



SD Document Number Range Enhancements

Technical Solution Guide

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SD Document Number Range Enhancements

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Sales and Distribution Document Numbers in R/3

R/3 uses Number Range Objects to assign numbers to all documents created in the system. Document numbers are always technically defined as character fields that are ten bytes long. The internal and display formatting of document numbers is controlled by the number range object and a conversion exit that is assigned to the domain. In many of the standard SD document processing programs (Order, Delivery, Billing), there are user exits available to override the behavior of the standard system. This document first explains how document number ranges are defined and then provides an example enhancement that changes the standard document number assignment. The examples in this document are from a 4.6c system.

Relevant OSS Notes

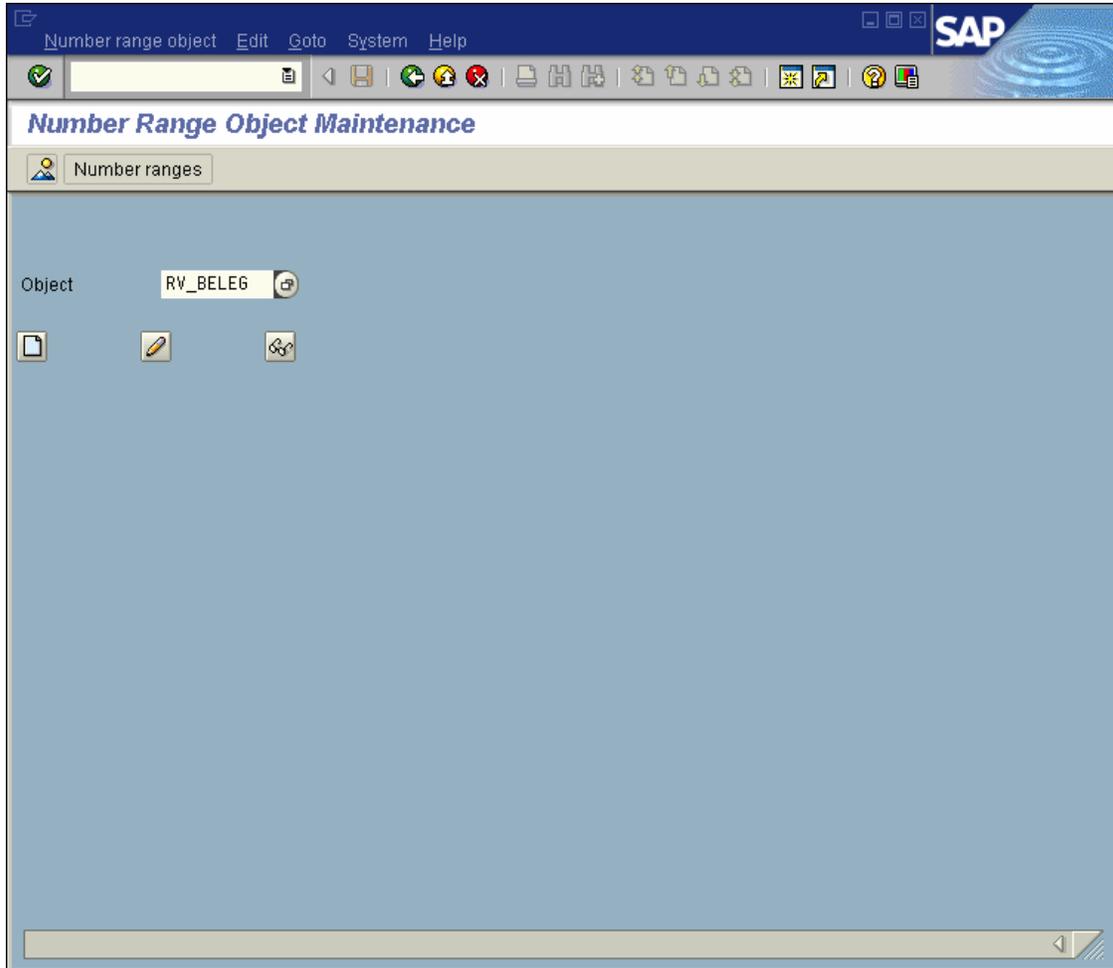
The following OSS notes may be useful in understanding this process:

595327 Different determination of number range interval

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SD Document Number Range Object

For Sales and Distribution documents, the number range object used is RV_BELEG. Number range objects can be viewed and maintained using transaction SNRO.



