



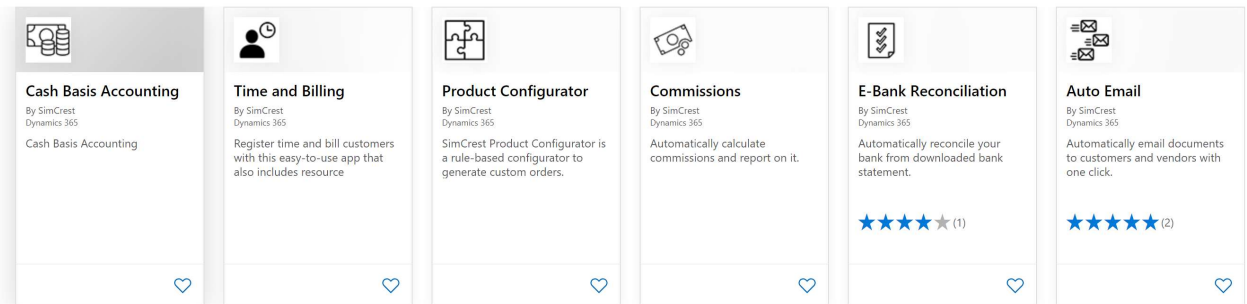
How to take your Dynamics NAV Customer's modifications and upgrade them to Business Central OnPrem

Using Extensions only

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Introduction – Carsten Howitz

- Started working with Navigator / Navision in 1990 in Denmark.
- Development, Consulting, Project Management, System Architect of Navigator, Navision, Navision Financials, Dynamics NAV, and Business Central.
- Founded SimCrest, Inc. in 2001. Dallas, Miami, Los Angeles
- Converted several customers from NAV to BC
- Developed Six Apps currently on Business Central AppSource



Agenda

- Go live check list
- Creating delta files from existing modifications.
- Using Txt2AL tool to convert delta to AL and fixing issues with code
- How to install extensions in BC OnPrem. Script examples.
- Easy debugging when working with BC OnPrem.
- How to avoid the temptation of making changes in the development environment.
- How to handle .Net variables if used.
- Standard use of date, time, Booleans
- Data migration of custom fields from C/AL tables to AL tables in the extension.
- Move permission sets, role centers, and profiles to extensions.

Upgrade or Reimplementation

- Upgrade
 - From newer version of NAV (2013 and up)
 - Not too many modifications
 - Customer has similar requirements
- Reimplementation (like if coming from other system)
 - From older version of NAV (2009 and before)
 - Extensively modified
 - Customer requirements changed

Upgrade Checklist

1. Convert Objects from C/AL to AL to create Extension (90%)
2. Export all data from custom fields and tables
3. Perform regular upgrade (technical and data) using the tools provided by Microsoft
4. Load standard BC objects (with Force to delete custom fields)
5. Delete all custom tables
6. Install Extension in BC
7. Import all custom data into fields and tables

Object conversion from C/AL to AL

1. Export all objects from modified database into txt files (modified.txt)
2. Export all objects from standard database into text files (original.txt)
3. Run script to split objects into separate files and compare
Result: Delta files
4. Run txt2al tool to convert to AL files
5. Create new AL project in VS Code
6. Copy new AL files into VS Code project
7. Start fixing issues !!

Delta Files

- Files containing the difference (delta) between the modified objects and the original objects

Modified					Original					Delta		
Table 37 Sales Line - Table Designer					Table 37 Sales Line - Table Designer							
E... Field No.	Field Name	Data Type	Length	Description	E... Field No.	Field Name	Data Type	Length	Description			
✓	5810 Return Qty. Received (Base)	Decimal			✓	5810 Return Qty. Received (Base)	Decimal			✓	87750 Commission Rate	Decimal
✓	5811 Appl.-from Item Entry	Integer			✓	5811 Appl.-from Item Entry	Integer			✓	87752 Com Rate Override	Boolean
✓	5909 BOM Item No.	Code	20		✓	5909 BOM Item No.	Code	20				SC.COM1.22
✓	6600 Return Receipt No.	Code	20		✓	6600 Return Receipt No.	Code	20				SC.COM1.22
✓	6601 Return Receipt Line No.	Integer			✓	6601 Return Receipt Line No.	Integer					
✓	6608 Return Reason Code	Code	10		✓	6608 Return Reason Code	Code	10				
✓	7001 Allow Line Disc.	Boolean			✓	7001 Allow Line Disc.	Boolean					
✓	7002 Customer Disc. Group	Code	20		✓	7002 Customer Disc. Group	Code	20				
✓	10000 Package Tracking No.	Text	30		✓	10000 Package Tracking No.	Text	30				
✓	87750 Commission Rate	Decimal		SC.COM1.22								
✓	87752 Com Rate Override	Boolean		SC.COM1.22								

