

[Tech Note 744](#)

Resolving Incorrect Shift Times When MESDB is Moved to Another Time Zone

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Introduction

This *Tech Note* explains resolving a known issue that occurs when the MES Database (MESDB) is moved to a different time zone.

The issue is that previously-configured Shifts revert back to the original time zone after the database is relocated.

After the first shift change in the new time zone, the shift defined in the database will revert back to the time zone to where the database and shifts were first defined. The UTC time written to the database will be off after the first shift change.

This is due to the new table in MES 4.0 called **dbo.tz_offset**. When the Middleware is first started it looks at the time zone for the machine it is installed on and writes that time zone data to the **dbo.tz_offset** table as the default time zone.

Figure 1 (below) shows that it wrote Eastern Standard time.

region_id	year	dst	default_region	start_utc	start_local
Eastern Standard Time	1994	False	True	1994-10-30 06:...	1994-10-30 01:..
Eastern Standar...	1995	True	True	1995-04-02 07:...	1995-04-02 03:..
Eastern Standar...	1995	False	True	1995-10-29 06:...	1995-10-29 01:..
Eastern Standar...	1996	True	True	1996-04-07 07:...	1996-04-07 03:..
Eastern Standar...	1996	False	True	1996-10-27 06:...	1996-10-27 01:..
Eastern Standar...	1997	True	True	1997-04-06 07:...	1997-04-06 03:..
Eastern Standar...	1997	False	True	1997-10-26 06:...	1997-10-26 01:..
Eastern Standar...	1998	True	True	1998-04-05 07:...	1998-04-05 03:..
Eastern Standar...	1998	False	True	1998-11-01 06:...	1998-11-01 01:..
Eastern Standar...	1999	True	True	1999-04-04 07:...	1999-04-04 03:..
Eastern Standar...	1999	False	True	1999-10-31 06:...	1999-10-31 01:..
Eastern Standar...	2000	True	True	2000-04-02 07:...	2000-04-02 03:..
Eastern Standar...	2000	False	True	2000-10-29 06:...	2000-10-29 01:..
Eastern Standar...	2001	True	True	2001-04-01 07:...	2001-04-01 03:..
Eastern Standar...	2001	False	True	2001-10-28 06:...	2001-10-28 01:..
Eastern Standar...	2002	True	True	2002-04-07 07:...	2002-04-07 03:..
Eastern Standar...	2002	False	True	2002-10-27 06:...	2002-10-27 01:..
Eastern Standar...	2003	True	True	2003-04-06 07:...	2003-04-06 03:..
Eastern Standar...	2003	False	True	2003-10-26 06:...	2003-10-26 01:..
Eastern Standar...	2004	True	True	2004-04-04 07:...	2004-04-04 03:..

FIGURE 1: REGION_ID IS EASTERN STANDARD TIME

Application Versions

- MES 4.0

Procedure

To resolve this problem, complete the following steps.

1. Open the MES Client and select the **Shift and Shift Schedule** feature. Delete all the shift data for all of the entities (Figure 2 below).

The screenshot displays the 'Shift and Shift Schedule' window in the Wonderware MES Client. The interface includes a menu bar (Home, Tools, View), a toolbar with 'Toggle View' and 'Add Schedule' options, and a 'Navigation Bar' on the left. The 'Master Data Config' section shows 'Entity Class' and 'Shift and Shift Schedule' with an 'Apply filters' button. Below this, 'Entity Name' is set to 'Reactor_1'. The main area features a table of shift data and a calendar view for 'Reactor_1' showing shifts for Sunday, Monday, and Tuesday. The 'Properties' panel on the right shows details for the selected 'Afternoon' shift, including 'Start Time' (16:00), 'End Time' (00:00), and 'Starting Day of the Week' (Friday). An 'Error List' panel is also visible at the bottom of the main area. The status bar at the bottom indicates 'Number of Shifts defined:15' and 'Total hours scheduled: 120'.

Status	Description	ID
<input checked="" type="checkbox"/>	Δ	=
<input type="checkbox"/>	Day	1
<input type="checkbox"/>	Afternoon	2
<input type="checkbox"/>	Night	3
<input type="checkbox"/>	Shift_4	4

Day	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00
Sunday													
Monday													
Tuesday													

Type	Instance	Description	Extension	Erro

Number of Shifts defined:15 Total hours scheduled: 120

FIGURE 2: EXISTING SHIFT DATA

2. Delete all the shift data for all of the entities (Figure 3 below).

The screenshot displays the 'Shift and Shift Schedule' window in the Wonderware MES Client. The window is divided into several sections:

