ENTERPRISE

Release Overview and Business Impacts

Version 2020

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Change History

This table shows the change history of this guide:

Edition	Date	Reason
1	21 April 2020	First edition.

Table of Contents

1 Introduction

This Release Overview and Business Impacts document (or 'ROBI') provides:

- A detailed description of each key update and enhancement, including examples of new or updated product screens and the expected business impacts.
- Notice of any updates to the ENTERPRISE suite's support with third-party software, so that you can prepare your network to support the new release
- Advance warning of any known deprecations of operating systems/third-party software in future releases (where available/applicable).
- List of Customer Support requests that have been addressed.

Note: This is with respect to version 9.1, through versions 10.0.2 and 10.0.3, up to this latest version, V2020.

Release Documentation

As well as this document, TEOCO provides a set of complementary documents that together provide a comprehensive overview of the changes and enhancements made in the release. These documents include:

Document	Description
Release Overview and Business Impacts	Provides: • Detailed description ('What's New') for each key update and enhancement, including examples of the new or updated user interface and the expected business impacts. • Complete list of Customer Support requests addressed in the release. • Summary of Technology Updates. This lists any updates to the ENTERPRISE suite's support with third-party software.
Release Notes	Includes information relevant to new customers and those customers upgrading to this new released version. More specifically, it includes basic guidance on: • System Requirements • Installation • Upgrade Provides important notices that affect ENTERPRISE, ASSET, ARRAYWIZARD, ASSET Backhaul and Citrix users. Also provides contact information for reporting of bugs.
Open Issues	List of known issues and limitations for this release.
Installation and Administration Guide	Explains how to install and configure ENTERPRISE, your network, and Oracle databases. Describes how to use Administrator to create users and groups, and set permissions. Also contains information on software licensing.
Database Reference Guide	Describes the relationships between tables in the database and the contents of each table.

From the time of the release, these documents will be accessible from the Product Support portal (https://resources.teoco.com).

For further information, please contact Product Support by opening a support request, or contact your TEOCO Account Manager directly.

About this Guide

For existing users of ENTERPRISE, the What's New section gives a brief overview of what has changed in the latest version.

Note: This is with respect to version 9.1. It therefore includes descriptions of new features from V10.0.2 and V10.0.3, as well as this latest version V2020.

However, if you are new to ENTERPRISE, you may find it more useful to refer to:

- The ENTERPRISE User Reference Guide, which provides information about common functionality across the tool suite
- The specific User Reference Guide for each of the products (such as ASSET or ASSET Backhaul) that you will be using

2 What's New in ENTERPRISE 10.0.2?

New Project Manager Dialog Box to Simplify Project Startup

In ENTERPRISE 10.0.2, after logging into the database, you will see a dialog box named '**Project Manager**'.

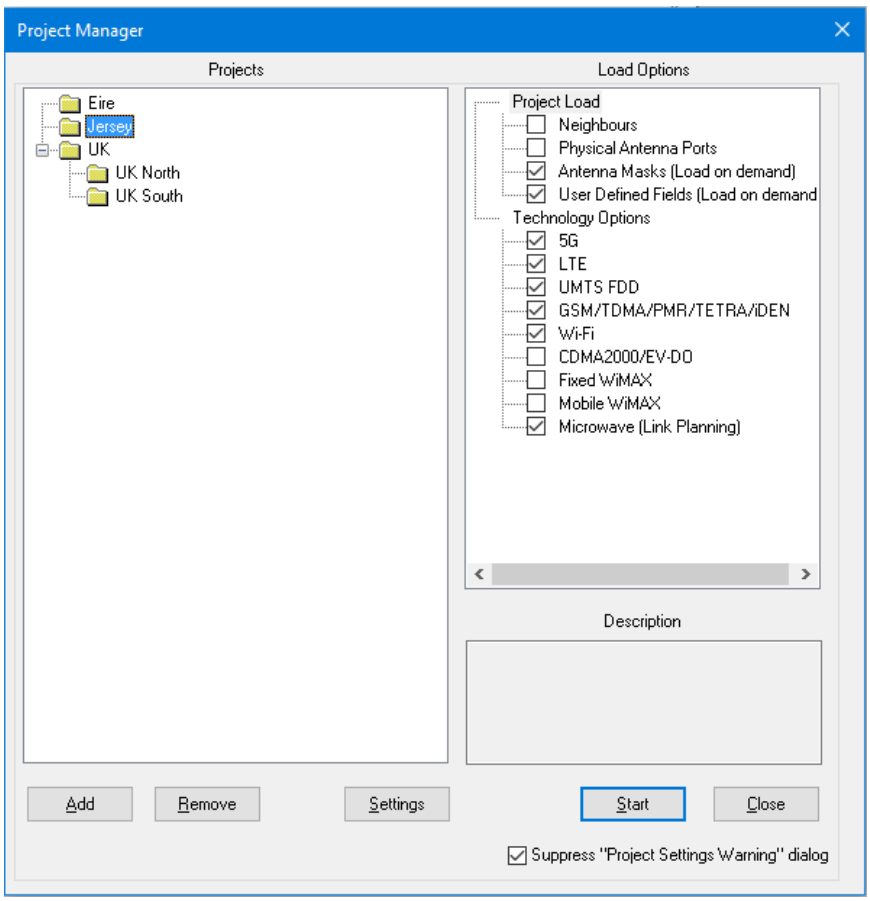
This represents a new simplified approach which improves the process of starting a project.

Previously, when starting a project, you would have seen a 'Start Project' dialog box. This incorporated an Options button to launch a 'Project Load Options' dialog box, where you could select which technologies and other items to load.

From 10.0.2, all of this is merged into one single dialog box, where the project load options are immediately visible and editable.

Note: The main advantage of this new approach is that you can easily see what you are loading, and quickly change it if necessary. This helps to only load the network information that you require.

This picture shows an example:



Project Manager dialog box

From this dialog box, the ‘Settings’ button launches the 'Project Settings' dialog. The project-specific settings work the same as before.

For full information on the above functionality, see 'Creating a New Project' in the *ENTERPRISE User Reference Guide*.

3 What's New in ASSET 10.0.2?

5G (NR) Support

ASSET 10.0.2 provides complete planning/dimensioning capabilities for 5G New Radio (NR), and these capabilities are highly flexible to meet the varying requirements and demands of different network operators and vendors.

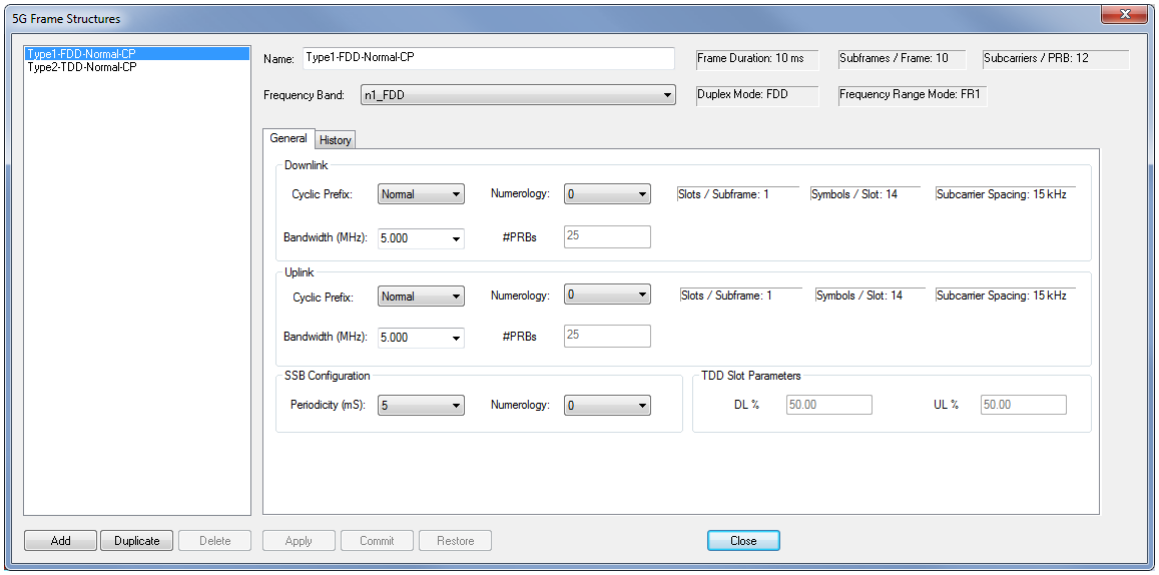
It enables you to plan and analyse different scenarios through a combination of service types, terminal types and terminal density arrays (traffic rasters). The static simulation provides a wide range of output arrays and reports.

The 5G (NR) functionality includes:

- Frame Structures
- Frequency Bands
- Carrier definitions
- AAS (Advanced Antenna System) support
- Site Database network element parameters for 5G
- Coverage Wizard
- Traffic modelling: bearers, services, terminal types, clutter parameters
- Simulator Wizard
- Interference Table Wizard

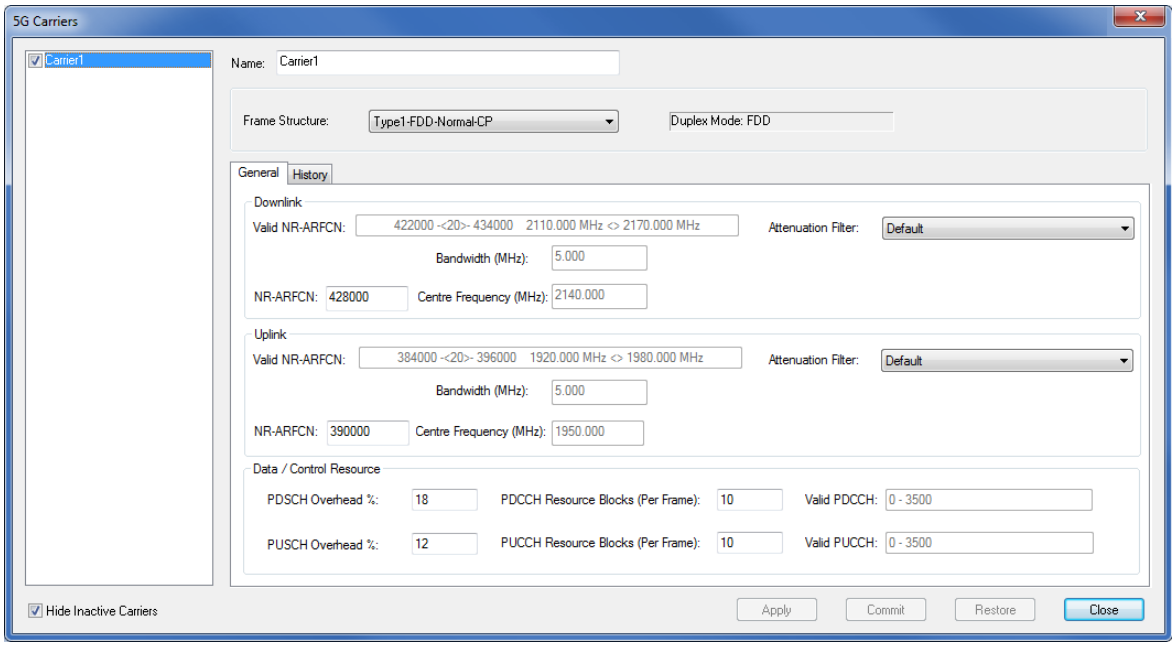
Based on the 3GPP 5G New Radio (NR) Standards, ASSET supports all FR1 and FR2 bands for FDD/TDD/SDL/SUL.

This picture shows an example of the 5G Frame Structures dialog box:



Example of 5G Frame Structures dialog box

This picture shows an example of the 5G Carriers dialog box:



Example of 5G Carriers dialog box

Switched Beam Antennas

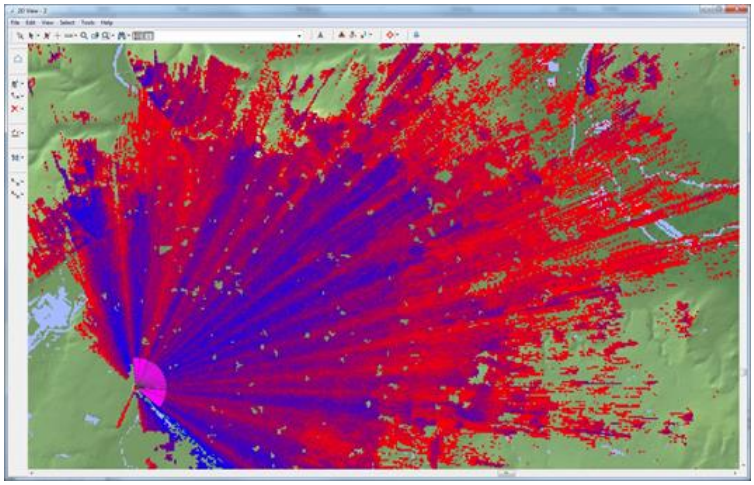
Switched Beam antennas are a vital part of the 5G technology.

Operationally, a switched beam antenna allows the signal to be steered in both the horizontal axis and vertical axis to give directional coverage to a mobile. For example, a switched beam antenna may have 136 patterns formed from a grid of beams which results in many horizontal and several vertical tilts. This means the azimuth can be electronically changed in small steps, and likewise the vertical tilt.