- We need the following objects in txt format:
 - Modified.txt, all objects from the database with the modifications
 - Original.txt, all objects from the database with no modifications
 - Must be the same NAV / BC version and CU

Delta File – Example Table 37

```
OBJECT Modification "Sales Line"(Table 37)
{
  OBJECT-PROPERTIES
  {
    Date=06/01/18;
    Time=10:46:53 AM;
    Modified=Yes;
    Version List=NAVW110.00,NAVNA10.00,SC.COM1.22;
  }
  PROPERTIES
  {
    Target="Sales Line"(Table 37);
  }
  CHANGES
  {
    { Insertion      ;InsertAfter="Package Tracking No."(Field 10000);
      ChangedElements=FieldCollection
      {
        { 87750;    ;Commission Rate      ;Decimal      ;OnValidate=BEGIN
          TestStatusOpen;
          TESTFIELD("Quantity Invoiced",0);
          IF ("Commission Rate"<>xRec."Commission Rate") THEN
            "Com Rate Override":= TRUE;
          END;

          { 87752;    ;Com Rate Override    ;Boolean      ;OnValidate=BEGIN
            TestStatusOpen;
            TESTFIELD("Quantity Invoiced",0);
            END;

            Description=SC.COM1.22 }
        }
      }
    }
  }
}
```


Convert to Delta files - Script

File Explorer view of the directory structure:

Name	Date modified	Type	Size
original.txt	3/28/2019 12:54 PM	Text Document	169,753 KB
modified.txt	3/28/2019 11:30 AM	Text Document	169,944 KB
AL	3/28/2019 2:46 PM	File folder	
DELTA	3/28/2019 2:44 PM	File folder	
MOD	3/28/2019 1:55 PM	File folder	
ORG	3/28/2019 1:55 PM	File folder	

```
Split and Compare to BC.ps1 X
1 # You may have to load this if running first time
2 # Set-ExecutionPolicy -ExecutionPolicy RemoteSigned
3
4 # Load Prerequisites
5 Import-Module 'C:\Program Files (x86)\Microsoft Dynamics 365 Business Central\130\RoleTailored Client\NavModelTools.ps1'
6
7 # Export objects from from base line
8 # Place original.txt as all baseline objects that are modified in MOD file
9 # Place modified.txt as baseline plus all modified objects that needs to be in extension
10 Split-NAVApplicationObjectFile -Source c:\al\original.txt -Destination 'c:\al\ORG' -Force
11 Split-NAVApplicationObjectFile -Source c:\al\modified.txt -Destination 'c:\al\MOD' -Force
12
13 # Compare
14 Compare-NAVApplicationObject -OriginalPath c:\al\ORG -ModifiedPath c:\al\MOD -DeltaPath c:\al\DELTA -Force -ExportToNewSyntax
15
16 # Create AL files
17 cd 'C:\Program Files (x86)\Microsoft Dynamics 365 Business Central\130\RoleTailored Client'
18 .\txt2al.exe --source=c:\al\delta --target=c:\al\al
```

Script is available on <https://github.com/SimCrestInc/DirectionsLasVegas2019>

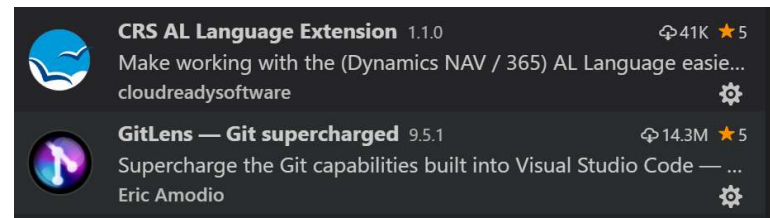
Fixing Issues in new AL project – VS Code

- Activate source code tracking (Git)
- .gitignore file (ignore *.app files, launch.json)
- Update app.json
- Copy and paste AL files into project
- Create settings.json
 - Auto Rename and Auto Prefix
- Create folders for related objects
- Fix tables first

Demo – Convert to AL and fix

Fixing issues – Time savers

- Install CRS AL Language
- Install Git Lens
- Settings.json prefix / rename
- Ctrl-Space makes suggestions



```
"CRS.ObjectNamePrefix": "SIMC ",  
"CRS.OnSaveAlFileAction": "Rename"
```

Fix Codeunits

- All modifications in codeunits must be reviewed and coded as subscribers in the extension (or reimplemented)
- Check Delta Files for Codeunits

Example:

- Sales order pricing
 - Based on Shipment Date (not order or invoice date)
 - Should depend on Check Mark in Sales & Receivable Setup

