

Customizations

STRATEGY ■ CONSULTING ■ SUPPORT



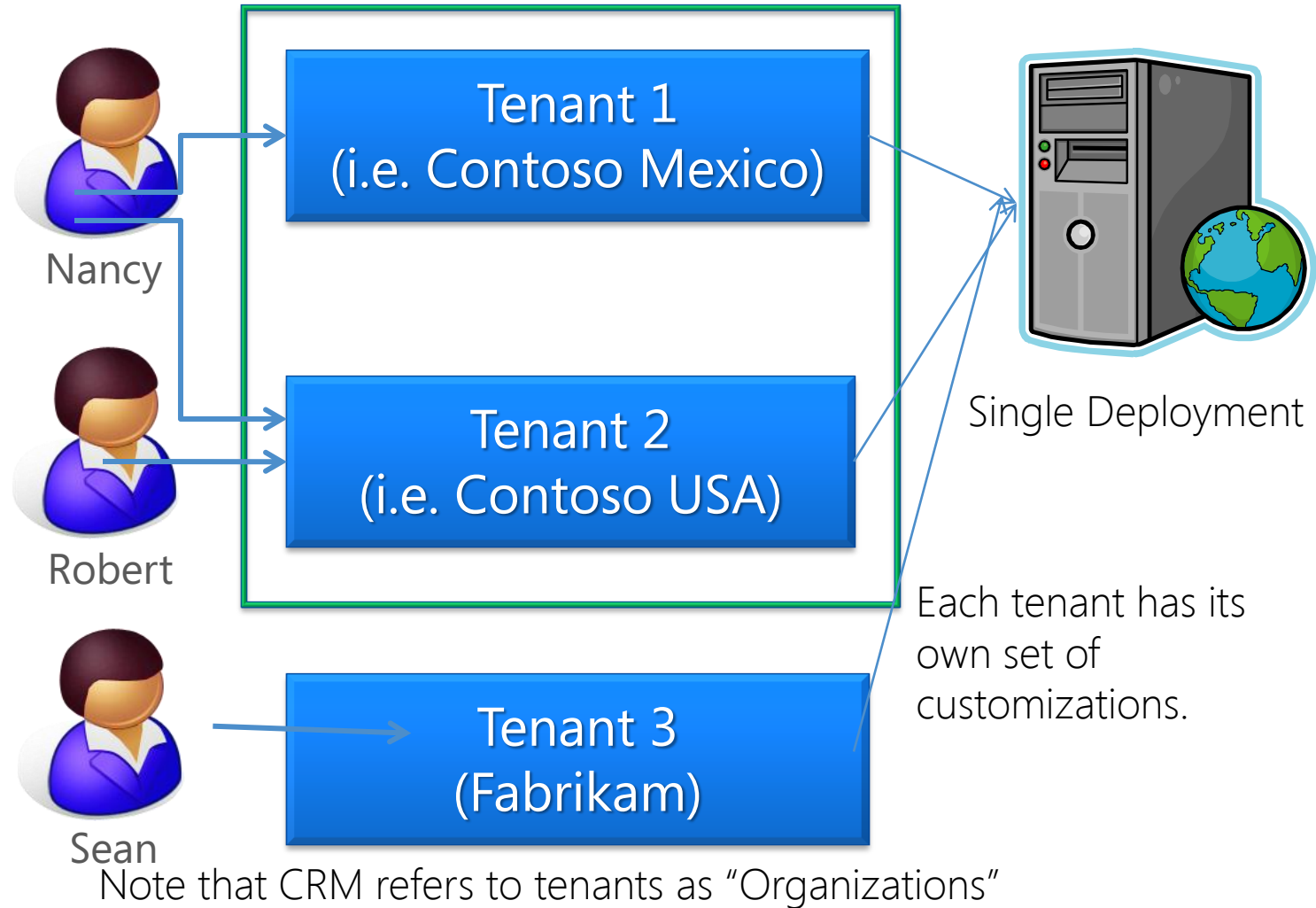
Customizations

- Entities
 - Fields
 - Forms & Views
 - Charts
 - Relationships
- Dashboards
- Options Sets
- Web Resources
- Solutions
- SiteMap
- Mobile Express
- SDK

What Can I Customize?

- Schema:
 - Entities
 - Fields
 - Relationships
- User Interface
 - Forms & Views
 - Charts
 - Navigation

