

**Fix Release Notes**

Fix 55

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# Introduction

This document defines the changes made to the Location Bridge component of the product. It is bundled as Fix 55 for 4.7.0.0. This incorporates all the changes that were issued in LB 4.2 (exnm04070001en\_updt47), 4.3 (exnm04070001en\_updt48), 4.4 (exnm0407001en\_updt49), 4.5 (exnm040007001en\_updt51) and is intended to be installed directly after the 4.1 upgrade if required. It is also intended to be installed on Location Bridge which has already been upgraded to 4.2, 4.3, 4.4 or 4.5 through the fixes numbered above.

From Build 4 onwards of this fix also contains a SQL file which will de-install the LB objects. The script is drop\_lb.sql and can be found under the admin\util folder.

After reading through this document, should you have any further training or consultancy requirements then please contact your Bentley account manager.

Please ensure that all listeners, map servers, scheduler processes and dbms\_jobs are disconnected prior to the installation of this fix.

# Fix Details

|  |  |
| --- | --- |
| Fix Details Baseline Release |  |
| Fix Description | This fix provides changed and improved functionality in the Location Bridge component of Network Manager. |
| Prerequisites | NM3 at version 4.0.7.1 and Location Bridge version 4.1, 4.2, 4.3, 4.4 or 4.5. Systems that utilise the LB modules may also need to access Exor data through a proxy user and may therefore have dependencies on the series of fixes which allow the setting of context variables to provide proxy user security, namely 4.7 fixes 29 and its pre-requisites. |
| Implementation Instructions | Ensure that the system is not in use before upgrading with this fix release.  The staging folder is the location of the folder that .zip was extracted to (the folder containing this readme).  Log onto SQL\*PLUS as the Highways Owner with the staging folder as the working directory.  At the prompt type START and press return.  Exit SQL\*Plus |
| Limitations | None known |
| Configuration Information | None |
| How To Test | Tests to be performed from client ARS modules |
| Rollback Strategy | Initially implement on a test environment |

# List of New and Amended Files

|  |  |
| --- | --- |
| Filename | Version |
| exnm0407009en\_updt55.sql | 1.0 |
| lb\_ref.pkh | 1.9 |
| lb\_ref.pkb | 1.9 |
| lb\_get.pkh | 1.12 |
| lb\_get.pkb | 1.29 |
| lb\_reg.pkh | 1.3 |
| lb\_reg.pkb | 1.14 |
| lb\_load.pkh | 1.8 |
| lb\_load.pkb | 1.27 |
| lb\_ops.pkh | 1.4 |
| lb\_ops.pkb | 1.4 |
| lb\_loc.pkh | 1.4 |
| lb\_loc.pkb | 1.9 |
| lb\_nw\_edit.pkh | 1.1 |
| lb\_nw\_edit.pkb | 1.5 |
| v\_network\_types.sql | 1.4 |
| v\_lb\_directed\_path\_links.vw | 1.0 |
| V\_LB\_PATH\_BETWEEN\_POINTS.vw | 1.3 |
| v\_lb\_path\_links.vw | 1.0 |
| v\_lb\_type\_nw\_flags.vw | 1.0 |
| v\_network\_elements.vw | 1.0 |
| v\_nm\_inv\_on\_network.vw | 1.0 |
| lb\_path.pkh | 1.7 |
| lb\_path.pkb | 1.10 |
| lb\_path\_reg.pkh | 1.2 |
| lb\_path\_reg.pkb | 1.8 |
| create\_nlt\_geometry\_view.prc | 1.2 |
| GetNetworkLinearLocationsTab.fnc | 1.2 |
| GetLinearElementTypes.prc | 1.1 |
| GetAssetLinearLocationsTab.fnc | 1.2 |
| V\_network\_types.sql | 1.3 |
| GetAssetLinearLocations.fnc | 1.1 |
| GetNetworkLinearLocations.fnc | 1.1 |
| drop\_lb.sql | 1.17 |

# Log No. Summary

This chapter summarises all software issues that have been addressed by this fix.