CU 7000: Sales Price Calc. Mgt.

```
CASE Type OF
Type::Item:
BEGIN
  Item.GET("No.");
  SalesLinePriceExists(SalesHeader,SalesLine,FALSE); ←
  CalcBestUnitPrice(TempSalesPrice);
  IF FoundSalesPrice OR
    NOT ((CalledByFieldNo = FIELDNO(Quantity)) OR
        (CalledByFieldNo = FIELDNO("Variant Code")))
  THEN BEGIN
    "Allow Line Disc." := TempSalesPrice."Allow Line Disc.";
    "Allow Invoice Disc." := TempSalesPrice."Allow Invoice Disc.";
    "Unit Price" := TempSalesPrice."Unit Price";
  END;
  IF NOT "Allow Line Disc." THEN
    "Line Discount %" := 0;
  END;
END;
```

```
LOCAL SalesHeaderStartDate(SalesHeader : Record "Sales Header";VAR DateCaption : Text[30]) : Date
WITH SalesHeader DO
  IF "Document Type" IN ["Document Type"::Invoice,"Document Type"::Credit Memo] THEN BEGIN
    DateCaption := FIELDCAPTION("Posting Date");
    EXIT("Posting Date")
  END ELSE BEGIN
    DateCaption := FIELDCAPTION("Order Date");
    EXIT("Order Date");
  END;
END;
```

Event Requests: <https://github.com/microsoft/al/issues>

```
608 [External] SalesLinePriceExists(SalesHeader : Record "Sales Header";VAR SalesLine : Record "Sales Line";ShowAll : Boolean) : Boolean
609 WITH SalesLine DO
610   IF (Type = Type::Item) AND Item.GET("No.") THEN BEGIN
611     IsHandled := FALSE;
612     OnBeforeSalesLinePriceExists(
613       SalesLine,SalesHeader,TempSalesPrice,Currency,CurrencyFactor,
614       SalesHeaderStartDate(SalesHeader,DateCaption),Qty,QtyPerUOM,ShowAll,IsHandled);
615     IF NOT IsHandled THEN BEGIN
616       FindSalesPrice(
617         TempSalesPrice,GetCustNoForSalesHeader(SalesHeader),SalesHeader."Bill-to Contact No.",
618         "Customer Price Group",'',"No.,"Variant Code","Unit of Measure Code",
619         SalesHeader."Currency Code",SalesHeaderStartDate(SalesHeader,DateCaption),ShowAll);
620       OnAfterSalesLinePriceExists(SalesLine,SalesHeader,TempSalesPrice,ShowAll);
621     END;
622     EXIT(TempSalesPrice.FINDFIRST);
623   END;
624   EXIT(FALSE);
```

Extension Solution

```
[EventSubscriber(ObjectType::Codeunit, Codeunit::"Sales Price Calc. Mgt.", 'OnBeforeSalesLinePriceExists', '', true, true)] You,
0 references
local procedure BeforeSalesLinePriceIsCalculate(VAR SalesLine: Record "Sales Line"; VAR SalesHeader: Record "Sales Header";
VAR TempSalesPrice: Record "Sales Price"; var InHandled: Boolean; ShowAll: Boolean)
var
    SalesPriceCalcMgmt: Codeunit "Sales Price Calc. Mgt.";
    SalesReceivableSetup: Record "Sales & Receivables Setup";
begin
    SalesReceivableSetup.Get();
    if not SalesReceivableSetup."Calculate Price From Shipment Date" then
        exit;

    // Use Shipment Date
    with SalesLine do begin
        SalesPriceCalcMgmt.FindSalesPrice(TempSalesPrice, SalesHeader."Sell-to Customer No.", SalesHeader."Bill-to Contact No.",
            "Customer Price Group", '', "No.", "Variant Code", "Unit of Measure Code",
            SalesHeader."Currency Code", "Shipment Date", ShowAll);
    end;
    InHandled := true;
end;

608 [External] SalesLinePriceExists(SalesHeader : Record "Sales Header";VAR SalesLine : Record "Sales Line";ShowAll : Boolean) : Boolean
609 WITH SalesLine DO
610 IF (Type = Type::Item) AND Item.GET("No.") THEN BEGIN
611     IsHandled := FALSE;
612     OnBeforeSalesLinePriceExists(
613         SalesLine,SalesHeader,TempSalesPrice,Currency,CurrencyFactor,
614         SalesHeaderStartDate(SalesHeader,DateCaption),Qty,QtyPerUOM,ShowAll,IsHandled);
615     IF NOT IsHandled THEN BEGIN
616         FindSalesPrice(
617             TempSalesPrice,GetCustNoForSalesHeader(SalesHeader),SalesHeader."Bill-to Contact No.",
618             "Customer Price Group", '', "No.", "Variant Code", "Unit of Measure Code",
619             SalesHeader."Currency Code",SalesHeaderStartDate(SalesHeader,DateCaption),ShowAll);
620         OnAfterSalesLinePriceExists(SalesLine,SalesHeader,TempSalesPrice,ShowAll);
621     END;
622     EXIT(TempSalesPrice.FINDFIRST);
623 END;
624 EXIT(FALSE);
```