These effects can be considered in ASSET, using the Pathloss Predictor, Signal Coverage Analysis, or Simulator.

The Cellular Antennas dialog box in ASSET accommodates these antennas with all the corresponding beam pattern information.

Here is an example of a 5G Switched Beam array:



Example of 5G Switched Beam array

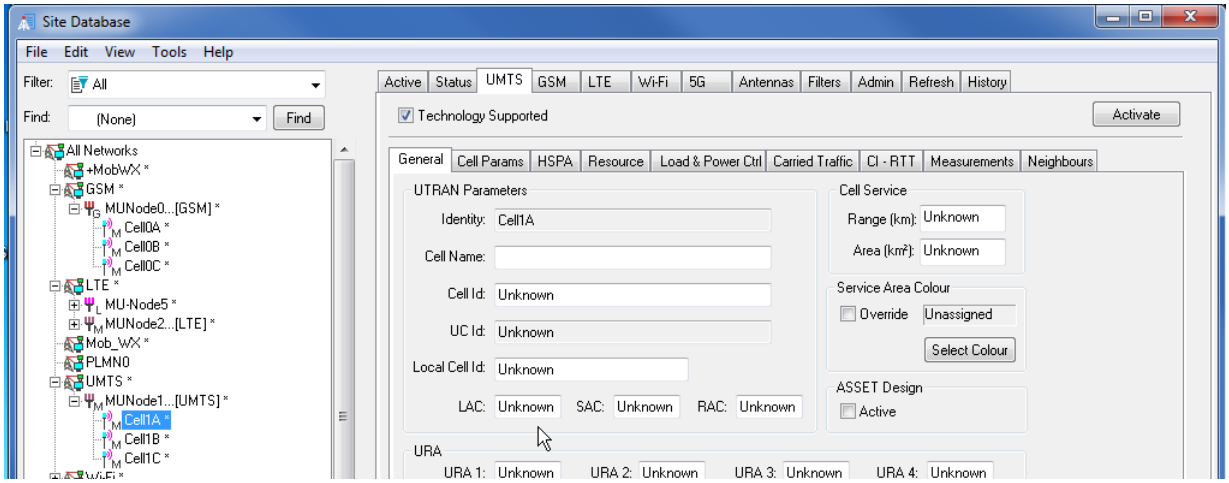
For more information on this, see the 'Using ASSET with 5G' chapter in the *ASSET User Reference Guide*.

Multi-Technology Cells

ASSET 10.0.2 introduces the concept of the 'multi-tech' cell which means that the cell object now has the potential to be configured for multiple technologies. This offers much greater flexibility than before, where only one technology could be configured on a cell object.

In the Site Database at the cell level, there are several tabs at the top, such as Active, Status, Antennas, and so on. At the same level, you will also see one or more technology tabs, depending which ones are supported in the project. By clicking on each technology tab, you can see the relevant sub-tabs that are relevant to that technology.

This picture shows an example, where the UMTS tab at the top has been clicked, showing the UMTS-related sub-tabs (such as HSPA):



Site Database showing Cell object capable of multiple technology configurations

Here are the basic principles:

- When you create and configure MU-Nodes:
  - You can limit its child cells to a single technology

    - or -

  - You can choose to allow its child cells to support multiple technologies
- You can enable or disable a technology at the MU-node.
- You can enable or disable a technology at the cell level.
- On an individual cell, only ONE technology can be **active** at any one time.
- There are user permissions that can control which users can edit the above settings.

For more information on this, see 'About MU-Nodes' and 'About Cells' in the 'Configuring Networks' chapter in the *ASSET User Reference Guide*.

Beamforming for LTE

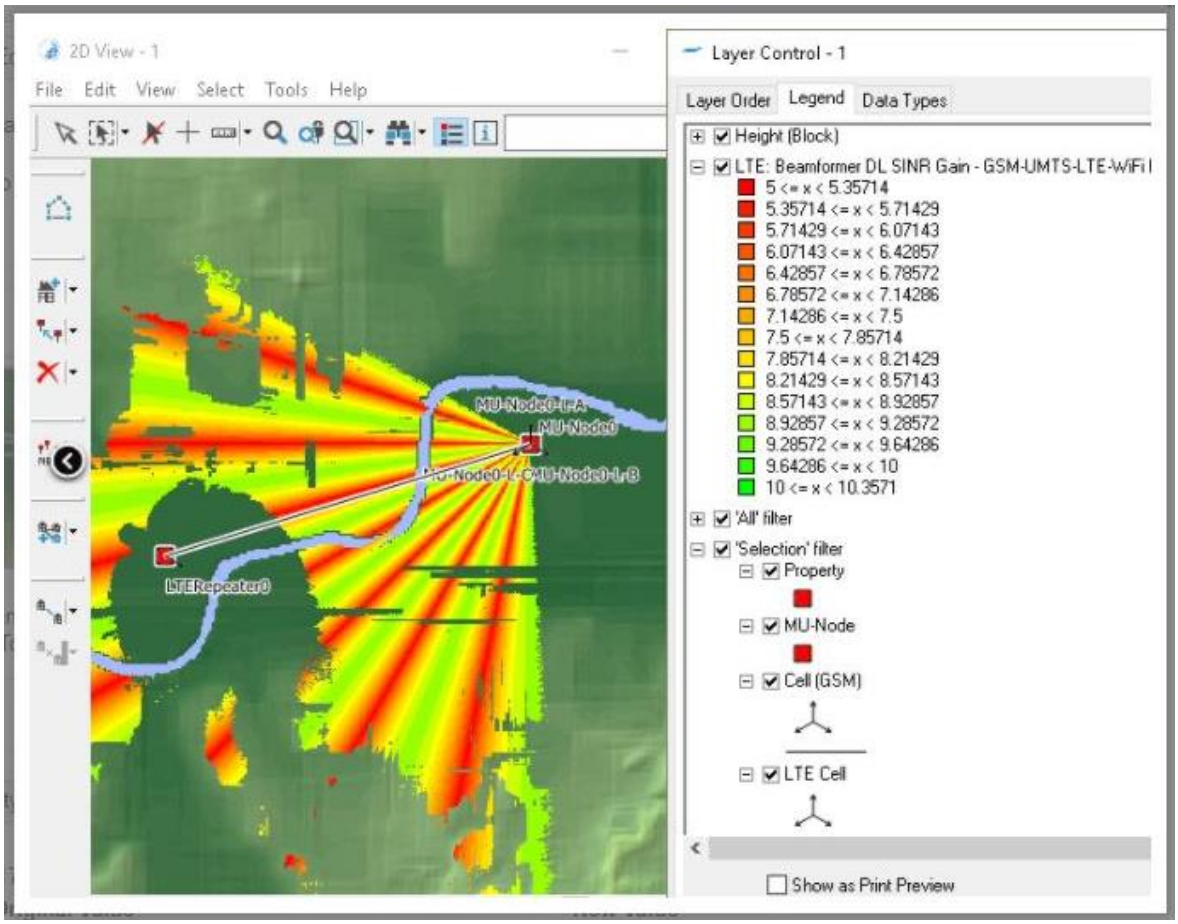
ASSET 10.0.2 supports beamforming for LTE.

It represents an addition to the existing AAS (Advanced Antenna System) transmission modes supported in ASSET. So now the list of supported modes is:

- SU-MIMO Spatial Diversity (SD)
- SU-MIMO Spatial Multiplexing (SM)
- MU-MIMO
- Beamforming

Some transmission modes can also be combined. For example, depending on the cell's AAS configuration, it may be possible for the connection to support Beamforming with SD, Beamforming with SM or Beamforming with MU-MIMO.

This picture shows an example of how the effects of beamforming can be visualised on the Map View:



Example of how the effects of beamforming displayed on the Map View

For more information on this, see the *ASSET User Reference Guide*.

Clutter Parameter and Indoor Loss Schemas

In ASSET 10.0.2, there is now support for clutter parameter schemas and indoor loss schemas to enable their definition on a per frequency, per operator and per market basis.

Previously, there was just one set of parameters for each technology (clutter parameters and indoor loss combined into a single dialog box), and this could not be committed to the database.

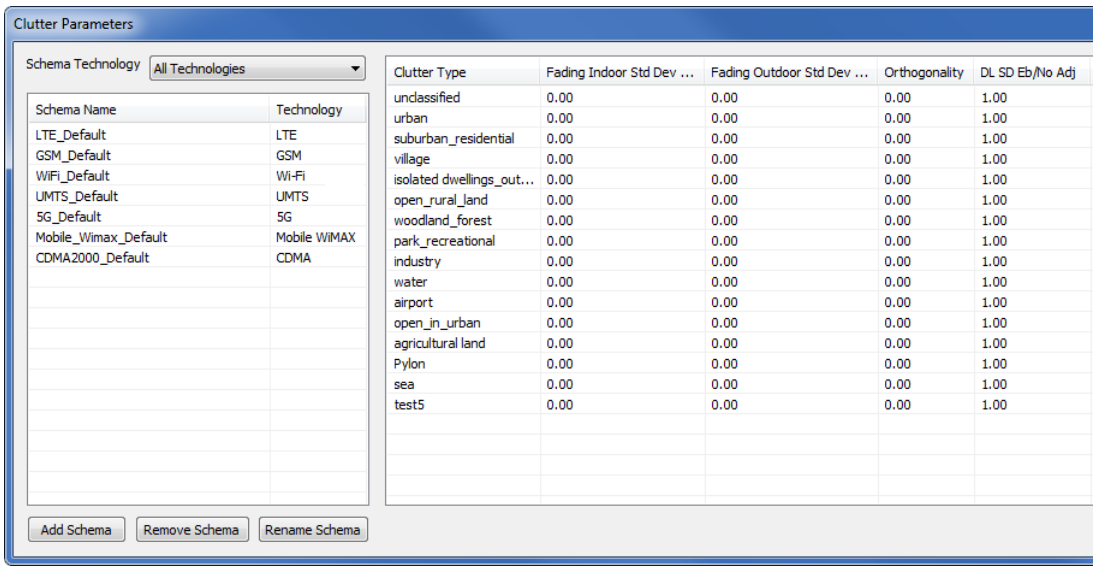
From 10.0, the following improvements have been made:

- The single dialog box has been split into two separate dialog boxes (one for clutter parameters and one for indoor loss).
- These parameters are now schema-based, which allows multiple sets.
- The schemas support true multi-user functionality: Apply/Commit/Restore.
- Indoor Loss schemas can be assigned to individual cells in the Site Database, but these can be overridden.
- In the Coverage Analysis wizards and the Simulator, you can select which schemas you want to use, relevant to the technology.

  This provides flexibility if you want to switch between different sets of values from time to time.

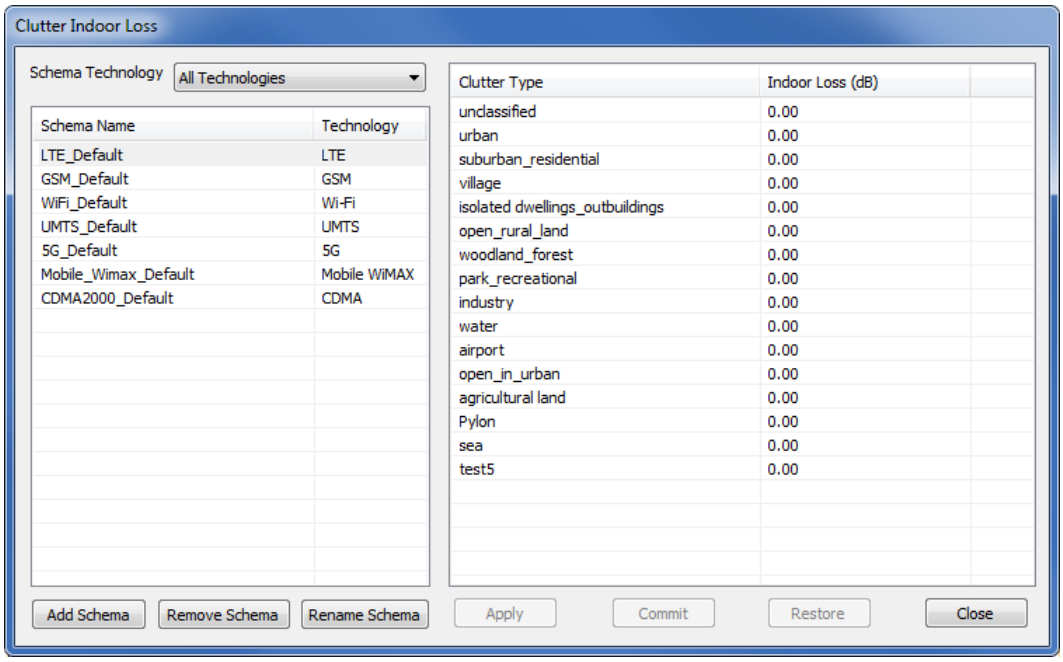
ASSET provides a default schema for each technology, but it is easy to create alternative schemas with different sets of values.

