



An Introduction to Microsoft Dynamics AX 2012 R3 on Microsoft Azure

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<http://www.microsoft.com/dynamics/ax>

 Microsoft Dynamics

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Microsoft Dynamics AX 2012 R3 on Microsoft Azure

Businesses worldwide are increasingly looking to the cloud as the preferred location for deploying and consuming software. Within the US market, for example, more than 80% of mid-sized businesses are expected to employ some form of cloud computing by the end of 2014¹. As mid- to large-sized enterprise businesses become more comfortable with hybrid and cloud-only deployments, the depth and breadth of workloads these businesses are asking for in the cloud will continue to expand – and enterprise resource planning (ERP) is no exception.

Dynamics AX 2012 R3 is a multi-language, multi-currency ERP business solution with comprehensive, global, business-management capabilities that supports both operational and administrative processes of organizations. This single solution comes with localizations for 36 countries. With a specialized focus on manufacturing, distribution, retail, service industries, and public sector, Dynamics AX 2012 R3 includes capabilities such as:

- Financial management
- Human capital management
- Manufacturing
- Supply chain management
- Project management and accounting
- Retail
- Demand forecasting
- End-to-end modern application framework
- Business intelligence and reporting

To meet the demand and expectations of both customers and partners, Dynamics AX 2012 R3 is [supported](#) to run on Microsoft Azure. Organizations that choose to deploy on Azure to meet their changing business needs can run Dynamics AX 2012 R3 in a number of deployment scenarios including production, demo, development/testing (dev/test), and disaster recovery environments, which are run in a private cloud on Azure's Infrastructure-as-a-Service (IaaS). This means you have options to deploy Dynamics AX 2012 R3: you can run it in your own data center, or you can deploy Dynamics AX 2012 R3 to run fully in the cloud. You can choose any of the deployment options to help you move faster, do more, and save money and utilize the power of Azure, Microsoft's cloud platform in the way that best suits the needs of your business.

¹ IDC Top 10 predictions for the Global SMB IT Market, December 2013

This white paper offers an introduction to the benefits of using Azure for both customers who want to deploy their own implementations, as well as partners who are interested in offering Dynamics AX 2012 R3 solutions in the cloud. The guidance included here contains current deployment scenarios for Dynamics AX 2012 R3 on Azure, licensing, and sizing.

What is Azure?

Microsoft Azure is Microsoft's cloud platform. It is an open and flexible platform that enables you to quickly build, deploy and manage applications such as Dynamics AX 2012 R3 across a secure, global network of Microsoft-managed datacenters. You can build applications using any language, tool or framework. And you can integrate your public cloud applications with your existing IT environment.

Azure cloud computing supports your IT operations with virtual resources such as computers, networking, and storage on a utility basis and enables you to easily scale your applications to any size. It is a fully automated, self-service platform that allows you to provision resources within minutes as well as elastically grow or shrink your resource usage based on your needs.

As with any utility, you only pay for what you use on a subscription basis. By using Azure cloud services, whether you are a customer or a partner, you can harness the power of massive data centers without having to build, manage, or maintain costly, complex IT building blocks. With the Azure cloud, much of the complexity of IT is abstracted away, letting you focus on the infrastructure, data, and application development that really matters to your business.

Benefits of using Azure

There are a number of advantages to using Azure over traditional on-premises data centers and deployment options. Some of these can include:

Agility

Use Azure to more quickly and easily respond to the changing needs of your organization. Whether you need a new development or test environment to help with the rollout of the latest release of your software or systems, a platform to rapidly develop and then deploy mobile apps to customers or your employees, or you quickly need to provision the systems to support a new acquisition, Azure can handle an almost unlimited number of configurations to help your business.

Elasticity and flexibility

Azure allows you to scale up (or scale down) infrastructure dynamically to meet the changing needs of your business. Never worry about running out of resources or paying for overcapacity. Do you need to scale up your systems to support an increase in demand as the result of a successful marketing campaign? Do you need to scale up (and then down) your infrastructure during peak usage times such as the holiday shopping season, or for your month- or year-end close? Do you need to scale down a system as you consolidate applications, or scale up a development environment to test a new mobile app at scale?

Replace infrastructure, hardware, and IT management costs with highly efficient automated processes in Azure to help refocus IT resources from managing infrastructure to working on strategic projects. You can do and stay on top of expenses by receiving detailed usage reports and only paying for the computing resources you use each month.