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The document number is defined as a ten byte, character field.

The screenshot shows the SAP 'No. Range Object: Display' window for object RV_BELEG. The window title is 'Number range object' and it includes a menu bar with 'Edit', 'Goto', 'System', and 'Help'. The main content area is divided into several sections:

- Object:** RV_BELEG (No. range object has intervals)
- Short text:** SD Documents
- Long text:** Number ranges for SD documents
- Interval characteristics:**
 - To-year flag:
 - Number length domain: CHAR10
 - No interval rolling:
- Customizing specifications:**
 - Number range transaction: []
 - Warning %: 5.0
 - Number ranges not buffered: []

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Table NRIV Number Range Intervals

Table NRIV contains the actual number range intervals

Data Browser: Table NRIV Select Entries 32

Table : NRIV
Displayed fields: 6 of 6 Fixed columns: 5 List width 0250

Object name	No. range no.	From number	To number	No. status	External
<input type="checkbox"/> RV_BELEG	01	0000000001	0004999999	000000000000000083236	
<input type="checkbox"/> RV_BELEG	02	0005000000	0005999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	03	0010000000	0014999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	04	0015000000	0019999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	05	0020000000	0024999999	000000000000020000127	
<input type="checkbox"/> RV_BELEG	06	0025000000	0029999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	07	0030000000	0034999999	000000000000030000035	
<input type="checkbox"/> RV_BELEG	08	0035000000	0039999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	09	0040000000	0044999999	000000000000040000595	
<input type="checkbox"/> RV_BELEG	10	0045000000	0049999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	11	0050000000	0054999999	000000000000050000004	
<input type="checkbox"/> RV_BELEG	12	0055000000	0059999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	13	0060000000	0064999999	000000000000060016030	
<input type="checkbox"/> RV_BELEG	14	0065000000	0069999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	15	0070000000	0074999999	000000000000070006309	
<input type="checkbox"/> RV_BELEG	16	0075000000	0079999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	17	0080000000	0083999999	000000000000080237675	
<input type="checkbox"/> RV_BELEG	18	0085000000	0087999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	20	0095000000	0098999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	21	0084000000	0084999999	000000000000084010057	
<input type="checkbox"/> RV_BELEG	22	0089000000	0089999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	23	0100000000	0109999999	000000000000000000000	
<input type="checkbox"/> RV_BELEG	24	0083000000	0083999999	000000000000000000000	
<input type="checkbox"/> RV_BELEG	25	0090000000	0094999999	000000000000090205816	
<input type="checkbox"/> RV_BELEG	30	0099000000	0099099999	000000000000099015123	
<input type="checkbox"/> RV_BELEG	31	0088000000	0088099999	000000000000088001579	
<input type="checkbox"/> RV_BELEG	32	0099900000	0099999999	0000000000000999900221	
<input type="checkbox"/> RV_BELEG	33	0088800000	0088899999	000000000000088800005	
<input type="checkbox"/> RV_BELEG	41	0180000000	0182999999	00000000000180033632	
<input type="checkbox"/> RV_BELEG	42	0185000000	0186999999	000000000000000000000	X
<input type="checkbox"/> RV_BELEG	43	0187000000	0190000000	000000000000000000000	
<input type="checkbox"/> RV_BELEG	44	0190000001	0195000000	000000000000000000000	X

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Assigning Intervals to SD Document Types

Number range intervals are assigned to specific sales and distribution document types via document type configuration. There are several transactions related to document types depending on the area of SD. The following example is used to maintain sales document types.

Transaction VOV8

Transaction VOV8 is used to maintain sales order types. In this example, two number range intervals are assigned. One is for internal number assignment and the other for external number assignment.

