



Release Notes



1Integrate

Version 2.6.0

23 January 2020

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1 Introduction

1.1 Scope

The purpose of the Release Note is to document the new functionality provided by the release and any known issues or limitations. The release notes will also record any administrative instructions that are specific to this release and not recorded elsewhere.

1.2 Purpose of Release

A standard release of 1Integrate.

For users of previous versions, 1Spatial recommends the following before applying any changes to your live environment:

- Please read these release notes and the **Installation Guide** for your application server carefully before installing this release
- Ensure all running and paused sessions are completed
- Back up your live database, including your repository
- Test the release on your test platform

1.3 System Requirements

Operating Systems

This version of 1Integrate is supported on the following platforms

Operating System	Prerequisites
Oracle Enterprise Linux 7.4	
Windows Server 2012 R2	Microsoft Visual C++ 2013 64 bit Redistributable packages Download from this link and pick vcredist_x64.exe https://www.microsoft.com/en-gb/download/details.aspx?id=40784

Application Servers

1Integrate requires an application server and the following are supported (Note that Wildfly is provided as part of the installation package and Oracle WebLogic is a pre-requisite that must be installed beforehand):

Application Server	Notes
Oracle WebLogic Server 12.2.1.3	Any Edition, must be pre-installed
Wildfly 9.0.1	Delivered as part of the 1Integrate installation

Java JDK

Java 8 JDK 1.8.0 (64-bit) update 141 or update 211

Database Platforms

A database is required to act as the 1Integrate repository to store **configuration**. In addition, databases can be used as a source for **spatial data**. The following database platforms are supported with the following restrictions:

Database	Restrictions
Oracle Database 12c R1/R2 (Any Edition)	None
Oracle Database 19c R1 (Any Edition)	None
Microsoft SQL Server 2008 R2 Microsoft SQL Server 2012	When used as data source, requires FME desktop (see below). When used as a rules repository, only supported on Wildfly application server.
PostgreSQL 9.5	When used as rules repository, only supported on Wildfly application server.

Optional FME desktop integration

For full data format support please check the 1Integrate online help under “Basic Steps-> Data Stores -> Supported Data Stores”:

https://1spatial.com/documentation/1integrate/v2_5/Topics/Data%20Stores/Supported_Datastores.htm

Component	Edition	Reason
FME Desktop 2018.1 (64-bit)	Professional Edition	Read or write CSV, Bentley Microstation DGN, Autodesk DWG/DXF Write Esri File Geodatabase
FME Desktop 2018.1 (64-bit)	Esri Edition	Formats listed above plus read or write Esri Enterprise Geodatabase. Requires installation of one of: <ul style="list-style-type: none"> • ArcGIS for Desktop 64-bit Background Geoprocessing • ArcGIS Pro 64bit • ArcGIS for Server
FME Desktop 2018.1 (64-bit)	Database Edition	Formats listed above plus write to Microsoft SQL Server

Web Browsers

This product works with most of the recent versions of Chrome, Firefox and Internet Explorer. The specific versions that have been tested for this release are:

Browser
Microsoft Internet Explorer 11
Google Chrome 78
Mozilla Firefox 71

Other browser clients can be used, but support requests can only be progressed if the issue can be replicated on a supported browser.

2 Release details

2.1 Summary of Changes

Notable differences in 1Integrate 2.6

- Support for Oracle Database 19c (Oracle Database 11 no longer supported)
- Ability to restrict open data task extent to that of previously opened data
- New built-in functions for schema checking (`class_get_attribute_type`, `class_get_attribute_value`, `class_get_attributes`, `class_is_attribute_null`)
- New datastore support: Google BigQuery
- New landing page
- Ability to specify which ordinate to ignore when reading XYZM (measured, heighted) data

