MODULE 1: INTRODUCTION TO THE UPGRADE PROCESS

Module Overview

This module provides an overview of the upgrade process in the Microsoft Dynamics® NAV 2013 environment. It shows the basic principles and key phases of the Microsoft Dynamics Sure Step methodology, in addition to describing the main tools that are used to perform an upgrade.

Objectives

- Review the process of upgrading Microsoft Dynamics NAV 2009 SP1 to Microsoft Dynamics NAV 2013.
- Explain the basics of the Microsoft Dynamics Sure Step methodology.
- Define the upgrade process workflow and stages.
- Describe the tools that are used to perform the upgrade.

Terminology

This table explains the terminology that is used in this training course.

Term	Definition
Source version	The version of the solution that is currently installed at the customer's site and that you plan to upgrade.
Target version	The newest (or newer) version of the solution to which the customer wants to upgrade.
Customizations	Changes in the solution that consist of creating new application objects and changing existing application objects.
Code upgrade	The sequence of actions that are intended to transfer customizations from the source to the target version of the solution and resolve any code or object property conflicts.
Object transformation	The sequence of actions that are intended to convert obsolete application objects to new ones to obtain benefits of the target version of the solution.
Data upgrade	The sequence of actions that are intended to transfer data from the source database to the database of the solution's target version.
Technical upgrade	The process of only installing the Microsoft Dynamics NAV 2013 server and client binaries (including the new versions of Microsoft Dynamics NAV Server and Microsoft SQL Server) without updating the application objects.
Application upgrade	The process of updating the customer's existing application objects so that they are compatible with the new version of the solution. Application upgrade consists of code upgrade, object transformation, and data upgrade.
ISV upgrade	The process of updating the add-on functionality, that is developed by an Independent Solution Vendor, to be fully compatible with the target version of the solution.

Term	Definition
Full upgrade	The process that consists of the technical and application upgrade. It results in a fully functional solution of the target version, where all functionality and data is consistent with the source solution and database. This process includes upgrades that are performed by the implementing partner or by a partner that specializes in upgrades.
Old Base Version	Standard objects of the solution's source version.
Current Custom Version	Objects from the source customer's solution, both standard and customized.
New Base Version	Standard objects of the solution's target version.
New Custom Version	Objects of the solution's target version, both standard and customized.
Development environment	The environment where upgrade actions are performed.
Test environment	The environment where the upgraded solution is tested before it moves to the pre-production environment.
Pre-production environment	The environment where the upgraded solution undergoes post-upgrade actions and testing by the partner and the customer's key users before it moves to the production environment.
Source production environment (or source solution)	The initial working environment at the customer's site that has the initial version of the solution. This environment is the system to be upgraded.
Production environment	The final working environment at the customer's site that has the target version of the solution where the upgraded solution is transferred from the pre-production environment. This environment is the result of the upgrade.

Upgrade Overview

When a new version of Microsoft Dynamics NAV is released, users of the earlier version(s) frequently want to upgrade their solution to the new release. Upgrading can give users powerful new functionality that can help their businesses grow. By taking advantage of improved functionality, new features, and improved capabilities, customers can reduce costs and keep business processes up to date.

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Data Upgrade and Code Upgrade to Microsoft Dynamics® NAV 2013

This course focuses on the full upgrade of Microsoft Dynamics NAV 2009 SP1, with customizations, to Microsoft Dynamics NAV 2013.

The full upgrade includes the following aspects:

- **Solution upgrade:** Updating the complete set of a customer's functionality and data to the solution's target version. Solution upgrade consists of the following procedures:
  - o **Technical upgrade:** The process of installing the Microsoft Dynamics NAV 2013 server and client binaries (including the new version of Microsoft SQL Server) without updating the application objects or information in the database.
  - o **Application upgrade:** The process of updating the customer's objects and data to be compatible with Microsoft Dynamics NAV 2013. An application upgrade consists of the following parts.
    - ▪ **Code upgrade:** Upgrading the application objects.
    - ▪ **Object transformation:** Upgrading the objects from the earlier version to work in Microsoft Dynamics NAV 2013.
    - ▪ **Data upgrade:** Transferring the information in the database to the new architecture.

- **ISV solution upgrade:** Updating any add-on functionality that is developed by third parties to be compatible with the target version of the solution. An ISV upgrade can be a stand-alone scenario.