The screenshot displays the SAP VOV8 transaction interface for maintaining sales order types. The title bar reads "Change View 'Maintain Sales Order Types': Details". The interface is organized into several sections:

- Header Fields:** Sales document type (OR), SD document categ. (C), Sales document block (X), and Indicator.
- Number systems:** No. range int. assgt. (01), No. range ext. assgt. (02), Item no. increment (10), and Sub-item increment (10).
- General control:** Reference mandatory, Check division (2), Probability (100), Check credit limit, Credit group, Output application (V1), Material entry type, Item division (checked), Read info record (checked), Check purch. order no., Enter PO number, and Commitment date.
- Transaction flow:** Screen sequence grp. (AU), Incompletion procedu. (11), Transaction group (0), Doc. pric. procedure (A), Status profile, Alt. sales doc. type1, Alt. sales doc. type2, Display criteria (UALL), FCode for overv. scr. (UER1), Quotation messages, Outline agrmt mess., Message: Mast. contr., ProdAttr.messages (A), and Incomplet.messages.

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Document Number Domain

The following screen displays the sales and distribution number domain (VBELN). VBELN is assigned to the table fields for several types of SD documents, however, there are other domains used. For example, shipment document numbers use the domain TKNUM. All document number domains specify the standard R/3 conversion routine ALPHA. The ALPHA routine zero fills the field on input and removes leading zeros on output.

The screenshot shows the SAP Dictionary: Display Data Element window for the data element VBELN. The window title is "Dictionary: Display Data Element". The menu bar includes "Data element", "Edit", "Goto", "Utilities", "Environment", "System", and "Help". The toolbar contains various icons for navigation and actions. The main content area is divided into several sections:

- Data element:** VBELN, Active
- Short text:** Sales and distribution document number
- Attributes:** Parameter ID: AUN, Default component name: SD_DOC, Change document:
- Search help:** Name: , Parameters:
- Data type:** Domain: VBELN, Sales and distribution ...
 - Data type: CHAR
 - Length: 10, Decimal places: 0
- Built-in type:** Data type: , Length: 0, Decimal places: 0
- Reference type:** Reference to:

