synchronization technology is to enable all transactions, data exchanges, and other network activities to occur equally and simultaneously in real time across multiple sites or locations. In IT parlance, all servers are "hot" and all are "active." There is no server hierarchy, and consequently no single point of failure. If one instance goes down, the others continue to function with no visible customer impacts. Since live transactions are being synched up continuously, the state of a transaction as it is processed is replicated in all protected locations thereby delivering an ongoing business continuity solution for applications deployed to Azure Stack.



- True active-active application availability is delivered **at the transactional level**
- All servers are hot and all are active
- The software is non-intrusive, agentless, and hardware-agnostic
- Transactions, data exchanges, and network activities are supported across multiple sites or Stamps
- Works with any IT infrastructure or cloud platform (MS Azure, Azure Stack, AWS, Oracle, Alibaba)
- Easy to install, run and support

Solutions for Azure Stack Scenarios

This section of the Playbook identifies some typical customer scenarios for deployment of Azure Stack, highlights some key challenges and explains how HA for Azure Stack aligns with the characteristics and requirements of the ideal solution.

Let us start by expanding the scenario we have examined to date, namely, moving to (and/or from) Azure Stack private cloud or Azure public cloud with high availability.

Migration to/from Azure Stack with High Availability

<p>Azure Stack to Azure w/ High Availability</p> <p><u>Characteristics and requirements:</u></p> <ul style="list-style-type: none"> • High availability at the application level with Azure Stack and with Azure public cloud • Ability to migrate applications from legacy on-prem to on-prem private, and from on-prem private to public • Fault tolerant capabilities with fallback to the original environment • Minimal disruptions to existing workloads and business services 	<p><u>Challenges:</u></p> <ul style="list-style-type: none"> • Planned and unplanned downtime due to migration • Data governance and compliance • Protect data and applications at all times • Delays due to volumes of data being moved between systems • Low customer tolerance for the high costs and severe business impacts of downtime 	<p><u>Ideal Solution:</u> Enables all transactions, data exchanges, and other network activities to occur simultaneously across different platforms and locations.</p> <p>ZeroDown Software solution does this and supports multiple migration scenarios:</p> <ul style="list-style-type: none"> • Legacy systems to Azure Stack • Azure Stack to Azure Stack • Azure Stack to Azure • Azure Stack to multi-cloud (any cloud) <p>Zero downtime, no lost revenue or transactions</p>
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Beyond simply moving to a new environment, modernization of apps and infrastructure is often one of the key drivers for a customer’s move to the cloud. Here are just a few of the scenarios where ZeroDown Software helps build out more resilient solutions for CI/CD (continuous integration and delivery) and new business models based on digital transformation.

<p>Hybrid DevOps</p> <p><u>Characteristics and requirements:</u></p> <ul style="list-style-type: none"> • Fast-paced, iterative IT service delivery • Linking legacy apps with newer cloud-native apps using a more dynamic infrastructure • Public PaaS Clouds to quickly write and test apps • Private PaaS instances in the data center • IaaS Clouds that enable app and API development 	<p><u>Challenges:</u></p> <ul style="list-style-type: none"> • Moving workloads from legacy systems to more dynamic hybrid IT infrastructure(s) • Setting up environments for rapid app and API development • Pinning up new apps for rapid delivery and deployment 	<p><u>Ideal Solution:</u> Enabling technology for enterprise IT orgs to become It-as-a-Service providers to their internal users/developer community.</p> <p>ZeroDown Software solution supports:</p> <ul style="list-style-type: none"> • Safety net for all environments • Maintains data consistency during test and deploy and rapid re-synch across platforms • Accelerates deployment of new apps, allowing fallback to the old environment if needed
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<p>Cross-Cloud Scaling</p> <p><u>Characteristics and requirements:</u></p> <ul style="list-style-type: none"> • Flexibility to adopt best features of different clouds • Scale-out capabilities using a multi-cloud architecture • Use of a global network to route traffic and deliver high performing cloud/IT services at minimal costs • Continual evolution of governance, orchestration, monitoring, data management and reporting • Use of containers to abstract out IaaS implementation differences across cloud providers 	<p><u>Challenges:</u></p> <ul style="list-style-type: none"> • Complex to manage and maintain • Security and compliance across multiple cloud providers and infrastructures • Active-active resilience across geos/clouds 	<p><u>Ideal Solution:</u> A multi-cloud design that empowers the global enterprise to geo-route to the best performing cloud or most cost effective cloud for their applications.</p> <p>ZeroDown Software solution supports:</p> <ul style="list-style-type: none"> • Cross-cloud auto-scaling with business continuity • Maintains data consistency between Azure and Azure Stack • Active-active resilience across different platforms and locations
<p>Data Sovereignty</p> <p><u>Characteristics and requirements:</u></p> <ul style="list-style-type: none"> • Regulations such as GDPR have made enhanced data sovereignty and privacy measures mandatory • Risk is amplified in heavily regulated industries such as financial services and healthcare • Greater accountability and transparency around IT security parameters for handling personal data 	<p><u>Challenges:</u></p> <ul style="list-style-type: none"> • Compliance with changing laws & regulations • Public cloud puts data with external providers, making it difficult to track where data is stored and replicated 	<p><u>Ideal Solution:</u> Ensuring clarity around where data is located and what laws it is subject to. The ideal solution would avoid vendor lock-in while providing increased data transparency and protection.</p> <p>ZeroDown Software solution provides:</p> <ul style="list-style-type: none"> • Audit and control with bullet-proof journaling • Brand new control point for regulatory and compliance flexibility
<p>Geo-distributed applications</p> <p><u>Characteristics and requirements:</u></p> <ul style="list-style-type: none"> • Public cloud providers locate their physical data centers all over the world. • Industries, such as High Frequency Trading funds, can leverage this to optimize apps where low or no latency is key by using a cloud provider with data centers close to their clients 	<p><u>Challenges:</u></p> <ul style="list-style-type: none"> • Geographically distributed, high volume apps • Processing of data across geos using private, hybrid or public cloud environments 	<p><u>Ideal Solution:</u> Provides the ability to place the right data on the right platform, including the utilization of private and public cloud computing.</p> <p>ZeroDown Software solution:</p> <ul style="list-style-type: none"> • Provides always available global environments • Supports any cloud workload in any geo