Multitenant Customizations

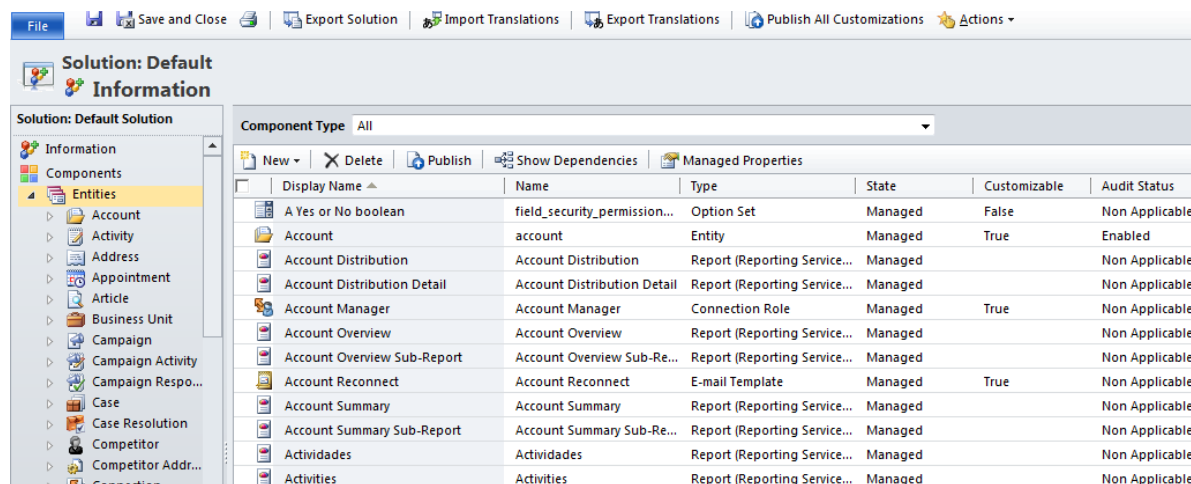


Entities

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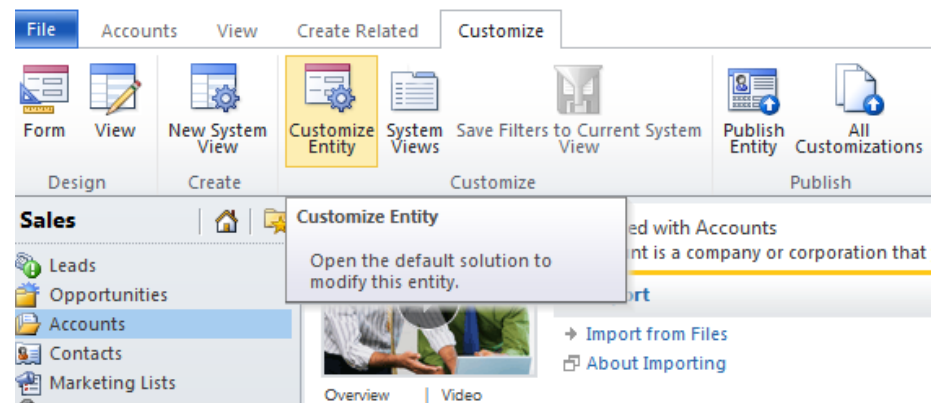
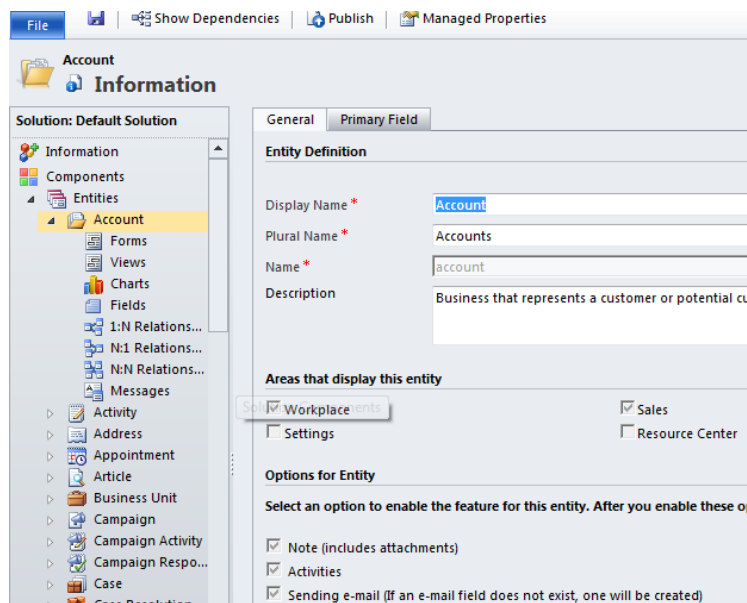
Entities Area

- Access point for Entities
- Overview of certain properties
 - ex. Audit Status & Customizable
- Deleting Entities (and attributes) will result in lost data!
- Managed Properties



Individual Entities

- Structure used to store and manage data (ex. Account)
- Access through Settings, or from inside the core app
- Primary Field (business required)
- Publish after changes
- Custom entities can be defined as Activity entities



Fields

- Fields are available to add to the entity's form
- Important fields
 - Requirement Level
 - Searchable
 - Field Security
 - Auditing
 - Type
- Precision option available when Type = Money
 - Pricing Decimal Precision
 - Currency Precision

The screenshot shows the 'Field' configuration window for a field named 'Account Number of Account'. The window has a menu bar with 'File', 'Save and Close', 'Show Dependencies', and 'Managed Properties'. The title bar indicates 'Working on solution: Default Solut'. The left sidebar shows 'Common' and 'Information' tabs. The main area is divided into 'General' and 'Schema' sections. The 'Schema' section contains the following fields:

