## WhereScape 3D

# -Ne infoVia

## Using Business Key Collision Codes (BKCC) in WhereScape 3D

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#### DISCLAIMER

The modifications suggested in this guide have worked for infoVia, but no assurances are provided. Individual WhereScape environments can differ and there is potential for these changes to conflict with other customizations, cause environmental oddities, or just not work. USE AT YOUR OWN RISK

A Business Key Collision Code, or BKCC for short, is a Data Vault technique to allow greater control of passive integration. This is not something natively available in WhereScape 3D but it can be implemented with a few modifications to the environment and model conversion rules.

## Overview

This modification works by adding a new attribute type called "BKCC" to a business key. The value of an attribute with the BKCC attribute type is set by a data transformation using the assigned BKCC value of the connection. Alternately, an entity may specify a BKCC value for a source mapping set by adding an extended property. A BKCC value set in this way will take precedence over the connection's BKCC value. A BKCC acts as a compound business key and will work in the standard WhereScape Red environment with no modifications.

#### Before you begin:

Download the model conversion rule ws3d\_rvls\_infoVia - BKCC from the infoVia blog Familiarize yourself with managing model conversion rules (see WhereScape 3D help Model Conversions>Managing Model Conversions)

### User Guide

#### Setting an attribute to BKCC

After completing the **setup** (see section "BKCC Setup in 3D" below) there will be a new BKCC attribute type available in the Data Vault Design model. To make an attribute a BKCC, simply create an entity attribute and assign the attribute types of business key, or link business key for link entities, and BKCC. Select an appropriate data type for your BKCC standards. This attribute will have no source mapping. The BKCC should be the last business key listed in any set of business keys to ensure consistent hashing.

<u>&amp;</u>	Customer		I Customer properties								×
N Customer Key N BKCC N WW/Customer D N Customer N Bill To Customer N Category N Primary Contact N Postal Code N Valid From N Valid To N Lineage Key	Int Customer.C varchar(100) Customer.C varchar(100) Customer.C varchar(100) Customer.C varchar(100) Customer.C varchar(100) Customer.C varchar(100) Customer.C datetime2(27) Customer.V int Customer.L	us tomer Key WI Cus tomer D us tomer altigory timery Contact to stal Coste altel From altel To ineage Key	Entity' Attributes Query Attributes Attribute name: Customer Key BKCC WWI Customer ID Customer Bill To Customer Category Buying Group Primary Contact Postal Code Vald From Vald To Lineage Key	Data characteristics         Add         Bename         Copy         Delete         Move to top         Move to top         Move to on         Move to end         Subjects:         General info	Data transformation Created by: Data type: Data type: Created by: Created by: Created by: Created by: Created by: Comment: Comment: Hidden:	S Index Relationsh	ip Source mapp	ings Extended proper			
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N Citata Desuines	rivar char(50)	City City	-	T N BKCC_Customer				N Customer	nvarchar(100)	Gus tomer. Gus tomer	
N State Province	nvarchar(50)	Unty State Province		N Order Key b	oigint identity Order.Or	der Key		N Bill To Customer	nvarchar(100)	Customer.Bill To Customer	
N Country	nvarchar(60)	City.Country		N Stock Item Key i	nt Order.St	ock Item Key	ru	N Category	nvarchar(50)	Customer.Category	
N Continent	nvarchar(30)	City.Continent	<u> </u>	N Order Date Key	late Order.Or	der Date Key		N Buying Group	nvarchar(50)	Customer.Buying Group	

#### Setting a specific BKCC value

The default value of a BKCC is set by the value of the BKCC field in the connection documentation and applies to any data source mapping using that connection. It is possible to specify the BKCC value for any source mapping set by setting an extended property for an entity in the Data Vault Design or Data Vault model. The extended property should be set with the following values:

- Attribute Left blank
- Property Must be set to the source mapping set name. Case sensitive.
- Type set as "BKCC". Case sensitive.



/	Entity	Attributes	Query	Data chara	Data transf	Index	Relationship	Source map	Extended p
E	xtende	d properti	es						
[									
Γ		Attribute		<b>≜</b> 1	Property		<b>▲</b> 2	Value	
				Details			ENT		
				Edit extended	property		×		
				Attribute:			-		
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				Value:	ENT				
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During the Load and Stage model conversion a data tranformation will be created for all BKCC attribute types based on the extended property BKCC value or, if the extended property is not set, the connection BKCC value. To view the transformation open a stage table entity's properties and select the Data Tranformations tab as seen below.

