



Core Highways Release Notes

v4.5.0.0

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1 Document Control

1.1 Author

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1.2 Document Summary

This document provides a description of the changes in this release and information about how these changes may impact on an Exor installation.

1.3 Document History

Document History			
Revision	Date	By	Description
1.0	18 th October 2011	Rob Coupe	First Draft
1.1	24 th November 2011	Rob Coupe	Final release

1.4 Reference documents

Oracle Document [ID 1268383.1] - Slow Performance when using SDO_RELATE/SDO_FILTER

1.5 Distribution

Exor Customers, Partners and Colleagues

1.6 Quality Assurance

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2 Introduction

This document highlights the key changes to the exor Core Highways database following the release of **Core Highways v4.5.0.0**. It is specifically targeted at users and system administrators of the exor systems. Changes in the core database functionality have the potential to have wide impact across all exor applications and it is important that these changes are understood. However, many of the functions of **exor Core Highways** are extremely technical in nature and this document is aimed at those with some degree of technical knowledge and not necessarily at end users.

It is not intended to be a full system description but a guide to indicate what changes have been made, why they have been made and the potential failings if this upgrade is not applied.

This release is available as an upgrade from release 4.4.0.0. of **exor Core Highways**.

After reading through this document, should you have any need for training or consultancy then please contact your **exor/Bentley** account manager. If these changes are considered important for your current release and this is incompatible with this patch release then please contact **support**.

This release is, in the main a bug-fix release and a technology change in that it has been adapted to be used on the Oracle forms 11 platform with the WebLogic application server. It is built on Oracle 11.2.0.2 RDBMS and with the latest iterations of Esri 9.3.1 compliant products as was the 4.4.0.0 release.

The issues that have been attended to are a result of internal testing, customer raised issues and internally driven enhancements and improvements. Where the change has been made as a result of an existing ECDM log raised by a customer, the table of fixes makes reference to the ECDM log or Bentley help ticket number. The latter tend to be much larger numbers, generally prefixed by 800.

The version of MapViewer is unchanged at this release although it is based on different libraries to match the WebLogic application server. Some subtle changes in the methods of communication across the applet/forms divide have left some functionality differences in modules such as locator and asset maintenance forms. These are documented under known issues later in the document.

3 Context and security changes

In previous releases, on the instantiation of each connection to the exor database, a set of variables would be initialised using two main server packages. These are nm3user and nm3context. These variables are handled as context settings and, to allow for multiple highways owner schema on the same instance, the functions would utilise a specific context namespace. This causes two main problems. The first is that, under some circumstances, there is little or no control within each session to set the context variables differently to those configured at start-up and the second is one of performance. In the latter case, the performance can be affected since simple variables are accessed through the use of the context variables, the namespace of which is only available through a database lookup. Simple functions such as that returning a user current effective date may be used many times. The use of a function can have effects on the choice of data access made by the optimiser. The former issue is one that is also compounded by occasional use of the Oracle pseudo-column USER. This release has been built after the replacement of the variables with context variables instantiated in known namespaces under the EXOR_CORE schema. New code exists with this schema to allow programmers and users to configure new context variables as well as set values for existing ones. All occurrences of the Oracle pseudo-column are replaced with an equivalent reference to Sys_Context. This is treated as a constant by the Oracle optimiser and can make improvements to performance. The use of these variables also allows the system to access the database and execute server resident code as if the session were executed by an account different to that of the account session owner. This "proxy user" configuration is particularly useful when executing procedures using the Oracle Scheduler or when accessing the server through thin-clients.

During installation and creation of the highways owner schema on the Oracle RDBMS, the system will configure a context with a naming convention of NM3_<Application_Owner>. This will be maintained until further notice but its use forces the use of a function look-up to determine the context each time an attribute/variable is accessed. Its use has been replaced by three new static contexts built under the EXOR_CORE schema. There follows a short description of the context/namespaces that are in use at 4.5.0.0

3.1 NM3_<application_owner>

This is the dynamic context created and used in previous releases. Its use is deprecated but it is still present but all internal variables have been moved.

3.2 NM3_SECURITY_CTX

This namespace is used only to store secure attributes that are only settable under certain circumstances. e.g. Set_User and ENFORCE_READONLY_CTX.