- Navigation Bar:** Includes 'Home', 'Tools', 'View', and 'Current View' tabs.
- Entity Tools:** Contains 'Toggle View', 'Zoom', and 'Add Schedule' buttons.
- Master Data Config:** Shows 'Entity Class' with 'Shift and Shift Schedule' selected. Below it is an 'Apply filters' button and an 'Entity Name' field.
- Entity List:** Displays a tree view with 'Reactors' and 'Reactor_1' selected.
- Shift and Shift Schedule Table:** A table with columns 'Status', 'Description', and 'ID'. It lists four shifts:

Status	Description	ID
<input checked="" type="checkbox"/>	Day	1
<input type="checkbox"/>	Afternoon	2
<input type="checkbox"/>	Night	3
<input type="checkbox"/>	Shift_4	4
- Scheduling Grid:** A grid with days of the week (Sunday, Monday, Tuesday, Wednesday) on the vertical axis and time slots (0:00, 1:00, 2:00, 3:00, 4:00, 5:00, 6:00, 7:00, 8:00, 9:00, 10:00, 11:00, 12:00) on the horizontal axis. The grid is currently empty.
- Error List:** A table with columns 'Type', 'Instance', 'Description', 'Extension', and 'Error'. It is currently empty.

FIGURE 3: DELETED SHIFT DATA IN SHIFT AND SHIFT SCHEDULE TAB

3. Shutdown the Middleware and Factelligence services.
4. Now go to the 4.0 MES Database and select the **dbo.Shift_to_go** table and delete all data Shift data like below. You can use the query truncate in SQL profile Truncate table Shift_to_go