The process of upgrading the system is complex. A Microsoft Dynamics NAV customer installation may have hundreds of tables, multiple industry specific solutions, large amounts of data, and connectivity to many legacy systems. Additionally, Microsoft Dynamics NAV can be configured differently for each company. To perform an upgrade, it is useful to have a thorough and understandable description of the company's business logic and processes.

Typically, each new version of Microsoft Dynamics NAV has many changes in the core functionality compared to the earlier version. The purpose of an upgrade is to separate and transfer the customer's solution (customizations) and data from the current version of Microsoft Dynamics NAV to the target version, and make them work with all the changes that are made in the new (target) version.

Because of changes in the core functionality, conflicts may arise during upgrade. Conflicts arise when a standard application object undergoes changes by the customer, and the standard code of this object differs significantly in the newest (or target) version of the application. Most conflicts must be resolved manually.

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The result of the upgrade is a stable environment for the business solution (application and data) on the target version of Microsoft Dynamics NAV, where any new functionality that is introduced corresponds to the customer's business processes.

For information about the versions of Microsoft Dynamics NAV that are currently supported, go to the Microsoft Product Lifecycle portal.

http://go.microsoft.com/fwlink/?LinkId=183266

Data Model Structure

There are seven basic application object types in C/SIDE in Microsoft Dynamics NAV 2013:

- Tables
- Pages
- Reports
- Codeunits
- Queries
- XMLports
- MenuSuites

Microsoft Dynamics NAV 2009 and earlier versions also used the following two object types:

- Forms
- Dataports

These object types are based on certain general concepts, and each is touched by the upgrade process.

Tables

Tables are the most important object type inside C/SIDE. They describe how data is structured and stored in the database. Tables store actual data. When customers change this type of object, it may result in the need to upgrade not only the code of the object, but also the data that is stored in it. For example, when you delete a field, or change its type, you must upgrade the data in the table.

Pages

Pages display data to the user in a familiar and user-friendly way. Most pages let the user add records to a table in addition to viewing and modifying records. Microsoft Dynamics NAV 2009 introduced pages and they targeted the RoleTailored client.

> 📋 **Note:** *In addition to pages, Microsoft Dynamics NAV 2009 used forms to target the Classic client. Versions earlier than 2009 used only forms. When you upgrade from Microsoft Dynamics NAV 2009 that did not use the RoleTailored client, or from an earlier version of Microsoft Dynamics NAV 2009, you first must transform forms to pages. To learn more about this process, refer to the Transforming Forms to Pages topic in the Microsoft Dynamics NAV 2009 Developer and IT Pro Help.*

Reports

Reports let the user summarize and print detailed information. The report object type in Microsoft Dynamics NAV 2013 uses a completely different definition than in earlier versions. Therefore, all reports first must be upgraded to Microsoft Dynamics NAV 2013 before users can run them. Processing-only reports that do not have layout typically do not require a complex upgrade process.

This process is partly automated and frequently requires development work.

XMLports and Dataports

XMLports let the user export the data that is stored in tables or import data into tables. You use XMLports to import or export data in XML or text formats. Earlier versions of Microsoft Dynamics NAV used dataports to export objects in text format. In Microsoft Dynamics NAV 2013 you can use only XMLports. You must convert any dataports manually to XMLports.

There are no automatic tools that streamline this process.

Codeunits

Codeunits let developers organize and group the code that they write. Customizing this type of object can significantly affect the functionality and cause much conflict during the upgrade process.

MenuSuites

In earlier versions of the MenuSuite, objects defined the content of the navigation pane. In Microsoft Dynamics NAV 2013, the MenuSuite objects define the content of the **Departments** page, and enable users to search for application objects.

Queries

Query is a new object type in Microsoft Dynamics NAV 2013. Queries enable developers to define structured data sets that consist of multiple tables. Queries retrieve data from the Microsoft SQL Server database in a single read request. Queries improve performance and can serve as sources to Charts or OData web services. When you upgrade from earlier versions, consider using queries when you upgrade code to achieve certain performance improvements. However, in most scenarios, you do not consider queries during the upgrade process.

