

Network Manager

**Fix Release Notes**

4.7.0.0 Fix 55

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# Introduction

This document defines the changes made to the Location Bridge component of the Network Manager 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.

Build 10 of fix 55 (exnm04070010en\_updt55) includes changes to the method of computing paths for the generation of linear locations. These changes are highlighted in their own section.

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

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| --- | --- |
| Fix Details Baseline Release | 4.7.0.0 |
| 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 exnm04070010en\_updt55.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 exnm04070010en\_updt55.sql 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 |
| exnm0407010en\_updt55.sql | 1.0 |
| lb\_ref.pkh | 1.9 |
| lb\_ref.pkb | 1.9 |
| lb\_get.pkh | 1.13 |
| lb\_get.pkb | 1.37 |
| lb\_reg.pkh | 1.3 |
| lb\_reg.pkb | 1.14 |
| lb\_load.pkh | 1.9 |
| lb\_load.pkb | 1.29 |
| lb\_ops.pkh | 1.4 |
| lb\_ops.pkb | 1.4 |
| lb\_loc.pkh | 1.4 |
| lb\_loc.pkb | 1.11 |
| 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 | 1.10 |
| lb\_path.pkb | 1.14 |
| lb\_path\_reg.pkh | 1.2 |
| lb\_path\_reg.pkb | 1.9 |
| 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 |
| make\_nw\_from\_lrefs.prc | 1.1 |
| v\_nm\_datum\_themes.vw | 1.2 |
| V\_LB\_PATH\_BETWEEN\_POINTS.vw | 1.6 |

# 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.

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| --- | --- | --- |
| 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 |  |
| 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. Although the upgrade will handle any missing synonyms, the method of generating the objects used in the pathing procedures differs over previous releases so this issue no longer arises. | Defect 670673 |  |
| Add continuous location on ESU Save location throws error - ‘From’ measure greater than the ‘To’ measure | Defect 759545 |  |
| Synonym and object mis-match problems causes difficulty in dropping a network and in the application of build 9 of fix 55 (location Bridge) | Defect 775038 |  |
| Pathing from exact end of single network element fails | Defect 671058 |  |
| Trace from start of first network element to mid-point of directly connected network element fails | Defect 670075 |  |
| Trace from mid-point of first network element to end of directly connected network element incorrect | Defect 670071 |  |
| Trace spanning mid-point of single network element fails | Defect 670065 |  |
| Mid-point to Mid-point traces return incorrect results | Defect 670057 |  |
| Retrieval of preferred location tab fails to return sequence | Defect 774809 |  |
| Installing LB, LB\_UNITS table does not get populated which makes Exor Integration database package deployment fail. | Defect 773923 |  |

Known issues:

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| 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 |  |

# Notes on the use of Oracle pathing tools

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

The methods used to generate the network property graph have changed from those outlined in previous fixes, particularly the methods outlined in the previous builds of fix 55 (<= build 9). In previous versions, the network metadata name was supplied and the network was constructed and persisted in objects described inside the metadata. The new release constructs property graphs for least-cost-path dynamically within Oracle global temporary tables. The whole procedure of generating the graph and using the path should be performed within the same session. This lends itself to dynamic graphs being assembled and disposed of and is not suitable to large-scale networks.

Code within the package lb\_path\_reg is now obsolete and will be removed in a future release. Also, certain code within the lb\_path package such as lb\_path.set\_network is also obsolete and will be retired in a future release. They are retained to avoid compilation issues for the short-term.

The network property graph may be assembled through the spatial intersection of a buffer around a series of linear references. Other methods to generate the graph will be available in the next build.

Since the graph is assembled dynamically over a selected area, the need for a user to be able to specify the network name no longer exists. The network metadata will now be based on a single network named LB\_NETWORK and other network definitions will be removed during the upgrade.

The graph is instantiated over the network through reference to the procedure lb\_path.make\_nw\_from\_lrefs which uses an array of linear references and an optional asset type. If an asset type is supplied, the network graph is constrained to datum types over which the specified asset type may be placed. If the asset type is not specified, all datum network types are possibly included in the graph. A stand-alone version of this procedure has been made available which takes a set of linear references and no asset type. This will be removed in a future build and has been made available for compatibility with a demonstration system.

The image below is a representation of the network defined by the supply of 9 linear references, each of which is converted to a geometry; the series of geometries are assembled into a polyline which gives rise to a buffer from which the network is defined. The diagram shows a path from the first to the last of the supplied linear references. The buffer size defaults to 200 meters but may be modified by changing the value in the system option LBNWBUFFER. Note that this is cached and changes will only take effect within new sessions or after the lb\_path package is recompiled.

It is anticipated that the network graph may be constructed from a variety of sources in future releases such as polygon/grid square and possibly over the full network.

