



Dynamics 365 for Finance and Operations Cloud Application Lifecycle

Published: May 2019

For the latest information, please see
<https://dynamics.microsoft.com/en-us/>

Table of Contents

Enterprise Application Lifecycle in the Cloud Era	1
The Microsoft Dynamics 365 journey	2
Refined development practices	2
New customization models	2
Preparation is essential	3
Testing and safe deployment	3
Customer choice	5
Modern application lifecycle in regulated industries	5
Conclusion	5

Enterprise Application Lifecycle in the Cloud Era

In any discussion of cloud Software as a Service (SaaS), shifting the responsibility for managing software upgrades to the cloud provider is high on the list of expected benefits. Upgrading software has historically been a costly and complex process for customers. By absorbing this responsibility, the software provider can dramatically reduce the total cost of ownership for an application.

In fact, the change enables more than just a shift of cost from the customer to the provider – by accepting responsibility for the upgrade process, the provider can create an experience where all customers are always on the latest version of their product. This structural change unlocks a broad range of significant additional benefits:

- ✓ Everyone gets the benefits of the latest features. No one is stuck on less capable older versions
- ✓ When an issue is fixed, it is fixed once, and it is easier to ensure that everyone has the fix
- ✓ It is not necessary to test endless combinations of components
- ✓ It is not necessary to “backport” changes to many older versions for different customers

This shift creates efficiency for the software provider, allowing more resources to be focused on creating new product capabilities. In addition, the change creates value for customers through both those additional features and improved stability and quality. In a world where ISVs extend a solution, the efficiency gains benefit that ecosystem as well.

The promise is clear, but how is it possible for customers to accept this model for mission critical applications where the customer has long controlled the process of introducing updates? How can this work in regulated environments that demand rigorous validation processes? Is this even possible when the software in question can be extended, configured and integrated with other systems? Finally, how can organizations that have historically scheduled change in discrete, conservatively spaced intervals adapt to providers publishing updates far more rapidly, and in fact, approaching continuous innovation?

With the One Version initiative, Microsoft is delivering on the vision of a modern cloud application lifecycle for mission critical enterprise solutions. It is not possible, however, to simply pivot to this new provider managed, continuous update model without changing the way in which the software is developed, evolved and extended, and without new tools and processes that provide necessary insights to customers and keep them in control of their mission critical solutions. To deliver on the promise of provider managed updates with reduced rather than increased risk, it is necessary to make changes throughout the entire development, validation, deployment and management lifecycle. Microsoft has been and continues to invest in these changes. This paper summarizes those investments, and describes the resulting One Version model for continuous, consistent delivery of Dynamics 365 updates.

The Microsoft Dynamics 365 journey

Microsoft introduced the One Version cloud application lifecycle model for Dynamics 365 Finance and Operations with the April 2019 service update. The investment and innovation to enable this new model, however, has been ongoing for some time. The new Dynamics 365 lifecycle builds on the investment and experience of:

- Years of Dynamics 365 for Sales and Dynamics 365 for Service, formerly Dynamics CRM, delivering service updates managed by Microsoft
- Dynamics 365 for Finance and Operations Platform Updates managed as a cumulative sealed binary
- Safe deployment models developed across other Microsoft cloud services
- Techniques for flighting new features developed across other Microsoft cloud services
- Enterprise lifecycle management across development, test and production instances created through Dynamics Lifecycle Service

The new cloud application lifecycle for Dynamics 365 builds off all these experiences, extended with new investments to create a modern, reliable, enterprise-ready application lifecycle.

Refined development practices

As noted above, creating this lifecycle starts in the product development process. Changes must now be done with an understanding of how they will be introduced without disruption and with the ability to be deployed smoothly and if necessary, rolled back. A simple example can be shown with a schema change to delete a column. If the column is deleted, even if the Dynamics application code is adjusted in the same update, the change could break reports, integrations or extensions that reference that column. Instead, the column can be deprecated in metadata and hidden, allowing tools to warn what customizations need to be adjusted and to validate when in a future release the column can safely be removed. There are similar safe practices defined for the addition of schema elements, the introduction of new and modified interfaces, and even more focused change patterns such as adding new values to an enumerated list. Platform capabilities to introduce new functionality "off by default" with customers choosing when to activate those capabilities have been created. These practices and system facilities are enabling future release changes to be managed in a new modern lifecycle.

New customization models

The refined Dynamics development practices establish the base for delivering the new cloud application lifecycle. New customization models – achieved solely through configuration and extension – provide the next essential building block. This transition has been in process for multiple cycles, beginning first with the platform layers and extending to the application. Once customization has been moved to the new models, the core product – evolved following the refined practices described above

– can be updated and the combined system of product, configuration and extensions continues to operate smoothly¹.

The new customization model is a critical enabler of the new application lifecycle model for any customer, but it powers another critical change for the entire ecosystem. A typical customer tenant leverages one or more ISV solutions with Dynamics 365 Finance and Operations. In the past, when a product update was published, each ISV needed to merge their solution with the new base – and in many cases, a customer needed to sequence uptake of the product update through each of their ISV solutions, concluding by merging their own customizations. With the new customization model, this sequencing challenge can be eliminated. There is no more code merging – as a result, customers no longer need to sequentially apply each ISV solution – they can simply leverage the product update with their ISV extensions and their own extensions directly. ISVs should follow similar new development process guidelines to manage their updates.

Preparation is essential

The Dynamics 365 team has initiated the publication of detailed release notes and release timelines several months in advance of application releases to allow partners and customers to prepare for what is coming. Beginning with the Fall 2019 update, Spring and Fall service updates will have an extended preview window. Customers can deploy these previews to an existing sandbox environment for evaluation and impact analysis. In addition, an impact analysis tool will allow customers and partners to understand in advance when planned future changes will require them to adjust their solutions. By identifying potential conflicts that must be resolved ahead of service update, development and update timing can be managed by the customer to ensure smooth, uninterrupted operation.