Reduce costs

Since you don't have to build out or manage infrastructure with Azure IaaS, your IT costs may be greatly reduced through the advantages of only paying for the resources you actually use. Azure allows you to easily scale up (or scale down) different environments to help your organization to quickly and easily expand operations whether through organic growth or through acquisitions.

Familiar tools and environments

In Azure, you can still use the Microsoft SQL Server, Windows Server, SharePoint, Systems Center tools and applications that you and your staff are already trained on, familiar with, and use every day to bring greater efficiency to your implementations. No need to learn new languages, systems or applications or worry about lengthy one-way virtual machine (VM) conversions as with other cloud services. With System Center 2012 you can easily and seamlessly migrate workloads from your own datacenter to Azure as well as Azure to the original data center or a different one.

Security and privacy

The adoption of cloud services worldwide continues to accelerate, yet many organizations are wary of trusting a third party with their data, applications, and infrastructure. Azure delivers a trusted foundation on which you can design, build and manage your own secure cloud applications and infrastructure and this extends to running Dynamics AX 2012 R3 on the Microsoft cloud. Azure helps you achieve the economic benefits of cloud services while furthering security and compliance utilizing key industry standards such as ISO/IEC 27001:2005. With Azure, you can benefit from Microsoft's industry-leading approach to security, privacy, and compliance while minimizing cost and complexity. Read more about Azure Security, Privacy, and Compliance here: <http://azure.microsoft.com/en-us/support/trust-center/security/>.

24x7 global support

Azure offers 24x7 technical support with engineers constantly monitoring service health. There are a number of support options that can scale to meet the needs of your organization and provide you with the best available expertise to increase your productivity, reduce your business costs, and accelerate your application development. For more information, see: <http://azure.microsoft.com/en-us/support/plans/>.

Speed development

Spin up the development or testing environments you need, and scale to almost any size to test real-world scenarios while only paying for the resources that you need and use.

Build a VM on-premises, move it to the cloud for testing on Azure at scale, and then simply move it back on-premises for further development work – all with no conversion necessary as with other cloud providers. Build native cloud applications or test existing applications in virtual machines, and create hybrid applications such as mobile apps that span your datacenter and Azure giving you the ultimate in ease, flexibility and power to meet the needs of your organization across departments and divisions.

Save time

An on-premises environment may take weeks to plan, acquire the necessary hardware, and then deploy. With Azure, you still must do the normal, required estimation and planning of your usage to properly scale your implementations, but hardware acquisition and deployment can be reduced to just a few hours. You select the resources, or images, you want and the platform you want them to run on (Windows Server, Linux or third-party software) and they are deployed and provisioned in a matter of minutes.

Instead of manually deploying Dynamics AX on Azure, the Cloud-hosted environments service of Microsoft Dynamics Lifecycle Services (LCS) was developed to help automate the server set up and deployment of the systems and software for a number of different environments, which are described in the [LCS section](#) below. While the software is deployed using LCS, you are still responsible for the licensing for these different environments with the exception of the Demo environment (see details in the [Demo environment section](#) below).

Note

Whether you choose to deploy Dynamics AX 2012 R3 manually on-premises or on Azure, or use LCS to help automate the deployment of different environments on Azure, they still have to size, configure, and run Dynamics AX 2012 R3 on Azure the same way they do on-premises, including hardware (it's referred to as "Compute" on Azure), storage and networking resources based on their usage estimates. You are responsible not only for all the licensing necessary to support their implementation, they need to manage the IT operations of the environment including monitoring the instance(s) and making updates or install hotfixes as needed. To learn more about deploying Dynamics AX 2012 R3 on Azure using LCS, see: <http://technet.microsoft.com/EN-US/library/dn741581.aspx>.

Enterprise-grade infrastructure and support

You can take advantage of 99.9% and higher availability guarantees when you group multiple VMs inside availability sets in Azure. These sets are similar to clusters in an on-premises deployments where if one node fails the processing automatically moves to a node in the cluster that is still operating. By utilizing availability sets you can help ensure that different applications or services are available during network or hardware failures as well as planned downtime such as maintenance. In the case of a single-instance VM or when a number of VMs are not deployed into an availability set, the Azure Service Level Agreements do not apply. To learn more about Azure Service Level Agreements, please visit <http://www.windowsazure.com/en-us/support/legal/sla/>.