Permissions Sets

- Permissions related to the extension should be maintained in the extension itself:

```
<PermissionSets>
  <PermissionSet RoleID="SIMC PROD CONFIG" RoleName="SimCrest Product Configurator">
    <Permission>
      <ObjectType>TableData</ObjectType>
      <ObjectID>70163500</ObjectID> <!-- Question -->
      <ReadPermission>1</ReadPermission>
      <InsertPermission>1</InsertPermission>
      <ModifyPermission>1</ModifyPermission>
      <DeletePermission>1</DeletePermission>
      <ExecutePermission>0</ExecutePermission>
      <SecurityFilter />
    </Permission>
    <Permission>
      <ObjectType>TableData</ObjectType>
      <ObjectID>70163501</ObjectID> <!-- Answer -->
      <ReadPermission>1</ReadPermission>
      <InsertPermission>1</InsertPermission>
      <ModifyPermission>1</ModifyPermission>
      <DeletePermission>1</DeletePermission>
      <ExecutePermission>0</ExecutePermission>
      <SecurityFilter />
    </Permission>
    <Permission>
      <ObjectType>TableData</ObjectType>
      <ObjectID>70163502</ObjectID> <!-- Trigger -->
```

simc Page

PERMISSION SET LOOKUP

ROLE ID	NAME	EXTENSION NAME	SCOPE
SIMC PROD CONF SE...	SimCrest Product Configurator	Product Configurator	Tenant
SIMC PROD CONFIG	SimCrest Product Configurator	Product Configurator	Tenant
SIMC AUTOEMAIL SE...	SimCrest Auto Email Setup	Auto Email	Tenant
SIMCREST AUTOEMAIL	SimCrest Auto Email	Auto Email	Tenant

Profiles and Role Centers in Extensions

```
0 references | You, 3 months ago | 2 authors (simcrest and others)
profile "CONSULTANT" You, 6 months ago • Finished
{
  Description = 'SimCrest Consultant';
  RoleCenter = "Consultant Role Center";
}
1 reference
page 52000 "Consultant Role Center"
{
  PageType = RoleCenter;

  layout
  {
    0 references
    area(rolecenter)
    {
      0 references
      group(Group1)
      {
        0 references
        part(JobAct; "SimCrest Job Activities")
        {
          ApplicationArea = All;
        }
      }
      0 references
      group(Group2)
      {
```

PROFILES

simcrest pro X + New Manage Process Resource Translation ...

PROFILE ID	DESCRIPTION	SCOPE	EXTENSION NAME	ROLE CENTER ID	DE... ROLE CENT	DIS... PERS
CAHROLE	CAH ROLE	Tenant	SimCrest Production	55210	<input type="checkbox"/>	<input type="checkbox"/>
CONSULTA...	SimCrest Consultant	Tenant	SimCrest Production	52000	<input type="checkbox"/>	<input type="checkbox"/>

.Net Variables only in BC OnPrem

```
You, 6 months ago | 1 author (You)
1 dotnet
2 {
3   assembly(mscorlib)
4   {
5     type(System.Security.Cryptography.MD5CryptoServiceProvider; MD5CryptoServiceProvider) { }
6     type(System.Convert; SysConvert) { }
7     type(System.Array; SysArray) { }
8     type(System.Byte; SysByte) { }
9     type(System.Text.Encoding; SysTextEncoding) { }
10  }
11 }
```

```
18 "screenshots": [],
19 "platform": "13.0.0.0",
20 "application": "13.0.0.0",
21 "runtime": "2.2",
22 "showMyCode": true,
23 "idRange": {
24   "from": 50000,
25   "to": 99999
26 },
27 "target": "Internal",
28 "features": [
29   "TranslationFile"
30 ]
31 }
```

app.json

```
3 references
procedure CreateMD5Hash(PremD5: Text[1024]) MD5Result: Text[1024];
var
  NETCryptography: DotNet MD5CryptoServiceProvider;
  NETEncoding: DotNet SysTextEncoding;
  NETConvert: DotNet SysConvert;
  InputBytes: DotNet SysArray;
  Hash: DotNet SysArray;
  HashValue: DotNet SysByte;
  MD5Buffer: BigText;
  i: Integer;
begin
  NETEncoding := NETEncoding.ASCII;
  NETConvert := NETConvert;
  NETCryptography := NETCryptography.MD5CryptoServiceProvider();

  InputBytes := NETEncoding.GetBytes(PremD5);
  Hash := NETCryptography.ComputeHash(InputBytes);

  FOR i := 0 TO Hash.Length - 1 DO BEGIN
    HashValue := Hash.GetValue(i);
    MD5Buffer.ADDTEXT(HashValue.ToString('x2'));
  END;

  MD5Buffer.GETSUBTEXT(MD5Result, 1);
end;
```