Testing and safe deployment

Three new innovations provide additional critical enablement for the new modern application lifecycle – safe deployment rings, automated regression testing and the customer Release Validation Program (RVP).

Deployment Rings are a technique used to provide safe deployment for Azure and other Microsoft cloud services managed at global scale. As Dynamics 365 updates are created each month, they will progress through a series of rings – with each ring providing broader exposure and usage and validation through system telemetry. The update that is published for general availability will have the benefit of extensive Microsoft testing as well as validation through each of the earlier rings.

¹ The One Version model does not currently include binaries from the Dynamics 365 for Retail components. As a result, these binaries will be versioned less frequently over the near term.



As shown in the diagram, changes are first published to Ring 1 – the feature teams within the Dynamics development organization so that all teams are working with the latest version. Ring 1 is used for RVP and select internal Microsoft Dynamics 365 deployments. Ring 2 progresses to support the Preview Early Access Program, open to ISV, partner and customer participation on an opt-in basis. Ring 3 extends access to the First Release Program. Ring 4 is the step where updates are published for General Availability. Even here, deployment is in waves ensuring that customers receive updates that have already been through the benefit of extensive validation through both testing and actual usage. At each Ring, telemetry is examined to determine that hidden regressions in capability or performance are not present. Versions remain in Ring 5 for an additional cycle to allow ongoing servicing. If customers encounter issues, the software can be serviced with hotfixes through Ring 5. Hotfixes are distributed cumulatively – again, maintaining the principle that quality will be higher with less unique versions in circulation.

Automated Regression Tests leverage the Task Recorder technology to enable customers to efficiently develop regression tests that are tailored to their key business processes and their specific environment including extensions and integrations. This capability was introduced several years ago but the tools, newly labeled Regression Suite Automation Tool (RSAT), recently received material new investment to simplify test development, extend test capability and to allow customers to create suites of regression tests that can be simply and repeatedly executed. These test suites can be developed today and should be run to validate any customer or partner changes, as well as new updates from Microsoft. The principle is that the customer can use the regression suite to evaluate new versions in their sandbox ahead of a production update.

Another investment that is key to the new modern lifecycle is the ongoing investments towards **zero downtime updates** which have already reduced the time required for an update, and which will soon approach 30-minute downtime for updates, and targeting zero downtime updates in 2019. Scheduled downtime for updates is a significant component of the Service Level Agreement (SLA). A side effect of a more frequent, continuous update process is increased pressure on the downtime required for any specific update. In response, Microsoft is investing in bringing the downtime for any individual update as close to zero as possible.

Finally, the **Release Validation Program (RVP)** will bring the automated regression suites of approximately 100 customers in house – based on customer opt-in – so that those test suites can be run in Ring 1, allowing material validation of updates while they can still be adjusted and ensuring that

updates promoted to Ring 2 have already been validated against a broad range of customer implementations – inclusive of their configuration, extensions, ISV solutions and data where applicable.

In short, the process is being extended through material investment to provide levels of validation in the release process beyond anything that has ever been done in the past.

Customer choice

Finally, customers can choose the schedule window for their updates once the version has been promoted to the general availability ring. The version will be published over a series of weeks, and customers can opt to be at the early or late part of that cycle. Within that range, they can specify the day and time for the update to align with available times for their business.

A mechanism will be provided to allow customers to pause the update process, opting out for up to three consecutive updates. This is intended, for example, to allow retailers to skip updates over the critical holiday season, or other similar critical business windows.

Modern application lifecycle in regulated industries

Regulated industries have always had a unique enterprise software lifecycle – stringent requirements to validate and document functionality that force constraints on how often updated capability can be delivered. The software industry pivot to the cloud creates a conflict between the continuous update model of SaaS solutions and the cost and practical limits of running the strict validation. The result – in most cases – has been restricting change in the solutions. With One Version and RSAT, Microsoft has invested to change this conversation. A set of capabilities are planned for RSAT specifically designed to meet the needs of regulated industries:

- Workflow, approval and audit logging on creation and maintenance of the RSAT test content
- Audit logging and sign-off workflow around RSAT test execution
- Audit logging and sign-off on RSAT test run results
- Sign-off on RSAT test results as a required milestone before a software update is deployed
- Audit logging of all deployed software updates

Conclusion

Supporting all customers with a single, up-to-date software version delivers on a key promise of cloud software as a service. Microsoft is investing and innovating for Dynamics 365 to ensure that this can be achieved with the right attention to quality and stability demanded by enterprise business applications. As Dynamics customers shift to this model, improved uptime and a reduction in the volume of service tickets. At the same time, those customers are seamlessly gaining access to a continuous stream of innovation. Microsoft, our partner ecosystem and our customers are spending less time and resource on upgrading software and focusing instead on delivering business value. The One Version journey is here – join us.



The information contained in this document represents the current view of Microsoft Corporation on the issues discussed as of the date of publication. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information presented after the date of publication.

This white paper is for informational purposes only. Microsoft makes no warranties, express or implied, in this document.

Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in, or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of Microsoft Corporation.

Microsoft may have patents, patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from Microsoft, the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other intellectual property.

© 2019 Microsoft Corporation. All rights reserved.

The example companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted herein are fictitious. No association with any real company, organization, product, domain name, e-mail address, logo, person, place, or event is intended or should be inferred.

Microsoft, list Microsoft trademarks used in your white paper alphabetically are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

The names of actual companies and products mentioned herein may be the trademarks of their respective owners.