Table Columns Query DW Query	Data charact	eristics Data transformations DDL Index Foreign key join Source mappings Extended properties	
Data transformations			
Transformation	Source set:		
BKCC_bkcc_city_Details	Description.		-
BKCC_bkcc_customer_Details	Columns:	order_key customer_key city_key city key bkcc_city customer key bkcc_city Select all	
	Change:	ENT	1) fx []
	Condition:		€ 5× €
	Encapsulate:	Define as SELECT query	est
	Preview:	1 SELECT 'ENT' as "bkoc_city" 2 FROM "stage_order"	• •
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#### Warning: Implied link tables in Data Vault Design

In the data vault design model it is possible to create an entity that has an attribute with the type business key and an attribute with the type link business key. This will result in a link being automatically generated during the data vault model conversion process. In this situation both the BKCC any extended properties will need to be set in the Data Vault Model. Explicitly forming link entities in the data vault design model ensures this will not occur.

Example: On the left is the data vault design entity and the resulting link after the data vault model conversion. Note that bkcc\_order loses the BKCC attribute type in the process.

<u>^</u>	& Order				link_order_customer_customer_city_city					
	N Order Key	bigint identity	Order.Order Key		Name	Data Type	PK	DT	Source Columns	СТ
	N BKCC_Order				order_cus tomer_cus tomer_city_city_ke	char(32)	💡 Y	N		
7	N City Key	int	Order.City Key		cus tomer_key	char(32)	🆗 N	N	2	
7	N BKCC_City				city_key	char(32)	Ϋ́Ν	N	2	
7	N Customer Key	int	Order.Customer Key		order_key	char(32)	9 N	N	2	
7	N BKCC_Customer				order key	bigint identity	N	N	Order.Order Key	
	N Stock Item Key	int	Order.Stock Item Key		bkcc_order		N	N		
	N Order Date Key	date	Order.Order Date Key		city key	int	N	N	Order.City Key	
	N Picked Date Key	date	Order.Picked Date Key		bkcc city		N	N		
	N Salesperson Key	int	Order.Sales pers on Key		customer key	int	N	N	Order.Customer Key	
	N Picker Key	int	Order.Picker Key		bkcc customer		N	N		
	N WWI Order ID	int	Order.WWI Order ID		dss record source	tot varchar(255)	N	N		
	N WWI Backorder ID	int	Order.WWI Backorder ID		dss load date	tgt datetime	N	N		
	N Description	nvarchar(100)	Order.Des cription		dss_create_time	tgt_datetime	N	N		

## **BKCC Setup in 3D**

#### Import

#### Import the Model Conversion Rule (MCR) file into your WhereScape 3D Environment

Select Tools > Manage Model Conversions

Use the green arrow to import the downloaded Model Conversion Rule "ws3d\_rvls\_infoVia - BKCC"



**Environment Settings** 

#### Add user documentation options

Open settings (Tools>Settings)

Navigate to the "Documentation" section in the left window

Select "Database connection" in the Objects list.

Select the window with a green plus and enter the label "BKCC" with the description "BKCC". This is case sensitive.

Repeat for "Host connection" if needed.

Click OK

I Settings X Appearance Documentation Locations SQL Enabled functionality **Objects:** Subjects: 🗔 🗔 🚘 🕂 SMTP 3DRepo Discovery Profiling Repository Enable Label Name Connection category General info General information ~ Forming
 Default category naming standards
 Keywords
 Note category Source tracking Source tracking Database con Host connection Source ➡- ➡ Source
 ➡- ➡ Data vault design
 ➡- ♣ Data vault 🔹 Data vault

#### Alter "User Documentation" for connections

Right click on a connection (under repositories) and select "Enter User Documentation"

Navigate to the "BKCC" tab and enter the desired default Business Key Collision Code for that connection. Click OK

Repeat for other connections

#### Add BKCC Attribute Type

Select a Data Vault Design Model version

Select the Manage attribute types wizard from the workflow pane

Click the window with the green plus and enter "BKCC" for the name and "Business Key Collision Code" for the description.

Choose a color.