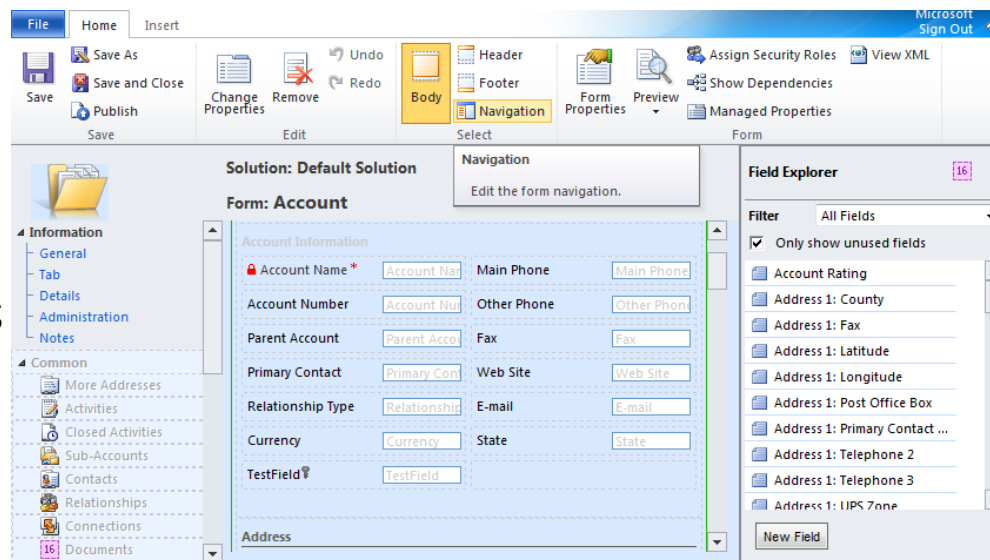
- Display Name ***: Account Number
- Name ***: accountnumber
- Requirement Level ***: No Constraint
- Searchable**: Yes
- Field Security**: ☐ Enable ☒ Disable
- Auditing ***: ☒ Enable ☐ Disable
- Description**: User-provided account number used in correspondence about the account.

The 'Type' section contains the following fields:

- Type ***: Single Line of Text (nvarchar)
- Format ***: Text
- Maximum Length ***: 20

Forms

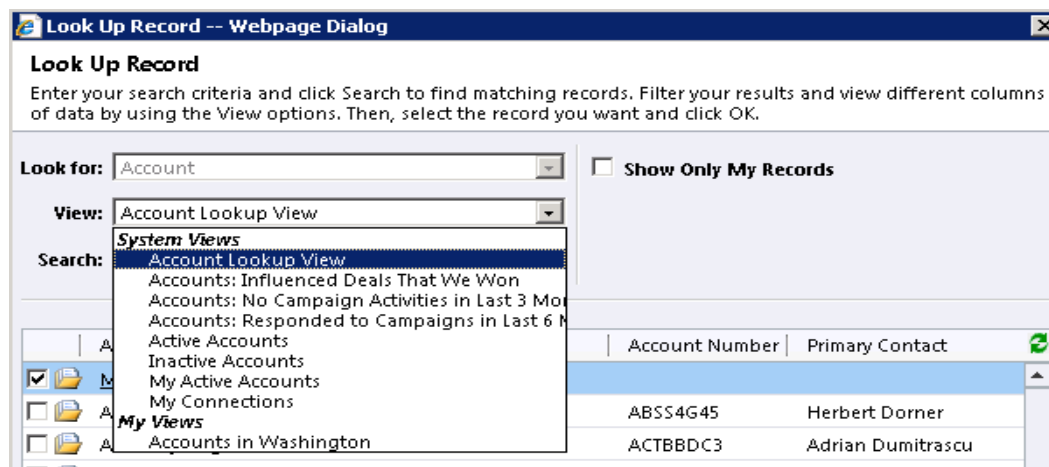
- Form Design
 - Drag & drop fields
 - Sub-Grids
 - Side tabs
 - Add new fields
- Field & Form Properties
- Header/Footer
- Navigation
 - Rename tabs
- Form Assistant
 - Available for Case, Product, Service Activity



Filter Lookups

- Lookup view selector to filter results by view
 - Show Only My Records option available

- Quick Find
- Related Record Filter
- Runtime Lookup View Filtering



Forms – Managing Multiple Forms

- Multiple forms per entity available
 - Ex. General Form and Salesperson Account Form
- Forms assigned to all, or per security role
- Form Types: Main or Mobile

New ▾ X 16 Assign Security Roles 16 Form Order ▾ More Actions ▾				
	Name	Form Type ▲	State	Customizable
<input checked="" type="checkbox"/>	16 Information	Main	Managed	True
<input type="checkbox"/>	16 Information	Mobile	Managed	True

- Fallback forms
- User's can have more than one form assigned


Information ▾

Salesperson Account Form
 Marketing Manager Account F...
 Information
 Preferences

Account

AWC

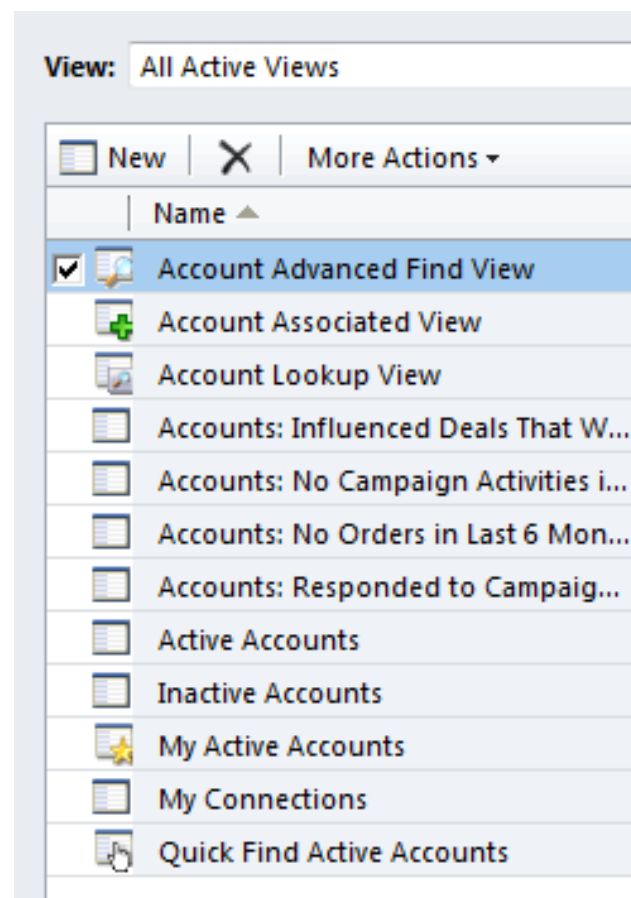
Primary Contact

 [Jose Curry](#)

