TIBCO ActiveSpaces®

Release Notes

Version 4.6.0
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The TIBCO Product Documentation website is updated frequently and is more current than any other documentation included with the product. To access the latest documentation, visit https://docs.tibco.com.

Product-Specific Documentation

Documentation for TIBCO ActiveSpaces® is available on the TIBCO ActiveSpaces® Product Documentation page.

To directly access documentation for this product, double-click the following file:

TIBCO_HOME`/release_notes/TIB_as_4.6.0_docinfo.html` where *TIBCO_HOME* is the top-level directory in which TIBCO products are installed. On Windows, the default *TIBCO_HOME* is `C:\tibco`. On UNIX systems, the default *TIBCO_HOME* is `/opt/tibco`.

The following documents for this product can be found in the TIBCO Documentation site:

- TIBCO ActiveSpaces® *Release Notes*
- TIBCO ActiveSpaces® *Installation*
- TIBCO ActiveSpaces® *Concepts*
- TIBCO ActiveSpaces® *Administration*
- TIBCO ActiveSpaces® *API Reference*
- TIBCO ActiveSpaces® *Security Guidelines*

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- For an overview of TIBCO Support, visit http://www.tibco.com/services/support.
- For accessing the Support Knowledge Base and getting personalized content about products you are interested in, visit the TIBCO Support portal at

https://support.tibco.com.

- For creating a Support case, you must have a valid maintenance or support contract with TIBCO. You also need a user name and password to log in to https://support.tibco.com. If you do not have a user name, you can request one by clicking Register on the website.

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About This Product

The TIBCO ActiveSpaces® software is a distributed in-memory data grid product. Some features of ActiveSpaces® include use of familiar database concepts, high I/O capacity, and network scalability.

ActiveSpaces features a complete redesign and reimplementation of the product and is straightforward to understand, use, and administer.

Product Editions

ActiveSpaces is now available in two editions: Community Edition and Enterprise Edition.

ActiveSpaces - Community Edition

ActiveSpaces® - Community Edition is ideal for getting started with ActiveSpaces for implementing application projects, including proof of concept projects, for testing, and for deploying applications in a production environment. Although the community license limits the number of production instances, you can easily upgrade to the enterprise edition as your use of ActiveSpaces expands.

The community edition is available free of charge. It is a full installation of the ActiveSpaces product. The limitation of using the community edition is that the users can run up to 25 nodes (a total of the copyset nodes or proxies in your data grid).

ActiveSpaces - Community Edition is compatible with both the enterprise and community editions of TIBCO FTL®.

ActiveSpaces - Enterprise Edition

ActiveSpaces® - Enterprise Edition is ideal for all application development projects, and for deploying and managing applications in the production environment of an enterprise. It includes all features presented in this documentation set, and you also have access to TIBCO Support. Choose the enterprise edition for production deployments with more than 25 nodes (a total of the copyset nodes or proxies in your data grid) and for enterprise monitoring using dashboards.

ActiveSpaces - Enterprise Edition depends on the enterprise edition of TIBCO FTL for monitoring and management of data grid components and secure communication.

Terminology Used to Address the TIBCO FTL Realm

With TIBCO FTL 6.1 or later, ActiveSpaces uses the realm service capabilities or processes of the TIBCO FTL server. The following changes are made to the terminology to generically address the components of TIBCO FTL 5.x and TIBCO FTL 6.x:

The Term Used in the Document	The Equivalent Component in TIBCO FTL 5.4.1	The Equivalent Component in TIBCO FTL 6.1 or Later
Realm service	Realm server	Realm service running on the TIBCO FTL server
Realm service URL	Realm server URL	TIBCO FTL server URL
Backup realm service	Backup realm server	TIBCO FTL server that is a member of a cluster of three or more TIBCO FTL servers
Primary Realm	Primary Realm Server and its Backup Realm Server	A cluster of primary TIBCO FTL servers that provide realm services for the data grid.
Satellite Realm	Satellite Realm Server and its Backup Realm Server	A cluster of satellite TIBCO FTL servers that are connected to a cluster of primary TIBCO FTL servers.

New Features

The following features have been added in this release of TIBCO ActiveSpaces®.

Added a New Binding Strategy

A new balanced binding strategy is added that attempts to balance client connections across all the available proxies. To select the balanced binding strategy, when creating the connection to the grid, set the following property:

```
TIBDG_CONNECTION_PROPERTY_LONG_BINDSTRATEGY=TIBDG_CONNECTION_BINDSTRATEGY_BALANCED
```

Added a Command To Balance the Distribution of Clients Across all Proxies

The `tibdg proxy shed` command is added that notifies a given proxy to disconnect either a single client or a number of clients. The clients then attempt to rebind to the available proxies. The intent of this command is to help administrators ensure that distribution of clients across all the proxies is even. This strategy is useful is when a new proxy starts when there are already proxies running. The command helps administrators move clients from the older proxies to the new one.

The Output of the Status Commands To Indicate the Unsynchronized Secondary Nodes

The output of the `tibdg status` command has been updated to indicate whether or not the secondary node is in sync with the primary node. The `tibdg status` command uses `!secondary` to represent unsynchronized secondary nodes.