New Date format in AL

- Converted Code:

```
0 references
local procedure DateTest()
var
    PostingDate: Date;
begin
    PostingDate:= 123119D;
end;
```

Constant value '123119D' is outside the range for a Date AL(AL0191)

[Quick Fix...](#) [Peek Problem](#)

- New Format:

```
0 references
local procedure DateTest()
var
    PostingDate: Date;
begin
    PostingDate:= 20191231D; // YYYYMMDD
end;
```

New Booleans in Reports

- Now consistent use of true / false (instead of Yes / No):

```
report 50040 "Consultant Sales Statistics"
{
    DefaultLayout = RDLC;
    RDCLLayout = './Reports/Consultant Sales Statistics.rdl';
    UsageCategory = ReportsAndAnalysis;
    ApplicationArea = All;

    dataset
    {
        6 references
        dataitem("Job Ledger Entry";"Job Ledger Entry")
        {
            DataItemTableView = SORTING("No.", "Posting Date", "Entry Type", Type)
                                WHERE(Chargeable=CONST[Yes]);
            RequestFilterFields = "Posting Date", "No.";
            column(FORMAT_TODAY_0_4_;FORMAT(TODAY,0,4))
        }
    }
}
```

You, a few seconds ago

```
= SORTING("No.", "Posting Date", "Entry Type", Type)
WHERE(Chargeable=CONST[true]);
ds = "Posting Date", "No.";
```

Avoid making changes to BC Development Environment

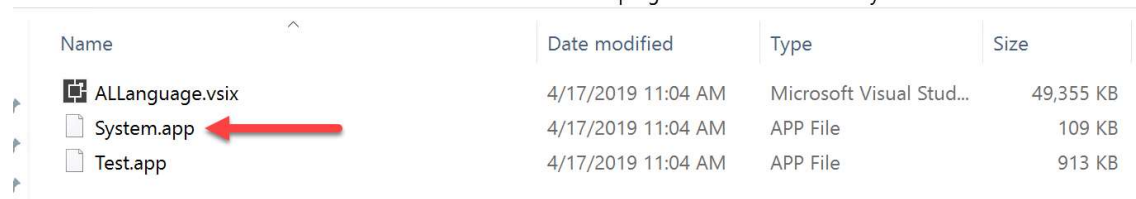
- Defeats the entire purpose of having extensions
- Will not be supported eventually
- Request new events from Microsoft.
(Event Requests: <https://github.com/microsoft/al/issues>)
- Reimplement the code. Scrap it if needed and redo.