This picture shows an example of the Clutter Parameters dialog box:



Example of Clutter Parameters dialog box

This picture shows an example of the Clutter Indoor Loss dialog box:



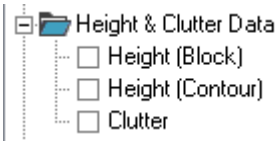
Example of Clutter Indoor Loss dialog box

Clutter Display Improvements

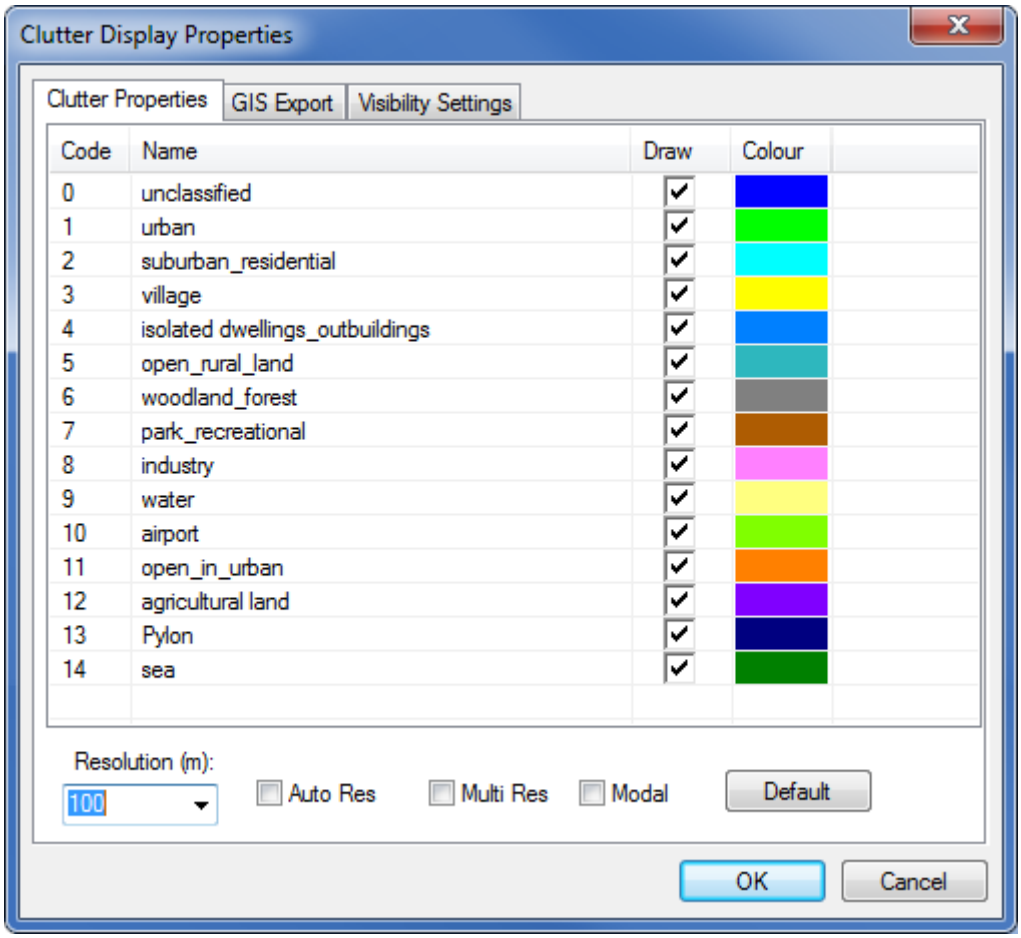
ASSET 10.0.2 provides a simpler and easier way of using the Clutter Display Properties:

Previously, the clutter categories were shown in multiple layers, which was more complicated. You can now edit all of the clutter colours in one place, as well as toggle the rendering of each clutter type on/off.

In the list of Map View data types, the Clutter item is now nested under **Height & Clutter Data**:



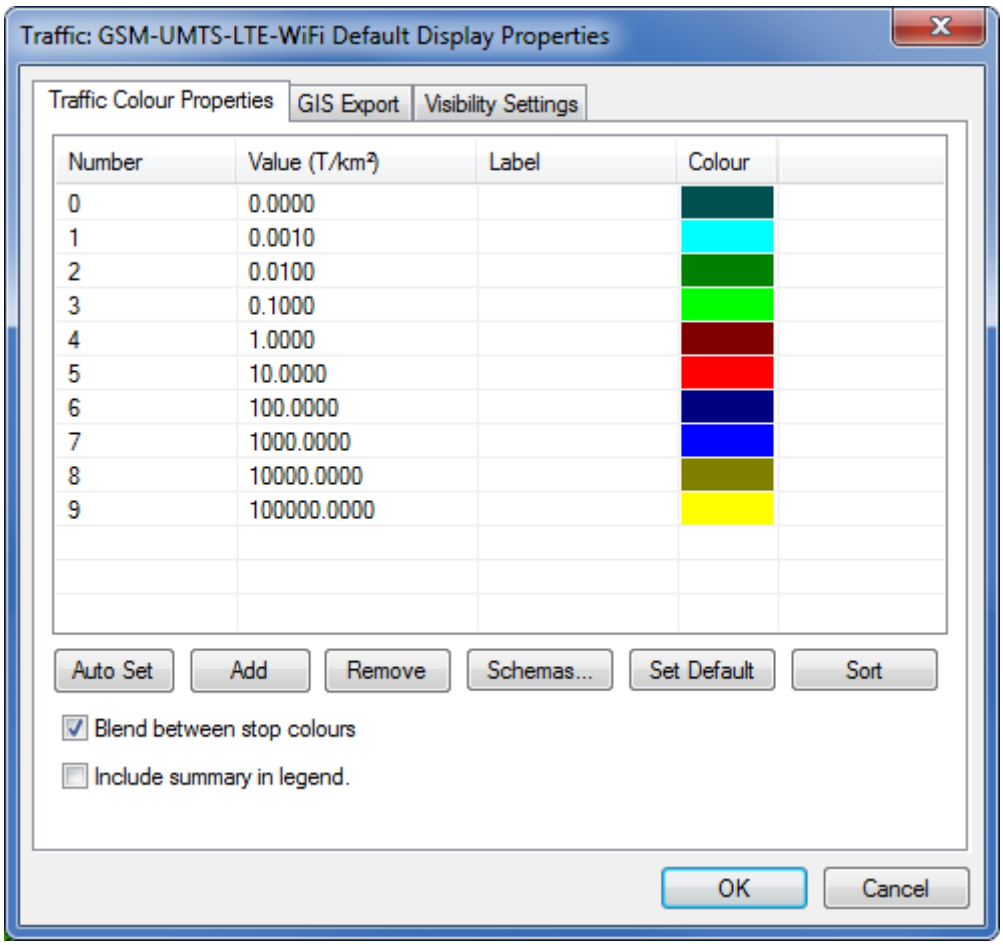
Here is an example of the new Clutter Display Properties dialog box:



For more information, see 'Customising How Clutter is Displayed' in the *ASSET User Reference Guide*.

Traffic Display Improvements

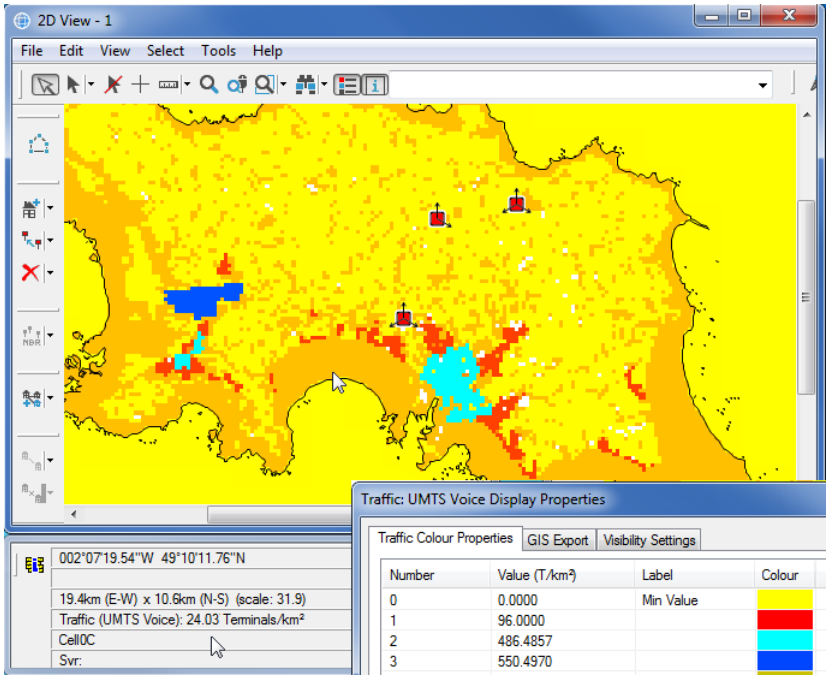
ASSET 10.0.2 provides enhanced traffic raster display settings, as shown in this picture:



On the new Traffic Colour Properties tab, you can:

- Click **Auto Set** to automatically make the settings match the actual data in the traffic raster. This will analyse your traffic array and then assign value ranges corresponding those that are statistically significant in your traffic.
- **Add**/**Remove** your own ranges and manually set the values, labels and colours.
- Use the **Schemas** option to save/load colour schemas.
- **Set Default**. This provides basic default ranges and colours.
- **Sort** (Refresh) the ranges by value, with lowest value at the top of the list.
- **Blend between stop colours**: Interpolates gradients between the threshold (stop) colours, according to each traffic value present in the array.

Here is an example of the colour blending:



Neighbour Delta Export includes a Header Row

ASSET 10.0.2 now includes a header row in the Neighbour Delta Export .CSV file.

This means that the header row now appears in the report.

Here is an example, showing the new header row:

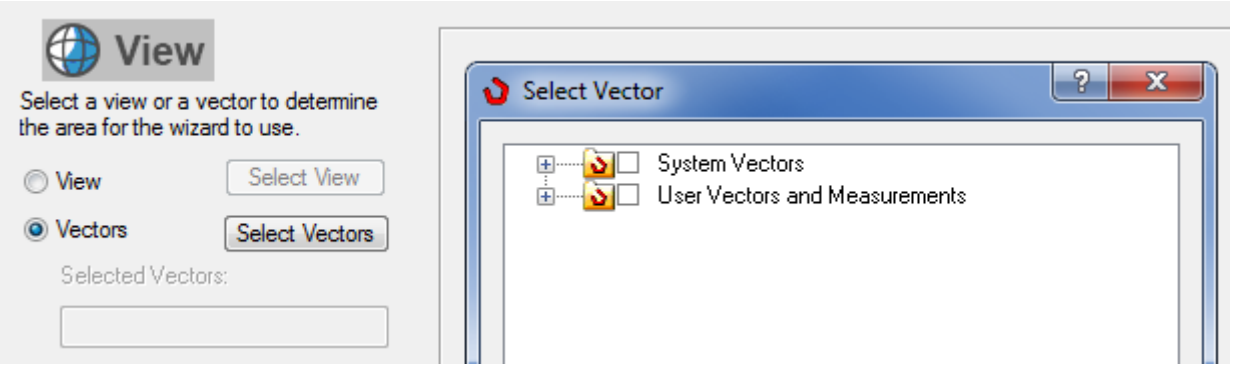
Source: Primary Identity	Source: Cell Identifier	Target: Primary Identity	Target: Cell Identifier	Action: Add[1]/Remove[0]
Cell2A	29987	Cell2B	61301	1
Cell2A	29987	Cell2C	61301	1
Cell2B	29987	Cell2C	61301	1
Cell2B	29987	Cell2A	61301	1
Cell2C	29987	Cell2B	61301	1

Example of Delta Export Report

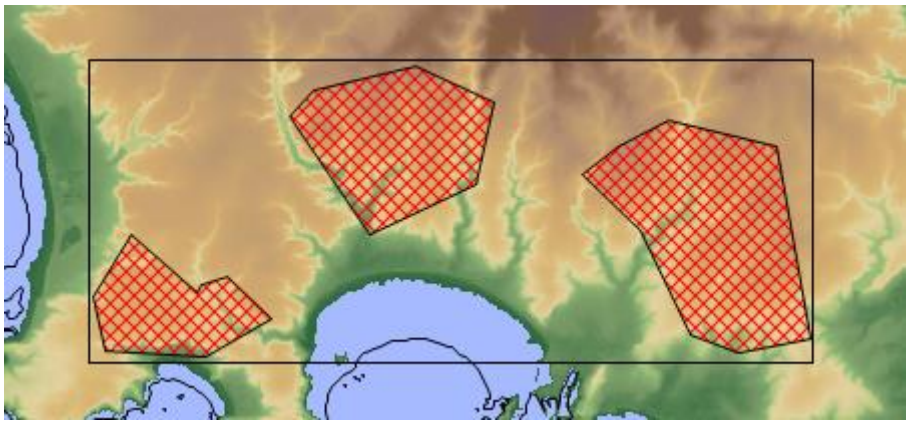
Using Vectors to Select the View Region in the Wizards

ASSET 10.0.2 supports the ability to use a vector or multiple vectors to select the view region in the wizards.

Previously, when using any of the wizards that involve the selection of a region on the first page, the only option was to select a particular Map View. From 10.0.2, you can use the **Vector Selection** method:



With this method, ASSET automatically calculates the bounding box of all features in all chosen vectors, and then populates the wizard region with the extents of this bounding box. This picture shows an example:



Example of a bounding box around chosen vectors

This enables you to easily determine the required region co-ordinates for the planning or the arrays, without needing to precisely position the view.