Credit Limit

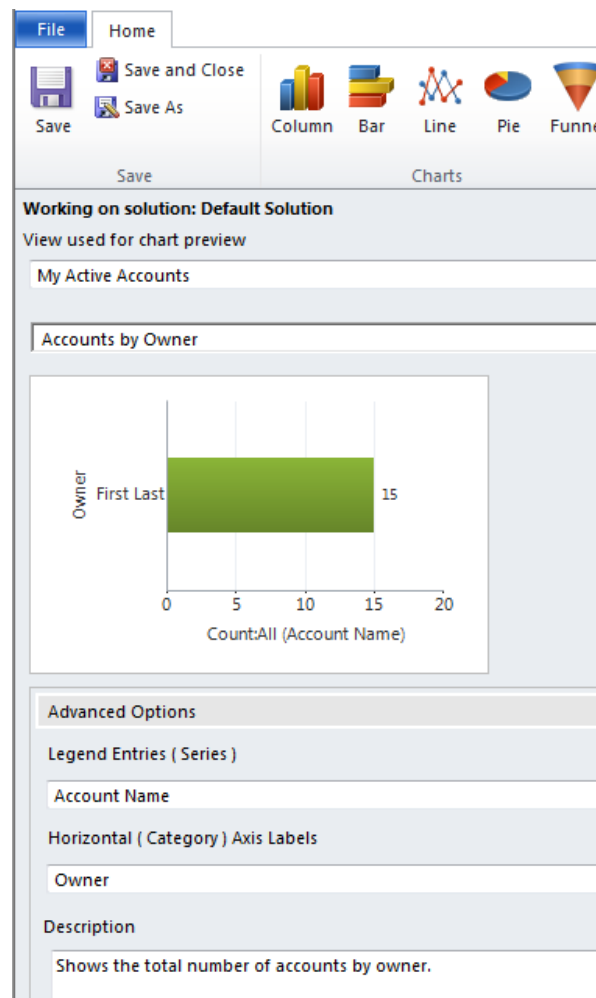
Views

- View Types
 - Advanced Find Views
 - Associated Views
 - Lookup Views
 - Default Public View
 - Public Views
 - Quick Find View
- Other
 - Personal views (can be default user views)
- Add columns
 - Related entities can be added



Charts

- Exposed at the right or top of grid
- Chart Drilldown
- Customizable
 - User Charts
 - System Charts
- Chart Types
 - Column
 - Bar
 - Line
 - Pie
 - Funnel



Relationships

- Relationship Types
 - 1:N
 - N:1
 - N:N
- System Relationships
 - Example: N:N User to Account
- Self-referencing
 - Example: Case / Sub-Case
- Many to Many (N:N)
- Multiple relationships between the same entities
 - Bank Account : Primary Contact and Secondary Contact

Relationships

- Customizable (if Type of Behavior \neq System)
- Relationship Behavior (per relationship)
 - Parental
 - Referential
 - Referential, Restrict Delete
 - Configurable Cascading

Relationships

- Behavior Types (Configurable Cascading)
 - Assign
 - Share
 - Unshare
 - Reparent
 - Can provide automatic share rights
 - Delete
 - Merge

Relationship Behavior			
Type of Behavior *	Configurable Cascading ▼		
Assign *	Cascade All ▼	Reparent *	Cascade All ▼
Share *	Cascade All ▼	Delete *	Cascade All ▼
Unshare *	Cascade All ▼	Merge *	Cascade All ▼

Relationships

- Cascade Levels
 - Cascade All
 - Cascade Active
 - Cascade User-Owned
 - Cascade None

Relationship Behavior

Type of Behavior *	Configurable Cascading
Assign *	Cascade All
Share *	Cascade All
Unshare *	Cascade Active

Cascade All
Cascade Active
Cascade User-Owned
Cascade None

Mappings

- Allows data to flow to related entity
 - Ex. Account address to related contact address