This package should **never** allow the caller to determine by the parameters which attribute they wish to set as this would undermine the security of all the existing secure context attributes within this namespace.

All attributes under this namespace will be maintained through specific functions. This context is bound to Exor_Core.nm3security and there exists one procedure per attribute:

```
Set_User  
Set_Effective_Date  
Set_Hig_Owner  
Lock_Core_Context;
```

3.3 NM3CORE

This namespace is used for the core context attributes that are required at the very basic level of core. These attributes represent the existing set of attributes that were previously managed by the package variable approach. They are subject to being made read only by the Nm3_Security_Ctx attribute ENFORCE_READONLY_CTX and as such will not behave in a way that a normal basic context will.

This context is bound to Exor_Core.Nm3ctx.Set_Core_Context and takes an attribute name as well as its value.

3.4 NM3SQL

This namespace is used as a generic bucket for any product or services code to use.

3.5 Deprecated Functions and Attributes

The following is list of functions that are maintained for ease of upgrade but, where necessary, they will reference the context variables within the new contexts under the EXOR_CORE schema. Functions setting the values under the dynamic context should no longer be used. They may be deprecated in future releases.

nm3context.set_context
nm3context.get_namespace
nm3context.get_context
nm3context.get_effective_date
nm3user.get_user_id
nm3user.get_effective_date
nm3user.get_user_date_mask
nm3user.is_user_unrestricted
nm3user.get_preferred_lrm
nm3user.get_user_length_mask
hig.get_application_owner
nm3user.is_user_restricted_acc
nm3user.get_user_def_inv_attr_set
hig.is_enterprise_edition
nm3context.instantiate_data
nm3context.show_all_context
nm3context.show_context
nm3api.get_effective_date
nm3api.set_effective_date

3.6 New Functions and Attributes

Listed below are the new context attributes:

Please note all contexts attribute values are held as a character string, so explicit conversions should always be used when setting or calling them via Sys_Context to avoid implicit conversion errors. In each case, the value may be referenced using code such as

Sys_Context(<namespace>, <attribute_name>)

Many of the attributes are set using packages specifically linked to a namespace. To set the attribute, the following code should be used.

<Package_name>.function (<attribute_name> => <value_goes_here>);

The attributes under the NM3_SECURITY_CTX context may be set using the package Nm3security and those under the NM3CORE context may be set using functions in the package Nm3ctx

There follows two tables, one for the attributes within NM3_SECURITY_CTX and one for those within the NM3CORE contexts. Note that several of the attributes are initialised at session instantiation and it makes no sense to set them to any other value. For example the host-name, instance-name etc.

3.7 NM3_SECURITY_CTX Attributes

Attribute	Usage
Hig_Owner	This attribute can only be set once per session and all subsequent calls are ignored. This should be called from a logon trigger
Enforce_Readonly_Ctx	This attribute can only be set once per session and all subsequent calls are ignored. The value is determined by the procedure which will set the attribute to 'YES'. This attribute is used as a flag to determine if other attributes should be readonly. Once locked the attributes cannot be unlocked.
Username	This attribute holds the username of the current user. However it is possible to set this attribute to a different username (proxy user). This depends on the rules governed in nm3security.Allowed_To_Proxy.
Actual_Username	This attribute holds the username of the current user and reflects the user pseudo column. This attribute is set whenever a call to Nm3security.Set_User is made and is not affected by the parameter p_Username.

3.8 NM3CORE Attributes

These settings are governed by the ENFORCE_READONLY_CTX attribute that belongs to the NM3_SECURITY_CTX namespace.

Attribute	Usage
Effective_Date	This attribute is holding a date (in a char) in the following format DD-MON-YYYY (No time component is explicitly set).
User_Length_Units	The value should be a primary key of a unit record from NM_UNITS table.
User_Date_Mask	The preferred date mask for date related fields
Default_Length_Mask	A number format mask acting as a default for some length related data
User_Length_Mask	A number format mask acting as a mask for user-specific length related data
User_Id	This attribute is holding a number (in a char). On setting this attribute an ltrim and to_char should be used to not rely on implicit conversion.
Unrestricted_Inventory	This is set to indicate if a user has an unrestricted view of the inventory data. It is not used within the security predicates, just a denormalised value from the users table. It is not recommended that this value diverges from that held in the database.
Application_Owner	The highways owner schema linked to the user session
Unrestricted_Accidents	This is set to reflect the restriction on accidents data (when installed and when accidents security is in place)
Enterprise_Edition	A Boolean flag indicating whether Enterprise Edition is installed
Instance_Name	The instance name
Host_Name	The host name of the DBMS server
Db_Version	The version of Oracle RDBMS
Preferred_Lrm	A value showing if a user has a preference to display some LR data relative to a specific LRS (road group type)
Roi_Id	A restrictive region of interest which restricts the returned data in queries in some modules.