Dynamics AX 2012 R3 VMs, which have been deployed through the Cloud-hosted environments service in LCS, whether single instance or multiple-VM environments, do not currently utilize availability sets. Detailed deployment guidance is provided in the TechNet content [Deploy Microsoft Dynamics AX 2012 R3 on Azure using Microsoft Dynamics Lifecycle Services \(LCS\)](#).

Support for High Availability (HA) deployments (including availability sets) is planned to be available by the end of calendar year 2014 and is planned to support both production as well as disaster recovery options.

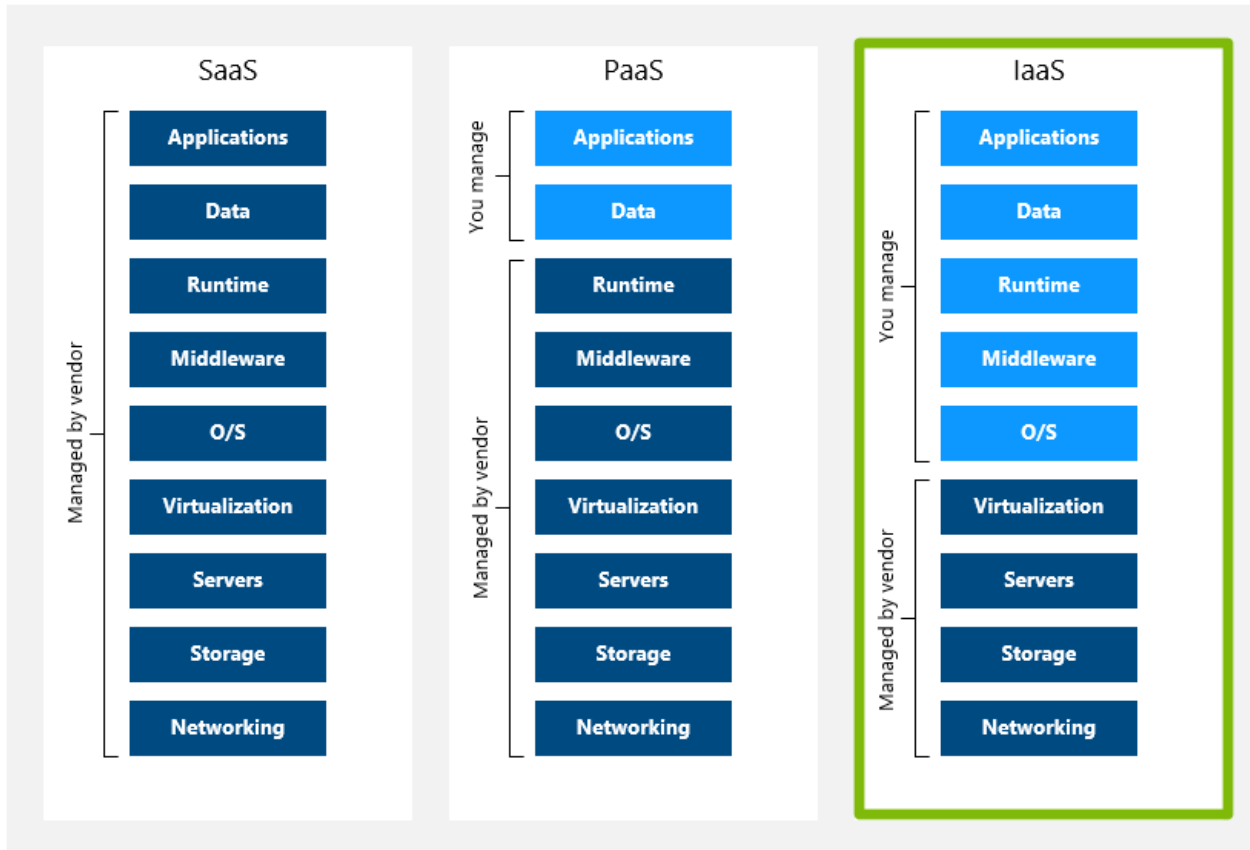
The Azure services model

Azure offers three types of services: Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS), and Infrastructure-as-a-Service (IaaS).

Type of service	Use to	Description
Software-as-a-Service (SaaS)	Consume	You use a web browser to use applications that are hosted in the cloud.
Platform-as-a-Service (PaaS)	Build	You don't manage or control the network servers or operating system. PaaS is more developer-oriented. It allows you to focus on the business logic of applications and quickly move applications from concept to launch.
Infrastructure-as-a-Service (IaaS)	Host	You have control over your virtual machines and the network configuration, but you don't have to worry about hardware.