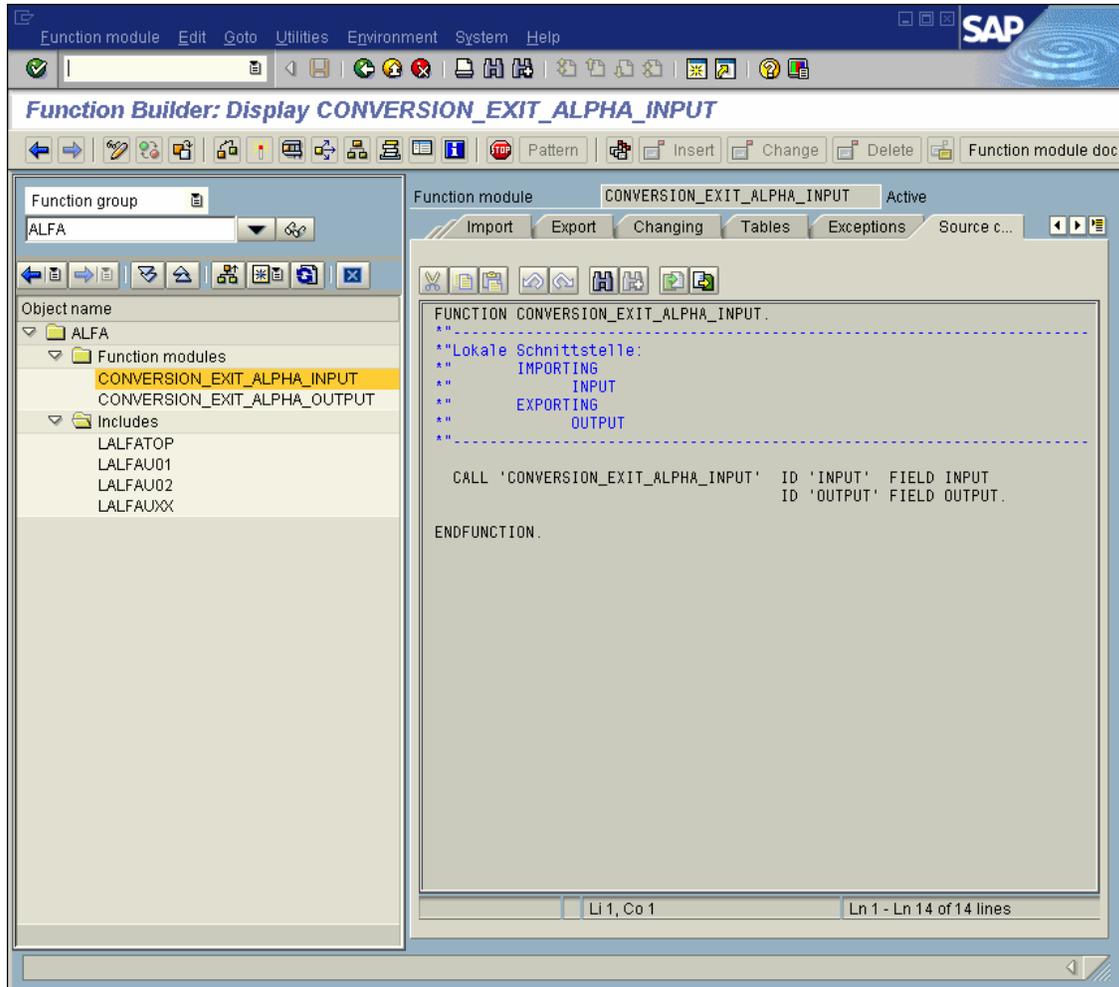
SD Document Number Range Enhancements

Function Group ALFA

The ALPHA conversion exit function modules are contained in function group ALFA. For each conversion exit defined, there are two function modules. One function is for input and, the other is for output. SAP has a standard naming convention for these functions. It consists of a prefix, the conversion routine name and a suffix as follows:

‘CONVERION_EXIT_’ + Conversion routine name + ‘_INPUT’

‘CONVERION_EXIT_’ + Conversion routine name + ‘_OUTPUT’



The two conversion exits are the only functions that exist in this function group. They call a lower level function to either zero fill or strip leading zeros from the field passed. These functions are used throughout the system and they can't be modified.

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Number Range Assignment User Exit Example

The following example demonstrates how to implement a number range user exit.

Business Requirement

The customer does business in Mexico. Mexican law requires that all invoices must be consecutively numbered without gaps in the numbers. In standard R/3, the number range intervals for billing documents are assigned by billing type. The same billing type (F2) is used across multiple sales organizations and therefore, across multiple countries.