Click Modify

•			🐨 Manage attribute types		$\times$
Workflow			Manage attribute types		
	)r	)[]	Add additional attribute types to support	t splitting entities into different Satellites	
2	6	5			
Manage attribute types	Create table	Assign attribute types			
			Attribute type	Description	Colour
			Satellite low volatility	To create a Satellite with low volatile attrib	
			Satellite medium volatility	To create a Satellite with medium volatile	
			Satellite high volatility	To create a Satellite with high volatile attri	
			Satellite transaction	To create a Satellite with transactional attr	
		1	Link business key	Foreign key attributes that make up the Lin	
Q	d d	F I	Link dependent child	Additional attributes that make up the Link	
		Manual Suta ath an	Business key	The business key (Do not be rename)	
Add source	Compare models	merge into other	Reference attribute	Reference fields	
mappings		model	Reference history attribute	Reference history fields	
			Code attribute	Code fields	
			Code history attribute	Code history fields	
			Satellite multi-active attribute	To create a Satellite with Multi-Active attrib	
			Satellite multi-active key	Multi Active Key used in conjoint with anot	
			Satellite bag-of-keys	Create a bag of keys sat	
\$			Create new attribute type	×	
Generate data vault	Advanced copy		Name: BKCC Description: Business Key Collision C Color: 128, 0, 128	Code	
			Οκ	<u>Cancel</u> < <u>Back</u> <u>Modify</u> >	<u>C</u> ancel

#### Add the conversion rule for Data Vault to Load and Stage

Add the model conversion rule *ws3d\_rvls\_infoVia - BKCC* to the model conversion rules between *ws3d\_rvls - Merge and Clean up stages* and *ws3d\_rvls - Create loads*. This can be done during the conversion process from a Data Vault model to Load and Stage via the "Create Load and Stage" wizard during the "Apply model conversion" portion of the wizard, as shown below

#### 🚸 Generate load and stage for data vault

#### Apply model conversion

Select a model conversion



#### Alter the model conversion rule "ws3d\_grv - Logical to DV Spine"

Open Tools>Manage Model Conversions. Make a copy of *ws3d\_grv* - *logical to DV Spine* model conversion ruleset and then adjust the created copy by replacing the code for each rule's listed field.

Rule: Delete source entity extended properties

- Add matching condition Custom Entity Template
- Field Entity Validation Expression

```
{%- set BKCCprop = "true" %}
{%- for srcSet in table.sourceSets -%}
    {%- set srcName = srcSet.name -%}
    {%- from table.extendedProperties as exProp where exProp.type == "BKCC" -%}
    {%- set BKCCprop = "false" -%}
    {%- endfrom -%}
{%- endfor -%}
{{BKCCprop}}
```

Create Rule: Clear Link BKCC key off Hub

Rule type - Assign Attribute Type

Position - Below "Set Link entity label to current name" and above "Clear Link business key off Hub Business key"

- Add matching condition Entity Type Select type "Hub"
- Add matching condition Attribute Type Select type "BKCC"
- Field Assign
   Select BKCC and Business Key
- Field Remove other attribute types Select

Rule: Clear Link business key off Hub Business key

 Add matching condition - Logical Group Select "IS NOT" Add matching condition - Attribute Type Select type "BKCC"

Create Rule: Set BKCCs in Link to Business key and BKCC Rule type - Assign Attribute Position - Below "Define entities as Links" and above "Set FKs in Link to Business key"

- Add matching condition Entity Type Select type "Link"
- Add matching condition Attribute Property Select "Foreign Key"
- Add matching condition Attribute Type Select type "BKCC"
- Field Assign
   Select BKCC and Business Key
- Field Remove matched attribute types Select
- Field Remove other attribute types Select

Rule: Set FKs in Link to Business key

 Add matching condition - Logical Group Select "IS NOT" Add matching condition - Attribute Type Select type "BKCC"

#### Final Notes:

The goal was to create an easy-to-use BKCC solution and while we have had excellent feedback from clients. If you MUST use implied links in your data vault design it is possible to add some logic in the model conversion rules to recognize BKCCs by attribute name. Feel free to contact us on the WhereScape forums (or through infoVia) if you need assistance with that.

ChangeLog: 1.1.1

- Add clarification for prerequisites
- Terminology fixes 1.1
- Removed Red version and RDBMS from document notes as neither is altered by this solution