Roi_Type	The type of object referenced in the Roi_Id.
Default_Inv_Attr_Set	Used in some modules to show a default set of inventory attributes.

During the upgrade process, occurrences of references to the NM3CONTEXT package will be swapped out with references to the new context and variables. In some cases, the affected code is that which is generated from the asset metamodel. The code in question such as asset APIs and instead-of triggers on asset/network join views will be refreshed directly from the inventory metamodel. However, the code may also reference an asset view.

This means that if an asset description in the metamodel is out of sync with the view definitions used to describe the inventory item then there may be a resultant failure in the compilation. If this is the case, then the code that fails validation is not reliable anyway and points towards the system being badly configured.

Prior to the upgrade, the administrator may wish to check all occurrences where the asset metamodel describes an asset in a way that differs from the view definition. If these persist during the upgrade, then invalid objects will result after the upgrade. The occurrences of these invalid objects may be rectified by executing the scripts that are provided in the upgrade script and described in the update guide. The upgrade will then make any attempts to synchronize the objects and metadata.

4 Subordinate User Spatial Views

At release 4.4.0.0 the system used views to provide subordinate users with access to spatial data held inside tables and views owned by the highways owner schema. Each view was defined for each subordinate user and this replaced the usual access path to data, usually provided through the use of synonyms. It was done in this way due to third-party systems failing to recognise public synonyms. This places a substantial overhead inside the Oracle data dictionary. Release 4.5.0.0 now uses the standard method to allow access to the data – either private or public synonyms. This improves the footprint of the dictionary and also improves performance as when new spatial layers are created, there is no requirement to generate a set of subordinate user views. There is an exception to this in the layers needed for MapCapture Interface. These will continue to operate using subordinate user views.

5 Spatial View APIs

During the upgrade the old context functions are removed and replaced using the new exor-core namespaces. This has an impact on spatial views which are generated by the system. Date tracked views will be predicated on such a context-based function. The upgrade forces the system to refresh these views and the system supports the rebuild of the spatial views using a new API. The views will also contain the pvcs version of the package that was used to build the views. Use of the new context methods on spatial queries can help performance.

6 Developer 11 Changes

The 4.5.0.0 release is based on a different technology stack to that of previous releases. It is built using Oracle Developer version 11 and uses the WebLogic Application server. Extra security in this technology stack means that certain operations are no longer available. For example, forms with floating toolbars were originally developed in client-server mode and make use of the client registry to hold last known positions of the toolbar. This is no longer available so all newly instantiated forms will start with a toolbar position at the top left of the window.

Also, subtle changes in the execution of custom-item events mean that the behaviour of forms such as asset maintenance and locator has changed. The custom-item event SETTHEME is failing to be handled and this means that the locator and asset maintenance form are unable to configure the context driven list of modules to which they can navigate. This means that navigation from sets of selected features to modules and reports other than the asset grid is unavailable. Also, other events such as those handled to raise Defects and Enquiries work as expected until such time that the locator form is closed. Upon re-opening new events are not handled. The user must close their browser session before the process can be re-instantiated.

7 Oracle 11.2.0.2

Attention is drawn to a bug in Oracle 11.2.0.2 which was introduced in 10.2.0.5 and so may not be apparent to customers who have been using releases up to but not including 4.4.0.0. Hence, this note is equally applicable to customers using 4.4.0.0 on Oracle 11.2.0.2. The problem arises with complex queries that are predicated with a spatial filter as well as other restrictions and joins. In some cases, especially when large numbers of SDO metadata has been registered, the Oracle optimiser will make poor decisions as to the access path. The ideal path is to perform the spatial query and then the secondary filter should be formed on the basis of the statistics of the relevant objects in the query. Almost all spatial queries in the highways system will have secondary filters, even if it is just to provide the date-tracking and since many SDO layers will often be registered, this problem will often be apparent.