App Modernization

When it comes to deploying modern cloud-based applications, we have partners utilizing our software through container orchestration technology such as Swarm or Kubernetes to create a set of microservices. We also work with application modernization partners as part of a hybrid cloud configuration, enabling HA features at the application layer.

Note: Application modernization, or the decision whether to rehost or rearchitect an application when moving to the cloud, is a subject that is outside the scope of this playbook. For an in-depth discussion of this topic, refer to Microsoft’s Cloud Migration & Modernization playbook at aka.ms/practiceplaybooks.

Multi-Cloud Scenarios

As we saw with the Azure Stack to Azure with High Availability scenario above, ZeroDown Software supports the deployment on any Private cloud (Azure Cloud) compatible offering to any public cloud, truly embracing customer choice. For example, it allows for the deployment of mission critical apps into both AWS and Azure simultaneously providing the ultimate 100% uptime for risk averse customers, like banks and hospitals.

For a demo of the multi-cloud solution, click here:

<http://www.zerodownsoftware.com/zerodown-demo/>

The demo shows that, even when a connection to an online application is broken because of an outage or other unscheduled event on either or both Clouds, the system continues to operate with no interruption of service. Once the downed systems are restored or come back online, ZeroDown Software automatically resynchs transactions in a way that is seamless to the application's end users.

A leader in deploying Microsoft collaboration platforms speaks to the benefits

"XMS has been working with the ZeroDown team through our relationship with Dell since 2012, and the number of use cases their ZeroDown product line solves continues to amaze me. From migration to true Business Continuity and Multi-Cloud processing... it has to be seen to be believed." ~ Syd Shepherd, XMS Solutions [Microsoft Gold Partner]



Note: Please contact ZeroDown Software directly about other migration scenarios of interest that are not included here. We welcome the opportunity to uncover best-in-class solutions designed to advance your customers' business and technical goals.

How is ZeroDown Software Different?

This section contains focused and brief competitive information that can be used to:

- Define the clear strengths of ZeroDown's patented technology compared to traditional HA, backup and recovery solutions
- Compare the ZeroDown Software HA solution against other solutions such as Azure Site Recovery (ASR), Zerto, Veeam, and CloudEndure.

BCaaS versus DRaaS

Others migrate applications using disaster recovery services which require systems to be taken offline. We call that process lift without the shift. We take care of the last-mile of migration, meaning there is no disruption in business. Our BCaaS™ solution provides the shift that is lacking in traditional disaster recovery solutions (repackaged for the cloud under the moniker "DRaaS"), by ensuring:

- (i) no transactions are lost, and
- (ii) no cutover or synch up problems.

Instead, we offer full business continuity with fallback so that once migration is accomplished, customers' applications are instantly available running HA for Azure Stack.

BCaaS™ (HA for Azure Stack)	DRaaS (Traditional Backup and Recovery)
In a true "Lift and Shift" paradigm, ZeroDown's patented Multi-Synch technology adds business assurance to cloud adoption without taking customers offline, meaning no disruption in business.	In an aspirational "Lift and Shift" paradigm, many are shoe-horning Disaster Recovery (block-copy-move), DRaaS, or Backup and Recovery, into the cloud migration concept.