Dynamics AX 2012 R3 is deployed to your Azure subscription using Azure IaaS. This means that Azure provides the virtual machines, storage, and networking capabilities to support your implementation while still giving you the control you want of your systems. And just as you do for on-premises deployments, you still are required to manage, secure, and license the operating systems, applications, and data installed on the virtual machines in your implementations.

Azure is simply providing virtualized hardware and networking facilities through your subscription, which is what grants you access to, as well as controls the amount of Azure resources and services that you have contracted to use. There are different pricing options available and it is your choice as to which one best suits the needs of your organization. To determine which plan is right for your organization and to review other considerations, please see the [Overview of and considerations for licensing Azure](#) section below.



Making deployments easier and faster with Microsoft Dynamics Lifecycle Services

Microsoft Dynamics Lifecycle Services (LCS) helps organizations improve the predictability and quality of their Microsoft Dynamics AX 2012 implementations by simplifying and standardizing the implementation process to realize business value faster.

LCS is a Microsoft Azure-based collaboration portal that provides a unifying, collaborative environment along with a set of regularly updated services that help manage the application lifecycle of your Microsoft Dynamics AX 2012 implementations.

Utilizing a collaborative workspace that can be used by both customers and partners, separately and together, LCS enables closer collaboration, helps speed implementations and reduces time to value.

The goal of LCS is to deliver the right information, at the right time, to the right people and to help ensure repeatable, predictable success with each roll out of an implementation, update or upgrade.

Use LCS to identify and define requirements, design and develop more robust systems, proactively monitor implementations, reduce the time it takes to resolve issues, and help keep systems up and running longer to help realize greater return on investment (ROI) while reducing total cost of ownership (TCO).

LCS helps manage the application lifecycle of Microsoft Dynamics AX 2012 R2 and later implementations. There are three phases that encompass the lifecycle – Define, Develop, and Operate. Those three phases are aligned with the four personas that LCS is designed and continuously developed for:

- **Project Managers** – Own and manage projects to help manage the entire application lifecycle and invite in the team members and partners into each one.
- **Business Analysts** – Integrate their organizations' business processes and competitive differentiators through requirements gathering, modeling of processes, and sizing of implementations.
- **Developers** – Build systems utilizing development and automated tools to deliver high quality customizations, maximize uptime and make upgrades easier.
- **IT Administrators** – Help proactively manage environments, keep their systems up and running, and speed the discovery of answers to issues that might arise.

To speed up the deployment of Dynamics AX 2012 R3 on Azure, you can use the Cloud-hosted environments service in LCS rather than taking all the necessary manual steps yourself. This service helps speed deployments by automating the server setup and software deployment of different environments, which can help eliminate anywhere from dozens to hundreds of hours of hands-on effort in installation time depending on the environment that you choose to deploy.

Being able to deploy environments faster can help you better support the needs of the business in a timely manner. For example, you can quickly deploy a development or test environment to develop and test new capabilities that help you serve your customers better and differentiates you from the competition. This can enable you to execute on your strategy faster and help you better respond to changing market demands.

Note

Lifecycle Services (LCS) is an Azure-based, Software-as-a-Service (SaaS) offering. However, deployment of Dynamics AX 2012 R3 environments using LCS utilizes your separate Azure subscription and the IaaS facilities of Azure. LCS expedites this deployment and also provides other facilities to operate and maintain your deployment, but it is not providing Dynamics AX 2012 R3 as a software service. Rather, once Dynamics AX 2012 R3 is deployed, it runs on the Infrastructure-as-a-Service (IaaS) virtual hardware and networks of Azure, but must be operated and maintained by your IT staff as if it were an on-premises deployment.

Currently, you can use the Cloud-hosted environments tool to deploy the following types of Dynamics AX 2012 R3 environments:

Standard demo environment

Deploy this environment to do demonstrations or Proof of Concepts (POCs) of Dynamics AX 2012 R3.

This environment includes one virtual machine (VM). This virtual machine has Windows Server – and the software and sample data that you'll need to demo Dynamics AX 2012 R3 – already installed on it and is time-bound and licensed according to the terms in the Software License Terms. For a complete list of the software that is installed in a Standard demo environment and more information on the Software License Terms, please see: [Plan your Microsoft Dynamics AX deployment on Azure \[AX 2012\]](#).