Common

Information

Mappings

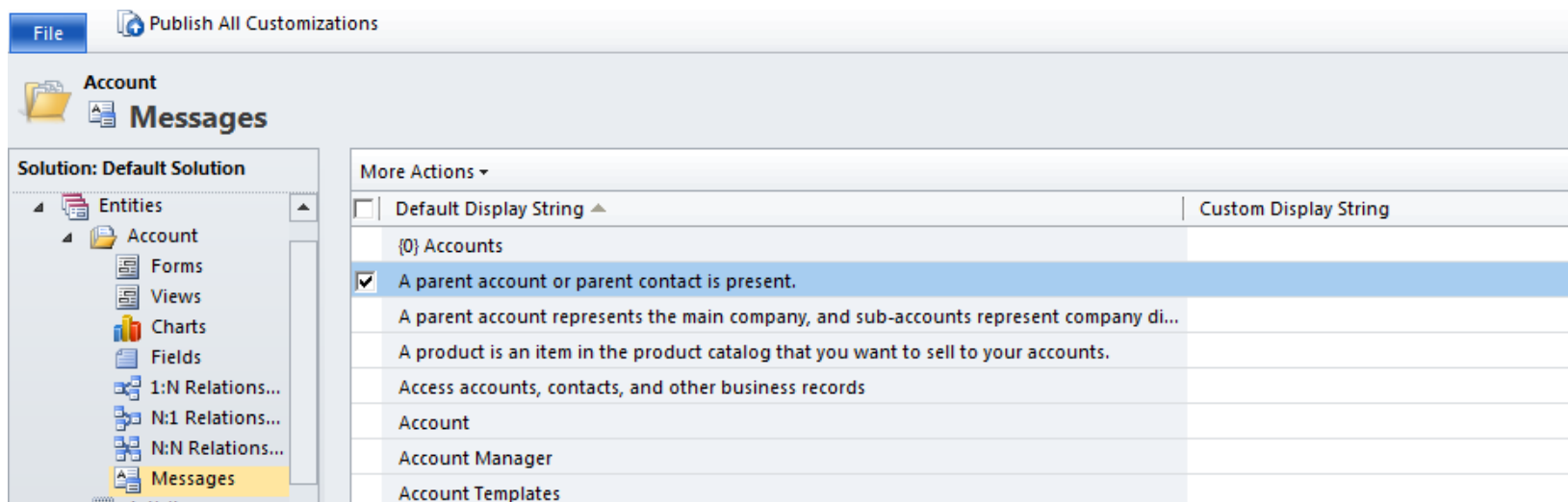
New

More Actions

	Source Name	Source Display Name	Target Name	Target Display Name
<input checked="" type="checkbox"/>	accountid	Account	parentcustomerid	Parent Customer
	address1_addresstypecode	Address 1: Address Type	address1_addresstypecode	Address 1: Address Type
	address1_city	Address 1: City	address1_city	Address 1: City
	address1_country	Address 1: Country/Region	address1_country	Address 1: Country/Region
	address1_county	Address 1: County	address1_county	Address 1: County
	address1_freighttermscode	Address 1: Freight Terms	address1_freighttermscode	Address 1: Freight Terms
	address1_line1	Address 1: Street 1	address1_line1	Address 1: Street 1
	address1_line2	Address 1: Street 2	address1_line2	Address 1: Street 2

Messages

- Allows you to change messages displayed when the business entity or business field display names have been changed.



Global Option Sets

- Option sets are picklists
- Global Option Sets are sets of values that are available to be re-used across entities

The 'Schema' form is used to define a Global Option Set. It includes fields for 'Display Name' (US States), 'Name' (new_usstates), and a 'Description' text area. Below the 'Options' section, there is a list of US states (Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia) and a 'Value' field set to '100,000,000'.

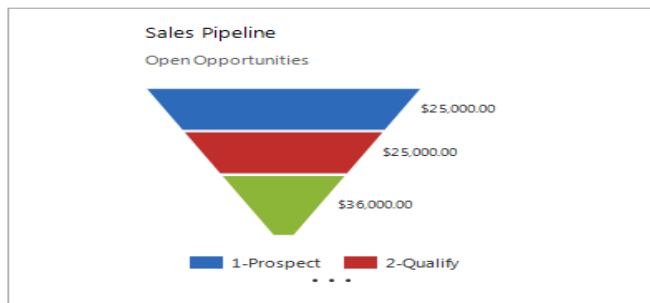
The 'Type' form is used to configure the type of the Global Option Set. It includes a 'Type' dropdown set to 'Option Set', a 'Use Existing Option Set' radio button group with 'Yes' selected, an 'Option Set' dropdown set to 'US States' with 'Edit' and 'New' buttons, and a 'Default Value' dropdown set to 'Washington'.

Dashboards

- Collection of components used to present data from multiple entities
 - Charts, lists, web resources, iframes
- Dashboard Types
 - User
 - System
- User can select default dashboard

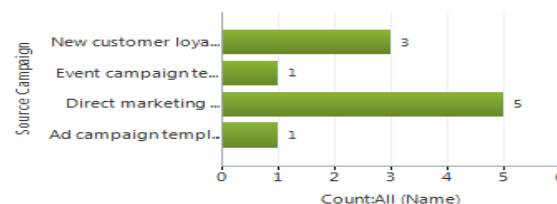
Dashboard: **Microsoft Dynamics CRM Overview** ▾

▾ Overview



Leads by Source Campaign

All Leads



▾ Activities

My Activities ▾

Activity Type	Subject	Regarding	Priority	Start Date
Task	test1		Normal	

Web Resources

- Store and use common types of web content
- Allows for easy reuse of code, images, and other files
 - Ex. jscript
- Web resources can be used within:
 - Forms
 - Sitemap
 - Ribbon
 - Solutions framework
 - Microsoft Dynamics CRM for Microsoft Office Outlook with offline access (automatic synchronization)
- More within the CRM SDK section

Solutions

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Solutions

- Used to author, package, and maintain a single unit of software that extends your CRM implementation
- Solutions are not required
 - Possible to modify default solution by:
 - Settings – Customizations – Customize the System
- Solution Publisher
- Export as Unmanaged or Managed