ZeroDown provides the Shift through ensuring:

- No transactions are lost
- No cutover or synch up problems
- Full business continuity with failback

This is a Lift without the Shift and requires:

- Organizational and IT disruption
- Taking systems and customers offline
- Loss of business continuity (no failback)

Compare ZeroDown with other Cloud Migration Services

The big difference between ZeroDown and other migration solutions is that ZeroDown supports active live-live transactions in multiple locations, eliminating the downtime risks typically associated with moving operations and workloads to the Cloud. To help you compare, here are how the features some of ZeroDown Software measure up against the leading cloud migration alternatives.

Product Features Compare with ZeroDown Software	ZeroDown Software High-Availability for Web Apps/Services	Storage Based Migration AWS, Azure	Hypervisor Migration ASR, Cloud Endure, Racemi, VMware SRM
Eliminates downtime during migration	✓	X	X
App. based High Availability →99.999%	✓	X	X
Guaranteed rapid disaster recovery	Does Not Apply	X	X
Eliminates single points of failure	✓	X	X
Hardware agnostic	✓	?	✓
Protects transactions/data in flight	✓	?	?
Continuous truly synchronous replication	✓	X	?
Eliminates time-sensitive "snapshots"	✓	X	?
Scalability: Zones, Servers, VMs	✓	X	X
Active-Active at any distance	✓	X	X
Software-only solution	✓	X	✓
Transaction-level replication	✓	X	?
Prevents cascading failures	✓	?	?
Low, controlled costs	✓	?	?
Supports Open Source Community	✓	?	X
Agentless	✓	X	X
Supports Containers	✓	?	X
Mixed environment (Multi-Cloud)	✓	X	X

Customer Use Cases

The following use cases show the value we provide to partners and their end customers who required a safe and secure method to migrate their applications to private, hybrid or public cloud environments.

Outcomes that are driven off HA for Azure Stack explicitly include:

- Web-based applications that delivered using private or public clouds (all verticals)
- Government (deployment of private and public clouds)
- Industries with regulatory compliance needs (for example, Healthcare and Telecom)
- Azure Stack to Azure Stack HA
- Azure Stack to Azure HA

We remove obstacles to cloud adoption across many verticals (some examples below)



Healthcare

Rapid cloud migration
No service interruptions
Regulatory compliance (HIPPA)



Telecommunications

Rapid cloud migration
Data sovereignty
Regulatory compliance



Government

Avoid vendor lock-in
Deployment flexibility
Public and private clouds



Digital Real Estate

Rapid cloud migration
Support for MSPs
Data auditing and control

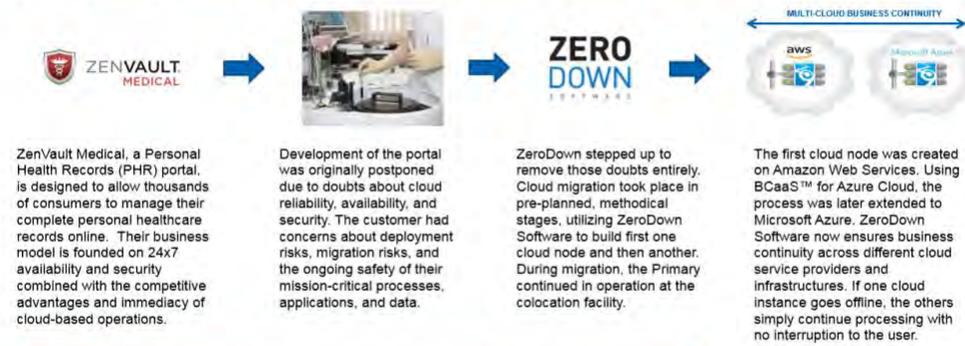
Note: To protect client confidentiality, two of these case studies are anonymous. To inquire about specific customer needs or other industry verticals, please contact us at sales@zerodownsoftware.com.

Case Study 1: Healthcare (SMB)

ZenVault Medical, a personal health records portal with thousands of online customers, provides a great example of the value ZeroDown Software provides for the short-term (migration) and long-term (run/operate).

Use Case: Health Services Industry (SMB)

Personal Health Records (PHR) portal maintains thousands of customer records online



"There could be no ZenVault Medical without ZeroDown Software. The cloud gives us flexibility, expandability, and low cost, and ZeroDown adds application uptime and data security. As a business, ZenVault Medical can't survive without that reliability."
 ~ Josephine Zhao, Lead Developer and Co-Founder, ZenVault, Inc.