Retail essentials demo environment

Deploy this environment to demo Retail essentials. Retail essentials is a retail-centric configuration option for Microsoft Dynamics AX. It provides a simplified, streamlined user experience that is optimized for organizations that use only the Retail management functions of Dynamics AX 2012 R3.

This environment includes one virtual machine, by default. This virtual machine has Windows Server—and the software and sample data that you'll need to demo Retail essentials—already installed on it. For a complete list of the software that is installed in this environment and the licensing terms, please see: [Plan your Microsoft Dynamics AX deployment on Azure](#).

Standard dev/test environment

Deploy this environment to develop and/or test features and functionality for Dynamics AX 2012 R3.

This environment includes five (5) virtual machines by default: a domain controller, a database server, an AOS server, an Enterprise Portal server, and a client machine. These virtual machines have Windows Server – and the software that you'll need for Dynamics AX 2012 R3 development and testing purposes—already installed on them. For a complete list of the software that is installed in a standard dev/test environment and the licensing terms, please see: [Plan your Microsoft Dynamics AX deployment on Azure.](#)

Retail essentials dev/test environment

Deploy this environment to develop and/or test features for Retail essentials.

This environment includes one virtual machine, by default. This virtual machine has Windows Server—and the software that you'll need for Retail essentials—already installed on it. This environment is designed for dev/test of environments to provide a simplified, streamlined user experience that is optimized for organizations that use only the Retail management functions of Dynamics AX 2012 R3. For a complete list of the software that is installed in this environment and the licensing terms, please see: [Plan your Microsoft Dynamics AX deployment on Azure.](#)

Retail e-commerce dev/test environment

Deploy this environment to develop and/or test an online sales channel that is fully integrated with AX 2012 R3.

This environment includes one virtual machine, by default. This virtual machine has Windows Server—and the software that you'll need for Retail e-commerce—already installed on it. This environment is designed for dev/test of environments to enable you to deploy, manage, and customize an online sales channel that is fully integrated with Dynamics AX 2012 R3. For a complete list of the software that is installed in this environment and the licensing terms, please see: [Plan your Microsoft Dynamics AX deployment on Azure.](#)

Retail mobility dev/test environment

Deploy this environment to develop and/or test the features and functionality that enables your sales staff to process sales transactions, enter customer orders, and perform daily operations and inventory management with mobile devices anywhere in a store.

This environment includes one virtual machine, by default. This virtual machine has Windows Server—and the software that you'll need for Retail mobility—already installed on it. For a complete list of the software that is installed in this environment and the licensing terms, please see: [Plan your Microsoft Dynamics AX deployment on Azure.](#)

Considerations when deploying Dynamics AX 2012 R3 on Azure

There are a number of enhancements in Dynamics AX 2012 R3, and you can find a detailed list of them in the "What's new in Microsoft Dynamics AX 2012 R3" documentation located [here](#). Keep the following points in mind as you consider how to deploy Dynamics AX 2012 R3:

- Azure is a deployment option for Dynamics AX 2012 R3; however, you do not have to deploy Dynamics AX 2012 R3 on Azure. You can deploy Dynamics AX 2012 R3 to your local on-premises network if you prefer.
- There is no price difference for your Dynamics AX 2012 R3 licenses whether you are deploying Dynamics AX 2012 R3 on Azure or deploying it on-premises. It is the same license for either deployment method.
- When deploying Dynamics AX 2012 R3 on Azure, you are utilizing the Infrastructure-as-a-Service (IaaS) capabilities of Microsoft's cloud.
- You will need your own Azure subscription. Go to <http://azure.microsoft.com/en-us/pricing/purchase-options/> to find the latest pricing options so that you can determine the subscription option that best meets your needs.
- You will need to determine the different services including Compute, Data Services (which includes storage), App Services, and Networking that your organization might need. Go to <http://azure.microsoft.com/en-us/services/> for more information.
- The Lifecycle Services Cloud-hosted environments tool is available to any customer currently on a support plan, or any registered partner.

Performance

The standard benchmarks for Dynamics AX were run against different sized topologies of Azure running Dynamics AX 2012 R3. These tests have shown that the response times are comparable to similar configurations for on-premises hardware. The tests have been scaled to 200 concurrent users on an all A4 VM topology on Azure and up to 600 concurrent users on an Azure topology using an A7 VM for SQL and A4 VMs for all the other systems. A4 and A7 are the names for different size VMs in Azure and are based on their compute power and RAM capacity. For details on the different sizes and costs of VMs in Azure, click [here](#).