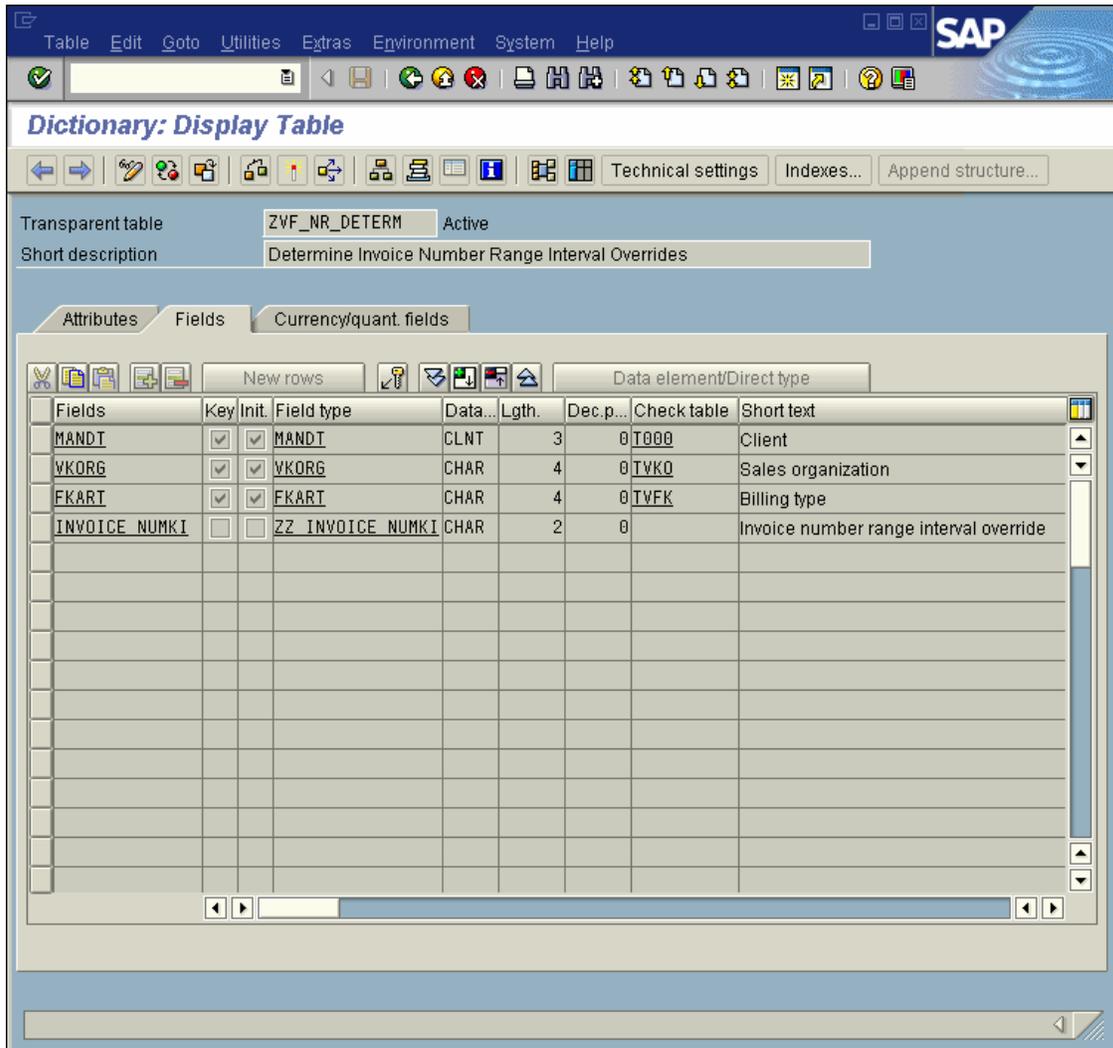
Solution

To solve this problem, we will add logic to override the number range interval used to create billing documents for Mexico. Instead of the standard interval, an interval that is only for Mexican invoices will be used. This will ensure that all billing documents are in sequence with no gaps in the numbers. This logic will be added to form `USEREXIT_NUMBER_RANGE` in the billing function group V60A. We will not hard code any logic, so a custom configuration table will be built to drive the user exit.

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Step 1 *Build the Custom Configuration Table*

The user exit logic will determine if the number range interval is to be changes based on the sales organization and billing type. The following custom configuration table is built to handle this requirement.