Ever since 2010 when their web-based services were first introduced to the public, ZenVault’s customers have enjoyed 24x7 access to their data with no interruption of service for any cause, scheduled or unscheduled, whether it be for server upgrades, distributed DoS attacks, or natural disasters. No downtime ever. Period.

Case Study 2: Telecommunications (Enterprise)

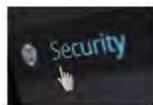
On the Enterprise side, through our partners and distributors serving countries in the Asia Pacific region, ZeroDown Software is being deployed with several large Telecom providers seeking to scale their applications and reap the benefits of Azure Stack. An early example of a deployment of ZeroDown Software that was instrumental in a move to cloud-based operations is shown below.

Use Case: Telecommunications (Enterprise)

Successful migration of protected SharePoint application to Azure



A leading telecommunications provider was running a customer help desk application on a protected SharePoint in one of its branch offices using an MS SQL database. The application needed to be scaled and secured for use at three different U.S. locations.



Upgrades to the Help Desk function had been repeatedly postponed due to concerns about the portability, reliability, and security of the application. The principal business concern was the ongoing safety of end user customer data.



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Although the IT group supporting the application had provisions with their IT services provider to refresh the hardware in regular cycles, it was clear that to consolidate the data and allow for its use beyond the existing silo, a new IT solution would be needed.



ZeroDown collaborated on an Azure-based cloud solution to run/operate the application across two sites in US East Coast and UK data centers. Using ZeroDown Software BCaaS™, the client was quickly able to test and validate the process and take complete ownership of the end-to-end solution, later adding a third site in Plano, Texas.

"We installed the ZeroDown software in three sites and it was very straightforward, the software worked as advertised."

~ Client Director, IT Operations

ZERODOWN
SOFTWARE

Case Study 3: Financial Services (Enterprise)

This third use case concerns a global financial services provider who was running a mission-critical report inside their datacenter and wanted a dedicated private cloud set up to extend the reach and resilience of the application that was generating the report. The client adopted ZeroDown's BCaaS solution first for non-disruptive migration, and then to establish fault-tolerant capabilities with guaranteed failback to the customer's datacenter.

Use Case: Financial Services (Enterprise)

Mission-critical application successfully migrated to a dedicated private cloud



This use case concerns a leading financial holding company who was running a mission-critical report from inside the client's data center. The report had to run on time or the client was subject to stiff penalties.



The hardware supporting the application was located in a secure environment and protected from unauthorized access. To introduce greater flexibility while ensuring top performance and security, the client wanted to test out the possibility of setting up a private cloud entirely dedicated to this report.



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Using ZeroDown's BCaaS™ solution to run a proof of concept, the client was quickly able to set up and validate the use of a private cloud. This was achieved without IT disruption. The application remained online at all times and there were no data synch-up issues at the transactional level.



Once testing was completed, the client took the next step of migrating the application from the data center to a dedicated private cloud. As a fallback mechanism (and to eliminate dependence on the cloud instance or infrastructure), the client also chose to adopt the BCaaS™ solution thereby ensuring fault-tolerant (active-active) capabilities at the same location.

Summary

Why HA for Azure Stack?

We Drive Azure Stack Adoption to Drive Consumption by Providing a Safety Net for Cloud Migration



Typical Solution (6 to 9 months delay)

Obstacles to Cloud Adoption

(Discovery > Re-modernize > Cloud-Ready Ops)

- Organizational and IT disruption
- Taking systems and customers offline
- Loss of business continuity (no failback)



ZeroDown's Solution (Start today)

Bridge to Rapid Cloud Adoption

(Pin up Site > Migrate > Failsafe Transactions)