The screenshot shows the 'Solution: New' form in Microsoft Dynamics CRM. The form is titled 'Solution: New' and has a tab labeled 'Information'. On the left, there is a navigation pane with the following items: Information (selected), Components, Entities, Option Sets, and Client Extensions. The main area of the form is divided into two sections. The top section is titled 'General' and contains the following fields:

Field	Value
Display Name *	Bicycle Shop
Publisher *	bluecompany
Version *	1.0.0.0
Name *	BicycleShop
Configuration Page	

Unmanaged Solution

- When solution is unmanaged, it can be modified.
- Container that holds references to other system components
- Multiple unmanaged solutions is possible

Managed Solution

- Designed for final distribution of components
- Differences from Unmanaged solution:
 - Managed cannot be modified once it is imported
 - Unless Managed properties have been allowed
 - Managed cannot be exported after it's been imported
 - Deleting a managed solution will uninstall all of the solution components
 - All custom attributes or entities part from the solution would be deleted

Exporting Solutions

- Unmanaged
 - A need to edit the customizations.xml file (ex. sitemap or ribbons)
 - Moving unmanaged solution to a new org
 - Additional changes can be made in new org
 - Create a backup of your current customizations
- Managed
 - Cannot be exported
 - Only created while exporting an Unmanaged solution

Importing Solutions

- System Settings
- Post Import Actions
- Unmanaged
 - Import when you want to move customizations into a new org
 - The newly imported solution would be customizable
 - Changed applied while importing cannot be uninstalled
- Managed
 - After import into new org, the solution definition is locked
 - Use when you want to restore or revert back to earlier
 - Can't import a managed solution into an environment from which it was exported

Updating Solutions

- Unmanaged
 - Changes cannot be uninstalled
 - If components already exist, the new solution will overwrite
- Managed
 - Cannot be changed
 - Uninstalling/reinstalling not an option (data would be deleted)
 - Updating is the best approach
 - Release a new version of the solution (upgrade)
 - Release an update of the solution (patch)
 - Updates can be rolled back by reinstalling a prior solution
 - Option to keep existing customizations

Delete/Uninstall a Solution

- Unmanaged
 - Deleting a solution simply deletes a single solution record in the db.
 - Actual components are not affected by this
- Managed
 - Deleting will uninstall the managed solution (including components)
 - Customizations made to components installed by the solution will also be uninstalled

Solutions – Managed Properties

- Standard entities can't be set to "not customizable"
- Only applicable to Managed solutions
- Defines whether or not to restrict users from customizing the solution's components.
- Managed Properties are set in the unmanaged solution
- By default, solution components set to customizable

Managed Properties of Field : Name -- Webpage Dialog

Managed Properties of Field : Name
Set the Managed Properties of this component.

The following properties will take effect only after the component is exported and imported as part of a managed solution.

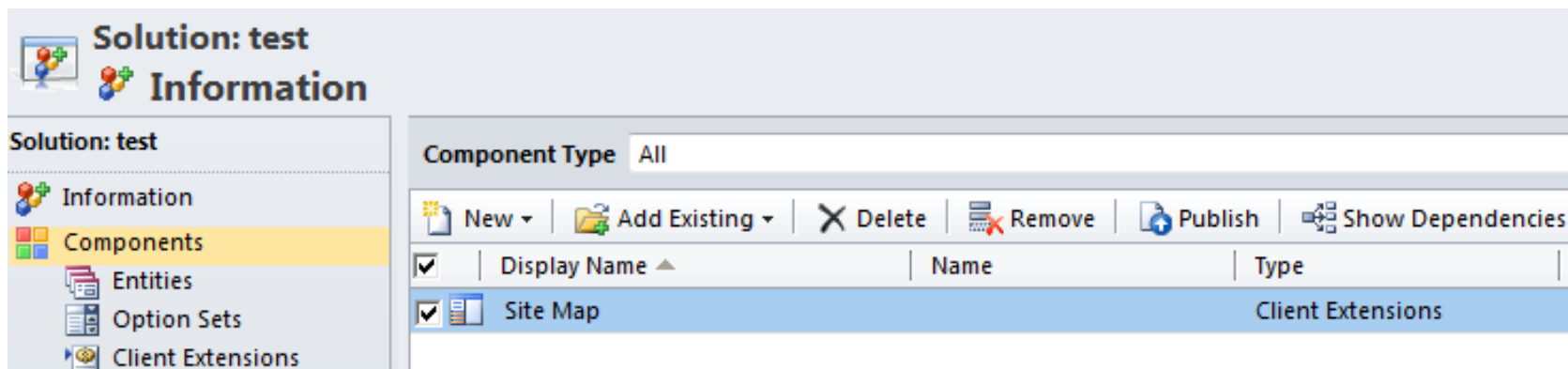
Can be customized	<input checked="" type="radio"/> True <input type="radio"/> False
Display name can be modified	<input checked="" type="radio"/> True <input type="radio"/> False
Can change requirement level	<input type="radio"/> True <input checked="" type="radio"/> False
Can Change Additional Properties	<input checked="" type="radio"/> True <input type="radio"/> False

SiteMap

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SiteMap

- XML representation of the structure of the CRM navigation pane
 - Includes the areas, groups, and subareas
 - Privileges can be set within subareas
- Export the SiteMap by exporting an unmanaged solution that contains the SiteMap.
 - The solution could also be the default unmanaged solution.