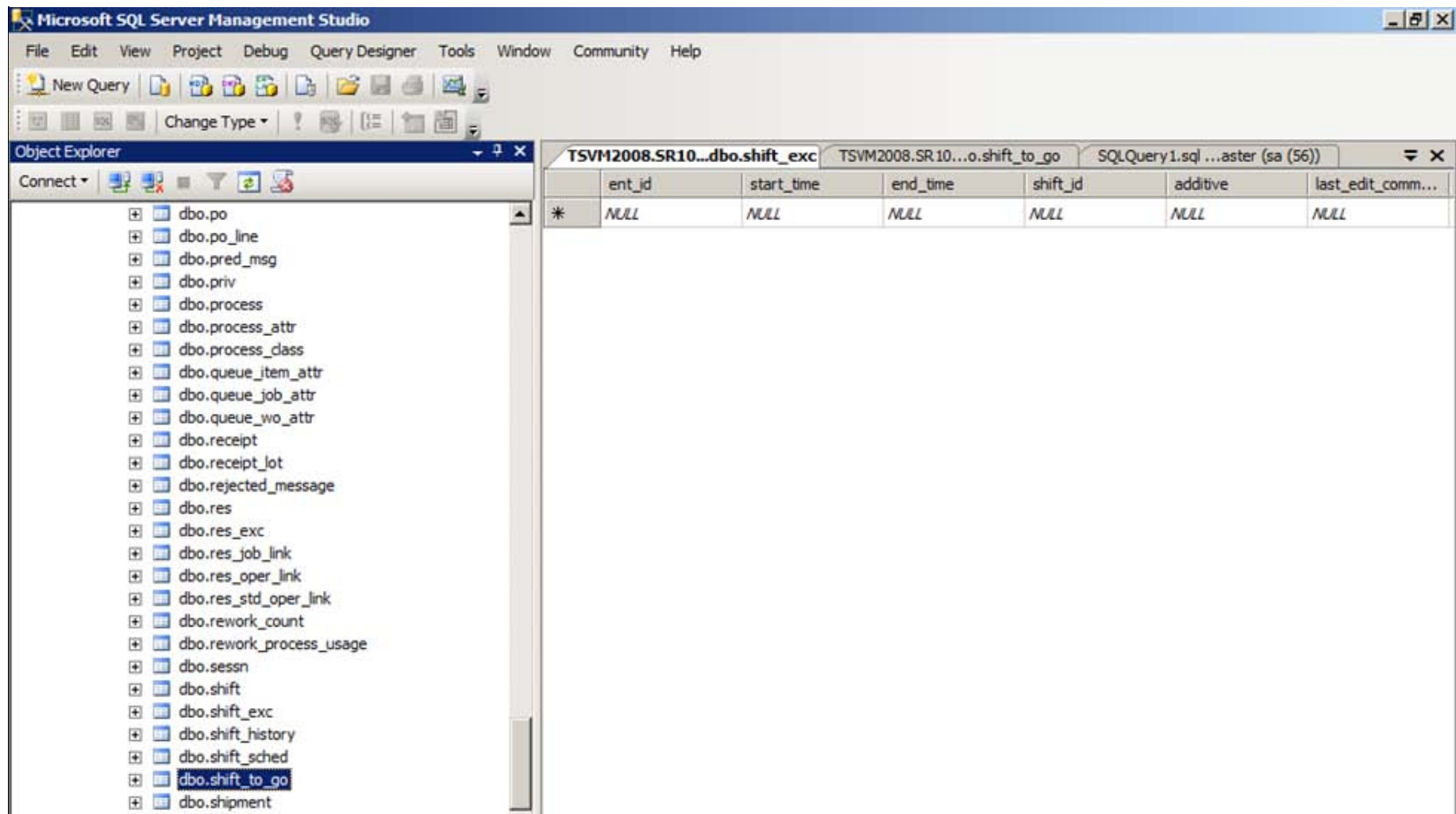


FIGURE 4: DELETED SHIFT DATA IN SHIFT_TO_GO TABLE

5. Delete the data in the **dbo.tz_offset** table.
6. You can use the following query to truncate the Offset table: `Truncate table tz_offset`

Figure 5 (below) shows the default region is **Eastern Standard**.

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left displays the database structure, with the `dbo.tz_offset` table selected. The main window displays the data for this table, which includes columns for `region_id`, `year`, `dst`, `default_region`, `start_utc`, and `start_local`.

region_id	year	dst	default_region	start_utc	start_local
Eastern Standard Time	1994	False	True	1994-10-30 06:...	1994-10-30 01:..
Eastern Standar...	1995	True	True	1995-04-02 07:...	1995-04-02 03:..
Eastern Standar...	1995	False	True	1995-10-29 06:...	1995-10-29 01:..
Eastern Standar...	1996	True	True	1996-04-07 07:...	1996-04-07 03:..
Eastern Standar...	1996	False	True	1996-10-27 06:...	1996-10-27 01:..
Eastern Standar...	1997	True	True	1997-04-06 07:...	1997-04-06 03:..
Eastern Standar...	1997	False	True	1997-10-26 06:...	1997-10-26 01:..
Eastern Standar...	1998	True	True	1998-04-05 07:...	1998-04-05 03:..
Eastern Standar...	1998	False	True	1998-11-01 06:...	1998-11-01 01:..
Eastern Standar...	1999	True	True	1999-04-04 07:...	1999-04-04 03:..
Eastern Standar...	1999	False	True	1999-10-31 06:...	1999-10-31 01:..
Eastern Standar...	2000	True	True	2000-04-02 07:...	2000-04-02 03:..
Eastern Standar...	2000	False	True	2000-10-29 06:...	2000-10-29 01:..
Eastern Standar...	2001	True	True	2001-04-01 07:...	2001-04-01 03:..
Eastern Standar...	2001	False	True	2001-10-28 06:...	2001-10-28 01:..
Eastern Standar...	2002	True	True	2002-04-07 07:...	2002-04-07 03:..
Eastern Standar...	2002	False	True	2002-10-27 06:...	2002-10-27 01:..
Eastern Standar...	2003	True	True	2003-04-06 07:...	2003-04-06 03:..
Eastern Standar...	2003	False	True	2003-10-26 06:...	2003-10-26 01:..

FIGURE 5: tz_OFFSET TABLE WITH DEFAULT REGION DATA

The screenshot shows the Object Explorer on the left with a tree view of the database schema. The right pane displays the 'dbo.tz_offset' table with the following data:

	region_id	year	dst	default_region	start_utc
*	NULL	NULL	NULL	NULL	NULL

FIGURE 6: DATA DELETED FROM TZ_OFFSET TABLE

This table is re-populated when the new time zone is set on the database server and the Middleware is started.

For this example, the time zone was changed to Pacific Coast time zone. Figure 6 (below) shows that when the Middleware was restarted the `dbo.tz_offset` was populated with the new time zone setting (Pacific coast).

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left displays the database structure, with 'dbo.tz_offset' selected. The main window shows a query result for the 'tz_offset' table. The table has the following columns: region_id, year, dst, default_region, start_utc, and start_local. The data shows that for every year from 1994 to 2001, the 'default_region' is 'Pacific Standard Time'.

region_id	year	dst	default_region	start_utc	start_local
Pacific Standard Time	1994	False	True	1994-10-30 09:...	1994-10-30 01:..
Pacific Standard ...	1995	True	True	1995-04-02 10:...	1995-04-02 03:..
Pacific Standard ...	1995	False	True	1995-10-29 09:...	1995-10-29 01:..
Pacific Standard ...	1996	True	True	1996-04-07 10:...	1996-04-07 03:..
Pacific Standard ...	1996	False	True	1996-10-27 09:...	1996-10-27 01:..
Pacific Standard ...	1997	True	True	1997-04-06 10:...	1997-04-06 03:..
Pacific Standard ...	1997	False	True	1997-10-26 09:...	1997-10-26 01:..
Pacific Standard ...	1998	True	True	1998-04-05 10:...	1998-04-05 03:..
Pacific Standard ...	1998	False	True	1998-11-01 09:...	1998-11-01 01:..
Pacific Standard ...	1999	True	True	1999-04-04 10:...	1999-04-04 03:..
Pacific Standard ...	1999	False	True	1999-10-31 09:...	1999-10-31 01:..
Pacific Standard ...	2000	True	True	2000-04-02 10:...	2000-04-02 03:..
Pacific Standard ...	2000	False	True	2000-10-29 09:...	2000-10-29 01:..
Pacific Standard ...	2001	True	True	2001-04-01 10:...	2001-04-01 03:..
Pacific Standard ...	2001	False	True	2001-10-28 09:...	2001-10-28 01:..

