Dynamics 365 Commerce Architecture Overview

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Dynamics 365 Commerce
Customer & Partner Success Initiatives

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Principal Architect
Dynamics 365 Commerce
AGENDA

- Architecture Overview
- Integrations Overview
- Topology Overview
- Headless Commerce
- Component Details
- Extensibility Overview
- Additional Info
ARCHITECTURE OVERVIEW

User Experiences

- DYNAMICS 365 FIN & OPS APPS Browser App
  - Finance, SCM, ...
  - Call Center, Commerce HQ
- THIRD-PARTY APPS & SERVICES Social app, third-party e-comm...
- POINT OF SALE (POS) Browser or Cross-Platform App
- E-COMMERCE STOREFRONT Website
- E-COMMERCE SITE BUILDER Browser App
- E-COMMERCE RENDERING Azure Web App / Node.js

ARCHITECTURAL HIGHLIGHTS

1. Natively integrated omni-channel experiences.
2. Headless commerce as centralized integration point.
3. Unified data solution through integration with CDS and ADLS.
4. Interconnected business processes with D365 app eco-system.
5. Enhanced user experiences through Microsoft native app integrations.
6. Power by AI through product recommendations service and Bing.
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Back Office
- **DYNAMICS 365 FIN & OPS APPS**
  - Service Fabric / Azure SQL
  - Finance, SCM, ...
  - Call Center, Commerce HQ

- **THIRD-PARTY SERVICES**
  - E.g. payments, taxes, shipping, ...

- **RECOMMENDATIONS SERVICE**
  - Azure (Various)

- **CONTENT MANAGEMENT SYS.**
  - Cosmos DB

- **DIGITAL ASSET MANAGEMENT**
  - Cosmos DB

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CONTENT MANAGEMENT SYS
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DIGITAL ASSET MANAGEMENT
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COMMON DATA SERVICE

AZURE DATA LAKE STORAGE

Headless Commerce

COMMERCESCALE UNIT
Azure App / IIS Service & Azure SQL

THIRD-PARTY SERVICES
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Unified Data
- **COMMON DATA SERVICE**
- **AZURE DATA LAKE STORAGE**
- **MICROSOFT BING FOR COMMERCE**
- **MICROSOFT TEAMS**

Microsoft Services
- **Microsoft Services**
- **Microsoft Services**
- **Microsoft Services**
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- **Microsoft Services**

Dynamics 365 Apps
- **DYNAMICS 365 SALES**
- **DYNAMICS 365 MARKETING**
- **DYNAMICS 365 CUSTOMER SERVICE**
- **DYNAMICS 365 FRAUD PROTECTION**
- **DYNAMICS 365 CUSTOMER INSIGHTS**

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## ARCHITECTURE DETAILS

<table>
<thead>
<tr>
<th>Service / App</th>
<th>Instances</th>
<th>Infrastructure</th>
<th>Deployment &amp; Servicing</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On-Prem</strong></td>
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</tr>
<tr>
<td>POINT OF SALE (POS)</td>
<td>Single tenant</td>
<td>Customer managed</td>
<td>Customer managed</td>
<td>Customer &amp; Microsoft managed</td>
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<tr>
<td>Windows, iOS, Android</td>
<td>Single instance</td>
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<tr>
<td><strong>Customer Managed ALM</strong></td>
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<tr>
<td>COMMERCE SCALE UNIT</td>
<td>Single tenant</td>
<td>Customer managed</td>
<td>Customer managed</td>
<td>Customer &amp; Microsoft managed</td>
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<tr>
<td>SELF-HOSTED</td>
<td>Single instance</td>
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<td>IIS Service / SQL Server</td>
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<td><strong>In Cloud</strong></td>
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<td>DYNAMICS 365 FIN &amp; OPS APPS</td>
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<td>E-COM STOREFRONT</td>
<td>Single tenant</td>
<td>Microsoft managed</td>
<td>Customer managed</td>
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<td>Website</td>
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<td>E-COM STOREFRONT RENDERING</td>
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<td>Azure Web App / Node JS</td>
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<td>POINT OF SALE (POS)</td>
<td>Single tenant</td>
<td>Multi tenant</td>
<td>Microsoft managed</td>
<td>Microsoft managed</td>
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<tr>
<td>Browser App</td>
<td>Multi instance</td>
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<td>COMMERCE SCALE UNIT</td>
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<td>Multi tenant</td>
<td>Microsoft managed</td>
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<td>Azure Web App / Doc DB</td>
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INTEGRATIONS OVERVIEW