For issues raised by users, Bentley Technical Support Group (TSG) Service Request Numbers are cross referenced where applicable.

|  |  |  |
| --- | --- | --- |
| Details | Internal Reference | TSG Service Request |
| Change v\_network\_types to include networks without locatable asset types | Enhancement 525376  Task 525896 |  |
| Location based predicates | Enhancement 316415 |  |
| Failure in route-based aggregation | Defect 433726 |  |
| Location Bridge query relative to route fails to operate with NULL measures | Defect 563403 |  |
| Problems in computation of aggregated geometry | Task 188739 |  |
| Problems with NULL aggregated geometry | Task 527600 |  |
| Add validation of measures on the load-by linear range function | Defect 524768 |  |
| Location Bridge generates incorrect results in the set operation MINUS (LB\_OPS.RPT\_MINUS) | Defect 563409 |  |
| Get whether an on-network asset type is Point or Continuous | Enhancement 316426 |  |
| Corrections and various improvements in the registration/de-registration of asset-types. | Defect 563412 |  |
| Enhancement to provide list of possible XSPs over a network location | Enhancement 523312 |  |
| Enhancement to provide a flag to indicate if an asset-type is point or continuous in respect of its location. The enhancement includes a view which can provide further flags relating to the asset-type and the network. | Enhancement 524308 |  |
| Added function to retrieve lists of XSPs for an asset and location | Enhancement 592172 Task 592173 |  |
| Problems with unit translations on route to datum conversions and vice versa | Defect 590818 |  |
| Modified range query to include the flag to return locations that are wholly within the search group or range |  |  |
| Minor performance issue in the search for assets over a group of groups. | Defect 568113 |  |
| Improvement on updates to JXP (allows the setting to NULL) |  |  |
| Added contiguity check |  |  |
| Added some exceptions to cater for re-registration of same asset types - preventing failure. |  |  |
| Unit translations can fail when units are the same. SQL accesses nit conversions where no data is found. | Defect 615163 |  |
| Load locations fails with an Oracle error ORA-30625: method dispatch on NULL SELF argument is disallowed | Defect 614192 |  |
| Load locations fails with an Oracle error ORA-01858: a non-numeric character was found where a numeric was expected | Defect 614128 |  |
| Location Bridge unit translation on load gives problems as used in createlinearange | Defect 614127 |  |
| Problems in use of an outer-join on exor unit translations | Defect 615231 |  |
| Range queries with the whole-only flag set do not work with different unit systems | Defect 592678 |  |
| LB allows registration of asset type on group-based network. | Defect 645688 |  |
| LB allows loading of empty location | Defect 645253 |  |
| Lateral offset is not computed on the aggregated geometry | Defect 626149 |  |
| LB module to supply list of available XSPs over a linear range will break on sub-class variations. | Defect 615198 |  |
| investigate and remove occurrences of combination geometries | Task 524553 |  |
| LB Registration silently ignores non-datum Network Types | Defect 528777 |  |
| Save Continuous Linear Location gives point/line reference error | Defect 670669 |  |
| Dynamic SQL formatting issue encountered in an RTD instance so path geometry failed to compute | Defect 675217 |  |
| Add UNIQUE constraint to EXOR\_UNIT\_ID column of LB\_UNITS table | Enhancement 675816 |  |
| JXP integrity | Defect 691141 |  |
| Theme removal on the de-installation of LB | Defect 691172 |  |
| Add the asset location start and end dates on to returned ref-cursors in selected functions (GetAssetLinearLocations and GetNetworkLinearLocations) | Enhancement 691212 |  |
| Add the asset location start and end dates on to returned table data in functions GetAssetLinearLocationsTtab and GetNetworkLinearLocationstab | Enhancement 691212 |  |
| Synonyms to eB Interface functions are missing in the original install scripts. These synonyms are corrected in the build 8 (onwards) of this fix. It works around the TFS entry shown but does not solve the issue in the original install script. This problem is fixed within the original install script which is available outside of this fix. | Defect 734037 |  |
| Problem in merge of location data in cases where location is wholly contained in second of two elements | Defect 740329 |  |
| Create an asset view which is based on the aggregated geometry of a specific asset type | Defect 741236 |  |
| Problem in the aggregation of offset linear geometries due to incorrect arc-tolerance in the arc-densification process. | Defect 743634 |  |
| Delete asset location API retains some location related data | Defect 741221 |  |
| Registration of Oracle network data can use nodes of the incorrect type | Defect 744554 |  |
| Incorrect order of location data from path. | Defect 672425 |  |
| Unable to compute a continuous network location when the start and end positions are on the same linear element | Defect 759869 |  |
| Unit translations can fail when units are the same | Defect 615163 |  |
| 'Linear type does not support aggregation' error message is thrown when translating references to the original linear type | Defect 732744, 655864 |  |