Solution: test
Information

Solution: test

- Information
- Components**
- Entities
- Option Sets
- Client Extensions

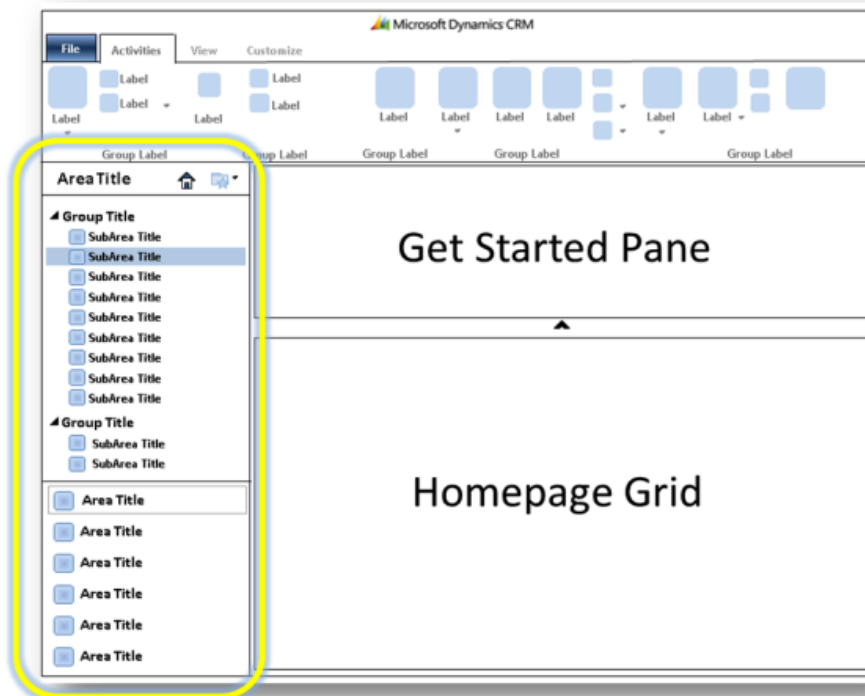
Component Type All

New | Add Existing | Delete | Remove | Publish | Show Dependencies

Display Name	Name	Type
Site Map		Client Extensions

SiteMap

- If your security privileges do not provide read access to an entity specified in the SiteMap that navigation option will not be displayed to you
- Application Navigation



SiteMap

- Configuration Options Available Using SiteMap
 - Edit Labels
 - Add or Change Icons
 - Add or Remove Elements
 - Group Links within Areas
 - Add New Pages to an Area
 - Customize the Get Started Pane
 - Change Workplace Profile Options



Mobile Express

Mobile Express

- Customized CRM experience for your users with mobile devices.
- Works on virtually any mobile device

File Save and Close Save As 16 Assign Roles... Form Properties

Mobile Entity: Accounts

Select the attributes from the Available Attributes list that you would like displayed on the form. Set the order in which they are displayed by moving them up and down in the selected list.

Available Attributes		Selected Attributes
Account Rating		Owner *
Address 1: Address Type		Status *
Address 1: Country/Region		Account Name *
Address 1: County		Primary Contact
Address 1: Fax		Main Phone
Address 1: Freight Terms		Fax
Address 1: Latitude		E-mail
Address 1: Longitude		Web Site
Address 1: Name		Address 1: Street 1
Address 1: Post Office Box		Address 1: Street 2
Address 1: Primary Contact Name		Address 1: City
Address 1: Shipping Method		Address 1: State/Province
Address 1: Street 3		Address 1: ZIP/Postal Code
Address 1: Telephone 2		Industry
Address 1: Telephone 3		Account Number
Address 1: UPS Zone		
Address 2: Address Type		
Address 2: City		
Address 2: Country/Region		

Add >
 Add All >>
 < Remove
 << Remove All
 Move Up
 Move Down
 Read Only

New Features

- Support for N:N relationships
- Ability to create related entities
- Role based forms, multiple forms
- Field Level security
- Solutions support for mobile forms
- Mobile customization is now done from the main application customization pages
- Default OOB Account, Contact, Case, Opportunity, and Lead Entities are enabled
- Auto redirect to /m if accessing Org from any Mobile Device

Software Development Kit (SDK)

- What is the SDK
 - Documentation
 - Sample Code
- Where is it?
 - MSDN Online Version
 - Downloadable Version
 - <http://www.microsoft.com/downloads/en/details.aspx?FamilyID=420f0f05-c226-4194-b7e1-f23ceaa83b69>

Main Components

- Server Side
 - Plugins
 - Workflow .NET Assemblies/Custom Workflow Activities
- Client Side
 - Web Resources
 - Jscript Libraries
 - Silverlight Applications
 - Images (JPG, PNG, GIF, ICO)
 - Text based pages (HTML, XML, XSL, CSS)
 - IFRAME
 - Site Map
 - Ribbon
- External Custom Applications (via CRM web services)

Plugins

- Modify or extend the CRM Business Logic
- Pre and Post Events
 - Create
 - Update
 - Delete
 - Assign
- Examples
 - Randomly generate an Account Number
 - Automatically fire a Workflow rule when a certain field is updated.