FIGURE 7: DEFAULT REGION _ID IS PACIFIC STANDARD TIME

- Open the MES Client and select the **Shift and Shift Schedule** feature and add all the shift data for all of the entities.

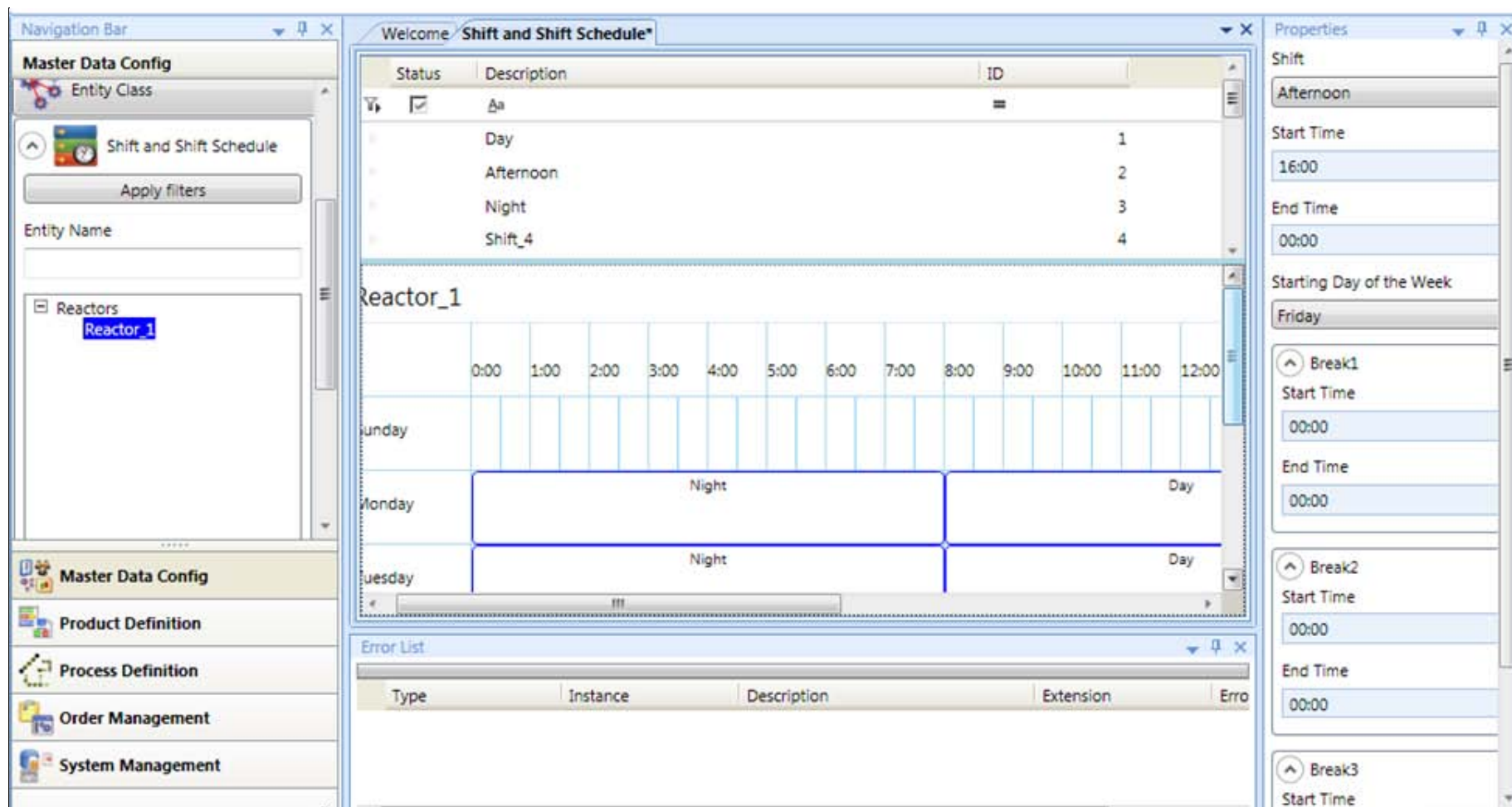


FIGURE 8: NEW SHIFT INFORMATION

J. Godfrey

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