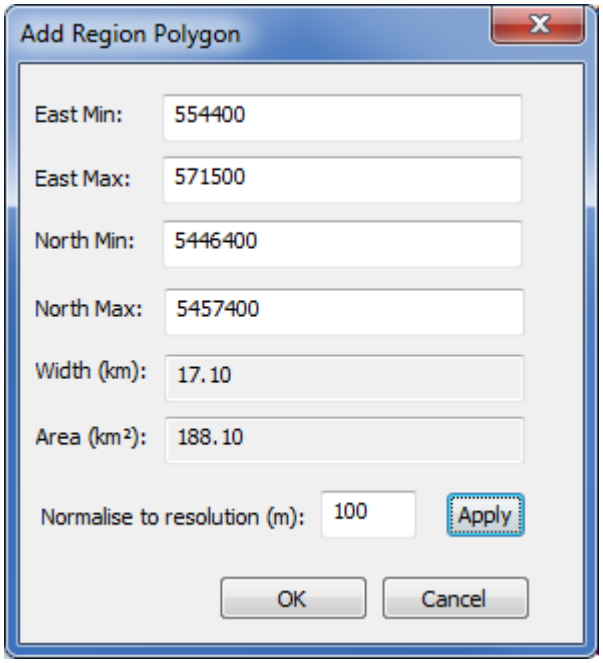
You can use this method for the majority of the wizards, such as:

- Coverage analysis
- Traffic
- Simulator
- Interference Table
- Neighbour Planners

For more information, see 'Using Selected Vectors in the Planning or Array Wizards' in the *ASSET User Reference Guide*. Also see 'Creating a Retrievable Region Polygon' in the *ENTERPRISE User Reference Guide*.

Creating a Retrievable Region Polygon

In the Vector Manager, ASSET 10.0.2 now supports the ability to create a 'region polygon':



This is extremely useful in various ways. You can:

- Set up a viewing region and subsequently return to that region at any time, because it will be retrievable from your vectors in the Layer Control dialog box.
- Share that region with other users, simply by making it available in the system vectors (permission-dependent), rather than user vectors.
- Store specific region coordinates for quick and easy usage when you run any of the planning or array wizards, without the need to precisely position the view every time you run a wizard. You can use this method for the majority of the wizards in ASSET, such as Coverage Analysis, Simulator, Traffic, Neighbour Planner, and so on. This also means you can remain looking at your current Map View when you run one of these wizards, without having to zoom in or out of your current Map View. Instead, you can just continue with your original view.

For more information, see 'Creating a Retrievable Region Polygon' in the *ENTERPRISE User Reference Guide*.

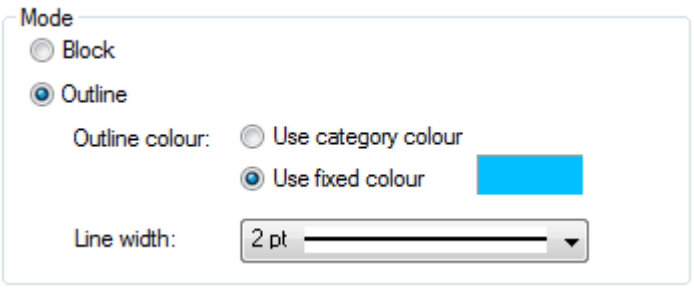
Best Server Array Boundaries

In ASSET 10.0.2, there is now an outline rendering mode for the enumerated array types (such as Best Server by RSRP, Best DL Cell and so on).

So this means that you can now choose between two display modes:

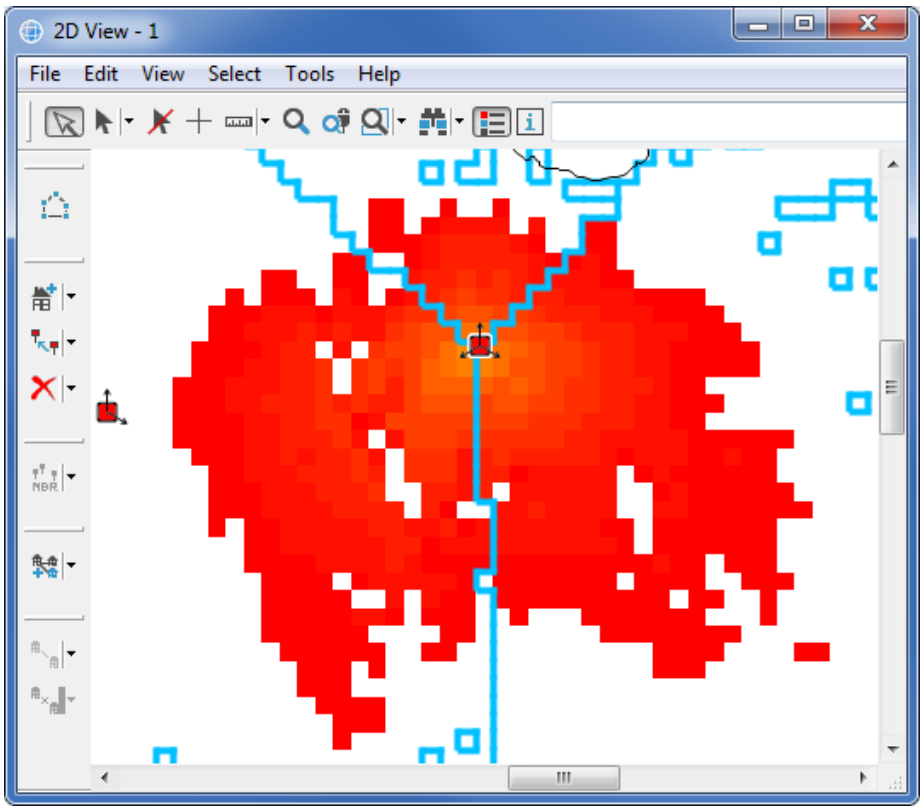
- **Block**: The array appears in a similar way to most of the other arrays.
- **Outline**: The array only shows the boundaries of the array. This enables you to display a separate signal strength array underneath the outline of the best server array, thereby visualising the cell boundaries in combination with the signal strength.

Here are the Block and Outline options in the Display Properties dialog box:



Display properties for an enumerated array (such as best server)

As an example, this picture shows a best server array in outline mode (fixed colour), together with an underlying signal strength array:



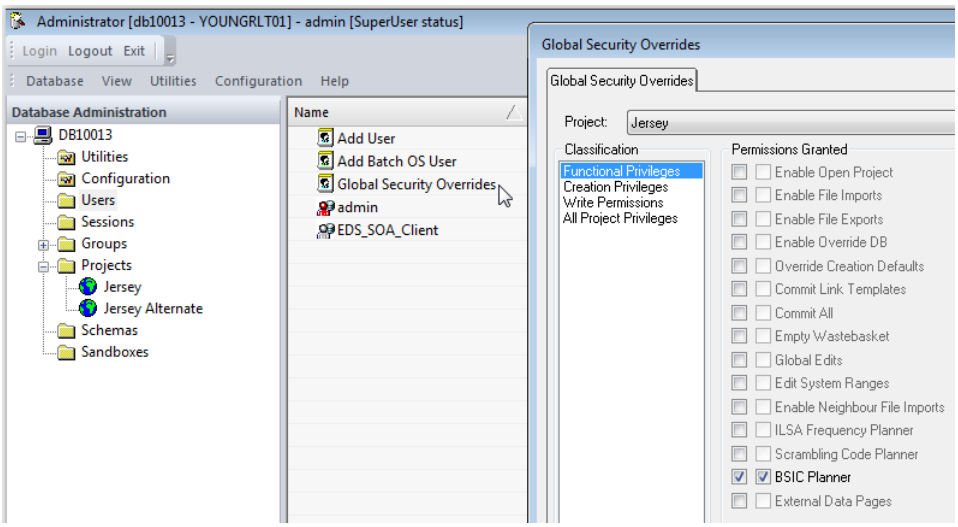
Example of best server array in outline mode, together with signal strength array

For full information on this, see 'Displaying Outline Boundaries for Best Server Arrays' in the *ENTERPRISE User Reference Guide*.

4 What's New in ENTERPRISE Administrator 10.0.2?

Global Security Overrides

As a Super User you can now use Global Security Overrides to grant or deny a permission or privilege to all users, including Sandbox users, irrespective of existing user or group settings. This picture shows the Global security Overrides dialog box:



If, for example, five users have the BSIC Planner permission granted through membership of a group, while all other users are denied that permission, then this table describes the possible settings for Global Security Overrides:

This Setting	Means This
☐ ☐ BSIC Planner	The permission setting is not enabled because the global setting is not selected. Group permissions apply. Five users have the permission and the rest do not.
☑ ☐ BSIC Planner	The denied permission is globally applied. Group permissions are overridden. No users have the permission.
☑ ☑ BSIC Planner	The granted permission is globally applied. Group permissions are overridden. All users have the permission.

Setting Hostname from Command Line

You can now set the hostname of the machine on which the distributed tasks Coordinator resides, from the command line:

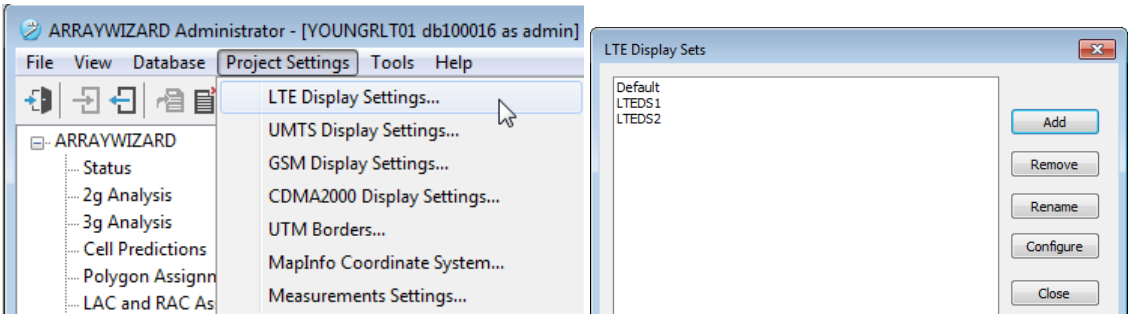
5 What's New in ARRAYWIZARD 10.0.2?

In ARRAYWIZARD 10.0, the following additional features are now available.

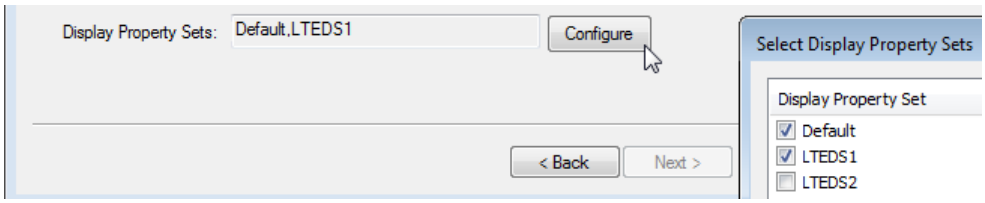
Multiple Display Sets

You can now create multiple sets of display properties that can be applied to your arrays. Separate output files are generated for each selected display set.

You can configure display sets from the Project Settings menu.



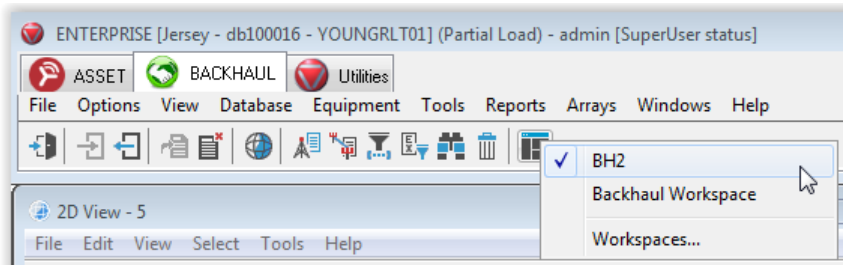
You can then select the required display sets when creating a parameter set:

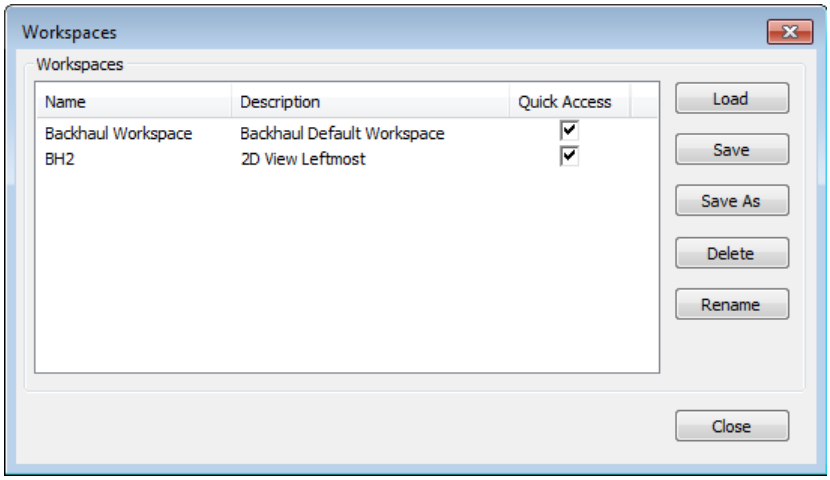


6 What's New in ASSET Backhaul 10.0.2?

Workspaces

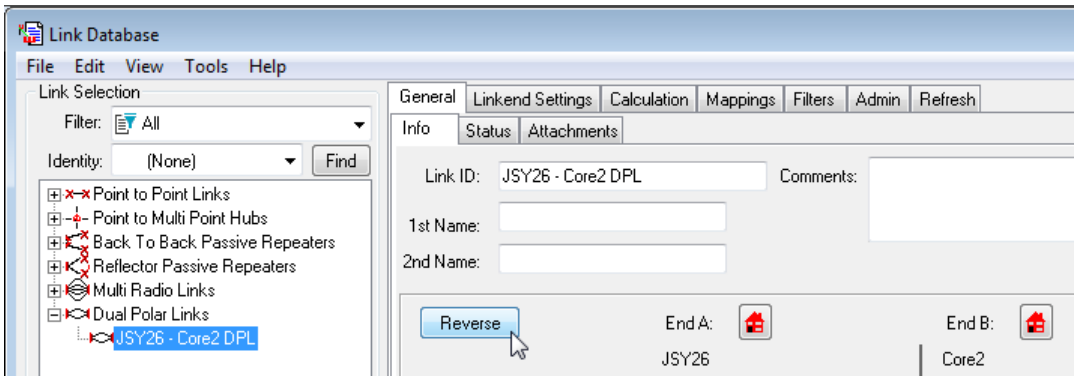
A workspace is a personalised combination of windows and dialog boxes that you use regularly, organised on the screen in a convenient layout that is saved for future use. Workspaces have always been available in ENTERPRISE but you can now create separate workspaces for ASSET Backhaul, and a default ASSET Backhaul workspace is provided.