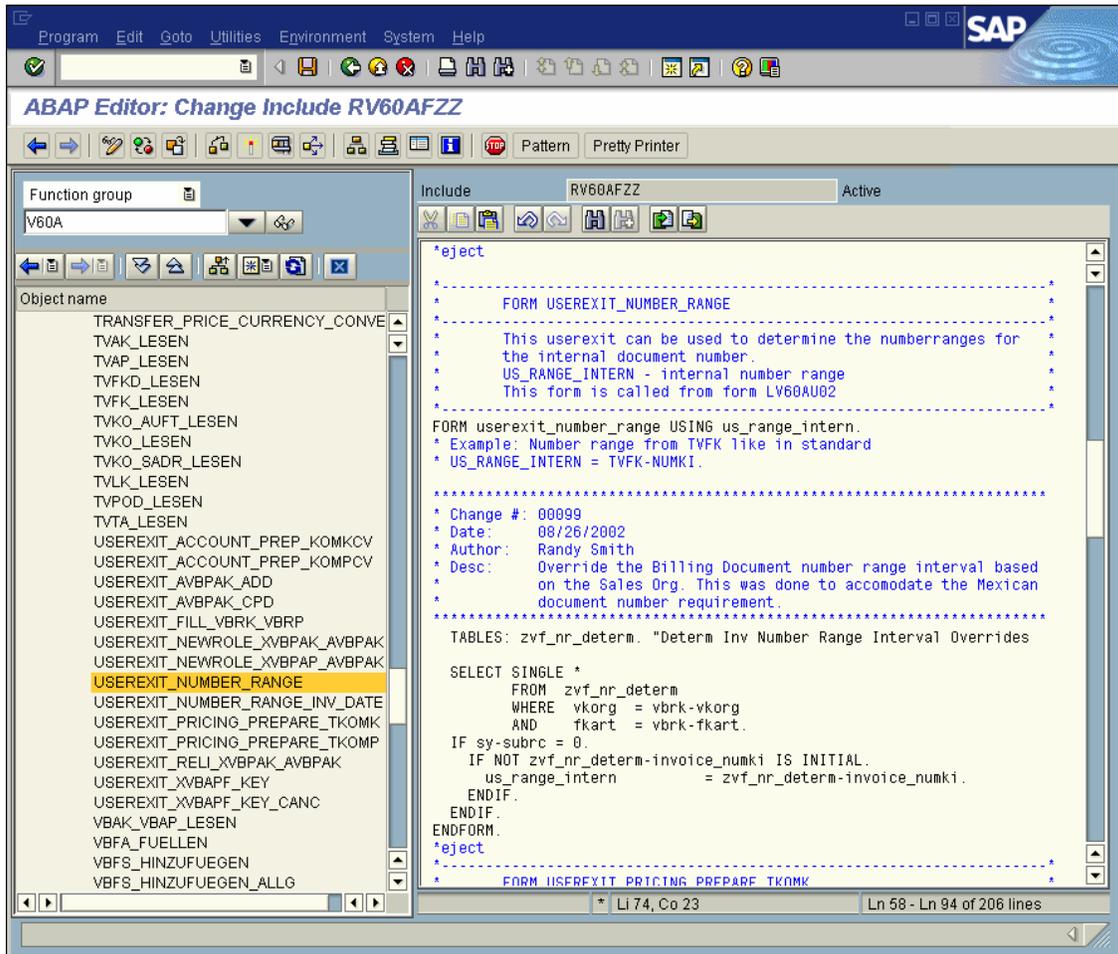
The screenshot shows the SAP Dictionary: Display Table for the transparent table ZVF_NR_DETERM. The short description is "Determine Invoice Number Range Interval Overrides". The table is active and contains the following fields:

Fields	Key	Init.	Field type	Data...	Lgth.	Dec.p...	Check table	Short text
MANDI	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	MANDI	CLNT	3	0	T000	Client
VKORG	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	VKORG	CHAR	4	0	TVKO	Sales organization
FKART	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FKART	CHAR	4	0	TVFK	Billing type
INVOICE NUMKI	<input type="checkbox"/>	<input type="checkbox"/>	ZZ_INVOICE_NUMKI	CHAR	2	0		Invoice number range interval override

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Step 3 Code the User Exit

In form USEREXIT_NUMBER_RANGE, we add logic to read the custom configuration table. If a record is found, the standard number range interval determined by the billing type configuration is overridden.



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Step 4 Test the Routine

The logic is ready for testing. In the following screen, we can see that an F2 normally uses interval 25.

The screenshot displays the SAP 'Change View "Billing: Document Types": Details' screen. The interface includes a menu bar at the top with options like 'Table view', 'Edit', 'Goto', 'Selection criteria', 'Utilities', 'System', and 'Help'. Below the menu is a toolbar with various icons. The main content area is divided into several sections:

- Billing type:** F2 Invoice, Created by: SAP
- Number systems:** No.range int.assgt. 25, Item no.increm. []
- General control:**
 - SD document categ. M Invoice Posting block
 - Transaction group 7 Billing documents Statistics
 - Billing category []
 - Document type RV Billing doc.transfer
 - Negative posting [] No negative posting
 - Branch/Head office [] Customer=Payer/Branch=s...
 - Credit memo w/ValDat No
 - Invoice list type LR Invoice List
 - Rebate settlement [] Rel.for rebate
 - Standard text []
- Cancellation:** Cancell.billing type S1 Cancel. Invoice (S1)
- Copying requirements:** []
- Reference number:** []
- Allocation number:** []
- Account assignment/pricing:** []

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Below is a snap shot of the number range intervals prior to our test. Notice that interval 30 specifies document numbers in the range 99000000 to 99099999.