Notable differences in 1Integrate 2.5

- Support for PostGIS (PostgreSQL 9.5) data out-of-the-box without the need for FME licenses
- Support for FME 2018.1 (**Note: Using FME 2018 via Data Stores on Linux when running on WebLogic can cause crashes which will be fixed in a later release**)
- PostGIS datastore using FME not supported on Linux
- Use more meaningful names when downloading backup files
- New `copy_attributes` built-in operation
- Support for Java 1.8 update 211 (as well as update 141)
- Security improvements
- Other fixes, improvements

Notable differences in 1Integrate 2.4

- Support Oracle LRS: read and write of measured lines in Oracle.
- Using FME 2018.1 writing to versioned Enterprise Geodatabase now updates correctly
- Ontology support fixes (still beta)
- Other fixes, improvements

Notable differences in 1Integrate 2.3

- Requires WebLogic installer minimum version 2.0.1
- Usable by Workflow in place of 1Validate as it Includes the 1Validate SOAP service (note that on startup a 1Validate Sessions folder will be created automatically)
- Support for Versioned SDE Tables in Esri Enterprise Geodatabase datastores with FME
- Support for reading measured LRS geometries using FME for Shapefile or Enterprise Geodatabase (SDE) formats
- New "rule_name" built-in function to get the name of the rule which invoked the action map
- New SOAP API operation to clone a session and set specific values and session parameters on it

- New `get_session_parameter_value` built-in function to read the value of session parameters passed in
- Various Fixes and security improvements

Notable differences in 1Integrate 2.2

- Support for Oracle Linux 7.4 (Oracle Linux 6.7 is no longer supported)
- Support for Oracle WebLogic Server 12.2.1.3
- Fixes to SOAP API issues
- Support for SQL Server 2012

Notable differences in 1Integrate 2.1

- Support for Java 1.8
- New `Generate_UUID` built-in function
- Improvements to documentation
- Improvements to remembering schema context settings
- Various bug fixes

Notable differences in 1Integrate 2.0

- New REST API available at `<server>:<port>/1Integrate/rest`. This is described in the 1Integrate Web help, accessible from https://1spatial.com/documentation/1integrate/v2_0/Topics/APIs.htm
- A new 'Production Mode' that can greatly reduce the amount of disk space used by sessions (note, this mode disables the cache viewer and the ability to step between the tasks)
- Much faster schema refresh for Oracle data stores, particularly when there are many tables.
- A 'minimised view' option to automatically collapse rules and actions so that they use the least screen space while still being fully readable
- Improvements to cache viewer
- Hide unused FGDB data store parameters
- Session cache garbage collection: Stopping any paused session or deleting any session will now happen rapidly (for deleting via the UI, this applies to deleting from the recycle bin). The session data cache for these sessions will be cleaned up either when any session is run again, or else within 15 minutes, whichever comes first. Sessions which are stopped while running or run to completion behave as before and have their cache deleted immediately on stopping. The result of this change is that it is now possible to completely delete sessions without stopping them and stopping paused sessions is much faster.

2.2 New functionality in this release

Note that not all releases add new functionality - bug fixes are listed in a separate table