Upgrade Workflow

To structure and organize the upgrade process, you can apply the implementation methodology named *Microsoft Dynamics Sure Step*. It combines the project management discipline with field-tested best practices plus user-friendly tools that enable deployment, migration, configuration, and upgrade of Microsoft Dynamics solutions.

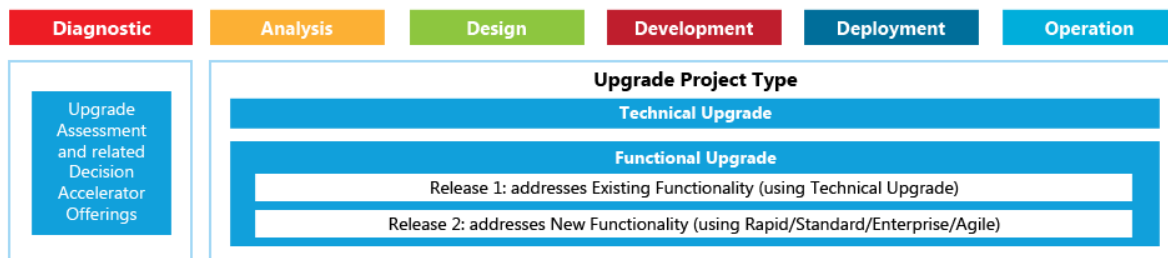***Download Microsoft Dynamics Sure Step from PartnerSource at:***

http://go.microsoft.com/fwlink/?LinkId=277008

Upgrade Workflow Phases

According to the Upgrade Project Type of the Microsoft Dynamics Sure Step Methodology, the upgrade process can be divided into the following phases:

- Diagnostic
- Analysis
- Design
- Development
- Deployment
- Operation

FIGURE 1.1:UPGRADE PROJECT TYPE WORKFLOW

Diagnostic

The foundation for the Upgrade implementation scenario includes the activities in the Diagnostic phase. This begins with the *Upgrade Assessment Decision Accelerator* offering. The Upgrade Assessment helps identify the approach that the upgrade team must take, while identifying at a high-level any additional business requirements that must be considered.

In the Diagnostic phase you collect enough information to define the high-level project charter and make a confident proposal for the implementation phases. The Diagnostic phase starts during the sales process and ends with an accepted proposal and statement of work (SOW) for the next part of the upgrade project. The major deliverable for this phase is the SOW and the Budgetary Estimate Proposal.

To facilitate the activities in the Diagnostic phase, Microsoft Dynamics Sure Step offers the following key document templates:

- Upgrade Assessment Questionnaire
- Preliminary Requirements and Process Review Questionnaire
- Statement of Work
- Upgrade Costing Worksheet

Analysis

In the Analysis phase you perform project analysis and planning. The following activities are performed in this phase:

- **Project Planning:** Upgrade project planning sessions are conducted as joint exercises with the customer. These planning sessions verify the initial upgrade timelines and deliverables with the customer, and help you understand the resources that are available from the customer. Planning for the upgrade is performed by using these inputs, together with those from the Upgrade Assessment that was performed during the Diagnostic Phase.

- **Conduct Solution Overview:** Present the net-new functionality (or differences) for the Microsoft Dynamics NAV 2013 solution to the Customer Core Upgrade team. With this knowledge of the net-new functionality, together with their knowledge of the existing functionality, the Customer Core Upgrade team will be better equipped to participate in the succeeding activities of the Business Requirements and Fit-Gap Analysis workshops.

To learn more about the net-new functionality of Microsoft Dynamics NAV 2013, go to one of the following MSDN links.

What's New: Application Changes for Microsoft Dynamics NAV 2013

http://go.microsoft.com/fwlink/?LinkId=277009

What's New: Developer and IT Pro Changes for Microsoft Dynamics NAV 2013

http://go.microsoft.com/fwlink/?LinkId=277010

- **Gather Business Requirements:** Analyze the source solution and define the project scope. These actions are very important for providing the technical infrastructure that is needed to support the upgrade of the application and data to the new solution.

- **Conduct Fit Gap Analysis:** By using the Functional Requirements Document (FRD) for Upgrades, the partner and customer teams can take the initial steps to design the new solution. Use Fit-Gap Analysis to review agreed-upon requirements with the customer. Categorize requirements that are supported by the new business solution as *fits*. Categorize requirements that are not fully supported by the new business solution as *gaps*. Fit-Gap Analysis identifies and documents gaps between the existing technical business solution and any new customer requirements. Also, the Fit Gap Analysis gives you an opportunity to identify customizations that can be replaced with standard functionality.