A workaround is to introduce a hint in the view or implement the workaround as advised in the note issued by Oracle - Document [ID 1268383.1] - Slow Performance when using SDO_RELATE/SDO_FILTER. This note advises that the statistics on spatial tables and indexes are disassociated from the processes that use these indexes – namely spatial filters. The following adjustments are recommended in this note.

```
connect /as sysdba
alter session set current_schema=MDSYS;
DISASSOCIATE STATISTICS FROM INDEXTYPES spatial_index FORCE;
DISASSOCIATE STATISTICS FROM PACKAGES sdo_3gl FORCE;
DISASSOCIATE STATISTICS FROM PACKAGES prvt_idx FORCE;
```

8 Fixes, Enhancements and Changes at 4.5.0.0

The following are a list of internal task identifiers with associated ECDM fault logs/Bentley help ticket numbers (where appropriate) that have led to changes in the 4.5.0.0 release.

Internal Task ID	Issue	Support Log(s)
0108192	There was previously an issue with the NM7041: PBI Query Results form where queries would incorrectly return no network found messages. This issue has now been resolved.	703525 717989 719670
0108568	The units in MapViewer when displaying data from the Spatial Server are assumed to be Meters. Customers sometimes use other units and although the data is accurate and translated to units, MapViewer must be changed to use the units of the spatial data or default to a preferred unit.	
0108742	Changes have been made so that the subordinate users have synonyms created for spatial tables rather than Views.	
0110345	Make dropping of spatial triggers more robust. Dropping layer using nm3sdm.drop_layer can sometimes leave the old Theme trigger behind if the the Trigger doesn't exist on what is defined to be the NTH_TABLE_NAME object.	
0110491	Locator exports could include incorrect asset information when a linear asset touched but did not intersect with the boundary of the chosen partial linear route.	728740
0110492	All modules with reference to the user pseudo-column have been changed to reference initialised context variables. This will support future work such as proxy users and jobs executed in the scheduler.	
0110553	Fixes issue where begin measures are incorrect when multiple assets on a route overlap and extend across the entire and partial portions of the route.	729286 8001092725
0110914	Alert trigger did not work correctly when using OR operator in the condition block. This has been fixed now.	8001057487 8001104270
0110927	Bug that resulted in error in locator when trying to order a field that has a domain in the results block has been fixed.	8001059410

0110934	Query description field increase in NM0120 to avoid truncation error message.	8001061924
0110954	Release SMTP connections properly	8001057749
0110955	Changes have been made to the effective date is reset when cancelling a location in NM0510.	
0110989	Oracle validate layer code is faulty in release 11g when applied to LRS data with a SRID. This is coded around so that the nm3sdo.validate_theme function returns valid results.	
0110991	The prompts for the ad data in NM0105, NM0110 and NM0115 have had their widths increased so they show the larger values.	8001071287
0110992	status of triggers will now be returned in module Hig1520 when executed as a subordinate user.	
0111000	Exiting after a re-sequence in the NM0110 form would not always prompt the user to save when needed. This would result in the changes being lost. This issue has now been fixed.	8001071428
0111001	Preserve the original member start dates on asset locations left behind after closing/deleting part of an asset location. No history is preserved for this operation.	8001071430
0111002	Restore multiple asset category selection functionality.	8001071431
0111003	Results tab is re-enabled in the delete global asset module	8001071432
0111043	Previously having multiple themes when the same feature table could cause an error when updating the SDO metadata. This issue has been fixed.	
0111069	Unclosing an element will un-close any dependent nodes.	
0111091	HIG_ROLES scripts grants cluster privileges during installation. These are required particularly for the TMA application	
0111102	Order of attributes in forms such as locator, is now based on the sequence number in all instances.	
0111122	Functionality of DOC0118 has been improved; the metadata produced by the form is now kept in step better.	
0111144	Alerts now work when a parameter field is > 1000 chars e.g. Doc Description in PEM, but the text is truncated to 1000 chars.	
0111157	The original code processed the updates of end-dates on shapes for all records on a specific datum. This resulted in an update to set the end-date which affected records that had been previously end-dated. The same process was responsible under some circumstances of re-setting the end-date to be null on more records that it should have done. The code now targets the specific member records, the update of which, the process is geared to respond.	8001100659
0111166	Restore the ability to delete/close assets on any effective date.	8001086110
0111174	Unclose functionality was previously not available using the EXOR forms. This functionality has now been added to NM0207: Unclose element form.	
0111178	Associated Documents - Ensure media file extension is added to the filename when fetching from the server if it does appear on the DOCS.DOC_FILE entry.	8001103940
0111189	The original ticket that gives rise to this problem relates to Spatial Manager and the provision of too many choices to the user. However, the core code expects to merge two elements based on inheritance of attributes from the first of the two. This includes direction. Hence, the direction of the first element determines the direction of the result and hence determines the node to be dissolved. In the scenario where two datum start and end at the same nodes, there is a choice. The inclusion of the order-by in the relevant code limits the choice and will now arrange for the merge to inherit the direction of the first element as desired. Work will be required on SM to remove extraneous logic to fully satisfy the issues raised on the ticket.	8001101079

