Microsoft Dynamics AX 2012 R3 Security

A quick guide to planning, designing, and debugging operational-level security for Microsoft Dynamics AX 2012 R3 implementations

Ahmed Mohamed Rafik Moustafa
In this package, you will find:

- The author biography
- A preview chapter from the book, Chapter 4 'Extending the Organization Model'
- A synopsis of the book’s content
- More information on Microsoft Dynamics AX 2012 R3 Security
About the Author

Ahmed Mohamed Rafik Moustafa is a Dynamics AX solution architect and a Dynamics AX evangelist. In November 2012, he published his first book, *Microsoft Dynamics AX 2012 Security How-To*, Packt Publishing, and he was the first Egyptian and Arabian person to have authored a book on Microsoft Dynamics ERP products. He has been ranked and listed as one of the Top 100 Most Influential People by *DynamicsWorld*, United Kingdom. He is also a columnist at MSDynamicsWorld, a media publishing corporate in the UK, and has been recognized as an official blogger by the Microsoft Dynamics Community.

Ahmed's professional career, spanning more than 10 years, has combined his expertise in business management and information technology in different industries, such as the retail, manufacturing, medical, and trading industries. He has led various implementations in diverse ERP modules over the Middle East in different countries to meet and exceed challenging business needs. He has carried out multiple project implementations of Microsoft Dynamics GP, Microsoft Dynamics AX, and Microsoft Dynamics Retail Management System (RMS) in diverse positions, such as project manager, team leader, and senior consultant.

In addition to his knowledge and experience of Enterprise Resource planning (ERP) systems, he is always keen to raise awareness about information system security. He has been recognized as an Information Security Awareness Expert by ASK PC, the largest Arabic IT community, in association with Information System Security Association (ISSA's Egypt chapter). Also, he is listed on ASK PC's Wall of Honor, as he published his first paper on accounting information system fraud and computer crimes on Culminis/GITCA, sponsored by Microsoft. Furthermore, he has so far published two paper books on Microsoft Dynamics AX security and plans to publish more books and articles.

In addition to these achievements, Ahmed holds these certifications: Microsoft Certified Master Great Plains (GP), Microsoft Certified Business Management Solutions Professional (GP), and Microsoft Certified Information Technology Specialist (MCITP) on Microsoft Dynamics AX products. He has also been a Microsoft Certified Trainer (MCT) for 7 years.
He is the founder of the Dynamics AX camp user group, sponsored by Microsoft Technical Communities, O'Reilly Media Corporate, Pluralsight Developer Training, and EMC Community Network. The Dynamics AX camp user group aims to share knowledge, experience, news, articles, and books in the ERP field, specifically in relation to Microsoft Dynamics AX products.

In 2013, Ahmed committed himself to helping students and graduates by providing free training seminars introducing Microsoft Dynamics ERP solutions and teaching them how to build a career in Microsoft Dynamics AX ERP products. He is considered a career coach expert and is also a keynote/guest speaker at different universities in Egypt, such as the American University in Cairo (AUC), the German University in Cairo (GUC), and the British University in Egypt (BUE).

Furthermore, he is using the science of coaching to leverage the success rate of ERP project implementations to lead the change that happens when organizations adopt the ERP solution, because he believes that success in ERP projects first depends on the people who use the ERP system first and then on everyone involved with implementing the enterprise system.

In addition to his exceptional communication skills, Ahmed has a special talent for bringing out the best in others, especially his team members, by instilling a high level of motivation in them. When he isn't focusing on his career, he enjoys playing his favorite sports, such as football, swimming, and squash. He is also a good piano player, and, as you can see, he tries to maintain a balance in his life through his diverse interests and passions because he enjoys living life with joy and passion.
Welcome to *Microsoft Dynamics AX 2012 R3 Security*, where we take you on a journey, starting from the security development concepts that use Microsoft Dynamics AX 2012 R3 and ending with practical steps to make the necessary security setups, illustrated with snapshots and figures that will guide you through developing your environmental security system.

**What this book covers**

*Chapter 1, MorphX Security System*, gives you a solid introduction to MorphX development tools. You will be able to use each development feature in a smooth and fast way.

*Chapter 2, Security Coding*, gives you the ability to use the code access security to secure your environment and also teaches you how to debug security coding.

*Chapter 3, Developing Extensible Data Security*, enables you to secure your sensitive data using the extensible data security features by designing and developing XDS policies.

*Chapter 4, Extending the Organization Model*, helps you understand the types of organizations and the basic categories of operational units and how to use them.

*Chapter 5, Enterprise Portal Security*, provides you with an understanding of the architecture of the Enterprise Portal in Microsoft Dynamics AX 2012, and ensures that you are able to secure web parts and elements.
Extending the Organization Model

To understand what extending the organization model means, we have to be aware of something called **business growth** and **business continuous improvement**.