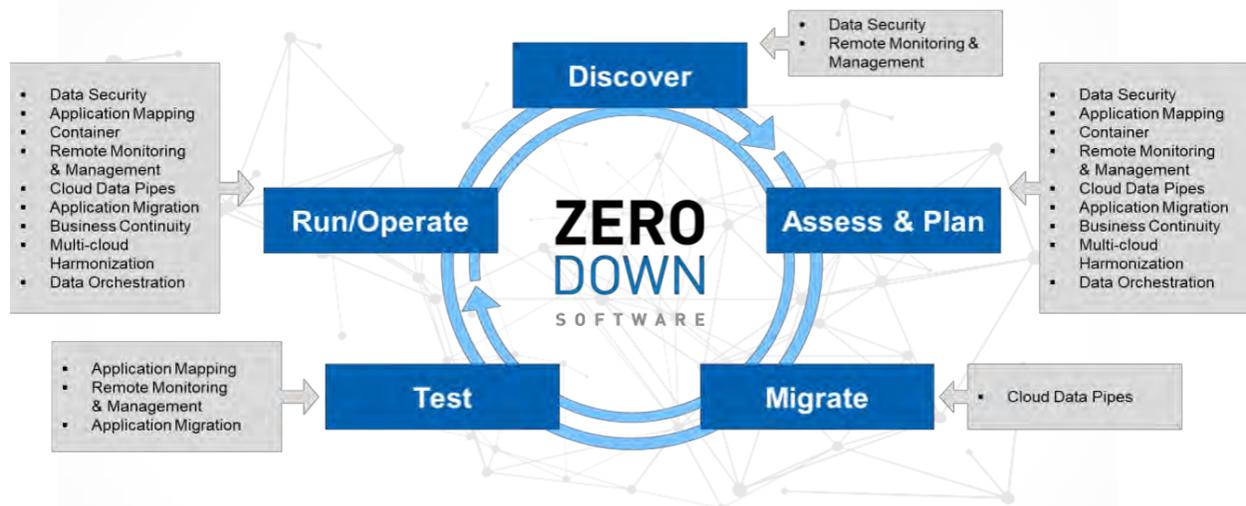
- No transactions are lost
 - No cutover or synch up problems
 - Full business continuity with failback
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Part 2: Deployment

This section of the playbook explains how ZeroDown’s approach makes your customers’ cloud journey easier to manage. Cloud complexity is a common fear that we encounter when talking with both partners and their customers. People love the simplicity of our value proposition but then give us this quizzical look when they ask ‘how easy is it to implement?’ The good news here is that the ZeroDown software solution is non-intrusive, agentless and platform-agnostic, and requires no modifications to the customers’ applications or services. No special cloud expertise, training of IT staff, expensive consulting fees or investment in disaster recovery planning is required in order to install, operate, or run the HA for Azure Stack solution. This gives us, our partners and end customers the peace of mind required to embark on the cloud journey together.

The key to building a successful and profitable cloud migration and modernization practice, whether it be for Azure or any other cloud platform, is to develop a sound and repeatable methodology to execute and streamline the deployment process. We break application migration into five distinct phases.

1. **Discover** (Understand existing infrastructure, applications, data, and define migration goals)
2. **Assess and Plan** (Prepare and plan migration including app modernization)
3. **Migration** (Deploy existing or modernized workloads to the new cloud environment)
4. **Test** (Validate migration was completed successfully)
5. **Run/Operate** (manage, maintenance and optimize for new cloud-based operations)



For the purposes of this playbook, app modernization is considered to precede all deployment phases. Suffice to say, ZeroDown Software provides a high availability solution for the complete app migration journey whether organizations are engaged in a rehost “lift and shift”, or containerizing legacy apps, or moving those apps to microservices, or creating new cloud native applications entirely. In the context of this playbook, we consider all of the above to come under the broad category of “cloud-ready” apps meaning the customer is ready to deploy them ‘as is’ based on a prior assessment of their needs.

Phase 1: Discover

The discovery phase is designed to map out the existing infrastructure, applications, and data. The goal is to understand where and how IT resources are being used. This phase is typically managed by our partners who will use their own automated tools and/or deploy third party technologies to evaluate what workloads are the best candidates for a move to the cloud.

How and Where We Fit

The Discovery phase will quickly reveal whether ZeroDown Software provides the additional mix of ingredients needed to develop a complete migration solution. We have identified three key domains (application migration, disaster recovery planning, and regulatory compliance) where ZeroDown Software can be used to build customer confidence in moving forward and to accelerate the pace of workload deployments and consumption of cloud-based services.

Application Migration Requirements

The following checklist indicates when to partner with ZeroDown Software on Azure Stack opportunities based on your client's needs or concerns:

- ✓ Customer is not sure that Azure Stack is ready for prime time
- ✓ Customer can't risk being down, fears revenue losses and customer satisfaction concerns
- ✓ Customer wants to try before they buy
- ✓ Customer is concerned about getting locked-in to one Cloud Provider
- ✓ Customer needs to modernize their applications without impacting critical business services
- ✓ Customer realizes their journey to the cloud needs audit/control capabilities for workload migration
- ✓ Customer has installed Azure Stack in a limited implementation and is not clear on how to scale operations for their daily business needs

High Availability/Disaster Recovery/Business Continuity Needs

Typically, the closing stages of the Discovery process will give rise to the most critical questions regarding migration risk and IT challenges associated with moving applications and operations to a new environment. This is when hidden roadblocks can suddenly surface for migration planning. The following checklist highlights when to bring ZeroDown into the conversation to help address customer concerns and needs:

- ✓ Uptime requirements to ensure continuous business operations, usually stated in a Service Level Agreement (SLA) between the SI or MSP partner and client.
- ✓ Understanding the processes by which the ZeroDown Software solution will be managed and maintained to meet the client's needs defined in the SLA.