0111199	GIS0020 will now create themes based on Inventory/Route types that do not have views created. Previously this could result in errors/warnings being raised.	
0111264	Previously a number of network edits would only be available to unrestricted users. The security has been modified to allow restricted users that can see all the data in relation to the operation to make edits also. This included areas such as Closing Elements, Unclosing Elements, Reclassify, Closing of Group of Group and Group of Sections.	729683 8001015580 8001028732 8001028733 8001092739
0111286	Spatial triggers generated on foreign table spatial representations were coded with a SRID derived from the original layer. If a system user refreshed the SRID, the triggers would need to be regenerated. The triggers are now able to take a change to a table's srid value into account without regeneration of the triggers. Existing triggers will need to be refreshed for this to take effect. Care should be exercised in this respect in case any customer specific logic has been added to the triggers.	
0111289	Snapping from one theme to another has a problem in some cases where the snapping theme is known, there are cases where the snapped theme (asset) has no base-theme.	8001113919
0111300	Fixed the one hour difference caused by British Summer Time Daylight Saving Time not being reflected properly on email timestamps.	8001104477 8001119964
0111301	Floating toolbar will always be initialised in its original position; any saved positions will be lost.	
0111308	Check for a nodes geometry is done when any point information is updated. If no geometry exists then the geometry field is populated even if the x and y are not modified.	
0111315	Navigator not showing associated documents when called from Mai3806 (Defects), MAI3800 (Works Order) etc. This has been fixed now.	8001110695
0111316	Some reports have been updated to work with usernames longer than 10 characters	
0111320	Problem is caused by a query being applied to a theme which has been configured with a label column that is permitted to be larger than 100 characters. The specific data that is found in the spatial search will fail with a value error when the data in this column is greater than 100 characters. The failure is due to the selected column not being truncated on insert into the internal data structure. The problem may be fixed by using a different column for the label. The fixes relating to this problem will force a sub-string of the label prior to the population of the internal array data.	8001125816
0111331	Alert setup allowed to create trigger even without email been setup for the alert. This has been fixed now, error is raised when creating alert trigger without email setup.	
0111338	Snapping of an XY asset to a network where no theme snaps and the asset shape is not derived from the network (no base themes), the trigger will fail to find the element. The snapping is performed from an XY asset to network element in any one of three ways for an XY driven asset. Firstly, any snapping may be optionally driven from the theme-snaps relationship, secondly the relationship between the asset theme and the network theme may be derived through the use of a base theme. This is normally used when an asset position is dynamically segmented from the network which is not usual with XY driven assets. Thirdly, the system can detect the network layers to which the asset should be snapped through the relationship in the network tab of the asset types module. XY assets should not be registered with a base theme. Snapping is also restricted by the existence of theme roles.	8001124055
0111341	When updating the coordinates of multiple inventory items the error "ORA-01403: no data found" was sometimes being raised. This was down to a trigger on NM_INV_ITEMS calling nm3homo which in turn tried to lock the inventory by doing an update on NM_INV_ITEMS. This loop caused the trigger to fire again which blanked out the global array with the list of inventory in it. Therefore individual	8001124055