Installing Extension in OnPrem – Now What?

```
Jobs/Pag-Ext50025.JobTaskLinesExt.al(1,47): error AL0247: The target Page "Job Task Lines" for the extension object is not found
Jobs/PAG1001.JobTaskLinesSubFormExt.al(11,38): error AL0118: The name 'Require WBS No.' does not exist in the current context
Jobs/PAG1001.JobTaskLinesSubFormExt.al(15,35): error AL0118: The name 'Non Billable' does not exist in the current context
Jobs/PAG1001.JobTaskLinesSubFormExt.al(22,41): error AL0118: The name 'Budget (Total Qty)' does not exist in the current context
Jobs/PAG1001.JobTaskLinesSubFormExt.al(26,40): error AL0118: The name 'Usage (Total Qty)' does not exist in the current context
Jobs/PAG1001.JobTaskLinesSubFormExt.al(30,43): error AL0118: The name 'Billable (Total Qty)' does not exist in the current context
Jobs/PAG1001.JobTaskLinesSubFormExt.al(34,46): error AL0118: The name 'Billable (Invoiced Qty)' does not exist in the current context
Jobs/PAG1001.JobTaskLinesSubFormExt.al(38,50): error AL0118: The name 'Internal Budget (Total Qty)' does not exist in the current context
Jobs/PAG1001.JobTaskLinesSubFormExt.al(1,52): error AL0247: The target Page "Job Task Lines Subform" for the extension object is not found
Jobs/PAG201.JobJournalExt.al(7,29): error AL0118: The name 'WBS No.' does not exist in the current context
Jobs/PAG201.JobJournalExt.al(1,43): error AL0247: The target Page "Job Journal" for the extension object is not found
Jobs/PAG463.JobsSetupExts.al(7,37): error AL0118: The name 'Task Group Nos.' does not exist in the current context
Jobs/PAG463.JobsSetupExts.al(1,43): error AL0247: The target Page "Jobs Setup" for the extension object is not found
Resource/PAG76.ResourceCardExt.al(8,29): error AL0118: The name 'User ID' does not exist in the current context
Resource/PAG76.ResourceCardExt.al(12,30): error AL0118: The name 'Consultant' does not exist in the current context
Resource/PAG76.ResourceCardExt.al(1,45): error AL0247: The target Page "Resource Card" for the extension object is not found
Resource/TAB50062.Resource%20Allocation.al(142,23): error AL0185: Codeunit 'NoSeriesManagement' is missing
Sales/PAG132.PostedSalesInvExt.al(8,34): error AL0118: The name 'Do Not Print' does not exist in the current context
Sales/PAG132.PostedSalesInvExt.al(1,47): error AL0247: The target Page "Posted Sales Invoice" for the extension object is not found
Sales/PAG133.PostedSalesInvSubformExt.al(7,35): error AL0118: The name 'Description 2' does not exist in the current context
Sales/PAG133.PostedSalesInvSubformExt.al(1,54): error AL0247: The target Page "Posted Sales Invoice Subform" for the extension object is not found
Sales/PAG134.PostedSalesCrMemo.al(1,47): error AL0247: The target Page "Posted Sales Credit Memo" for the extension object is not found
Sales/PAG143-Ext50020.PostedSalesInvoicesExt.al(1,54): error AL0247: The target Page "Posted Sales Invoices" for the extension object is not found
Sales/PAG21.CustCardExt.al(7,25): error AL0118: The name 'VAR' does not exist in the current context
Sales/PAG21.CustCardExt.al(12,29): error AL0118: The name 'VAR No.' does not exist in the current context
Sales/PAG21.CustCardExt.al(17,33): error AL0118: The name 'License No.' does not exist in the current context
Sales/PAG21.CustCardExt.al(22,33): error AL0118: The name 'NAV Version' does not exist in the current context
Sales/PAG21.CustCardExt.al(27,27): error AL0118: The name 'Payroll' does not exist in the current context
Sales/PAG21.CustCardExt.al(32,32): error AL0118: The name 'Primary PM' does not exist in the current context
Sales/PAG21.CustCardExt.al(36,34): error AL0118: The name 'Secondary PM' does not exist in the current context
Sales/PAG21.CustCardExt.al(41,33): error AL0118: The name 'Developer 1' does not exist in the current context
Sales/PAG21.CustCardExt.al(46,33): error AL0118: The name 'Developer 2' does not exist in the current context
Sales/PAG21.CustCardExt.al(1,41): error AL0247: The target Page "Customer Card" for the extension object is not found
Jobs/PAG88.JobCardExt.al(19,35): error AL0118: The name 'Ship-to Code' does not exist in the current context
```

A few more things needs to be done

- Install System.app



Name	Date modified	Type	Size
ALLanguage.vsix	4/17/2019 11:04 AM	Microsoft Visual Stud...	49,355 KB
System.app	4/17/2019 11:04 AM	APP File	109 KB
Test.app	4/17/2019 11:04 AM	APP File	913 KB

Publish-NavApp -ServerInstance \$ServInstance -Path C:\apps\System.app -PackageType SymbolsOnly


- Generate Symbols via command prompt

finsql.exe Command=generatesymbolreference, ServerName=<DatabaseServerName>\<DatabaseInstance>, Database="<MyDatabaseName>"

- More info: <https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/upgrade/upgrading-to-business-central-on-premises>