Data Browser: Table NRIV Select Entries 32

Table : NRIV
 Displayed fields: 6 of 6 Fixed columns: 5 List width 0250 Individual billing document (Sh

Object name	No. range no.	From number	To number	No. status	External
RV_BELEG	01	0000000001	0004999999	00000000000000083238	
RV_BELEG	02	0005000000	0005999999	00000000000000000000	X
RV_BELEG	03	0010000000	0014999999	00000000000000000000	
RV_BELEG	04	0015000000	0019999999	00000000000000000000	X
RV_BELEG	05	0020000000	0024999999	00000000000020000127	
RV_BELEG	06	0025000000	0029999999	00000000000000000000	X
RV_BELEG	07	0030000000	0034999999	00000000000030000035	
RV_BELEG	08	0035000000	0039999999	00000000000000000000	X
RV_BELEG	09	0040000000	0044999999	00000000000040000595	
RV_BELEG	10	0045000000	0049999999	00000000000000000000	X
RV_BELEG	11	0050000000	0054999999	00000000000050000004	
RV_BELEG	12	0055000000	0059999999	00000000000000000000	X
RV_BELEG	13	0060000000	0064999999	00000000000060016030	
RV_BELEG	14	0065000000	0069999999	00000000000000000000	X
RV_BELEG	15	0070000000	0074999999	00000000000070006309	
RV_BELEG	16	0075000000	0079999999	00000000000000000000	X
RV_BELEG	17	0080000000	0083999999	00000000000080237687	
RV_BELEG	18	0085000000	0087999999	00000000000000000000	X
RV_BELEG	20	0095000000	0099999999	00000000000000000000	X
RV_BELEG	21	0084000000	0084999999	00000000000084010057	
RV_BELEG	22	0089000000	0089999999	00000000000000000000	X
RV_BELEG	23	0100000000	0109999999	00000000000000000000	
RV_BELEG	24	0083000000	0083999999	00000000000000000000	
RV_BELEG	25	0090000000	0094999999	00000000000090205829	
RV_BELEG	30	0099000000	0099099999	00000000000099015124	
RV_BELEG	31	0088000000	0088099999	00000000000088001579	
RV_BELEG	32	0099000000	0099999999	0000000000009900224	
RV_BELEG	33	0088000000	0088999999	0000000000008800005	
RV_BELEG	41	0180000000	0182999999	00000000000180033632	
RV_BELEG	42	0185000000	0186999999	00000000000000000000	X
RV_BELEG	43	0187000000	0190000000	00000000000000000000	
RV_BELEG	44	0190000001	0195000000	00000000000000000000	X