Note

Performance and scalability of a Dynamics AX system depends very heavily on the workload, the customizations and the ISV solutions installed. It is strongly recommended that a performance testing and validation phase, similar to what is currently recommended for an on-premises deployment, be done for an Azure deployment where the exact performance and scalability characteristics are measured and tuned to meet expectations. This should include proper planning and configuration of the software infrastructure, details of which can be found in the TechNet article: [Plan hardware and software infrastructure \[AX 2012\]](#).

Initial testing has shown that to increase the performance of a Dynamics AX 2012 R3 implementation in Azure, we recommend enabling Instant File Initialization as well as creating a storage pool with 16 physical disks that are attached to the SQL Server VM.

Additional testing is being done and the results of all performance benchmarking, along with the topology tuning, will be made available through a performance white paper that will be produced once the testing has been completed. The white paper is planned to be released in fourth quarter of calendar year 2014.

Overview of licensing Azure

For deployments on Azure, you should evaluate the licensing terms specific to Azure, and the impact these may have on the overall cost of running your environment. There are several things you must consider and decisions that should be made prior to deploying. While below is a simple check list, you can find more information here: [Plan your Microsoft Dynamics AX deploy on Azure \[AX 2012\]](#) and through the links below:

- Verify that you can log on to Lifecycle Services
 - You will need to confirm that you can log on to Lifecycle Services if you want to use Cloud-hosted environments to help speed your deployments of your Dynamics AX 2012 R3. Click [here](#) to see how to verify your access to Lifecycle Services.

- Purchase an Azure subscription
 - To use Azure, you must purchase a subscription. Review this [link](#) to determine the best option for your business, Note: make sure you select a subscription large enough to support the environment you wish to deploy. For details on those requirements, see [here](#).
 - The Enterprise Agreement (EA) offers additional discounts and terms as part of a deeper commitment to the platform. For more information see: www.windowsazure.com/en-us/pricing/enterprise-agreement.
 - To review the different services including Compute, Data Services (which includes storage), App Services, and Networking and see how your organization might benefit from using them, see: <http://azure.microsoft.com/en-us/services/>.
- Purchase an Azure support plan
 - Azure support plans provide technical and billing support for Azure. To learn about the available support plans and to purchase a plan, see the [Azure support plans](#) page.
- Become familiar with the Azure Management Portal
 - Use the Azure Management Portal to configure, provision, monitor, and manage your Azure components. You can review more information [here](#).
- Understand the Azure billing process
 - For an overview of the Azure billing process, links to sample invoices, and information about how to download daily usage data for the current billing period, see [Understand your bill](#). To use the Azure pricing calculator, click [here](#).
- Consider legal and regulatory requirements
 - Microsoft runs Azure services with common operational practices and features across multiple geographies and jurisdictions. However, it is ultimately up to you to determine if Microsoft services satisfy your regulatory needs. See the [Azure Trust Center](#) for more information about security, privacy, and compliance.
- Consider licensing requirements
 - For deployments of Dynamics AX 2012 R3 on Azure, you will want to evaluate the special licensing terms specific to Azure and the impact that these terms have on the overall suitability of the solution. Review the current environment options [here](#) and their relative Software License Terms [here](#).

Summary

Azure provides a way to extend your operations efficiently and effectively to the Microsoft cloud to help expand operations and more easily meet the needs of your organization today, and in the future, as they change, shift and morph to meet the expectations of your industry and your customers.

There are a number of advantages to deploying Dynamics AX 2012 R3 on Azure that are detailed in this white paper that your company can leverage to help reduce TCO and increase ROI. Some of these include:

- Improve agility, elasticity, and flexibility to help you more easily meet the changing needs of your business by dynamically scaling up (or scaling down) your infrastructure.
- Reduce costs by only paying for the resources you actually use, and only when you need them.
- Save time by rapidly acquiring and deploying the enterprise-grade infrastructure needed to support your operations utilizing any number of Microsoft's 17 global data centers.
- Use familiar tools and services your IT organization is already using so there is no need for additional training, or worries about compatibility, allowing you to work seamlessly with Azure.
- Protect your data with Industry leading global security and privacy.
- Support your operations with Microsoft experts around the clock to keep your operations up and running.
- Speed development by quickly and easily deploying systems with Lifecycle Services to design, test and deploy new features and functions as well as help increase the uptime of your critical business solutions.

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