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<td>POINT OF SALE (POS)</td>
<td>Microsoft Teams: Tasks &amp; Notifications, Power BI: In-store reports</td>
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<td>E-COM STOREFRONT</td>
<td>Power Virtual Agent: Chat bot, Azure B2C: Consumer authentication</td>
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<td>DIGITAL ASSET MANAGEMENT, CONTENT MANAGEMENT SYS.</td>
<td>Power Automate: Workflow, Azure Cognitive Services: AI based image auto-tagging</td>
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<td>DYNAMICS 365 FIELD SERVICES</td>
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TOPOLOGY OVERVIEW
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REGION A
Region A leveraging self-hosted Commerce Scale Unit to provide better geo-proximity or better connectivity for regions with poor network connectivity in store.

REGION B
Region B leverages the cloud-hosted Commerce Scale Unit for better geo-proximity and to provide easier maintainability due to sufficient network connectivity.

REGION C
Region C is the primary customer region hosting the Dynamics 365 Finance & Operations back office application and the e-Commerce storefront. Additionally, second cloud hosted Commerce Scale Unit hosted for geo proximity.

MULTI-TENANT SERVICES POWERING E-COMMERCE STOREFRONT AND COMMERCE SCALE UNIT
Set of multi-tenant services powering the e-Commerce storefront and Commerce Scale Unit. These services are deployed, serviced, maintained, and controlled solely by Microsoft.
HEADLESS COMMERCE
HEADLESS COMMERCE

SAMPLE NATIVE APPS AND SERVICES
- E-COMMERCE STOREFRONT / POS
- HTML / JavaScript App
- Typescript Proxy
- BING FOR COMMERCE
- DYNAMICS 365 FRAUD PROTECTION
- RECOMMENDATIONS SERVICE
- DYNAMICS 365 FIN & OPS APPS

HEADLESS COMMERCE

AZURE WEB APP / IIS WEB SERVICE
- ODATA ENDPOINT
  - Search Controller
  - Cart Controller
  - Loyalty Controller
  - Shipping Controller Ext
  - Payments Controller
  - Pricing Controller
  - Exception Handling
  - Tax Controller Ext

MIDDLEWARES
- Authentication
- Authorization
- Exception Handling

COMMERCE RUNTIME
- Search Service
- Order Service
- Loyalty Service
- Shipping Service Ext
- Fraud Protection Service
- Pricing Service
- Customer Service
- Tax Service Ext
- Recommendations Serv.
- Shifts Service
- ... Tax Service Ext
- Transaction Service
- Caching Service
- SQL Data Service
- Gift Card Service Ext

AZURE SQL / SQL SERVER
- CHANNEL DATABASE
  - Commerce Runtime Schema
  - Commerce HQ Schema
  - Extension Schema

SAMPLE THIRD PARTY APPS AND SERVICES
- THIRD-PARTY NATIVE APP OR SERVICE
- C# Proxy
- THIRD-PARTY SHIPPING SERVICE
- THIRD-PARTY TAX SERVICE
- THIRD-PARTY GIFT CARD SERVICE

SAMPLE THIRD PARTY APPS AND SERVICES
- THIRD-PARTY GIFT CARD SERVICE
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THIRD-PARTY SHIPPING SERVICE
THIRD-PARTY NATIVE APP OR SERVICE
ARCHITECTURAL HIGHLIGHTS

1. Symmetric and portable architecture that is independent from the host.
2. Composable to fit the context of the hosting application.
3. Highly extensible with request handlers and pre/post triggers.
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COMPONENT
DETAILS
POINT OF SALE ARCHITECTURE

COMMERCESCALE UNIT (CSU) – CLOUD- OR SELF-HOSTED

AZURE WEB APP / IIS

UI LAYER (HTML + JAVASCRIPT)

OOB Pages and Controls

Extension Pages and Controls

MODERN POINT OF SALE (MPOS)

WINDOWS APP

UI LAYER (HTML + JAVASCRIPT)

OOB Pages and Controls

NATIVE CLIENT BROKER

HARDWARE STATION

OOB Connectors

COMMERCESCALE UNIT (CSU)

OOB Services

OFFLINE DATABASE

OOB Schema

CLOUD POINT OF SALE (CPOS)

BROWSER

UI LAYER (HTML + JAVASCRIPT)

EXTENSION CONNECTORS

COMMERCE RUNTIME

COMMERCEScale Unit (CSU)

