

Microsoft Dynamics Technical Conference

February 2–4, 2015 | Seattle, WA



Extensibility overview for Microsoft Dynamics AX for Retail – Part II

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Commerce Data Exchange



Commerce runtime

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Commerce Runtime

- Core business logic for commerce across
 Channels
- Composition pattern for "plug-and-play"
- Symmetric schema across channels
- Built on .Net stack (C#)
- Fully extensible
- PCL complaint (in CU8)

CRT internals

- **Client** entry point to the CRT
- Messages contains contracts
- Workflows orchestration layer
- Plugins service implementations that represent atomic operations



Extensibility

•All workflows and plugins are implemented using the request and response pattern.

 Handlers can be registered with the runtime and each incoming request is dynamically dispatched to the appropriate handler for execution.

 Handlers are loaded dynamically by the CRT using the <u>Managed Extensibility Framework</u> (MEF).

Commerce Runtime (CRT) Architecture



Retail server

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Retail Server (RS)

 Stateless web service that exposes CRT functionality through an OData web interface.

 Anything outside of CRT is web specific implementation details including but not limited to authentication, authorization, OData extensibility.

 Exposes metadata from which a cross-platform client proxy is generated.

Retail Server architecture



Retail Proxy



- Retail proxy abstracts the interface between Retail server and Commerce Runtime
- Handles Local, Remote
 - Local context -> CRT
 - Remote context -> Retail
 Server
- All the clients use proxy API to interact with the server
- Cross platform available both in Java script as well as C#

Modern POS

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Extensibility Scenarios

Look and Feel

Workflow Changes

Extend Retail Entities

Additional Functionalit Y

Modern POS Architecture



Modern POS Solution: Core

Core	
	N 4

Operations

Workflow
Extensive use of activities

Activities

- "Abstract" classes
- No implementation
- Data contract
- •Can have a response handler

Entities

- · Data model only
- •CommerceTypes: Retail Server entities

Managers

- Data managers
- CommerceContext: Retail Server API

Peripherals

• Peripheral interface

Modern POS Solution: App



Look and Feel Extensibility (View)

Scenario –

- A Fashion retailer wants to brand the POS for their needs. The retailer wants to change the look and feel of POS. They also have different placement and sizes of the various buttons that appear on the home page.
 - HomeScreen View and TransactionScreen view can be designed from the Screen layout designer
 within AX with support for landscape and portrait orientations
 - HomeScreen view
 - Button grids
 - Banner
 - TransactionScreen view
 - Button grids
 - Totals panel
 - Customer panel
 - Line items and payment grid
 - Tab control
 - Custom controls
 - NumPad
 - Image
 - All other views needs to be changed in place

Entities extensibility

Scenario

• Contoso wants to collect customer's email preference for email marketing. This is an additional property/attribute on the Customer entity

Entities can be extended in a programmatic way

- Entities can be extended using Extensibility Helper
- The design can be leveraged to automatically create properties on the fly
- The main target is class types from CommerceTypes (because they contain ExtensionProperties property)

Entities extensibility ExtensibilityHelper Class

class ExtensibilityHelper {

public extend(typeToExtend: any, propertyName: string, key: string, propertyType: PropertyTypeEnum, enumerable: boolean = false);

Extending Customer entity to add email preference property

export interface IExtendedCustomer extends Model.Entities.Customer { emailPrefOptIn: number;

ExtensibilityHelper.extend(Model.Entities.CustomerClass, "IsPreferred", "ISPREFERRED", PropertyTypeEnum.BooleanValue); var customer = new Model.Entities.Customer();

var extendedCustomer = <IExtendedCustomer>this.customer();
 this.emailOptIn(extendedCustomer.emailPrefOptIn == 1);

Existing workflow changes

• An operation is composed of multiple activities

• A specific activity can be replaced / added / deleted

• A complete operation may be replaced



Adding New Functionality

- Adding new operation in AX
- Add a button in button grid of screen layout and map it to the operation
- Create an operation handler which defines the workflow for the new functionality
- Add client side activity implementation

Demo Scenario

• Third Party Cross Loyalty

Retailer A had a recent partnership with a leading retailer B and as a part of it, Retailer B's customers can enjoy extra discounts while purchasing from Retailer A.

200 points or more in Retailer B Loyalty card = \$4 discount in purchases from Retailer A 100 points or more in Retailer B Loyalty card = \$2 discount in purchases from Retailer A

Architecture



High level flow



Modern POS Changes

	Views – HTML5/CSS/JS [platform specific views]						Platform dependent
Loc TypeScript, resison	View-Controllers – TypeScript, WinJS, DevExpress, jQuery, jqGrid, Knockout S [platform specific UI code behind]					i	Platform ndependent
	View-Models - TypeScrip [common binding properties,]		Operations – TypeScript [WorkFlows]				
Device Manager – TypeScript [peripherals interface] M		Models – TypeScript (entities)		Data Manager Inte TypeScript	erface-		
Devices (PointOfService)		ODATA Client Dat	ODATA Client – TypeScript DataJS		cript		
		HTTP/HTTPS					
ODATA v3							
		Retail Ser	ver (C#)				
		CRT (C#)				

Demo

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Questions

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Additional Retail Sessions

Ask the Experts: Microsoft Dynamics AX for Retail ATEAX08 Wednesday, February 4 1:00 PM - 2:15 PM Room: TCC - Room 305 Microsoft Dynamics AX 2012 for Retail: Set up, mass deployment, and monitoring options to improve service and manage growth BSAX81 Wednesday, February 4 1:00 PM - 2:15 PM Room: TCC - Room LL4 Microsoft Dynamics AX Retail essentials - BSAX80 Wednesday, February 4 2:45 PM - 4:00 PM Room: TCC - Room 305 Retail Hands on Lab Training Thursday Feb 5th & Friday Feb 6th Microsoft Conference Center – Building 33

Hands on training in setup, configuration and usage of the Dynamics AX for Retail solution using a hosted VM



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