- **Developing Upgrade Testing Strategy:** Define the high-level plan for testing of the upgraded application and data. This action ensures the overall quality of the Microsoft Dynamics NAV solution that is being upgraded, with an account of both technical and functional aspects of the upgrade. An Upgrade Test Plan document is created, refined, and updated as more information is gained throughout the project. It includes the test scripts/cases/scenarios to show exactly how tests will be performed and what data will be used.

- **Set Up Non-production Environments:** The Upgrade Test Plan requires multiple non-production environments for support. Among other factors, the customer's infrastructure requirements, hardware constraints, and Upgrade Test Plan will play a role in determining the number of non-production environments that are needed. In the Set Up Non-production Environments activity that you set up the non-production environments that are required to support the Upgrade Test Plan.

- **Initiate Data Upgrade Preparation:** Determine the scope of the data to be upgraded. After you determine the scope, review the analysis of the data in scope to determine the correct strategies surrounding upgrade preparation.

To facilitate the activities in the Analysis phase, Microsoft Dynamics Sure Step provides the following key document templates:

- Data Migration Mapping Checklist
- Data Migration Data Mapping Template
- Fit Gap and Solution Blueprint worksheet
- Non Production Environment Specification
- Project Plan for Upgrade Projects
- Test Plan for Technical Upgrades
- Training Plan
- Upgrade Functional Requirements Document Template
- WBS for Upgrade Projects

Design

In the Design phase you define how the upgrade will be implemented. This phase includes planning the required sequential steps for executing the upgrade, proactively planning to address potential post-upgrade execution problems, and identifying custom code upgrade conflicts. The Design phase also includes reviewing the existing integration and interfaces to determine whether any existing integrations between Microsoft Dynamics and third-party solutions must be upgraded or redesigned to work with the newer version of the Microsoft Dynamics solution.

The following activities are performed in this phase:

- **Review Data Upgrade Checklist:** The Data Upgrade Checklist provides a list of activities that must be completed in sequential order to complete the upgrade. The Review of Data Upgrade Checklist activity reviews this list of activities to correctly plan for the data upgrade.

- **Review Existing Code:** The Review Existing Code activity identifies conflicts that are created by the customizations that exist in the current application against the changes that the partner has made to the standard application in the upgraded Microsoft Dynamics NAV 2013 solution.

- **Review Existing Integration and Interfaces:** The Review of Existing Integration and Interfaces determines whether any existing integrations between Microsoft Dynamics NAV and third-party solutions must be upgraded to work with Microsoft Dynamics NAV 2013.

To facilitate the activities in the Design phase, Microsoft Dynamics Sure Step provides the following key document templates:

- Setup Checklists for different application areas (Administration, Financial Management, Warehouse, Purchasing, Sales, Manufacturing, and so on)

- Integration and Interface Requirements Template

Development

In the Development phase you execute the application upgrade process. This includes customizations, integrations and interfaces, and data. This phase also includes testing the system to make sure that the upgrade of the application and data to the new version of the Microsoft Dynamics solution completed successfully. Review performance benchmark data to confirm the resources that are required to support the new benchmarks for the upgraded data.

The following activities are performed in this phase:

- **Upgrade Application Modules:** Upgrade the customer's Microsoft Dynamics NAV solution to the latest version. As part of the upgrade process to a new version, the data must be upgraded. As discussed in the Data Upgrade Preparation activity document, this is necessary because of changes that were made to the existing data structures; or when tables, fields, or indexes are renamed, deleted, or added.

- **Upgrade Customizations:** The Review Existing Code activity that was performed in the Design Phase provided insight into any potential conflicts with custom code. Based on these results, the upgrade project plan was updated to include the effort that is required to upgrade and resolve any conflicts with the existing customizations. The Upgrade Customizations activity upgrades the current customizations to Microsoft Dynamics NAV 2013 solution.