Reverse Dual Polarised Links

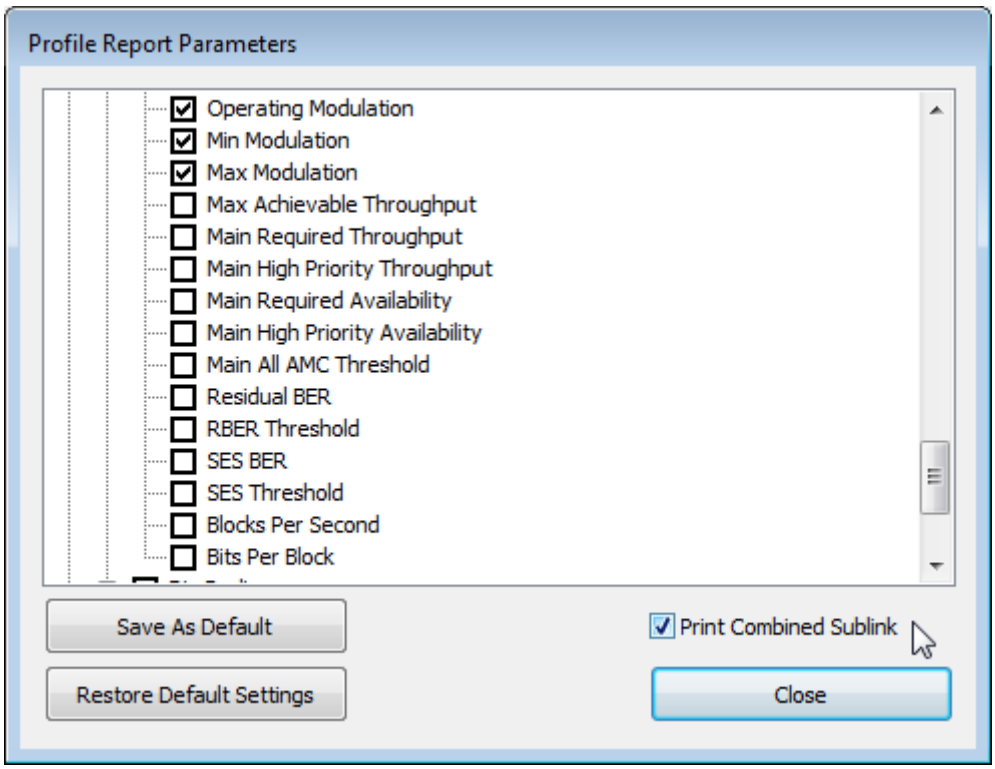
There is now a Reverse button for dual polar Links:



This can also be done from the Height Profile window, however you cannot reverse the Properties for sub-links of dual polar links.

Enhanced Profile/Budget Reports

In the Profile Report Parameters dialog box you can now choose to include Operating Modulation, Minimum Modulation and Maximum Modulation for Linkend - Radio (Main and Diverse) in your Link Profile/Budget Reports. Also, if you are printing a report for a Dual Polar Link or a Multi-Radio Link and you want to include sublink details, you can now select a Print Combined Sublink option :



7 What's New in ASSET 10.0.3?

Beam Sets for Switched Beam Antennas

ASSET 10.0.3 adds Beam Sets for Switched Beam Antennas to the 5G New Radio (NR) functionality in order to support the flexibility of assigning a subset of the beams to each cell.

The Cellular Antennas dialog box in ASSET accommodates Switched Beam antennas with all the corresponding beam pattern information.

In ASSET 10.0.3, if the antenna device type is Switched Beam, you must define at least one beam set for it. A beam set is a defined group of patterns that will be used by an assigned antenna. The beam set information should be in the antenna definition file supplied by the antenna manufacturer.

This picture shows an example of part of a beam set:

Pattern Beam Index	SSB Index	Is Control Beam	Is Traffic Beam	Control Beam Index	Traffic Beam Index	Antenna Pattern Info
102	0	1	0	0	-1	(37000.0 MHz E-Tilt: -3.0° Offset 56.0°) (40000.0 MHz E-Tilt: -3.0° Offset 56.0°)
103	1	1	0	1	-1	(37000.0 MHz E-Tilt: -11.0° Offset -58.0°) (40000.0 MHz E-Tilt: -11.0° Offset -58.0°)
104	2	1	0	2	-1	(37000.0 MHz E-Tilt: -10.0° Offset -52.0°) (40000.0 MHz E-Tilt: -11.0° Offset -53.0°)
105	-1	0	1	-1	0	(37000.0 MHz E-Tilt: -11.0° Offset -48.0°) (40000.0 MHz E-Tilt: -11.0° Offset -48.0°)
106	-1	0	1	-1	1	(37000.0 MHz E-Tilt: -11.0° Offset -44.0°) (40000.0 MHz E-Tilt: -11.0° Offset -44.0°)
107	-1	0	1	-1	2	(37000.0 MHz E-Tilt: -11.0° Offset -40.0°) (40000.0 MHz E-Tilt: -11.0° Offset -40.0°)

Number Of SSB Beams: 3

For more information on this, see the 'Using ASSET with 5G' chapter in the *ASSET User Reference Guide*.

Dual Connectivity

ASSET 10.0.3 adds Dual Connectivity to the 5G New Radio (NR) functionality and allows the modelling of the Non-Standalone mode.

Dual Connectivity allows a terminal to utilise radio resources provided by two separate schedulers which may be located on different nodes. One node acts as the master and schedules resources for cells in the Master Cell Group (MCG). The other node schedules resources for cells in the Secondary Cell Group (SCG).

In addition, it is possible for Carrier Aggregation to be deployed on either of the nodes, meaning that Dual Connectivity and Carrier Aggregation can work together. (Carrier Aggregation is described in the subsequent sections.) The range of arrays and reports that can be generated by the Simulator therefore have the prefix: 'CA/DC'.

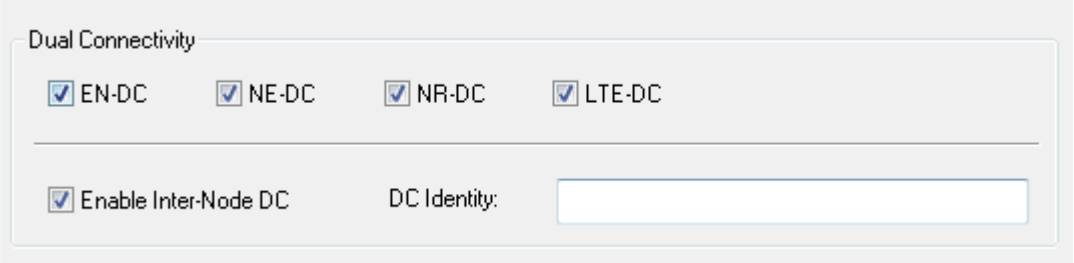
Depending on the configuration, Dual Connectivity can operate intra-node and/or inter-node.

This table describes the possible Dual Connectivity options:

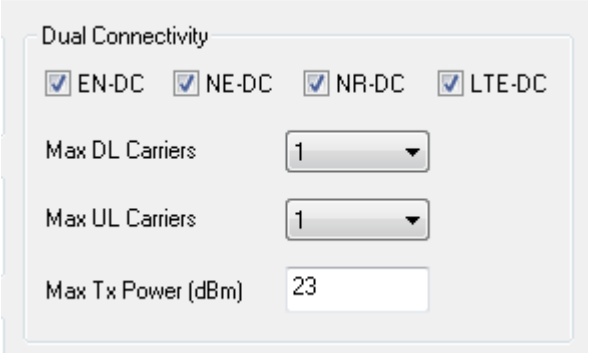
Option	Technology of MCG Cells	Technology of SCG Cells
EN-DC	LTE	5G
NE-DC	5G	LTE
NR-DC	5G	5G
LTE-DC	LTE	LTE

In ASSET, the Dual Connectivity options are configured in two places:

- In the **Site Database**, on the **General** tab of an MU-Node:



- In the **Terminal Types** dialog box, on the **Multi Tech** tab:



For more information on this, see the 'Using ASSET with 5G' chapter in the *ASSET User Reference Guide*.

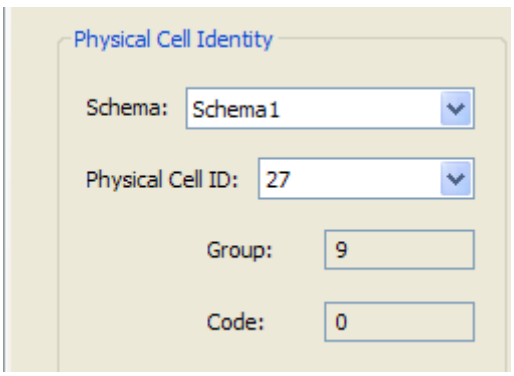
PCI Planner and RSI Planner

ASSET 10.0.3 adds PCI planning and RACH RSI planning to the 5G New Radio (NR) capabilities that were introduced in ASSET 10.0.2.

PCI Planning

The 5G Physical Cell ID Planning Wizard enables you to plan Physical Cell Identities (PCIs) for your network.

This picture shows an example of the 5G Physical Cell Identity (PCI) settings in the Site Database:

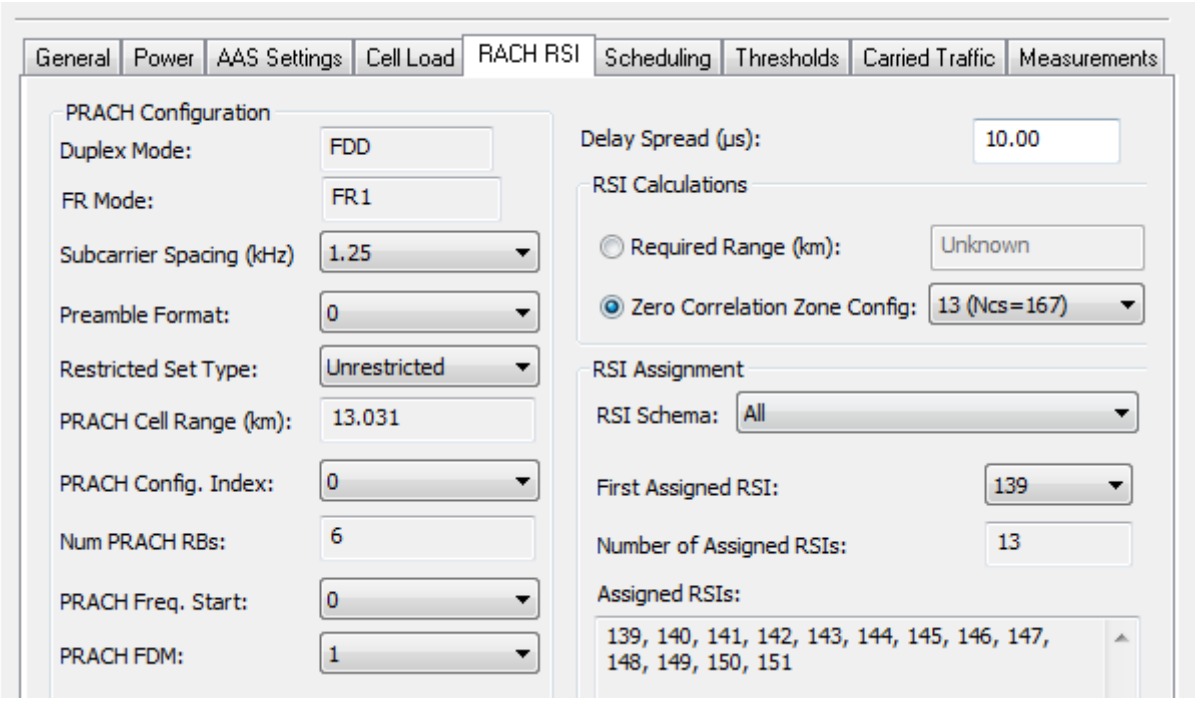


Example of Physical Cell Identity for a cell in Site Database

RACH RSI Planning

The 5G RACH RSI Planning Wizard enables you to plan RACH RSI parameters for your network.