2.6.0	
MSINT-1430	Show which session queue is running a session
MSINT-1461	Support Oracle Database 19c R1 (Database 11g no longer supported)
MSINT-1564	Support for measures for GDAL data stores
MSINT-1994	New built-in functions (class_get_attribute_type, class_get_attribute_value, class_get_attributes, class_is_attribute_null)
MSINT-1922	Data Store setting to specify whether to read M or Z when reading XYZM data
MSINT-1834	Enable Windows Authentication for the FME SQL Server Data Store
MSINT-2001 MSINT-2002 MSINT-2003 MSINT-2004	New datastore type: Google BigQuery
MSINT-2029	Restrict Open Data Task's extent to that of convex hull of already loaded data
MSINT-2034	New landing page and menu bar
2.5.1	
MSINT-1987 MSINT-1970 MSINT-1965 MSINT-1964 MSINT-1948	Security: Various security improvements
MSINT-1947	Update to latest JQuery
2.5.0	
MSINT-1643	Out-of-the-box ability to read and write PostGIS data from PostgreSQL 9.5 without the need for FME (PostGIS via FME on Linux no longer supported)
MSINT-1997	Support Java 1.8 Update 211
MSINT-1465	Upgrade to FME 2018 (Note: Using FME 2018 via Data Stores on Linux when running on WebLogic can cause crashes which will be fixed in a later release)
MSINT-1839	New copy_attributes Built-in operation to copy matching attributes from one object to another
MSINT-485	Use more meaningful names for files created by downloading entities
MSINT-1567	Improve data upload form to be the same as rules upload form
MSINT-1508	Allow rs_data_loaders role to upload files
MSINT-1985	WebLogic, default users changed to match WildFly
2.4.0	
MSINT-1835	Allow the 1Integrate Oracle datastore read and write measured lines (LRS lines with m values)
2.3.4	
MSINT-1829	Ability to set per-session parameters via a setParameters SOAP API operation. These parameters can be accessed using a new get_session_parameter_value built-in function in rules or actions
2.3.3	
MSINT-1760	Add 1Validate SOAP service endpoint to allow 1Integrate to be used in place of 1Validate for validation within 1Workflow
2.3.2	
MSINT-1824	SOAP API new operations to clone a session and set extent, workspace and rule-accessible parameters

MSINT-1727	Security improvement: Secure external XML entity reference handling
MSINT-1729, MSINT-1781, MSINT-1782	Security improvement: cross-site request forgery prevention
MSINT-1771	Document pre-requisites for optional datastores in installation guide
2.3.1	
MSINT-1276	Standard support for reading/writing to Versioned SDE Tables from Esri Enterprise Geodatabase (SDE)
MSINT-1613	Hotspots - Specify the implicated attribute in validation hotspot reports
MSINT-1631	Measure values not exported to Shapefile
MSINT-1723	Security: Prevent remote code execution through unsafe Java deserialisation (JNDI)
MSINT-1728	Security: Prevent cross-site scripting (XSS)
MSINT-1750	Document that the Esri Enterprise Geodatabase format is only available for Windows.
MSINT-100	Document how to authenticate via LDAP with Wildfly
MSINT-1682	Document 1Integrate recommended server specification
2.3.0	
MSINT-1560	FME datastore updated to reading measured LRS geometries (Shapefile and Enterprise Geodatabase (SDE) formats only
MSINT-1531	Hide classes from Cache Viewer legend when deselected in Open Data Task
MSINT-1401	New built-in function <code>find_duplicates</code>
MSINT-1401	New built-in function <code>find_kickbacks</code>
MSINT-1401	New built-in function <code>find_self_intersections</code>
MSINT-736	New built-in "rule_name" returns the name (and optionally the path) of the currently running rule, or the rule which triggered the current action (if running an action map)
2.2.0	
MSINT-1444	Support for WebLogic 12.2.1.3
MSCOMMON-693	Upgrade to Oracle Linux 7.4
MSINT-1486	Support for MS SQL Server 2012
MSINT-1551	Much more prominent warnings for purge repository admin option
2.1.0	
MSINT-1369	Support Java 1.8
MSINT-1475	New built-in function <code>generate_UUID</code>
MSINT-1455	Document which data stores support commit
MSINT-1420	Document more details on using MS SQL server as repository
MSINT-1477	Synchronise schema context between Rules and Actions
MSINT-1478	Persist schema context between logins
-	New LRS built-ins for measured geometries – these are not applicable until import and export for measured geometries is added in a subsequent release
2.0.1	
MSINT-1146	Faster Oracle Schema Refresh
MSINT-1373	Production mode for sessions to greatly reduce cache disk space for sessions which change the data (disables cache viewer and rewind/play of tasks)
MSINT-1412	New context menu or double click to collapse and expand Rule and Action nodes
MSINT-1294	New 'minimised view' for Rule and Action context menu to collapse nodes as much as possible while staying readable
2.0.0	