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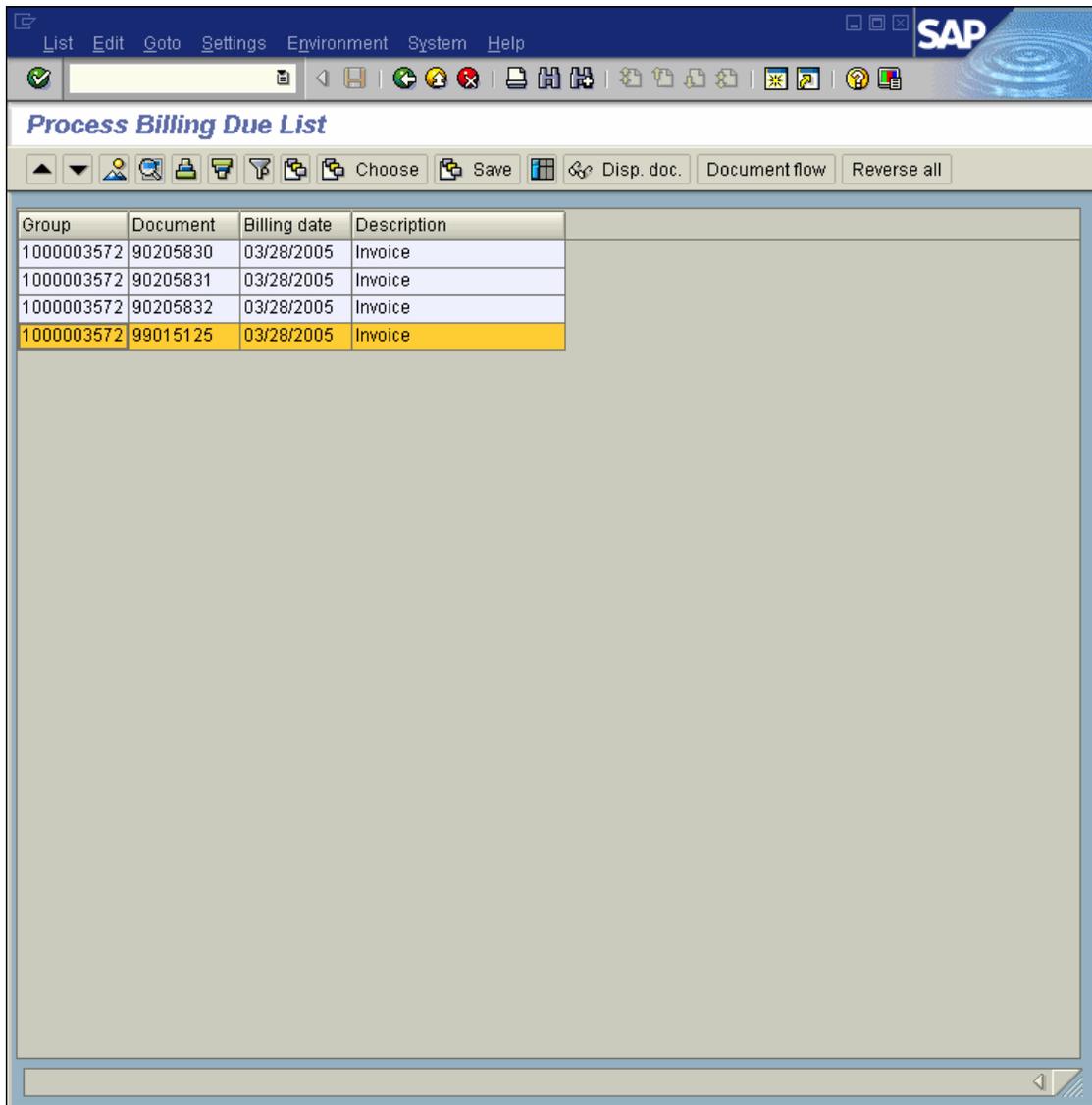
Running the Billing Due List (Transaction VF04), we have selected two Mexican deliveries (sales org 3000) and three US deliveries.

The screenshot shows the SAP Billing Due List (VF04) interface. The title bar reads "Billing document List Edit Settings Environment System Help". The main window title is "Process Billing Due List". Below the title bar, there are several icons and a search field. The table below shows the following data:

S	BICat	SOrg	Billing date	Sold-to pt	BILLT	DstC	Document	DChl	Dv	DocCa	Address	Sort term	Cour
X	L	1000	02/14/2005	58172	F2	US	80234410	01	01	J	50542	P T	
X	L	1000	02/17/2005	58172	F2	US	80236851	01	01	J	50542	P T	
X	L	1000	02/17/2005	6162279	F2	US	80234259	01	01	J	50624	S I..	
X	L	3000	02/09/2005	8012062	F2	MX	80231443	01	01	J	103746	S A	
X	L	3000	02/17/2005	8013124	F2	MX	80236847	01	01	J	108588	K M	

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After processing the Billing Due List, One Mexican and three US billing documents were created. The Mexican billing document number used interval 30, and the US billing documents used interval 25.



The screenshot shows the SAP 'Process Billing Due List' window. The window title is 'Process Billing Due List'. The menu bar includes 'List', 'Edit', 'Goto', 'Settings', 'Environment', 'System', and 'Help'. The toolbar contains various icons for navigation and actions. Below the toolbar, there are buttons for 'Choose', 'Save', 'Disp. doc.', 'Document flow', and 'Reverse all'. The main area displays a table with the following data:

Group	Document	Billing date	Description
1000003572	90205830	03/28/2005	Invoice
1000003572	90205831	03/28/2005	Invoice
1000003572	90205832	03/28/2005	Invoice
1000003572	99015125	03/28/2005	Invoice

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We process two Mexican deliveries but only one Mexican billing document was created. Looking at the Billing Due List Log, we can see that one of the Mexican sale orders was blocked for billing.