Data Sovereignty, Regulatory and Compliance Issues

Concerns over data sovereignty and regulatory compliance should be captured during the Discovery phase. The EU General Data Protection Regulation (GDPR) is an often cited example of strict new legal jurisdictions, and there are many other in-country and/or industry regulations besides. By way of contrast, the permissiveness of public cloud enables wide-ranging access from around the globe. This is one reason why customers may have chosen to go with Azure Stack since the deployment of a private cloud is perceived as the best way to ensure that their customer data is protected. However, the selection of Azure Stack does not automatically satisfy all requirements, especially when it comes down

to examining data transports for each workload. Answers to the following questions are essential to satisfy regulatory needs:

- Who controls the data?
- Where is it stored?
- Who has access to it?

When it comes to questions of data sovereignty, ZeroDown Software offers a safe and secure alternative to traditional backup solutions that may require transport of data to other locations. Better still, ZeroDown provides an auditable solution to know where data is located right down to the level of an individual transaction. This can be critical in areas such as healthcare, financial services, or digital real estate where, for auditing purposes, it may be necessary to know the location of data at all times.

Next Steps

Once a customer need for ZeroDown Software HA for Azure Stack has been identified, we can work on defining the engagement model, identifying the development lifecycle opportunities, and creating an implementation plan for the customer.

Phase 2: Assess and Plan

The purpose of this phase is to build a migration plan that clearly defines the technical and security aspects of migrating mission-critical data and deploying applications to the cloud. To qualify high availability needs, the following questions can be used to determine requirements for app deployment.

- Can the customers' applications be deployed across multiple fault domains?
- Can applications be deployed into multiple regions?
- Will the app support active/active operations and how can data consistency be achieved?
- Is the customer invested in application federation across multiple clouds?
- Does the customer have all the automation necessary to rapidly re-deploy?
- Is the customer using 3rd party replication or orchestration products to failover to another location?

Configuration Worksheet

A simple worksheet can be used to capture the necessary configuration information for each site.

Item	Input	Description
Domain Name		Domain URL for the site being replicated
Site 1 Address		Enter IP / URL address for Site 1
Site 1 Port		Enter Port number for Site 1
Site 2 Address		Enter IP / URL address for Site 2
Site 2 Port		Enter Port number for Site 2
Revive Login URI		Enter the Authentication Page / Login link for the site, used to initiate the Session ID tracking
Revive Logout URI		Enter the Logout link to close the Session ID tracking

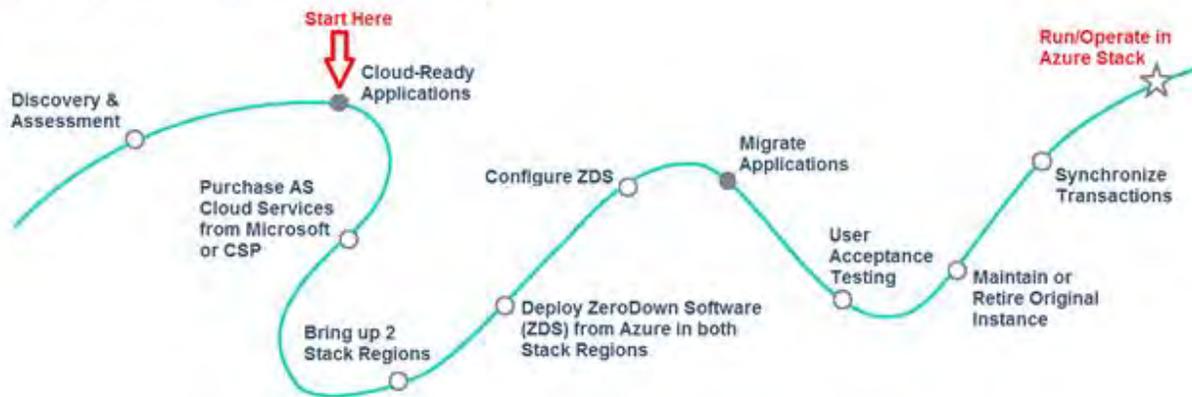
Next Steps

The source and target destinations is all the information that the customer needs to provide in order to get started on a deployment using ZeroDown Software.