OFFLINE DATABASE

OOB Schema

ANDROID POINT OF SALE

ANDROID APP

ANDROID SHELL

NATIVE CLIENT BROKER

HARDWARE STATION

OOB Connectors

Extension Connectors
EXTENSIBILITY OVERVIEW
DEVELOPER EXPERIENCE

DYNAMICS 365 FIN & OPS EXTENSION

- FIN & OPS VHD
  - X++ Object Model
  - Visual Studio Extension
  - Runtime / Service Extension X++
  - Database Extension X++
  - FIN & OPS APP EXTENSION PACKAGE
    - Runtime/Service Extension
    - Database Extension

E-COMMERCE EXTENSION

- E-COM DEV ENVIRONMENT
  - SDK
  - JavaScript, HTML
  - Configuration
  - JSON
  - Modules, Themes, Data Actions
  - JavaScript (React), HTML
  - E-COMMERCE EXTENSION PACKAGE
    - Modules, Themes, Data Actions
    - Configuration
    - Modules, Themes, Data Actions

HEADLESS COMMERCE & POS EXTENSION

- HEADLESS COMMERCE EXTENSION PACKAGE
  - POS UI & Runtime Extension
  - Configuration
  - JSON
  - Modules, Themes, Data Actions
  - JavaScript (React), HTML

- HEADLESS COMMERCE RUNTIME
  - Commerce Runtime
  - Channel Database Schema
  - Code Samples
  - C#, SQL

- HEADLESS COMMERCE ON-PREM INSTALLER
  - POS UI & Runtime
  - POS UI & Runtime Extension
  - POS UI & Runtime
  - Runtime / API Extension
  - Database Extension

- MODERN POS ON-PREM INSTALLER
  - POS UI & Runtime
  - POS UI & Runtime Extension
  - POS UI & Runtime
  - Runtime / API Extension
  - Database Extension

FIN & OPS APP VHD

- Channel Database Schema
- SQL Schema File
- Code Samples
- JavaScript (Typescript), HTML

POS UI & Runtime Extension

- POS UI & Runtime
- Runtime / API Extension
- Database Extension

SDK

- DEPLOYMENT
- COMPILATION
- DEVELOPMENT
**DEVELOPER EXPERIENCE**

**DYNAMICS 365 FIN & OPS EXTENSION**
- FIN & OPS APP extension package
- Runtime/Service Extension
- Database Extension

**E-COMMERCE EXTENSION**
- E-COMMERCE extension package
- Modules, Themes, Data Actions
- Configuration
- Modules, Themes, Data Actions

**HEADLESS COMMERCE & POS EXTENSION**
- HEADLESS COMMERCE extension package
- POS UI & Runtime Extension
- Runtime / API Extension
- Database Extension

**MODERN POS ON-PREM INSTALLER**
- Modern POS
- POS UI & Runtime
- Runtime / API Extension
- Database Extension

**DEPLOYMENT & SERVICING EXPERIENCE**

**DYNAMICS 365 LIFE CYCLE SERVICES**
- Microsoft owned and managed

**MODERN POINT OF SALE**
- Windows App / SQL Express
- Commerce Runtime
- Runtime / API Extension
- Database Extension

**DYNAMICS 365 FIN & OPS APPS**
- Service Fabric / Azure SQL

**E-COM STOREFRONT RENDERING**
- Azure Web App / Node JS

**COMMERCE SCALE UNIT CLOUD-HOSTED**
- Azure Web App / Azure SQL

**COMMERCE SCALE UNIT SELF-HOSTED**
- IIS / SQL Server

**ON-PREM MASS DEPLOYMENT INFRASTRUCTURE**
- Customer owned and managed
ADDITIONAL INFORMATION
ADDITIONAL RESOURCES

UPCOMING TALKS

E-Commerce Architecture Deep Dive
Brian Shook  ▪ Senior Program Manager
Petri Simolin ▪ Senior Program Manager
Tuesday, December 08, 2020 7:00 AM (PST)
Tuesday, December 08, 2020 2:00 PM (PST)

Commerce Deployments, Updates and Servicing
Aamir Allaqaband ▪ Senior Program Manager
Petri Simolin ▪ Senior Program Manager
First Week of January

ARTICLES

Dynamics 365 Commerce architecture overview
Select an in-store topology
Commerce Scale Unit architecture
Modern POS (MPOS) architecture
Commerce for IT Pros and Developers
// aka.ms / CommerceArchitecture
// aka.ms / CommerceInStoreTopology
// aka.ms / CommerceScaleUnitArchitecture
// aka.ms / CommerceModernPOSArchitecture
// aka.ms / CommerceForITPros

CONTACT

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