International organizations can grow internally and externally. External growth occurs by mergers or acquisition, and that’s what happened when Microsoft bought Skype with an investment of 8.5 billion dollars. Another international organization decided to target a new customer segment or create sales growth in one of its products in the next year with a certain number of sales amount and units, which is called **internal business growth**.

These two types of growth both contain a high level of risk and challenges; therefore, the CEOs need to measure the performance of these types of growth opportunities (internal or external).

They also need to monitor and control the performance improvement that happens in the lower level of the organization, such as departments, business units, and divisions.

Microsoft Dynamics AX 2012 can handle this type of growth and monitor the performance of their investments using the extended organizational model.

The list of topics that will be covered in this chapter is as follows:

- The organizational model framework
- The organizational model scenarios
- Extending the organizational model
The organizational model framework

The organizational model has two main components: organization types and organization hierarchies. To start modeling your business, you have to understand each one of them to be able to establish your organizational structure.

The following diagram shows the complete components of the organizational model framework:

- **Party records**: Some organizations may have multiple legal entities or locations; therefore, you can create party records in the Global Address Book form to separate these entities or locations.
  
  Creating separate entities using party records reduces the confusion when communicating with different areas in an organization.

The organization types in Microsoft Dynamics AX 2012, legal entities and operating unit are as follows:

- **Legal entities**: In the business world, legal entities can be described as any entity type that has a legal standing in the eyes of the law that can enter into agreements or contracts. In Microsoft Dynamics AX 2012, the legal entity is the same as a company.

- **Operating unit**: Any legal entity can divide their work into operational processes among the team, and every team is considered an operating unit that has duties and responsibilities to perform their work. Legal entities must work at least with a single operating unit or more according to their business capacity. Therefore, there are several types of operating units and they are as follows:
  
  - **Business unit**: This is an operating unit that focuses on achieving a business strategy, such as the product line or a specific industry
Cost centre: This is a type of operating unit that is used to track and manage costs, and some types of operating units can be used as a cost controller.

Department: The created organizational departments are based on functional responsibility, such as accounting, sales, marketing, and customer service.

Value stream: This is a type of operating unit that is used in lean manufacturing that describes the flow of activities needed to create a final product or service.

Retail channel: This is a type of operating unit that is used in the retail industry to represent a retail channel, such as retail stores and online stores.

The process of internal control in any organization can be enabled through the organization model framework in Microsoft Dynamics AX 2012, by arranging the legal entities and operating units into hierarchies and using the reporting tool.

Organization hierarchies

The organization is a group of people who are working in an operational and administration process that has a flow of different activities. The organizational hierarchy shows the internal and external relationships in the organization; therefore, it is easy to understand the flow of activities within the organization.

The team is a type of internal organization that can be found under several types of operating units that can be created for a specific purpose or project.

A purpose is set to define how the organizational hierarchy is used in organization model scenarios; some purposes can be used with a specific organization type and others can be used with all types of organizations, as shown in the following table:

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Description</th>
<th>Organization types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization chart</td>
<td>Used in human resource module for the reporting relationship</td>
<td>All types</td>
</tr>
<tr>
<td>Security</td>
<td>Used to determine data security access for organizations</td>
<td>All types</td>
</tr>
<tr>
<td>Audit internal control</td>
<td>Used to determine policies to identify documents for audit purposes</td>
<td>Legal entities</td>
</tr>
</tbody>
</table>
### Extending the Organization Model

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Description</th>
<th>Organization types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralized payments</td>
<td>Used to make payments by one legal entity on behalf of other legal entities</td>
<td>Legal entities</td>
</tr>
<tr>
<td>Vendor payment internal control</td>
<td>Used to determine payments of vendor invoices</td>
<td>Legal entities</td>
</tr>
<tr>
<td>Signature authority internal control</td>
<td>Used to determine policies that control the spending and approval limits</td>
<td>All types</td>
</tr>
<tr>
<td>Procurement internal control</td>
<td>Used to determine policies that monitor and control the purchasing process cycle</td>
<td>All types</td>
</tr>
<tr>
<td>Expenditure internal control</td>
<td>Used to determine policies for expense reports</td>
<td>All types</td>
</tr>
</tbody>
</table>

The organization hierarchy purposes are shown in the following screenshot:

![Hierarchy designer - Geographical (0)](image)

As a best practice to implement Microsoft Dynamics AX 2012, the organization model structure must be defined. Next, every functional department should participate in establishing the organizational hierarchy under the supervision of the CEO, managers, and senior executives.
The organizational model scenarios

The organizational framework is used to model how the business operates, and there are two ways to approach the organization model framework. The first method is using the built-in integration with Microsoft Dynamics AX modules and other application frameworks. The second method is modeling custom scenarios to meet the business needs and requirements:

- Integration with other frameworks' application modules
- Custom modeling scenarios

Integration with other frameworks' application modules

The main modules in Microsoft Dynamics AX that are integrated with the organizational model framework are as follows:

- **Address book**: The address book is a main feature in Microsoft Dynamics AX that stores addresses and contact information; therefore, all organization types can use the address book in an internal organization.