MSINT-1331	New REST API for 1Integrate
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2.3 Bugs Fixed in this release

2.6.0	
MSINT-1603	PostgreSQL repository: Error when uploading large files
MSINT-2078	Height built-in function throws exception for non-heighted geometries
MSINT-2008	Remove WildFly library classpath warning in logs
MSINT-1851 MSINT-1911 MSINT-1769	rule_hotspot_geometry built-in function isn't restorable from a 1Integrate for ArcGIS .rules backup
MSINT-2024	Two dots in a FGDB data store name gets blocked by security check
MSINT-2027	Job graphs don't work consistently across all browsers
MSINT-2052	PostGIS data stores: Cannot set 'Output Mapping' to a different target table to source
MSINT-2061	GDAL data stores leave file handles open, leaking resources
MSINT-2067	WebLogic startup errors related to classes implementing the Java EE spec
MSINT-2019	Data store names inconsistently referenced in file upload errors
MSINT-1827	NullPointerException when generating hotspot for spatial relationships in certain conditions
MSINT-1315	nearest_point built-in function default value for third parameter (return single point) should be 'true'
2.5.0	
MSINT-1860	Open data tasks error when opening two tables into the same class
MSINT-1869	Loading a large ontology to a data store takes several minutes to upload/select data store/use as context
MSINT-1296	When reporting missing built-in function, report the rule that contains it
MSINT-1524	Cache viewer not showing multi-part geometries
MSINT-1927	Cache Viewer rendering wrong for Geodetic data with reversed axis ordering
MSINT-1935	Cache viewer doesn't display Advanced Style page correctly
MSINT-1879	Ontology is not backed up with the data store
MSINT-1881	Type error starting session when ontology changes type
MSINT-1923	Data Gateway: Enable definition of user-defined classes through API to prevent validating report objects.
MSINT-1931	ORA-00054: resource busy and acquire with NOWAIT specified sometimes seen at startup
MSINT-1976	FME PostGIS Data store: Datatype int is read as fme_varchar
2.4.2	
MSINT-1897	User attributes added to an existing class in data store input mapping are not included in the schema
2.4.1	
MSINT-1881	Error starting a session containing a data store in which an ontology has changed the type of an attribute
MSINT-1884	Slow performance when searching on an attribute of an Ontology superclass even if all child classes have that attribute indexed
2.4.0	
MSINT-1869	Loading a large ontology to a data store takes several minutes to upload/select data store/use as context
MSINT-1882	Enterprise Geodatabase update using FME 2018.1 inserts feature instead of updating it on versioned data.
MSINT-1889	Workspace is set on non-versioned databases when running a session, causing an access