Service Tier Setup

Development

Allowed Extension Target Level:  Internal

Debugger – Long Running SQL Statements Threshold: 500


Debugger - Number of SQL Statements to Show: 10


Debugger - Show Long Running SQL Statements: ☒

Debugger - Show SQL Statements: ☒

Debugging Allowed: ☒

Enable Debugging: ☐

Enable Developer Service Endpoint: ☒ 

Enable loading application symbol references at server startup.: ☒ 

Enable SSL: ☐

HttpClient AL Function Maximum Timeout value: 00:05:00

HttpClient AL Function Response Size: 150

Port: 7049

Installation of App OnPrem - Script

```
Install Extension.ps1 X
1  # This should be run on the service tier
2
3  # App name
4  $AppName="App Name"
5  $oldVersion= "1.0.0.0"
6  $NewVersion = "1.0.0.1"
7
8  # Change path and file name if needed
9  $NewAppFile= "C:\apps\SimCrest_" + $AppName + "_" + $NewVersion + ".app"
10 # Change Server Instance to the instance you use
11 $ServInstance= "BC130"
12
13 # Change the path to the RTC client as needed
14 Import-Module 'C:\Program Files (x86)\Microsoft Dynamics 365 Business Central\130\RoleTailored Client\NavModelTools.ps1'
15
16 # First uninstall old version
17 UnInstall-NAVApp -ServerInstance $ServInstance -Name $AppName -Force
18 UnPublish-NAVApp -ServerInstance $ServInstance -Name $AppName -Version $oldVersion
19 # Upgrade to new version
20 Publish-NAVApp -ServerInstance $ServInstance -Path $NewAppFile -Skipverification
21 Sync-NAVApp -ServerInstance $ServInstance -Name $AppName # -Mode Development
22 # Only use if -Mode Development is used
23 # Install-NAVApp -ServerInstance $ServInstance -Name $AppName -Version $NewVersion
24 Start-NavAppDataUpgrade -ServerInstance $ServInstance -Version $NewVersion -Name $AppName
25
26 # List Apps on Service Tier
27 Get-NAVAppInfo -ServerInstance $ServInstance
```

Script is available on <https://github.com/SimCrestInc/DirectionsLasVegas2019>

Extension installation – SQL Server

+	dbo.SimCrest, Inc_\$Custom Report Selection
+	dbo.SimCrest, Inc_\$Customer
+	dbo.SimCrest, Inc_\$Customer Amount
+	dbo.SimCrest, Inc_\$Customer Bank Account
+	dbo.SimCrest, Inc_\$Customer Discount Group
+	dbo.SimCrest, Inc_\$Customer Posting Group
+	dbo.SimCrest, Inc_\$Customer Price Group
+	dbo.SimCrest, Inc_\$Customer Template
+	dbo.SimCrest, Inc_\$Customer\$1c9f9809-0e2b-40c9-905b-51916c86f167
+	Columns
+	timestamp (timestamp, not null)
+	No_ (PK, nvarchar(20), not null)
+	SIMC Email Documents (tinyint, not null)
+	SIMC Email To (nvarchar(100), not null)
+	SIMC ccEmail To (nvarchar(100), not null)
+	SIMC bccEmail To (nvarchar(100), not null)
+	Keys
+	Constraints
+	Triggers
+	Indexes
+	Statistics
+	dbo.SimCrest, Inc_\$Customer\$b60a7ee7-ebca-4fd1-836a-a659aebdb640
+	Columns
+	timestamp (timestamp, not null)
+	No_ (PK, nvarchar(20), not null)
+	VAR (tinyint, not null)
+	VAR No_ (nvarchar(10), not null)
+	License No_ (nvarchar(20), not null)
+	NAV Version (nvarchar(20), not null)
+	Payroll (tinyint, not null)
+	Primary PM (nvarchar(20), not null)
+	Secondary PM (nvarchar(20), not null)
+	Developer 1 (nvarchar(20), not null)
+	Developer 2 (nvarchar(20), not null)
+	Keys
+	Constraints
+	Triggers
+	Indexes
+	Statistics
+	dbo.SimCrest, Inc_\$Customized Calendar Change

Testing and Debugging

- Use Docker
 - Easy change of Country version. A must for Apps supporting multiple countries
 - Test against future versions
- Use Cloud Sandbox (F5)
 - Probably fastest and most accessible
 - Easy access from anywhere
- Use Debugger in OnPrem
 - showMyCode property in app.json

```
"capabilities": [],  
"dependencies": [],  
"screenshots": [],  
"platform": "13.0.0.0",  
"application": "13.0.0.0",  
"showMyCode": true, ←  
"idRange": {  
  "from": 50000,  
  "to": 50099  
}
```

Custom Data to Extension

- Custom Data has to be wiped out when going to extension
- Same table / field can't exist both in database and extension

What we have to do:

- We export all custom data using Configuration Packages (or XML ports)
- Once the standard objects are applied with Force and custom tables are deleted, we can install Extension and the custom fields and tables are back
- Now we can reimport the data and we are done!

Removing Custom Fields – Sync w. Force

- Upgrade CU (currently 104000)

```
// Force: Synchronize without saving data in the upgrade table, disregard if there is data in the modif
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Sales Header",DATABASE::"UPG Sales Header",TableSyncSetup.
```

```
// !!!!! Force
DataUpgradeMgt.SetTableSyncSetup(5106,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(5648,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(7135,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(10125,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(25000,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(25004,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(25005,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(50000,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(50001,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(50002,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(50003,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(50004,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(50005,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(50006,0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(50007,0,TableSyncSetup.Mode::Force);
```

```
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"G/L Account",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"G/L Entry",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Vendor",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Purchase Header",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Purchase Line",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Invoice Post. Buffer",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"User Setup",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"General Ledger Setup",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Purch. Rcpt. Header",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Purch. Inv. Line",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Check Ledger Entry",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Purchases & Payables Setup",0,TableSyncSetup.Mode::Force);
DataUpgradeMgt.SetTableSyncSetup(DATABASE::"Disposition Value",0,TableSyncSetup.Mode::Force);
```