This picture shows an example of the 5G RACH RSI tab in the Site Database:



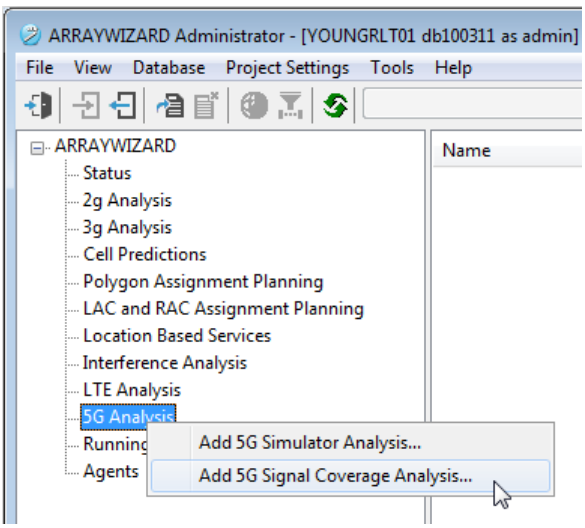
Example of RACH RSI tab for a 5G Cell in Site Database

For more information on this, see the 'Using ASSET with 5G' chapter in the *ASSET User Reference Guide*.

8 What's New in ARRAYWIZARD 10.0.3?

5G Analysis

You can now create 5G Simulator Analysis and 5G Signal Coverage Analysis parameter sets in ARRAYWIZARD:



9 What's New in ASSET 2020?

5G Measurements

ASSET 2020 supports the import of 5G measurement data using a generic CSV file format. Given the variety of proprietary measurement file formats, this generic CSV format provides maximum flexibility for users.

This picture shows an example of the structure of an NR 5G (*.csv) file expected as input to the ASSET loader:

	A	B	C	D	E	F	G	H	I	J
1	Center Frequency:	3500	MHz							
2										
3	Date	Time	Latitude	Longitude	PCI	Beam Index	SS-RSRP (dBm)	SS-SINR (dB)	PS-RSRP (dBm)	SS-RSRQ (dB)
4	12/29/2019	11:52:47	51.243095	-0.593105	252	3	-73	15.91	-107.84	-1.65
5	12/29/2019	11:57:41	51.243095	-0.593105	252	6	-73	16.14	-111.1	-1.77
6	12/29/2019	11:57:41	51.243095	-0.593105	252	6	-73	16.55	-117.48	-2.95
7	12/29/2019	11:57:41	51.243097	-0.593105	252	6	-74	16.12	-118.18	-3.14
8	12/29/2019	11:59:59	51.243097	-0.593105	252	6	-74	15.75	-110.75	-1.63
9	12/29/2019	11:59:59	51.243097	-0.593105	252	6	-72	16.26	-113.15	-1.85
10	12/29/2019	11:59:59	51.243098	-0.593105	252	6	-73	16.48	-123.12	-4.83
11	12/29/2019	11:59:59	51.243098	-0.593105	252	6	-72	17.35	-123.92	-5.72

Example structure of an NR 5G (.csv) file*

For more information on this, see the 'Measurement Data File Formats' section in the *ENTERPRISE Technical Reference Guide*.

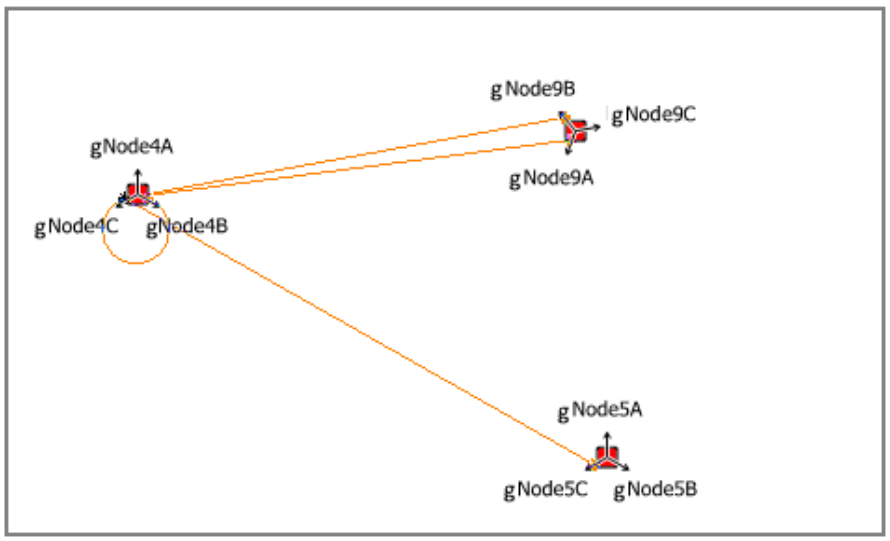
5G Neighbours

ASSET 2020 continues to build on the 5G functionality by providing 5G neighbour planning. This will provide 5G Intra-Frequency, 5G Inter-Frequency and inter-technology neighbour relationships. This means that the existing functionality for all the other technologies will be equally supported for 5G.

Direction	Total	2G	UMTS	CDMA	LTE	5G	Live	Planned
Outward	4	0	0	0	0	4	0	4
Inward	4	0	0	0	0	4	0	4

Identity	Carrier / Cell Layer	Direction	Technology	Distance(km)
gNode4C	Carrier1	Mutual	5G	0.000
gNode5C	Carrier1	Mutual	5G	1.586
gNode9A	Carrier1	Mutual	5G	1.262
gNode9B	Carrier1	Mutual	5G	1.262

Example of neighbour relationships displayed for a cell in the Site Database



Example of neighbour relationships displayed in the Map View

The added functionality is implemented into the following:

- Map View
- Neighbour Planner
- Neighbour Analysis
- Neighbour Limits (project-based limits and cell-specific limits)
- Site Database (Neighbours tab)
- Global Editor
- XML Import/Export

For more information on this, see the 'Creating Neighbour Relationships' chapter in the *ASSET User Reference Guide*.

Cellular Antennas Enhancements

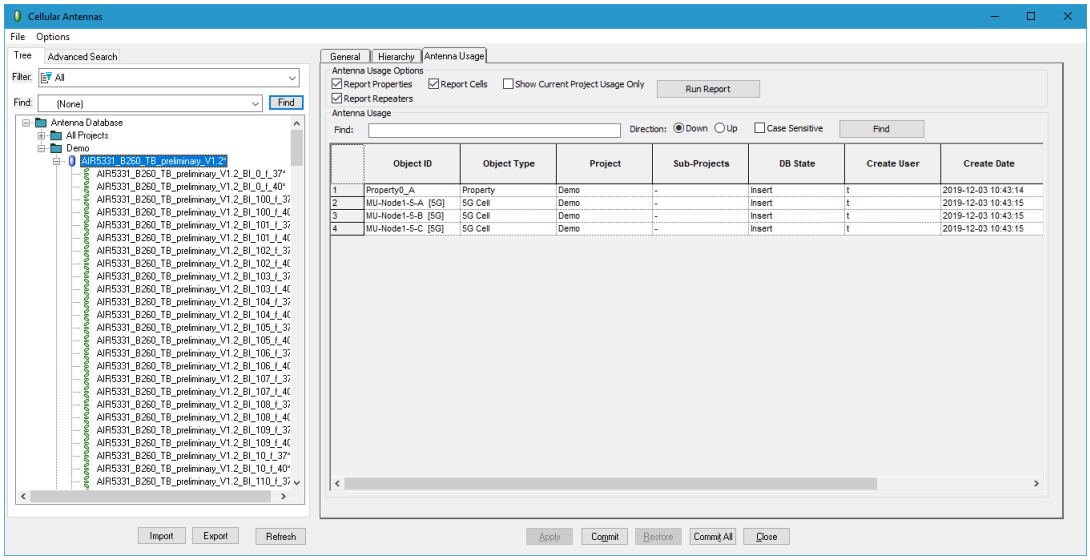
ASSET 2020 introduces some changes to the Cellular Antennas dialog box:

- **Reduced number of tabs**

  At the antenna device level, the number of tabs in the right pane has been reduced, so that you can find information more easily.

  The Costings, Dimensions and Beam Sets information has been relocated onto the General tab. The Hierarchy tab is unchanged.

- **New Antenna Usage tab**:



  This enables you to run a report showing which objects are using the device or pattern. This might be useful in various ways, for example when you want to perform cleanups.

  The option is also available for specific objects by right-clicking at the folder, device or pattern level (all in left pane).

  At the antenna pattern level, the number of tabs has been reduced, so that you can find information more easily.

  The Gain, Frequency and Polarisation information has been relocated onto the General tab. The Mask tab is unchanged.

  For more information on this, see 'Using the Cellular Antennas Dialog Box' in the *ENTERPRISE User Reference Guide*.

- **XML Import/Export**

  There are now Import and Export buttons on the Cellular Antennas dialog box, which makes it quicker and easier if you want to perform these functions for antennas only. In previous versions, this could only be done by using the general Import/Export utility from the main File menu on the ENTERPRISE toolbar.

  There are also right-click options for exporting specific objects at the folder, device or pattern level (all in left pane).

- **Right-click context menus**

  In addition to the above exporting options, there are more right-click options available on the Tree tab and the Advanced Search tab (both in left pane).

  See 'About the Context Menu on the Tree Tab' and 'About the Context Menu on the Advanced Search Tab' in the *ENTERPRISE User Reference Guide*.

Converting 2D Traffic to 3D Traffic

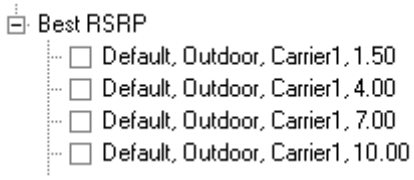
ASSET 2020 enables you to convert existing (2D) traffic rasters into 3D rasters which can take account of floor levels.

The **Traffic 2D to 3D Converter** enables you to convert a raster that already exists in memory into a 3D version of it. This means that you can output multiple height-specific array instances when you run the Simulator. For each building encountered in the simulation area, the converter 'spreads' the values in the original raster over a number of 'floors' of that building. In the parts of the area where there are no buildings, the original traffic value in the 2D raster will be retained.

You can save the converted raster in the usual way, using the Array Manager. You can then proceed to run a simulation in the normal way.

At the end of the simulation, one array instance of each array type will be generated for each height derived from the 3D traffic raster. The height values will be appended in the output array instance names.

Here is an example:



Prerequisites:

- Building vectors which include polygons and building height attributes.
- You need to have set up multiple heights in the appropriate propagation model(s).

For more information on this, see 'Converting 2D Traffic to 3D Traffic' in the *ASSET User Reference Guide*.

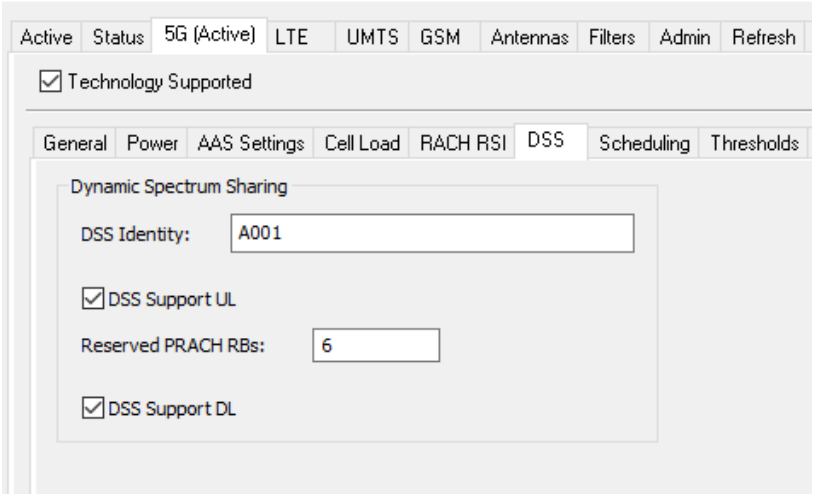
Dynamic Spectrum Sharing (DSS)

In ASSET 2020, you can model Dynamic Spectrum Sharing (DSS) between 5G and LTE. DSS enables operators to deploy 5G on their existing LTE spectrum and infrastructure, dynamically switching 5G users between the two technologies.