The output of the `tibdg node status` command has also been updated to indicate whether or not the secondary node is in sync with the primary node. If the secondary is not in sync with the primary, the progress made by the secondary is represented by the number of keys that have been checked.

Added Timestamps To the Output of the Status Commands

Timestamps are now displayed in the output from the `tibdg` status commands.

Added Support for ISO 8601 Date/Time Strings to INSERT Statements

When using INSERT statements to populate columns of the `datetime` type, the format of the strings has now been increased to accommodate a subset of ISO 8601 date/time strings.

Deployment Descriptions from the tibdg Tool Now Contains Information about the Command that was Executed

Added more details to the deployment description that is shown on TIBCO FTL server's Deployment History page. These details are visible when the grid configuration is modified (including adding or removing tables). Users of the `tibdg` admin tool can add their own message by using the new `-m` option. For example: `tibdg -r http://localhost:8080 -m "Creating another proxy" proxy create p2`.

Added New Logging Options in the tidbdg and tibdgadmind Commands

The `tibdg` and `tibdgadmind` commands now provide the following options:

Option	Description	Default
`--logfile <file>`	File name or the prefix to log to.	
`--max-log-size <bytes>`	Maximum size of a log file (bytes), ignored if the log file is not set.	9223372036854775807
`--max-logs <num-files>`	Maximum number of log files, ignored if the log file not set.	1
`--trace <level>`	Sets the log level.	Valid values are `severe`, `warn`, `info` or `debug`. The old options `--debug`, and `--quiet` are marked deprecated and map to `--trace debug` and `--trace severe`.

Changes in Functionality

The following functionality and features have been changed in this release of TIBCO ActiveSpaces®.

Improved Performance When There Is a Heavy Write Load

Improved performance of redistribution under heavy write loads.

Validity of the Time Zone is Checked Before Inserting the Values in a Row

When using INSERT to store datetime values into a row, the timezone specified in the datetime string is now checked to ensure if it is a valid time zone specifier for UTC time. The valid time zone specifier must be one of the following values: 'Z', '+00:00', '+0000', '+00'. Previously the time zone was ignored.

The Logging Details Now Include a Unique Request ID

The logging details now include a unique request ID to the HTTP request. This makes it easier to correlate when recursive requests are made between `tibdg client` and `tibdg server` or on different threads.

Improved Concurrency of Re-indexing Operations

Improved concurrency of re-indexing operations in certain scenarios.

Improved Performance of Checkpoints

Checkpoints now use potentially less disk space and require less memory to open at run time.

Improved Query Performance

Improved the performance of queries in the following scenarios: while redistribution is in progress, reducing the number of rows scanned in some range queries, and when retrieving a row by using its primary key.

All Nodes in a Copyset Perform Disk Usage Optimizations

Some `tibdgnode` disk usage optimizations were being performed only on the primary nodes within a copyset. Now all nodes in a copyset perform similar optimizations to

keep disk usage and performance consistent.

Deprecated and Removed Features

The following features were deprecated or removed in this version of TIBCO ActiveSpaces®.

Deprecated The Options To Specify Secondary Realm Server

The `--secondary-realmserver` (or `-s`) option has been marked as deprecated for the node, state keeper, and proxy. From TIBCO FTL 6.0 and later, you can specify multiple TIBCO FTL servers by passing a "|" separated list of URLs to the `-r` option.

Deprecated the --debug and --quiet Options in tibdg and tibdgadmind Command

The old options `--debug`, and `--quiet` are marked deprecated and map to `--trace debug` and `--trace severe`.

Migration and Compatibility

This version of ActiveSpaces is backward compatible with ActiveSpaces 3.x. However, ActiveSpaces 3.0 and later is not backward compatible with ActiveSpaces 2.x.

For information about upgrading from an earlier version of ActiveSpaces see "Upgrading from an Earlier Version" in *TIBCO ActiveSpaces Installation*.

This release requires TIBCO FTL® 6.4 or later. For information about migrating from TIBCO FTL 5.x to TIBCO FTL 6.4, see the "Migration and Compatibility" section in *TIBCO FTL® Release Notes* and "Upgrade Migration to a New Release" section in *TIBCO FTL® Administration*.

Note: For the upgrade to be successful, the latest version of ActiveSpaces `tibdg grid rebuild` must run on the existing data grid before upgrading the ActiveSpaces components.

Closed Issues

The following issues have been fixed in this release of TIBCO ActiveSpaces®.