Plugin Deployment

- Plugin Registration Tool
- Ability to deploy in isolation mode (Sandbox)
 - Allows for use with CRM Online
- Plugin storage location
 - Database
 - Disk
 - Global Assembly Cache
- Register New Step
 - Message
 - Primary Entity
 - Event Pipeline
 - Execution Mode
 - Deployment

Custom Workflow Activities

- .Net assembly
- Can be a simple task, or complex logic
- Ability to call a web service through a Workflow Rule
- Assembly contains logic that cannot be completed through standard rule
- Can be used with workflows or dialogs
- Examples:
 - Send email from workflow as another user
 - Send email that contains URL to specific entity
- On-premises only

Web Services

- Two global installation-level Web services
 - IDiscoveryService Web Service
 - Returns a list of organizations that the specified user belongs
 - IOrganizationService Web Service
 - Used to access Microsoft CRM data and metadata
- REST (Representational State Transfer) endpoint
 - Uses Windows Communication Framework oData

Service Endpoints

- SOAP 2007
 - [org root url]/mscrmservices/2007/crmService.asmx
- REST (OData)
 - [org root url]/xrmServices/2011/organizationdata.svc
- Discovery
 - [org root url]/xrmServices/2011/discovery.svc
- Organization
 - [org root url]/xrmServices/2011/organization.svc

Upgrades

- Plugins and Workflow .Net Assemblies will upgrade
 - Will not be able to take advantage of new functionality
- Supported Jscript will upgrade
- Custom applications may need additional configuration

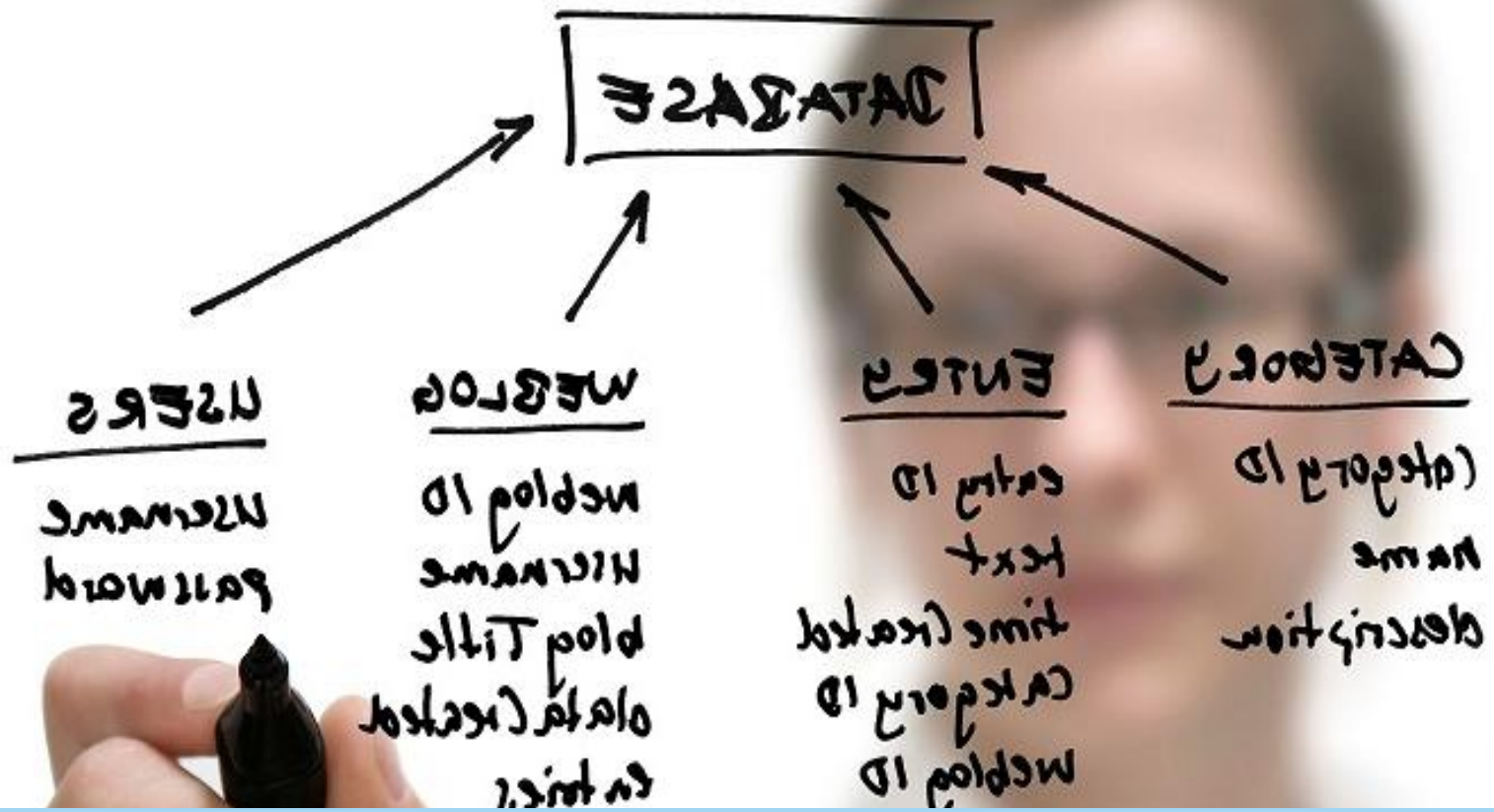
Unsupported Customizations

- Direct SQL updates
- Modifications to default CRM files
- Undocumented jscript
- NOTE: There are many public blogs that contain unsupported customizations.

Customizations Summary

- Entities
 - Fields
 - Forms & Views
 - Charts
 - Relationships
- Dashboards
- Options Sets
- Web Resources
- Solutions
- SiteMap
- Mobile Express
- SDK





Questions?