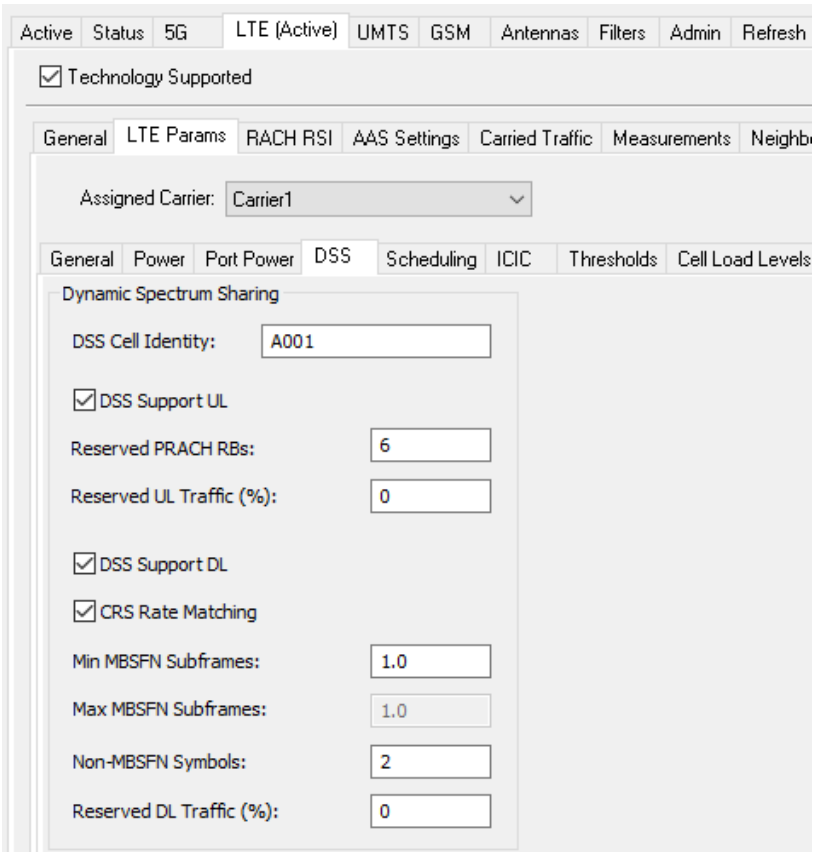
To model this spectrum-sharing in ASSET, you can designate pairs of cells, each pair comprising one 5G cell and one LTE cell.

The settings exist in the Site Database as pictured here:

- 5G cell:



- LTE cell:

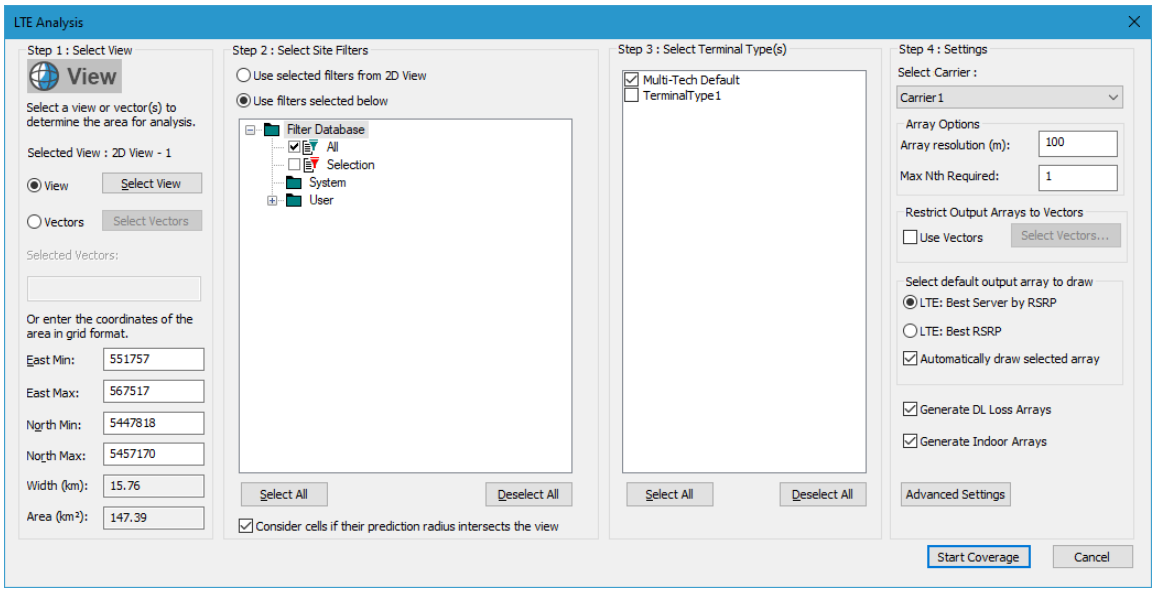


For more information on this, see 'Configuring Support for Dynamic Spectrum Sharing' in the *ASSET User Reference Guide*.

Single Page Coverage Analysis

The Signal Coverage Analysis feature is the most commonly used part of ASSET and is also fundamental to other aspects of the tool.

ASSET 2020 provides an improvement in the use of the coverage analysis by replacing the four-step wizard with a single-page dialog box:



Single-page dialog box for Coverage Analysis

This improvement is for GSM, UMTS, LTE and 5G.

Benefits are:

- Visibility of all the parameters, options and settings (excepting some less frequently used options in the advanced settings).
- Less clicks involved in the process.
- A new option to automatically draw the chosen output array on the 2D View (previously a manual 'redraw' was always required)

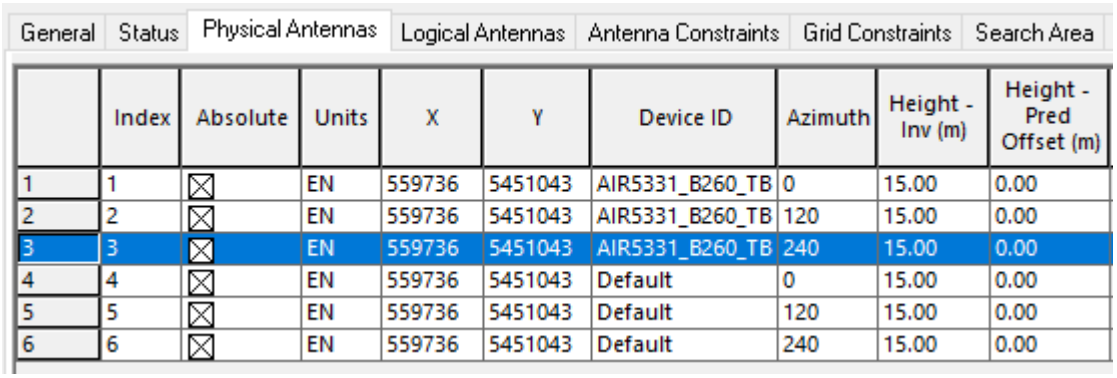
Note: If users wish to revert to the original four-step wizard, they can request this by contacting Product Support.

For more information, see the 'Creating Signal Coverage Arrays' topic in the technology-appropriate chapter in the *ASSET User Reference Guide*.

Site Database Enhancements

ASSET 2020 introduces some changes to the Site Database:

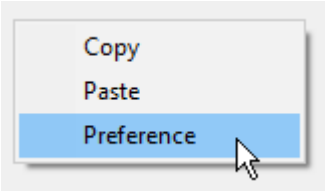
- Ability to customise the columns on the Physical Antennas tab



	Index	Absolute	Units	X	Y	Device ID	Azimuth	Height - Inv (m)	Height - Pred Offset (m)
1	1	☒	EN	559736	5451043	AIR5331_B260_TB	0	15.00	0.00
2	2	☒	EN	559736	5451043	AIR5331_B260_TB	120	15.00	0.00
3	3	☒	EN	559736	5451043	AIR5331_B260_TB	240	15.00	0.00
4	4	☒	EN	559736	5451043	Default	0	15.00	0.00
5	5	☒	EN	559736	5451043	Default	120	15.00	0.00
6	6	☒	EN	559736	5451043	Default	240	15.00	0.00

The tab stores information such as location, device, azimuth, height, mechanical tilt and so on.

You can now customise the columns to show only the parameters that are important to you, and also modify the sequencing, simply by right-clicking and selecting Preference:



For more information on this, see 'Customising the Physical Antennas tab' in the *ASSET User Reference Guide*.

- Removal of Ports information

  Previously, the lower pane of the Physical Antennas tab showed the port information, if this had been defined in the Cellular Antennas dialog box. Even if it was not defined, the column headings still appeared. Now, this information has been removed, which gives the tab a tidier appearance.

Using Site Database Reporter to Generate Data for Grid Data Loader

In ASSET, the **Grid Data Loader** provides a method of adding to or updating the information stored in the Site Database. There are several ways you can enter data into the loader, such as manually, or loading from a file.

In Version 2020, there is a new option where you can use the **Site Database Reports** dialog box to generate the data to be loaded.

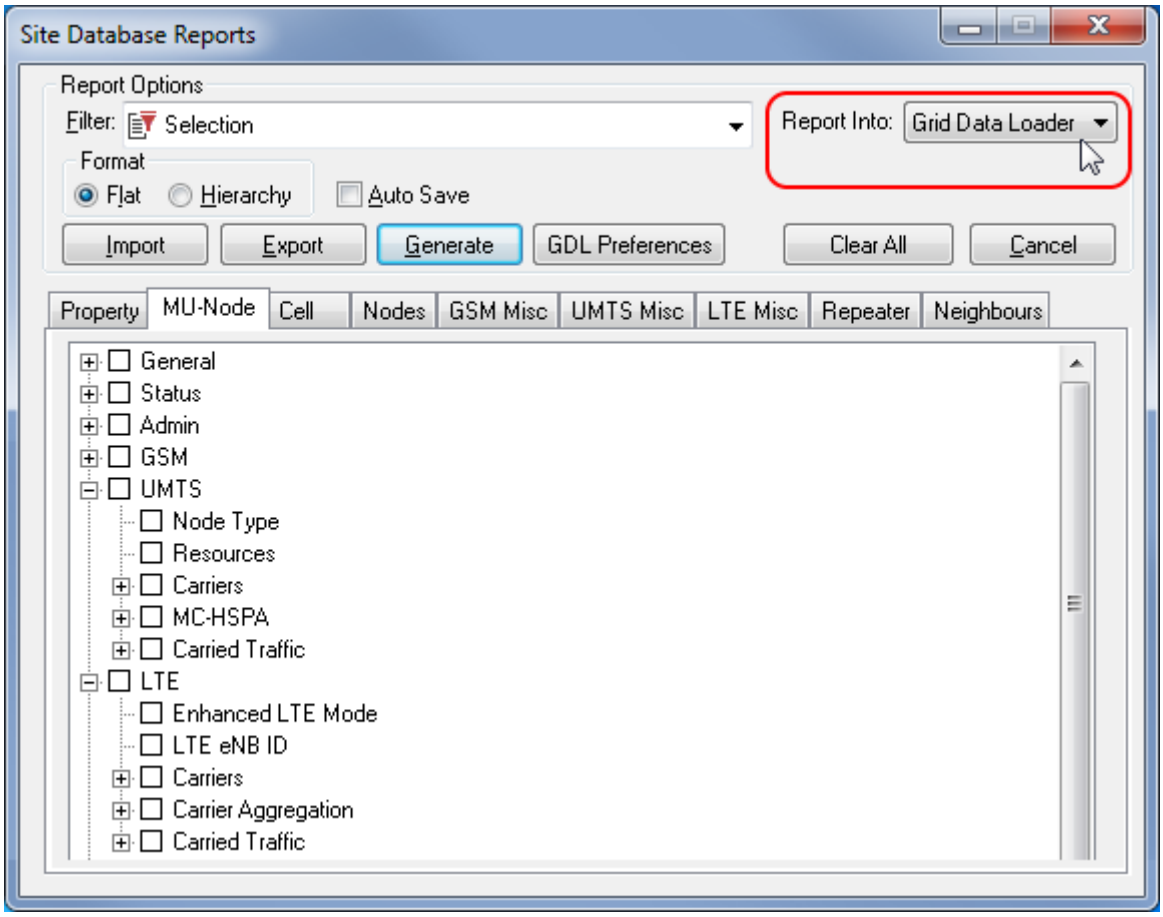
(**Note**: 'Site Database Reports' was formerly titled 'Site/Node Reports'.)

This method enables rapid editing of data that is already in your database, and offers an easy selection facility to choose what you require. Another benefit is automatic column matching which should minimise the need to perform row and column editing. A typical use case would be where you want to perform a bulk UPDATE of your existing network data, perhaps modifying a cell setting on all the cells, with the benefit of clear visibility of the data within rows and columns.