- **Conduct Testing:** After you complete the upgrading of the application and data, a series of function and data acceptance tests determine whether the upgraded application and data satisfy the criteria. These tests also make sure that functionality meets criteria that are specified in the Functional Requirements Document. This activity makes sure that the upgrade of the application and data to Microsoft Dynamics NAV 2013 completed successfully. The Conduct Testing activity consists of many different tests, each with each its own objective. Testing results for this activity form a comprehensive base for determining whether the objectives of the upgrade are met before release of the Microsoft Dynamics solution to the customer.

- **Set Up Production Environment:** The setup of the production environment must happen in parallel with the upgrade activities that are related to the application and data upgrade. This enables information from the testing of the upgrade to validate those initial assumptions that were made during the Gather Requirements and Fit-Gap Analysis Phases in the architectural design. This activity finalizes and obtains customer sign-off for the technical architecture design for the production and Disaster Recovery (DR) infrastructure in terms of hardware sizing, platform components, applications, and availability solutions.

- **Upgrade Integrations and Interfaces:** During the Review of Integrations and Interfaces that were performed in the Design Phase of the upgrade, existing integrations and interfaces are reviewed to determine the scope of effort that is required to upgrade to Microsoft Dynamics NAV 2013. This activity begins the upgrade of integration and interface components that were identified in the Design Phase.

- **Verify and Benchmark Data:** This activity verifies and validates the data for accuracy after the test upgrade. Data upgrade and migration are key activities for an upgrade project from a user perspective. Users gain confidence in the upgraded solution when they can view their successfully migrated data and perform their user-defined tasks with this data. Performance Benchmarking determines whether the upgraded data meets the requirements that are defined in the upgrade assessment.

To facilitate the activities in the Development phase, Microsoft Dynamics Sure Step provides the following document templates:

- Technical Design Document
- Testing Scripts by Role

Deployment and Operation

The activities within the Deployment and Operation phases implement the upgraded solution in the actual production environment and ensure an effective Go-Live procedure. The following actions are performed:

- **Conduct User Training:** For many upgrade projects, users have a good understanding of the processes they perform on the Microsoft Dynamics NAV 2013 solution. User training for these projects focuses on differences in the net-new functionality of the new version to be implemented. This activity provides the appropriate level of user training on the upgraded application before Go Live, and prepares selected users to participate in User Acceptance Testing (UAT).

- **Conduct User Acceptance Testing:** The partner and customer teams have completed their testing of the upgraded application and data. Users who are designated to participate in user acceptance testing are suitably trained. Users are ready to perform their daily tasks according to the objectives of the upgrade. *User Acceptance Testing* (UAT) obtains user acceptance sign-off for the upgraded Microsoft Dynamics NAV 2013 solution.

- **Final Data Upgrade to Production:** The Gather Requirements and Data Upgrade Preparation activities determined upgrade data requirements. You completed the scoping, review, and testing of the upgraded data. Based on these activities, the data upgrade strategy and approach were also completed and made a part of the deployment plan (or cutover plan). This activity upgrades the data to the Production Environment for Go Live as per the deployment plan.

- **Go-Live:** Planning, design, testing, and execution activities that are related to the implementation are completed. Supporting technical infrastructure now provides a stable environment for the new Microsoft Dynamics solution. Users were trained, and the results from their testing indicate that they can perform their user tasks in Microsoft Dynamics NAV 2013 without loss of functionality. This activity initiates the successful processing of daily business transactions and activities in the new version of the Microsoft Dynamics solution.

- **Project Closure:** The Statement of Work described the various deliverables for each phase of the upgrade. These deliverables were reviewed with the customer project manager to provide an understanding of the content of each deliverable, assignment of resources, and timing. In addition, other project documentation must be inventoried and prepared for review with the appropriate members of the customer project team. The Project Closure activity verifies and documents final upgraded application results; achieves formal acceptance from the customer; and ensures overall customer satisfaction.

- **Transition Solution to Support:** This activity formally hands over the solution from the project team to the ongoing support team.

To facilitate the activities in the Deployment and Operation phases, Microsoft Dynamics Sure Step provides the following key document templates:

- Training Plan
- Go-Live Checklist

Upgrade Tools

There are many tools that make the upgrade process easier. By using these tools, you can estimate the time for the code upgrade, detect and resolve code conflicts, compare application objects in different versions, and so on. This lesson discusses the upgrade tools that you can use.