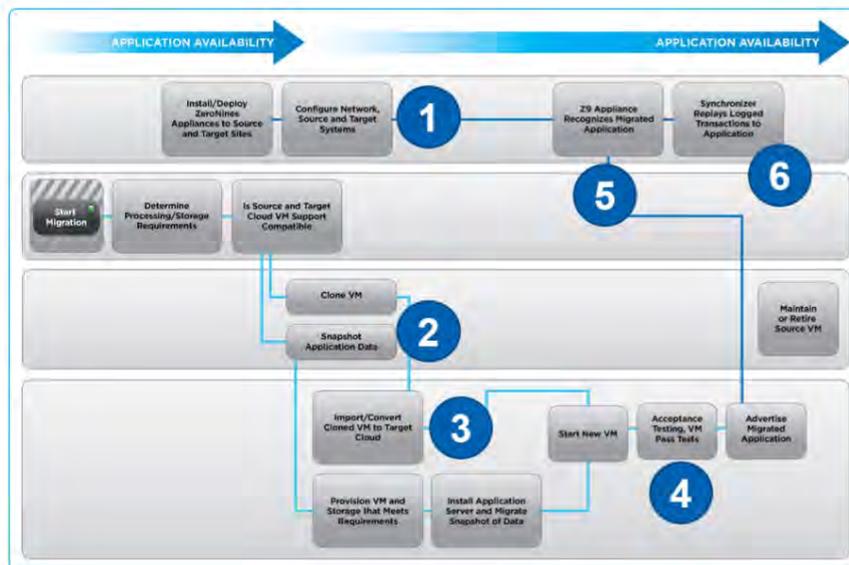
Phase 3: Migrate

For the migration phase to go smoothly, apps have to be ready to move to the new environment with no noticeable user impacts. If uptime cannot be guaranteed, delays can rear their head in the shape of organizational or IT disruption, taking systems and customers offline, loss of business continuity (with no failback). This is where ZeroDown Software’s HA for Azure Stack solution enters the picture, dramatically shortening cycle times from a matter of weeks or even months to failsafe migration in less than a day. In the customer’s cloud journey, ZeroDown HA for Azure Stack paves the last mile of a secure and rapid pathway to the cloud.

HA for Azure Stack - Customer Journey



Migration is a six step process to move the data and get the applications running in the new environment.



How we move data:

- 1) Install and deploy ZeroDown Software.
- 2) Take a snapshot of Source Application Data.
- 3) Load Source Data and Application(s) at Target Site.
- 4) Perform Acceptance Testing
- 5) Configure ZeroDown® to communicate with the Target Site Application(s)
- 6) Synchronize all transactions processed during migration

Migration notes:

- While the business application and its data are being migrated, ZeroDown® allows the source location (VM, container, or server) to continue operations
- Once the app has been migrated, ZeroDown® recognizes the availability of services and automatically begins to replay transactions processed at the Source site to the Target site
- This activity fully synchronizes the source and target environments
- The complete end-to-end process is transparent to any online customer using the application during the migration, with zero downtime and zero loss of in-flight transactions

Note: A System Administrator is able to install the ZeroDown® Software within minutes. For a detailed step-by-step guide on how to deploy and configure the software in Azure/Azure Stack, refer to the *ZeroDown Software Configuration and Setup* documentation.

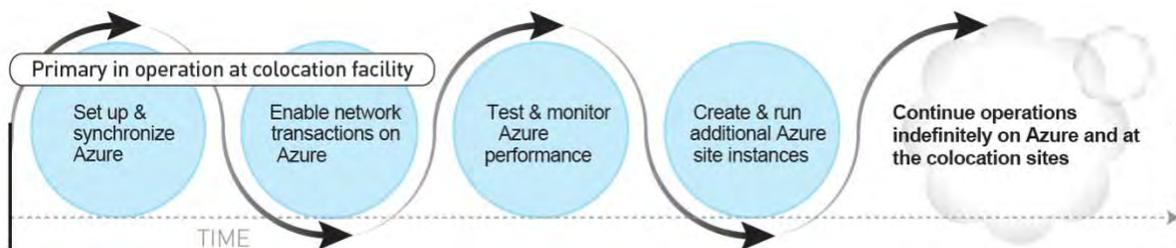
Phase 4: Test

Acceptance testing is performed as part of the migration process to make sure that the application and data are working and accessible. This is also the time to validate source apps and data were transferred to the target environment successfully.

To manage and maintain high availability in the new environment, it is possible to schedule regular or impromptu failover operations from within the new production environment in a way that is seamless to end user customers.

Phase 5: Run/Operate

Once migration is completed, ZeroDown® Software offers easy and safe cloud migration leading to uninterrupted run/operate on Azure Stack using a scalable and repeatable methodology.



Moving forward, ZeroDown Software can act as a new edge control point to drive Azure Stack adoption and accelerate consumption by serving as a safety net for incorporating new services, accommodating different cloud usage models, and adding new workloads now and in the future. Please contact us about longer term opportunities to partner together on run/operate models for the cloud.