You can output the generated results in two ways:

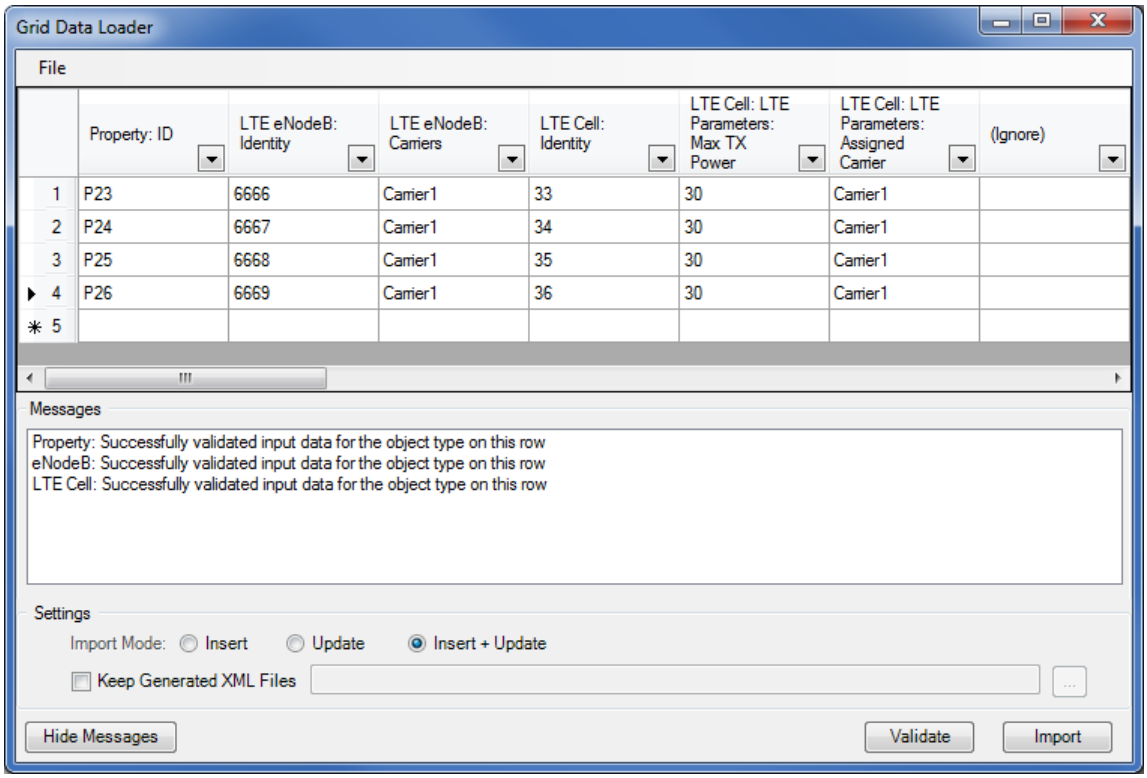
- Directly into the Grid Data Loader
- Into Microsoft Excel or a text editor, then load the file into the Grid Data Loader

This picture shows an example of the Site Database Reports dialog box with the new reporting option:



Example of Site Database Reports dialog box

This picture shows an example of the Grid Data Loader:



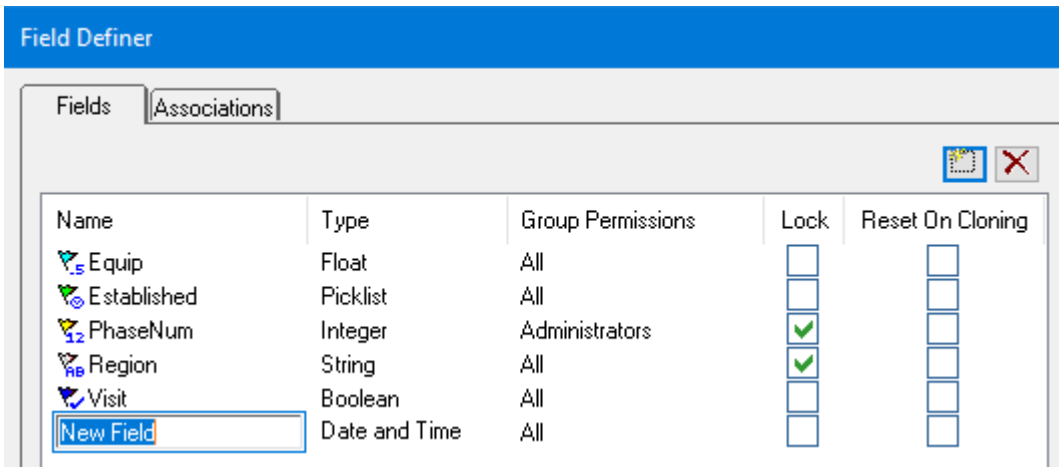
Example of Grid Data Loader

For full information on this, see 'Integrating the Site Database Reports with the Grid Data Loader' in the *ENTERPRISE User Reference Guide*.

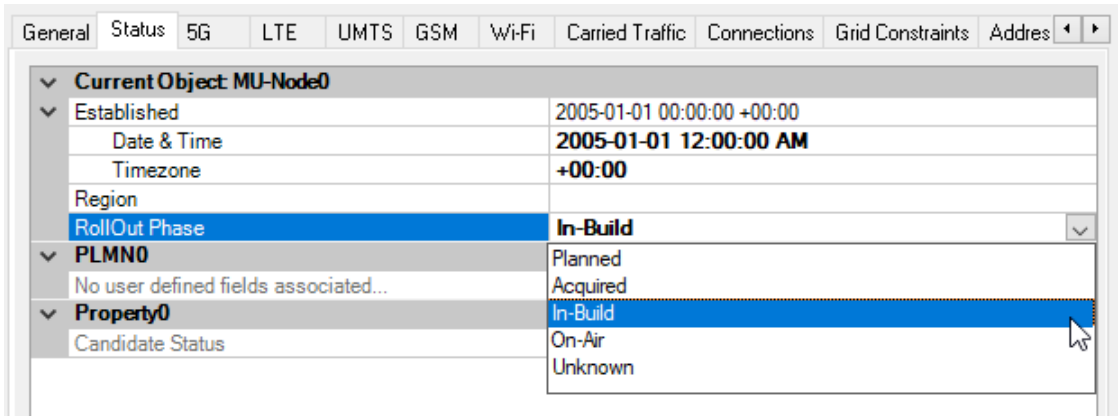
10 What's New in ENTERPRISE Administrator 2020?

Date and Time Field Type

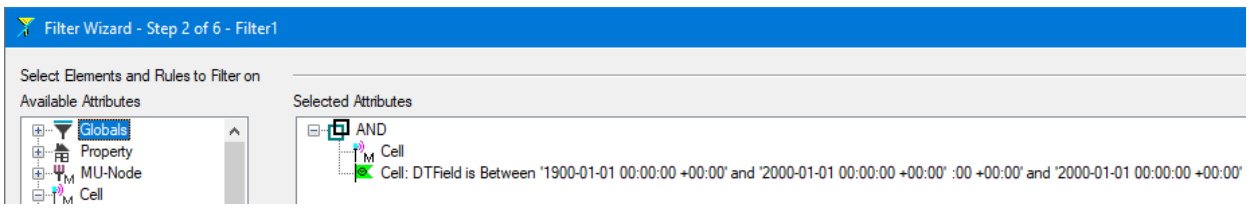
A new status field type of Date and Time with Timezone has been added and you can select it when defining a field using the Field Definer in Administrator:



When a Date and Time field has been defined in Administrator and committed to the database, you can view and edit it within the **Status** tabs of the **Site Database** in ENTERPRISE:



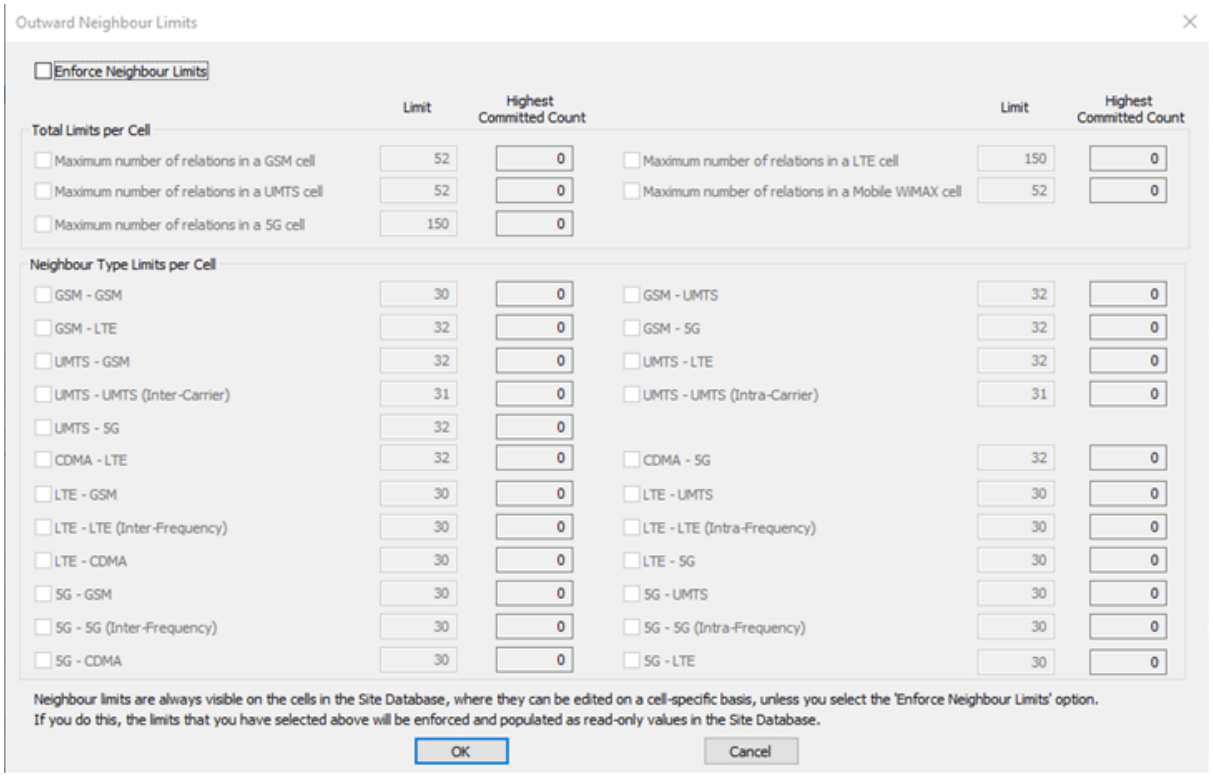
As with other field types you can also select the Date and Time field as an attribute for filtering criteria when using the Filter Wizard in ENTERPRISE:



Note: Fields of the Date and Time type are supported by most but not all network object types.

Outward Neighbour Limits

The **Outward Neighbour Limits** dialog box has been expanded to accommodate 5G technology:



11 Summary of Customer Enhancements

This table gives a summary of the additional enhancements introduced in response to customer requests, since version 9.1.

The summary includes the items from V10.0.2 and V10.0.3, but the items for V2020 are not finalized at the time of publishing this first edition of the ROBI document.

If you wish to see the complete summary, please log in to the Teoco Resource Center (https://resources.teoco.com), and click the 'Reference Guides' link. Then select 'ENTERPRISE' in the Product drop-down list, and '2020' in the Product Version drop-down list. This enables you to find and download the latest ENTERPRISE Release Overview and Business Impacts document.

Component	Description	Jira ID
ENTERPRISE	Mandatory technology selection when starting projects.	EC-20370
	Antenna Mask display enhancement.	EC-20872
	Improve column orders of physical and logical antenna grids.	EC-20940
	Allow setting of global default for ABS or REL coordinate entry.	EC-20420
	Cascade Electrical Tilts for multi-band antennas.	EC-19548
	Site Database Report: consistency of export report for 2G repeaters.	EC-19927
	Add conversion from RD NEW to Lat/Long WGS84 coordinates.	EC-19029
	Improved import of antenna devices from simple Planet format (target hierarchy).	EC-20654
	Logical antenna: synchronise numeric tilts between two logical antennas at different frequencies (different patterns).	EC-20624
ASSET	Configurable displayed EPSG.	AS-32762
	More Colour options for legends in GSM Traffic Map.	AS-33137
	Ability to show the UMTS best server areas (Best Server by Pilot) with contour lines.	AS-18138
	Add centre frequency tab in LTE Carrier dialog.	AS-31704
	Neighbour Delta Plan Export: Headers.	AS-24846 AS-32164
	Tighter security settings for Oracle user accounts.	AS-35672
	Enhancement to support passive antennas with 5G.	AS-36721
	Add multi height predictions to switched beam antenna predictions.	AS-36841
BACKHAUL	Flexible dialog box management (workspace feature).	CT-10442
	Property reverse function for Dual polar and Multi radio links.	CT-9323
	Add Activate button in Workspace.	CT-8646
	Allow Dual Polarised links to be reversed.	CT-9764
	ASSET users should not have to load ASSET BACKHAUL data when the latter is not installed in the application server.	CT-10693
	Ability to create wider number of channels (125MHz up to 2000MHz).	CT-10597

Component	Description	Jira ID
ARRAYWIZARD	Generate arrays based on multiple schemas.	AW-1766
	Multiple colour schemas for each project in ARRAYWIZARD.	AW-1344
	Allow ARRAYWIZARD index file creation to be turned off.	AW-1914
EDS	LTE and UMTS Code schemas to be filtered on ModifyDate.	EWS-1237

12 Technology Updates

For a full list of tested and supported operating systems for the ENTERPRISE (including ASSET Backhaul) application installation, database and virtualization, as well as details of supported versions of Microsoft Office, customers should download the *Tested Configurations for ENTERPRISE V2020* spreadsheet.

In addition, upgrading customers should be aware that TEOCO has made the following updates to the ENTERPRISE suite's support with third-party software between v9.1 and v2020:

ENTERPRISE Application Installation

- Windows Server 2016 has been added
- Oracle 12cR1 x64 Instant Client has been added
- Windows 7 is no longer supported
- Windows Server 2008 is no longer supported

ENTERPRISE Database Host

- Windows Server 2016 has been added
- Red Hat Enterprise Linux Release 7 has been added
- Oracle Enterprise Linux 7 has been added
- Oracle 11g is no longer supported
- Oracle 19c is now supported (this means that all Oracle versions from 12c up to and including 19c are now supported)
- Windows 7 is no longer supported
- Windows Server 2008 is no longer supported