Microsoft Dynamics NAV Upgrade Toolkit

The Upgrade Toolkit consists of a set of tools and procedures that help you perform a data upgrade to Microsoft Dynamics NAV 2013. The Microsoft Dynamics NAV installation package includes the Upgrade Toolkit in the Upgrade Toolkit folder.

For Microsoft Dynamics NAV 2013, the tools cover the data upgrade for Microsoft Dynamics NAV 2009 and later versions.

The files in the Upgrade Toolkit include the following:

- **Data Conversion Tools folder:** This folder contains the files that are used to convert data from a Microsoft Dynamics NAV 2009 to Microsoft Dynamics NAV 2013.

- **Object Change Tools:** This folder contains a tool that changes the C/AL code from earlier versions to compile the objects in Microsoft Dynamics NAV 2013.

*To learn more about this tool, read this article on MSDN:
TextFormatUpgrade2013 Tool*

http://go.microsoft.com/fwlink/?LinkId=277011

- **Upgrade Quick Guide file:** This file contains a high-level explanation of the upgrade process. It also contains the checklist that you can use to track the upgrade process to make sure that you are executing all steps that are required. You should extend this file to include any additional steps to upgrade the customizations. Use this file to keep track of the time that the upgrade process needs in order to perform various steps so that you can plan the actual upgrade process more effectively.

Application Test Toolset for Microsoft Dynamics NAV 2013

The *Application Test Toolset* for Microsoft Dynamics NAV 2013 includes tools that streamline the application testing process. It includes several thousand regression tests that you can use to determine whether the customizations that you make in Microsoft Dynamics NAV 2013 have any negative effect or introduce bugs or errors in standard functionality.

The toolset contains the following components:

- Test Tool to execute tests
- Test selection feature for filtering relevant tests
- Code coverage tool to measure code coverage
- Between 6000 and 9000 of regression tests, depending on the country/region version

*Download the Application Test Toolset for Microsoft Dynamics NAV
2013 at the following PartnerSource page:*

http://go.microsoft.com/fwlink/?LinkId=277012

Module Review

Solution upgrade enables users to take advantage of improved functionality, new features, and improved capabilities of the new version of the solution.

In this course, Microsoft Dynamics NAV 2009 SP1 is upgraded to Microsoft Dynamics NAV 2013. Such an upgrade includes three main aspects: code upgrade, object transformation, and data upgrade.

To make the upgrade process easier, Microsoft developed a comprehensive implementation methodology called Microsoft Dynamics Sure Step. According to this methodology, the upgrade process for Microsoft Dynamics NAV includes the following phases:

- Diagnostic
- Analysis
- Design
- Development
- Deployment
- Operation

Each upgrade phase consists of multiple activities that must be planned carefully by the project management and distributed within the upgrade team.

The tools that are provided with the installation medium make it easier to upgrade.

Test Your Knowledge

Test your knowledge with the following questions.

1.   What are the three main aspects of an upgrade project?

_____

_____

_____

_____

2. Which of the following object types is no longer used in Microsoft Dynamics NAV 2013?

   ( ) Forms

   ( ) XMLports

   ( ) Codeunits

   ( ) MenuSuites

3. According to Microsoft Dynamics Sure Step, the non-production environments that support the upgrade process are set up within the Development project phase?

   ( ) True

   ( ) False

4. Which of the following Microsoft Dynamics NAV versions can be upgraded by using the Upgrade Toolkit for Microsoft Dynamics NAV 2013? Select all that apply.

   ( ) 3.7

   ( ) 4.0

   ( ) 5.0

   ( ) 2009 or later versions

Test Your Knowledge Solutions

Module Review and Takeaways

1. What are the three main aspects of an upgrade project?

   MODEL ANSWER:

   The three main aspects of an upgrade project are code upgrade, object transformation, and data upgrade.

2. Which of the following object types is no longer used in Microsoft Dynamics NAV 2013?

   (√) Forms

   ( ) XMLports

   ( ) Codeunits

   ( ) MenuSuites

3. According to Microsoft Dynamics Sure Step, the non-production environments that support the upgrade process are set up within the Development project phase?

   ( ) True

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4. Which of the following Microsoft Dynamics NAV versions can be upgraded by using the Upgrade Toolkit for Microsoft Dynamics NAV 2013? Select all that apply.

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