	permission error in Oracle for that workspace
MSINT-1873	Ontology - Rule Non-conformance XML not reporting attributes defined in an ontology superclass
MSINT-1888	Ontology - added datatypes reverting to real when refreshing mapping
MSINT-1855	Excessive logging of errors when installed on a SOA domain
2.3.4	
MSINT-1428	Importing an ontology to a Integrate datastore does not read in virtual parent classes
2.3.3	
MSINT-1812	00026437: rule_name() returning null unless used outside of 'Create Object' operation
2.3.2	
MSINT-1752	00025792: GDMS R320 Session Crash with error message invalid pointer, during iq_destroy_predicate.
MSINT-1684	00024342: Covers or Coveredby operators can cause "Unhandled Exception: Descriptor block: get2DGeometry & spatial covers"
MSINT-1784	00025826: Error message "JclLogger - Closing NIO session because of unhandled exception & SocketException: Connection reset"
MSINT-1783	00025826: Exception: "Error sending message: Failed to send message to remote node"
MSINT-1470	Open data by predefined region fails when polygon is loaded from non-Oracle source with error: "Cause: Error loading polygons FmeDataStore is not connected, failed to disconnect for format xxx'
MSINT-1823	Wildfly: Rest API endpoints POST requests cause error 'org.jboss.resteasy.core.NoMessageBodyWriterFoundFailure:' for the following endpoints: createOrUpdateEntity, getDataStoreSpecs, getBuiltinAggregators, getBuiltinFunctions, getBuiltinOperations
2.3.1	
MSINT-1624	Error building topology on lines that loop back on themselves in a lollipop shape. (Could not snap data - look for detail such as spikes or close vertices)
MSINT-1168	21842: The union of two geometries is incorrect and does not contain one of the geometries
MSINT-1301	CSV: Output file extension invalid (extra .)
MSINT-1302	CSV: Extra system csv attributes added to feature class
MSINT-1306	CSV: geometry attribute should not be added by default
MSINT-1468	Poor performance when loading massive 2.5D polygons with inner rings touching outer rings
MSINT-1504	Typo in documentation for sys:Edge class
MSINT-1633	Non-Oracle Data read from inbuilt GDAL datastore reads null values as empty strings
MSINT-1645	Document setting a session polygon as WKT in session UI
MSINT-1696	WebLogic Installation guide, correct specification for JDBC URL
MSINT-1785	Commit to non-spatial Esri Enterprise Geodatabase (SDE) tables is not updating data
2.2.0	
MSINT-1541	SOAP Web Service does not allow updating of rules or actions with templates
MSINT-1536	SOAP Web Service does not correctly set the "last edited" timestamp
MSINT-1457	Admin UI "traffic light" not correctly warning of mismatched Java version (red for major, amber for minor)
2.1.2	
MSINT-1515	Cache Viewer sometimes fails with "(initialise) Error detaching from database: gothic.main.GothicException" due to garbage collector
MSINT-1511	FGDB data (not using FME) can only be read if it has sequential FIDs starting from 0
2.1.0	
MSINT-1466	REST API: Data store GET request failing to return attribute indexes
MSINT-1467	REST API: Data store GET swaps source and target class names in the output mapping.

MSINT-1490	Debug ports and flags enabled by default in release
MSINT-1238	GDAL data stores not displayed on some Linux installations
MSINT-1494	Make cache viewer deal with range of SRS' more gracefully
MSINT-1459	WebLogic Installation missing rs_data_loaders group
MSINT-1450	Prevent Jaro-Winkler returning error with null string input
OSGBGDMS-1181	MetadataStoreReverseLookup built-in function fails intermittently with java.lang.NullPointerException
2.0.1	
MSINT-1391	Clicking the tools menu can also cause download to be clicked at the same time
MSINT-1398	Cache viewer opens in same tab rather than a new tab when using Chrome 60 or higher
2.0.0	
MSINT-1169	Cache Viewer does not highlight selected points
MSINT-590	Cache Viewer point colour setting gets ignored
MSINT-1386	Remove unused Esri File Geodatabase parameters 'Retrieve all schemas' and 'Retrieve all table names'

2.4 Known Issues and Unresolved Bugs

ID	Description
MSINT-1465	Using FME 2018 via Data Stores on Linux when running on WebLogic can cause crashes which will be fixed in a later release
MSINT-1865	<p>Upgrading to version 2.3.4 from a previous release may cause the following error when running a session "gothic.main.GothicException: load of native library C:\Windows\TEMP\gothic-w64-5.61\gothic_w64.dll failed"</p> <p>Workaround is to shut down 1Integrate services and delete the folder named above e.g. 'C:\Windows\TEMP\gothic-w64-5.61\', then restart 1Integrate and continue.</p>
MSINT-1605	<p>'javax.naming.NameNotFoundException: Name "PersistenceUnit"' errors occasionally seen in the logs when running on Linux.</p> <p>This can be avoided by using a different random number generator or by adding a start server argument to 1Integrate by adding the following startup parameter on the application server:</p> <pre>-Djava.security.egd=file:/dev/./urandom</pre>
MSINT-859	<p>Uploading very large files (several Gb) to a data store may result in timeout errors. To increase the timeouts:</p> <p>On Wildfly: go to ..\wildfly-9.0.1.Final\standalone\configuration and edit stanadalone.xml line 381 to increase from 300s (5 mins) to a larger value e.g. 1200s (20 mins):</p> <pre><subsystem xmlns="urn:jboss:domain:transactions:2.0"> ... <coordinator-environment default-timeout="300"/></pre> <p>On WebLogic Increase TransactionTimeout property in Configuration tab of DataStoreController in the WebLogic admin server</p>
	FGDB data cannot be downloaded from a data store containing non-standard characters in its name, or with a name longer than 145 characters.