Part 3: Partnering with ZeroDown

Using deep IT industry experience across networking, data storage, virtualization, and security, we can partner with you on ways to create 1+1=3 cloud-based solutions for your customers. Our team of experts can answer questions about getting started, architecture and design, and arranging demos or a proof of concept. We are also ready to help with any pricing questions you may have.

About Us

Company Profile



- Founded 18 years ago in Denver, Colorado
- Original name, ZeroNines Technology, came from Gartner
- Executives with deep IT industry experience in Data Storage, Security, Enterprise Software, Audit and Consulting
- Unique High Availability Solution backed by Issued Patents
- Cloud Partnerships with Oracle, AWS, Alibaba, Google
- Strong Relationships with Microsoft and Azure Community: ISV PAC Member; Azure Stack Syndication Technology Partner; Co-Sell Ready



Who We Partner With

We are MS Co-Sell Ready! Our GTM is based on a self-through Partner model with no direct sales motion



International/Regional Distributors
Drive Azure and Azure Stack sales
Sell cloud tools and IT services
Deliver migration/business continuity

Cloud Service Providers
Drive Azure and Azure Stack sales
Enable high availability multi-cloud
Deploy cloud on-premises models

Global Service Integrators
(GSIs/SIs/MNOEMs/ISVs)
Enable seamless Azure migration
Run/operate multi-cloud apps

One Azure Ecosystem

ZeroDown Software is proud to be an integral part of the One Azure ecosystem engaged in bringing innovative tools and proven technologies to Azure and Azure Stack customers.

The graphic features a blue vertical bar on the left with white text. To the right, a grid of logos for various partners is displayed. The logos include: Pivotal Cloud Foundry, docker, DC/OS, bitnami, redhat, BLOCKCHAIN, ZERODOWN SOFTWARE, KEMP TECHNOLOGIES, TREND MICRO, Barracuda, Check Point SOFTWARE TECHNOLOGIES LTD., CANONICAL, CHEF, kubernetes, CLOUDFOUNDRY, and suse.

One Azure ecosystem

Work with the tools and technologies you want across Azure and Azure Stack

Goal: Applications and services that are certified for Azure work on Azure Stack

Pivotal Cloud Foundry docker DC/OS

bitnami redhat. BLOCKCHAIN

ZERODOWN SOFTWARE KEMP TECHNOLOGIES TREND MICRO

Barracuda Check Point SOFTWARE TECHNOLOGIES LTD. CANONICAL

CHEF kubernetes CLOUDFOUNDRY suse

We are:

- Azure Stack Syndication Technology Partner
- Co-sell Ready
- On Partner Sales Connect allowing MS sellers to register deals
- In the OCP Catalog for Microsoft internal sellers Microsoft Partner Network (MPN)
- A Microsoft Managed Partner
- On the Azure/Azure Stack Marketplace
- Microsoft ISV PAC
- Charter Member of ISV P2P Pilot
- Member of Azure Marketplace GTM & Co-Sell Pilot
- ASR Embrace & Extend technical engagement
- Aligned with MS Global Black Belt community
- Contributing Partner to Microsoft's Cloud Practice Development Playbooks

Benefits of Partnering with Us

When you partner with ZeroDown Software, you will have the opportunity to leverage our deep relationships with Microsoft and Microsoft's partners. Benefits of partnering with us include:

- We enable partners to deploy themselves, providing end-to-end expert guidance
- Constant engagement with principals ensures efficient planning and best practices
- Deploy once/deploy many: our solution is easy to set up/run, and rapidly scales for new workloads
- We do not sell direct to end customers

On a practical level, we understand the complexities and technical challenges of cloud deployments together with the necessity of making it simple. Our tools and experience deliver:

- A good understanding of on-premises workloads, data, and dependencies
- Migration software that enables fallback to an on-premises location or to another cloud provider
- Thorough testing and good documentation for configuration and setup of the target environment
- A seasoned team who can support you whenever and wherever you or your clients need help

Purchasing and Pricing

Obtaining ZeroDown Software for Azure Stack first requires that you have an Azure Stack Stamp with a Cloud Service Provider or hosting service. BYOL, or "bring your own license," is the process used to purchase and deploy the software to Stack. We can help you find the perfect plan with volume discounts for multiple apps and/or pricing for multiple Stamps. The standard license includes a 3 year Maintenance agreement that is prepaid as a flat percentage of the overall costs.

To run a basic proof of concept, we offer the option of a free 30-day trial.

Call or email us to discuss your needs:

ZERODOWN
S O F T W A R E

844-ZRO-DOWN

sales@zerodownsoftware.com

Getting Started

To find out more about how HA for Azure Stack can help you drive adoption and accelerate consumption by providing a safety net for cloud migration and more, contact us at

sales@zerodownsoftware.com

ZERODOWN

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