	updates could be done without error but multiple could result in the error. The change has been made to prevent the attempted lock when inventory coordinates are updated.	
0111346	Merge Query fails in cases where partial linear routes are being merged with assets with a shared location and where the partial linear route is non-exclusive and multi-valued.	8001133789
0111367	The undo process will remove the elements created as part of the process being undone. Any dependent spatial representations of assets will also be removed. In the case of whole-road AD data such as that used in the NSG product, the data was not being removed.	
0111393	The CSV loader's APIs use a network reference which in some cases is always assumed to be a route. The system will then use the GET_DATUM_OFFSET to translate a route reference to a datum reference. However, in some cases the data being passed in from the CSV file is a datum reference. Rather than fail the process, it is preferable to return the original datum reference allowing the process to complete - loading the data as an un-translated datum reference.	8001130332
0111415	The floating toolbar used inside some forms was originally designed for forms in client/server mode. The code saves current positions of the toolbar in the registry which is now disabled when executing forms using the Weblogic application server. This means the toolbar will always start in the same position. It may be moved and its position will remain saved until the form is restarted at which stage, the toolbar will revert to its original starting position.	
0111425	Ensure passwords changed through HIG1833 are kept in sync with MapCapture Interface.	8001019061
0111433	Querying Foreign Table without Network Chainage Columns set on the metamodel can fail with invalid SQL error.	
0111440	Partial routes with a configuration in a figure 6/b were failing to be rescaled due to a degree of freedom on a cursor in the rescale procedure. This led to connectivity being seen where the measures should have been used to exclude one of the choices of connected datums.	8001170737
0111448	All C modules recompiled to run on the WebLogic application server.	
0111472	A difference in behaviour of the SDO_AGGR_MBR function when applied in Oracle 11g means it now returns a solid (3008) geometry in code such as COALESCE_NW_DIMINFO. This is used to set the start-up extent of MapViewer - so MapViewer will start-up with an extent that likely includes the origin. The code has been changed to correct the MBR.	8001178438
0111487	Ensure the appropriate synonyms are in place for subordinate user theme objects according with the changes in 4.5 to remove subordinate user views and replace with synonyms.	
0111053	On testing the execution of a simple PBI query, the system failed to deliver any results. After coding a test harness and executing the program manually through a network extent derived from a route, the server code failed with the message below. ORA-20000: NET-0306: No network matches the filter criteria ORA-06512: at NM3PBI", line 110 ORA-06512: at line 5 The form looks to have executed the query in extremely quick time giving rise to suspicions that the execution has failed but that the error remains unreported. Further investigation will need to be performed. This was also shipped in 4400 fix 1	
0110998	SM does not allow the date to be entered. The member dates are derived from the group start date (as opposed to the current date). The system should allow	8001071424

	any date which is not less than the greater of the datum start date or the route start date.	
0110997	ASD date corrected in forms but not SM	8001071423
0109564	Gazetteer Query fails (NET-0389) on specific route – due to Spatial manager adding trailing spaces on the NE_DESCR column.	725606
0110438	Error saving partial type 51, 52 & 53 recs in Spatial manager	
0110458	Ambiguous position not updated in split form of SM	0110458
0110837	Zoom to groups of groups does not work in SM with NSG installed	8001034167
0110797	Type 64 tab - labels incorrect in Spatial Manager	0110797
0110796	Query Layer error on a flexible attribute in a character column with a date format mask will fail in SM.	
0111002	Selected Categories Not Returned (del. global ast)	8001071431
0111003	Results tab missing on del. global asset. This is present but minor errors exist when used with partial linear routes.	8001071432

9 Known Problems at 4.5.0.0

9.1 MapViewer

As mentioned in the previous sections, the change to the new technology stack has resulted in changes in behaviour of forms with the embedded maps. These failures result from a change in the communication process and the handling of custom events within the form. A small selection of active issues is listed below.