	FGDB data downloaded from a data store cannot be opened by FME if the data store name is longer than 60 characters.
MSINT-688	The Session Description fails on CheckRules and ApplyAction tasks containing a mixture of folders and single entities.
	The Microsoft SQL Server Spatial data store does not support reading or writing tables that contain multiple geometry columns.
	1Integrate allows spatial columns to contain a mixture of geometry types – many formats force a geometry column to contain only points, lines or areas. When such data is written to Shapefile format via FME, there will be a shapefile for each geometry type whose name will have the geometry type appended, e.g. "Road_line."
	It is not possible to create any geometry properties when importing data through the Comma Separated Values data store. Contact 1Spatial Customer Support for information about how to create geometry using 1Integrate actions. In order to be able to create the geometry, the schema for a CSV data store always includes a geometry attribute. If a geometry attribute is to be created later, the Allow Invalid Geometries option must be selected when importing data to allow them to be temporarily null. If no geometry is to be created, the geometry attribute should be deselected from the schema.
	Unzipping the main 1Integrate zip file can fail using the built-in Windows "Extract All" facility due to a "Path too long error". Use a third party zip program such as 7-Zip or extract the release to the top level directory of a drive and move it afterwards to the desired location.
RST-4774	After a file has been uploaded through the web service, the name of the file is blank in the Input Details of the data store in the UI. Test Connection, Get Schema and opening data from the data store will work, but it may be confusing.
RST-4779	When an object fails to import through FME, the co-ordinates of the MBR of the feature are reported when known. However, the values for maxX and minY are transposed.
RST-4780	A copy of an FME data store can't be used to read data until a data file is uploaded, even though a file name is displayed in the GUI and Test Connection will succeed. The session will run, but will not load any data. To resolve the issue, upload a new data file to the copy of the FME data store.
RST-4781	1Integrate may fail to load the FME Objects DLL, with an error message similar to: <pre>java.lang.UnsatisfiedLinkError: C:\Program Files (x86)\FME_2013_b13450\fmobj_java.dll: The specified procedure could not be found</pre> and/or <pre>java.lang.NoClassDefFoundError: Could not initialize class COM.safe.fmeobjects.FMEObject</pre> The most common cause of the error is a problem with the configuration of the PATH environment variable. If FME is installed on Windows to a location where the path to the file includes spaces – for example C:\Program Files (x86)\FME, it must appear in the PATH environment variable in the shortened 8.3 name, e.g. C:\Progra~2\FME. It may be necessary for the FME entry to be the first entry in PATH to avoid an error similar to the one described above. On Linux, a similar error may be reported if the <FME_HOME>/fmeobject directory has not been added to LD_LIBRARY_PATH as described in the Installation Guide.
	When loading MapInfo TAB data on Linux environments, the Data Store does not automatically identify the Coordinate Reference System (CRS). Users can work around this by specifying the CRS in the 'Coordinate Reference System' field on the 'Input Details' tab of

	<p>the Data Store. The string required starts 'FME=' followed by the required FME CRS. For example if WGS84 is required, enter the following:</p> <p>FME=LL-WGS84</p> <p>Or</p> <p>FME=EPSG:4326</p>
RST-5077	<p>WM error, insufficient privileges when committing. This is due to an Oracle database bug. Either make the data owner a dba user, or apply Oracle patch 9190764 available here: https://updates.oracle.com/download/9190746.html</p>
MSINT-155	<p>The Gothic native library could not be initialised (Linux only) – often caused by the ICU libraries needing to be relinked after a machine reboot</p>
MSINT-381	<p>Sessions will not run if a networked drive is set in the PATH Environment Variable on an Server that is offline</p>

3 Installation

Follow the instructions in the Installation Guide for your application server.