Known issues:

|  |  |  |
| --- | --- | --- |
| Known Problems | Internal Reference | TSG Service Request |
| Problems in location queries such as get\_obj\_id\_as\_rpt\_tab can fail in cases where object type is a road group type expressed as an Exor Foreign Table | Defect 635058 |  |
| Problems relating to pathing at or close to the start/end of the linear references | Various defects |  |
| Once configured, the base data for the pathing tools is static and is not currently updated when weights and connectivity is changed. |  |  |
| ComputeLinearLocation query fails with error ORA-29532  This is caused by having registered metadata and Oracle Network data in a schema different to the Exor Highways owner. The upgrade script will make adjustments for missing synonyms but systems configured in this faulty way may need the network metadata to be dropped and re-created. | Defect 670673 |  |
| Add continuous location on ESU Save location throws error - ‘From’ measure greater than the ‘To’ measure | Defect 759545 |  |

# Notes on the use of Oracle pathing tools

There follows a short description of the options available to use the Oracle pathing tools.

The pathing tools require network data that is consistent and performant when used with the Oracle network model. This can be done by reference to a specific node type – this will generate background data of all network that connects with the node type. The LB\_PATH\_REG package is used to do this. The following code will register the metadata for a network named ‘NW’ which connects all Exor network elements that connect using the ‘ROAD’ node type.

begin

lb\_path\_reg.register\_nw\_types('NW', 'ROAD');

end;

/

Once registered, the Oracle system allows a graph of connected data to be assembled in memory. To generate a graph of the whole of the named network code such as that below can be used. Note that the node type is needed but may be deprecated at some stage.

begin

lb\_path.set\_network(‘NW', 'ROAD');

end;

If this is being used for a placement of a specific asset type, then the selected network need only be of the prescribed types linked to the asset type. This can be assembled for an asset type of ‘SPED’ by using:

begin

lb\_path.set\_network('NW', 'ROAD', ‘SPED’);

end;

/

Over large networks where a path is required over a small area, the extent of the graph may be restricted by ordinates. These must be in the same coordinate system as the network geometries,

begin

lb\_path.set\_network('NW', 'ROAD', NULL, 5052000, 3557000, 5060000, 3565000 );

end;

/

Once a graph has been configured, the least-cost path may be generated as an LB\_RPT\_TAB or as an SDO\_NUMBER\_ARRAY. The basic Oracle pathing tools work node to node and return an SDO\_NUMBER\_ARRAY s shown:

select lb\_path.get\_sdo\_path( 22709, 22713) from dual;

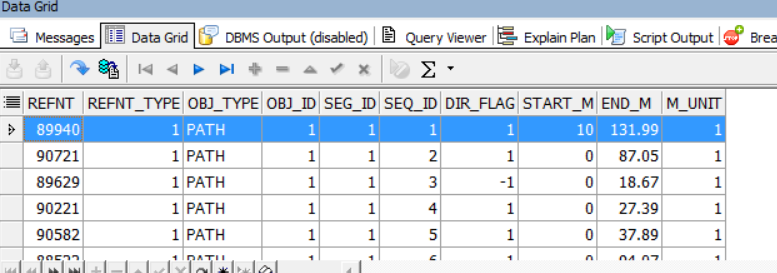
Returning:

(91118, 93246, 92971, 93399, 311149, 92146, 64270104……….)

Optionally, this can be returned as a table of IDs.

The function is overloaded to provide a path from two or more linear reference pairs as illustrated (an NM\_LREF object contains the linear element ID and a measure along it in the prescribed units) :

select \* from table(lb\_path.get\_sdo\_path( nm\_lref(89940, 10), nm\_lref(89957, 20)))



These results show the records of the resultant nested table where the sequence and relative direction of the datum element is returned. This result set can be converted to asset placements or geometry.

An array of linear references may be used to generate the path.

SELECT lb\_path.GET\_LB\_RPT\_TAB\_FROM\_LREF\_ARRAY (

nm\_lref\_array\_type (nm\_lref (89940, 10),

nm\_lref (89942, 50),

nm\_lref (89957, 20)))

FROM DUAL;

And this result set can be converted to a set of geometries which can be aggregated.

select \* from table( LB\_GET.GET\_RPT\_GEOM\_TAB\_FROM\_RPT(lb\_path.GET\_LB\_RPT\_TAB\_FROM\_LREF\_ARRAY (

nm\_lref\_array\_type (nm\_lref (89940, 10),

nm\_lref (89942, 50),

nm\_lref (89957, 20)))))