Internal Task ID	Issue	Support Log(s)
0111386	The Select to drop down list does not display all entries when Locator is unpinned and the user attempts to use the Search By Polygon tool	8001139145
0111674	Fails to highlight when using snapping LOV. When using the snapping device inside Locator to raise Defects and Enquiries on a network element, the selected element should be highlighted. Missing quote delimiters causes the highlight to fail.	8001232210
0111615	Defects/PEMs creation issues. Communication between the form and the MapViewer applet has changed such that if the locator form has been closed and re-opened, the events used to create Defects and Enquiries are no longer handled resulting in a failure. The user must exit the whole session and restart to re-activate.	
0111566	Event not being received in Locator. This is the problem whereby the SETTHEME event is not handled and the form will fail to generate the context sensitive list of modules that would normally be available for a set of selected features.	

9.2 Snapping

During the last few months, an attempt has been made to tidy up the logic with which spatial data is snapped to a network to record linear references. A number of failures have arisen in previous releases. There are two similar APIs that are used to generate a network reference from an object and its position. One is aimed at use within an LOV in MapViewer and operates within a specific tolerance and one is aimed at performing a similar query but is

used to select the nearest available network reference for use in automated updates such as those inside triggers or CSV loader APIs. Each now works in the same way. In each case any rules that may be available through the asset and network metamodel may be over-ridden using the theme snaps relation.

If the off-network asset is linked to a specific network type, the snapping should behave in one of three ways. The base theme for an off-network asset is extraneous, it should not be there and steps will be taken to remove this in future releases. However, to maintain compatibility, it is still used but customers and services colleagues may wish to modify the rules in line with this document. The base theme is there to allow the software to navigate to a dependent theme so that if the shape of an independent layer changes, all dependent shapes can be addressed – this does not include XY/off-network assets since their shape is independent of the network. If the registration of an off-network layer sets the base themes, then this is a separate bug.

The latest version is now consistent across all recent releases and each offers three possible ways to perform snapping.

The first is a direct theme snap relationship which would over-ride all other methods. The second is if a base theme is configured – and this must be a base theme which is a base table theme. If none of these return any data, the system uses the relationship between the asset and the network (table NM_INV_NW). It will snap to a network theme relating to the given network type to which the user has been granted access through theme roles.

There are other related fixes. The standard set of asset CSV API uses snapping to a route and offer translations. In cases where the snapping is expected to be to a datum theme, the API fails to translate the linear reference (as you would expect). See ticket 8001130332. This is not escalated so is only fixed in 4.5.

To perform snapping, there must be a return from any one of the three cursors below (for the given theme – for which I have used a bind variable of :theme_id. The three cursors below may assist customers and/or support colleagues in ensuring correct snapping rules exist.

- Theme-Snaps – as mentioned above, this allows an over-ride mechanism

```
SELECT nm_theme_entry( a.nth_theme_id )
FROM NM_THEME_SNAPS, nm_themes_all b, nm_themes_all a
WHERE nts_theme_id = :theme_id
and a.nth_theme_id = nts_snap_to
and b.nth_theme_id = nts_theme_id
and exists ( select 1 from nm_nw_themes where nnth_nth_theme_id = a.nth_theme_id )
order by nts_priority;
```

- Using the base-theme – as mentioned above, this data will not be created in future releases.

```
SELECT nm_theme_entry( a.nth_theme_id )
FROM NM_BASE_THEMES, nm_themes_all b, nm_themes_all a
WHERE nbth_theme_id = :theme_id
and b.nth_theme_id = nbth_base_theme
and nvl(a.nth_base_table_theme, a.nth_theme_id) = b.nth_theme_id
and exists ( select 1 from nm_theme_roles where nthr_theme_id = a.nth_theme_id );
```

- Network location metadata – this uses the metadata in the network tab of the asset metamodel (Table NM_INV_NW)

```
SELECT nm_theme_entry(a.nnth_nth_theme_id)
FROM nm_inv_themes, nm_inv_nw, nm_linear_types, NM_NW_THEMES a
WHERE nith_nth_theme_id = :theme_id
and nith_nit_id = nin_nit_inv_code
and nlt_nt_type = nin_nw_type
and nnth_nlt_id = nlt_id
and exists ( select 1 from hig_user_roles, nm_theme_roles
            WHERE hur_username = USER
            AND hur_role = nthr_role
```

AND nthr_theme_id = a.nnth_nth_theme_id);

9.3 Merge Query

The release notes of 4.4.0.0 contain a list of several known issues in relation to merge query, engineering dynamic segmentation and derived assets. Other than the list of fixes inside the previous chapter, these issues remain in release 4.5.0.0.