- **Financial dimensions**: The main purpose of the financial dimension is to measure the financial performance of the organization, and it can be used with legal entities as well as operating units to evaluate the business performance for every department, business unit, and department.

- **Policy framework**: The policy framework can define the internal control policy of the organization, for example, expense reports, purchase requisitions, and vendor invoice payments.

- **Extensible data security**: The extensible data security framework helps secure your business data from unauthorized access and can be assigned on the organization hierarchy.

Also, the organizational model framework is used in the following modules within Microsoft Dynamics AX:

- **Human resource**: All the data and transactions that occur in the human resources module can be shown and modified using the organizational model framework.
• **Procurement and sourcing**: Using the organizational model framework, the purchase data can be viewed and modified similarly to the purchase requisition and the packing list

• **Travel and expenses**: Expenses that occur in a legal entity can be viewed, modified, and audited using the organizational model framework

**Custom modeling scenarios**
You can also model your own scenarios using the organization model framework. For example, organizations may need to limit the user access to certain data in the sales module that is related to another industry line and view only the sales data in his or her specific industry.

**Extending the organizational model**
You can extend the organizational model to support ISV or partner customization by creating a custom type of operating unit or extending the hierarchy designer.

**Creating a custom type of operating unit**
You can implement this scenario when the organization needs to accommodate a certain vertical industry, such as retail branches and stores. The organizational model framework supports the extensibility of your organization by creating a new custom type of operating unit using the AOT, and it is as follows:
Chapter 4

The steps to create a custom type of operating unit are as follows:

1. Create a new base enum value for the operating unit type.
2. Create a view.
3. Create a menu item.

Creating a new base enum value

Base enums are used to categorize data; for example, if you need to add more categorization to inventory item types, you can create a new base enum to add more categories in the same table.

System enums are located in the AOT in this path: SystemDocumentation | Enums. The value of a base enum is stored in the database as an integer value.

The following steps illustrate how to create a new base enum value using the AOT:

1. Navigate to Data Dictionary | Base Enums | OMOperatingUnitType, and then click on New Element:

2. Enter the name and label from the Properties window of the new element.

Creating a view

After creating the new base enum value, the next step is to create a view from the AOT view node as follows:

1. Navigate to Data Dictionary | Views and then click on New View.
Extending the Organization Model

2. In Name, type DimAttributeOM"Name", for example, DimAttributeOMStore:

```
DimAttributeOMOMBranch{sv}
Metadata{sv}
  Data Sources
  BackingEntityOMOperatingUnit
  Fields
  Ranges
  OMOperatingUnitTypeOM
    Data Sources
    Group By
    Having
    Order By
  Fields
  Field Groups
  Methods
DimAttributeOMBusinessUnit
DimAttributeOMCostCenter
DimAttributeOMDepartment
```

Creating a menu item

The last step is to create a menu item for the new operating unit type, and it is created as follows:

1. Navigate to Menu Items | Display and then click on New Menu Item.
2. In the Properties window, set the following (Store is an example):
   - Name to StoreMenuItem
   - Label to Store
   - Object to OMOOperatingUnit
   - EnumTypeParameter to OMOOperatingUnitType
   - EnumParameter to Store

After finishing the last step, the new operating unit type, Store, will appear in the list of the operating unit types in the organizational model framework.

You can define the data security access and policies for these organization types based on the hierarchy.
Extending the hierarchy designer

There is limited support to extend the hierarchy designer in Microsoft Dynamics AX 2012. The hierarchy designer can be customized into four parameters within the hierarchy, and they are as follows:

- The border color
- The node image
- The top gradient color
- The bottom gradient color

This form is available through this path: Organization Administration | Setup | Organization | Organization Hierarchies.

Summary

By the end of this chapter, you understood the types of organizations and the basic categories of operational units, and learned how to use them.

You were also able to extend your organizational hierarchy using the organization model framework and create a new custom type of operating units when it comes to establishing new vertical industries for the growth purpose of your organization.

In the next chapter, we will learn how to be the architect of an Enterprise Portal, how to secure it, and how to secure your business data.
Where to buy this book
You can buy Microsoft Dynamics AX 2012 R3 Security from the Packt Publishing website.
Alternatively, you can buy the book from Amazon, BN.com, Computer Manuals and most internet book retailers.
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