Configuration Package

CONFIG. PACKAGE CARD

BCEXT

New Process Package Show Attached Actions

General

Code BCEXT

Package Name BC Extension

Tables Manage Table Functions Excel Less options

TABLE ID	TABLE NAME	PARENT TABLE ID	DATA TABLE
18	Customer	0	
23	Vendor	0	
36	Sales Header	0	
37	Sales Line	0	
111	Sales Shipment Line	0	
112	Sales Invoice Header	0	
113	Sales Invoice Line	0	
115	Sales Cr.Memo Line	0	
156	Resource	0	
167	Job	0	
169	Job Ledger Entry	0	
210	Job Journal Line	0	
270	Bank Account	0	
315	Jobs Setup	0	
1001	Job Task	0	
1003	Job Planning Line	0	
5050	Contact	0	
5065	Interaction Log Entry	0	
5077	Segment Line	0	

EDIT - CONFIG. PACKAGE FIELDS - JOB TASK

Search Edit List Process Show Attached Open in Excel Actions Less options

DI...	FIELD ID	FIELD NAME	INC... FIELD	VA... FIELD	PROCESS... ORDER	RELATION TABLE ID	RELATION TABLE CAPTION	CR... MISS CODI	MAP... EXISTS
<input type="checkbox"/>	1	Job No.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	167	Job	<input type="checkbox"/>	No
<input type="checkbox"/>	2	Job Task No.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2			<input type="checkbox"/>	No
<input type="checkbox"/>	3	Description	<input type="checkbox"/>	<input type="checkbox"/>	3			<input type="checkbox"/>	No
<input type="checkbox"/>	4	Job Task Type	<input type="checkbox"/>	<input type="checkbox"/>	4			<input type="checkbox"/>	No
<input type="checkbox"/>	6	WIP-Total	<input type="checkbox"/>	<input type="checkbox"/>	5			<input type="checkbox"/>	No
<input type="checkbox"/>	7	Job Posting Gro...	<input type="checkbox"/>	<input type="checkbox"/>	6	208	Job Posting Group	<input type="checkbox"/>	No
<input type="checkbox"/>	9	WIP Method	<input type="checkbox"/>	<input type="checkbox"/>	7	1006	Job WIP Method	<input type="checkbox"/>	No
<input type="checkbox"/>	21	Totaling	<input type="checkbox"/>	<input type="checkbox"/>	8	1001	Job Task	<input type="checkbox"/>	No
<input type="checkbox"/>	22	New Page	<input type="checkbox"/>	<input type="checkbox"/>	9			<input type="checkbox"/>	No
<input type="checkbox"/>	23	No. of Blank Lines	<input type="checkbox"/>	<input type="checkbox"/>	10			<input type="checkbox"/>	No
<input type="checkbox"/>	24	Indentation	<input type="checkbox"/>	<input type="checkbox"/>	11			<input type="checkbox"/>	No
<input type="checkbox"/>	34	Recognized Sale...	<input type="checkbox"/>	<input type="checkbox"/>	12			<input type="checkbox"/>	No
<input type="checkbox"/>	37	Recognized Cost...	<input type="checkbox"/>	<input type="checkbox"/>	13			<input type="checkbox"/>	No
<input type="checkbox"/>	56	Recognized Sale...	<input type="checkbox"/>	<input type="checkbox"/>	14			<input type="checkbox"/>	No
<input type="checkbox"/>	57	Recognized Cost...	<input type="checkbox"/>	<input type="checkbox"/>	15			<input type="checkbox"/>	No
<input type="checkbox"/>	60	Global Dimensio...	<input type="checkbox"/>	<input type="checkbox"/>	16	349	Dimension Value	<input type="checkbox"/>	No
<input type="checkbox"/>	61	Global Dimensio...	<input type="checkbox"/>	<input type="checkbox"/>	17	349	Dimension Value	<input type="checkbox"/>	No
<input type="checkbox"/>	50020	Blocked	<input checked="" type="checkbox"/>	<input type="checkbox"/>	18			<input type="checkbox"/>	No
<input type="checkbox"/>	50021	Require WBS No.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	19			<input type="checkbox"/>	No
<input type="checkbox"/>	50030	Non Billable	<input type="checkbox"/>	<input type="checkbox"/>	20			<input type="checkbox"/>	No

Close

Let's Stay Connected

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This presentation is available at: <https://github.com/SimCrestInc/DirectionsLasVegas2019>