1Integrate will automatically upgrade the repository from the existing release on initial startup. Ensure that all running and paused sessions are stopped before upgrading, and we recommend creating a backup of the repository database first.

Follow the installation guide to install the new release in alongside the existing version and use the same database connection details for the repository. For Wildfly installations the easiest way to configure is to copy the files from the SETTINGS folder from the old installation folder to the new installation folder.

When the new version is started it will automatically upgrade the repository if necessary.

Note that for some upgrades (e.g. moving higher than 1Integrate 1.1) this is a one-way upgrade, once you have started the new version then the repository is upgraded and can no longer be used by the older version, or easily downgraded. For this reason, it is recommended that the repository schema is backed up first.

3.1 Special notes for upgrading from 1Integrate 2.3.3

Upgrading to version 2.3.4 from a previous release may cause the following error when running a session
“gothic.main.GothicException: load of native library C:\Windows\TEMP\gothic-w64-5.61\gothic_w64.dll failed”

Workaround is to shut down 1Integrate services and delete the gothic-* folder named in the error message above e.g. ‘C:\Windows\TEMP\gothic-w64-5.61\’, then restart 1Integrate and continue. Note that the location of this Temp folder is defined by the current user’s TEMP environment variable and so it might point to a different location, such as %userprofile%\AppData\Local\Temp

3.2 NIC/Network Adaptor Configurations

For servers with multiple network adaptors, you must specify which adaptor/network to use for grid communication between the components. The Grid discovery used to find session queues by default uses the first found non-loopback address, for example a machine with Ethernet adaptors ‘eth0’ & ‘eth1’ and Local Loopback ‘lo’ will likely use ‘eth0’.

For Servers with multiple Networked Adaptors

The following properties must be set to specify the adaptor to use:

- **grid.local.address** - specifies the IP address of the network adaptor used for grid communication.
- **grid.communication.tcp.port** and **grid.discovery.tcp.port** - allows environments to specify known ports (for example, when using a firewall).

The communication port must be a minimum of 100 greater than the discovery port, in order to avoid conflict.

If there is only one adaptor and you do not need to modify the adaptor behaviour, then the properties can be omitted to provide the default behaviour.

For Wildfly, the following properties must be included in the **settings.properties** file:

```
grid.local.address=[NIC Address]
grid.discovery.tcp.port=[default: 51300]
grid.communication.tcp.port=[default: 51401]
```

For WebLogic, include the following in the Server Start Arguments (within the WebLogic Server Administration Console):

```
-Dgrid.local.address=[NIC Address]
-Dgrid.discovery.tcp.port=[default: 51300]
-Dgrid.communication.tcp.port=[default: 51401]
```

Standalone off-network environment

For non-networked standalone environments where there is not an active NIC/Network Adaptor, the loopback localhost can be used:

```
(-D)grid.local.address=127.0.0.1
```


4 1Spatial Product Assistance

If assistance is required while deploying this release, contact either your distributor or 1Spatial Support.

To contact 1Spatial Support, please visit our website: <http://www.1spatial.com/services/support>

Maximise the value of this release with 1Spatial foundation and advanced training courses. For training enquiries please contact your Account Manager or email training@1spatial.com

5 Oracle JDBC Driver Distribution License Terms

This 1Spatial product when deployed on Wildfly includes Oracle JDBC drivers which can fall within these license terms:

License Rights

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