9.4 Other Issues

Other issues are being dealt with on the basis of a priority list which is allocated by support. Some of the issues have been discovered on past releases such as 4.2.0.0 and may not apply to the 4.5.0.0 release. When investigation is complete, should the issues be apparent in other supported releases such as 4.5.0.0 then the appropriate fix will also be made available. The current list includes:

Internal Task ID	Issue	Support Log(s)
0111008	Forms running in READONLY mode prevent the opening of other modules.	8001075194
	Gaps and connectivity problems exist in customer's data. This is likely due to several problems over a period of time. Earlier releases of the NSG product would create new node/point combinations close to existing node/points, sometimes within a very small tolerance. Also, issues in previous releases of Spatial manager could dissolve an incorrect node or mix node-name and node-id. The connectivity problems caused by co-located nodes with the corruption due to the dissolve node problem mean that an automated repair service is quite complex.	729748
0110909	Derived assets over circular routes with a datums configured in both the cardinal and non-cardinal direction of a route can lead to multiple chunks. This is deemed acceptable but once located, the translation of the datum locations to the route LRM are often displayed incorrectly. This is due to a degree of freedom in an order-by clause and may not affect all customers.	8001049753
0111533, 0111467, 0111534	A bug was introduced in release 4.4.0.0 whereby the primary AD data relating to a network element is lost when network element is reclassified. Attempts at fixing this have left the code in a state whereby road groups with associated data are not able to be reclassified resulting in a failure due to date tracking failures.	8001178316
0111536, 0111518	The delete-global-asset module fails to deliver the correct results. In some cases, where an asset has two or more locations within a network selection, a violation of the primary key of a temporary result set may be violated. The use of the partial flag and the operation over asset locations that are partly included in the selected network is incorrect.	8001190683, 8001190785
0111524	If you enter an invalid Effective Date when locating an asset on a Control Section (GoS) using the Locate Asset Tool from Form NM0510 (Asset Items), a valid error message will be triggered asking the user to press the OK or Cancel buttons. If the user presses the 'OK' button, re-enters a valid Effective Date and replaces the existing location, and if there exists a datum element having an identical ne_unique id as the ne_unique id of the control section (GoS) where the asset needs to be located, the asset location will be moved to the wrong datum element. The asset, therefore, will end up being located on the wrong Control Section.	8001178954
0111485	The very first statement in nm_inv_items_mand_check populates the primary key field if it is null. The user wants the Mandatory Check to be enforced, requiring the user to populate the primary key field, not the system. The trigger should check the mandatory option of the primary key field (iit_primary_key) before	8001187536

	automatically populating the field with the NE_ID.	
0111486	During the PEM creation process from MapViewer a customer experiences rare but irritating occasions when the Doc0150 form fails to start.	8001075836
0111540	If you create a new route group/control section, resequence it, rescale it without maintaining history and then save your changes causes wrong history to be written to the NM_NLT_NBCS_NBCS_SDO theme. Note: the SDORESEQ product option is set to 'U' (update shape with no history).	8001192315
0111669	Spatial manager fails to create NSG specific ASD data. Error creating partial TP51, 52 & 53 records – Procedure: ICommand_OnClick clsTraceASD.cls Line : 208 Error Number: 13 Error Description: Type mismatch	
	Creation of road groups with additional data results in two AD records being created and thence a failure to retrieve the data after execution of a query.	
0111537	Delete Global Asset gives wrong results. The delete global asset form fails to remove all assets as expected and gives wrong results.	8001190683
0111676	Creation of a new group in module NM0110 with additional data fails. On creation, the module seems to have been successful but on opening the additional attributes tab and saving will result in two AD records being created. When you click through the AD attributes you get an error: HIG-0067: Record not found nm_inv_items (INV_ITEMS_ALL_PK) iit_ne_id =>..... Closing the form and re-querying the newly created road group results in an error And no rows returned: ORA-01422: exact fetch returns more than requested number of rows ORA-06512: at "DORSET.NM3NWAD", line 2514 ORA-06512: at "DORSET.NM3NWAD", line 323	