Key	Summary
FFY-3797	The `tibdgnode` node failed to clean up internal information on disk about disaster recovery and mirroring.
FFY-3766	When taking checkpoints, a timeout on the state keeper prevented future checkpoints from being successfully recorded.
FFY-3741	Changing the order of columns was not supported. An attempt to change the order of columns resulted in unreadable data.
FFY-3740	When `tibdgnode` received corrupt data, it became unresponsive.
FFY-3733	The `tibdg` usage message did not indicate that the `-g` option is ignored for commands that take a grid name as one of their inputs.
FFY-3716	When the client was unable to find its IP address, the client failed to connect to the grid.
FFY-3704	Rows were not sorted correctly when queries referred to columns in upper case and when there were more than one copyset.
FFY-3702	When disaster recovery or mirroring was enabled, the `tibdgnode` process took a long time to startup or fail over when the grid had taken a large number of checkpoints. Now, the fail-over time is optimized and there are additional disk usage optimizations for checkpoints.
FFY-3678	When using a date/time string as a value for an INSERT statement, if fewer than nine places of precision were used for the nanoseconds portion of the string, milliseconds and microseconds were misinterpreted. For example, .368 would be interpreted as 368 nanoseconds instead of 368000000 nanoseconds.
FFY-3671	Expiration of rows could stop if a node was restarted following a redistribution.
FFY-3668	Queries with a WHERE clause that used a wrong data type for a column caused subsequent queries to fail.

Key	Summary
FFY-3666	On startup, the node, state keeper, and proxy were not logging their grid name.
FFY-3647	Checkpoints would remained open until they reached the retention limit, which led to higher than expected memory usage. Now checkpoints will be closed internally when they are no longer in use.
FFY-3640	It was possible to create tables containing the '/' character, but it was not possible to delete such tables.
FFY-3625	Executing SQL DDL commands resulted in memory growth.
FFY-3612	In the Java client API, APIs that used `java.util.Properties` objects ignored the default properties of those objects.
FFY-3596	In a DR deployment, where data is being mirrored between grids, after the addition of a copyset, a node could fail as the redistribution was taking place.
FFY-3550	Queries involving functions and ORDER BY were being rejected if the ORDER BY clause referred to the computed column instead of its alias. For example, the following query failed: `SELECT city, max(age) AS qa_max_on_long_long_1 FROM t1 GROUP BY city ORDER BY max(age), city` The query failed because the ORDER BY clause referred to `max(city)` and not `qa_max_on_long_long_1`. Now, it is possible to refer to the column by either the function or the alias.
FFY-3549	The `tibdg status` command reported that the grid was functioning when the state keepers and nodes were running, but no proxies were running. Now, in addition to the state keepers and nodes running, at least one proxy must be running for the grid to be declared functioning.
FFY-3337	The proxy did not support more than two TIBCO FTL server URLs for some DDL operations. To specify multiple URLs, provide a '|' separated list of URLs to the `--realm` (or `-r`) option. The `--secondary-realmserver` (or `-s`) option has been marked as deprecated for the node, state keeper, and proxy.
FFY-3065	In a DR deployment, where data is being mirrored between grids, after the addition of a copyset, a node could fail as the redistribution was taking place.

Key	Summary
FFY-2966	Occasionally, there were cases when error events were not delivered to table listeners.

Known Issues

The following are the known issues in this release.

Key	Summary/Workaround
FFY-2942	**Summary:** Queries involving GROUP BY do not work with expressions. The following limitations apply when using GROUP BY: • SQL CASE Expressions cannot be used in select lists when aggregation is used. • SQL CASE Expressions cannot contain aggregation functions. • Nested functions and nested expressions in select lists cannot be used when aggregation is used. **Workaround:** None
FFY-2711	**Summary:** The SQL `INSERT` parameter values must exactly match the type defined for the column in the table. No attempt is made to cast from the data type of the parameter to the data type of the column in the table. **Workaround:** Set the parameter value into the statement by using the type that exactly matches the column type of the table.
FFY-2140	**Summary:** Removing a mirror grid from a gridset, either by using the `tibdg gridset remove` command or by using the `tibdg gridset delete` command, results in an unexpected behavior if the `-p` or `--makePrimary` flags are not used. As a result, data grids cannot be removed from gridsets and then added back. **Workaround:** Use the `-p` or `--makePrimary` flag when performing an operation to remove a data grid from a gridset. Using these options transitions the mirror grid

Key	Summary/Workaround
	into a standalone grid. As a result, the data grid removed cannot be added to a gridset as a mirror grid.
FFY-1654	**Summary:** When creating a table using SQL, the SQL data types are mapped to their underlying FTL types. When the metadata for the table is returned, the original data types are not preserved and you can only see the following mapping: • long => BIGINT • string => VARCHAR • double => DOUBLE • datetime => TIMESTAMP • opaque => VARBINARY **Workaround:** For information about how SQL data types are mapped to ActiveSpaces data types, see the "SQL Data Type Mapping" section in the *TIBCO ActiveSpaces® Administration* guide.
FFY-1569	**Summary:** In an iterator, calling `tibdgRow_ToString()` on a row or executing a query such as `SELECT * FROM <table>` does not always return columns in the order defined in the table. **Workaround:** Retrieve the columns individually by name and in the order you wanted.
FFY-1474	**Summary:** Occasionally, using special characters for identifiers is out-of-sync between the `tibdg` tool and the SQL DDL commands. In some scenarios, it is possible to create a table by using the `TABLE CREATE` command, but not drop the table by using the `tibdg` tool or by using the `SQL DROP TABLE` command. **Workaround:** Create simple table names. The tables names must use lowercase characters, but no special characters or embedded spaces.

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