Session Settings (Section 2)

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What This Section Covers

Session settings and performance-related features

Session settings that affect results

Special considerations: QUOTED_IDENTIFIER

Special considerations: ANSI_NULLS

Session settings and stored procedures

Best practices

Session Settings and Execution State

- If session settings are not consistent, you may get multiple (different) plans in cache and inconsistent performance (that is difficult to troubleshoot)
- Some of the SET options that require recompilation are:
  - ANSI_DEFAULTS
  - ANSI_NULL_DFLT_ON
  - **NUMERIC_ROUNDABORT**
  - **ANSI_WARNINGS**
  - **ANSI_PADDING***
  - FORCEPLAN
  - ANSI_NULL_DFLT_OFF
  - ROWCOUNT n
  - **ARITHABORT**
  - **CONCAT_NULL_YIELDS_NULL***
- Bolded options are those that are required for performance-related features

* "In a future version of SQL Server, ANSI_PADDING and CONCAT_NULL_YIELDS_NULL will always be ON and any applications that explicitly set the option to OFF will produce an error. Avoid using this feature in new development work, and plan to modify applications that currently use this feature." – SQL Server Books Online

Session Settings and Client Connectivity

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Troubleshooting Session Settings

- Currently connected users (and currently set session settings) can be viewed
  - At the user level:

```
SELECT *
FROM [sys].[dm_exec_sessions]
WHERE [session_id] = @@SPID
```

  - Across sessions:

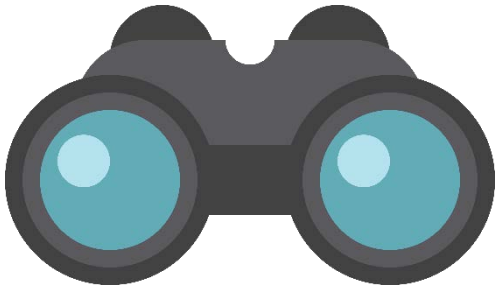
```
SELECT *
FROM [sys].[dm_exec_sessions]
WHERE [is_user_session] = 1
```

  - This does not guarantee that the session settings are not being changed elsewhere in the application (or, by the user [e.g. ODBC DSN settings])

Troubleshooting Session Settings

- Before using performance-related features, review ALL client applications to see if their session settings are correctly configured
- If connection settings MUST vary and/or the client application connection settings cannot be changed, avoid these features:
  - Indexed views
  - Indexes on computed columns
  - Filtered indexes
  - Query notifications
  - Spatial index operations
  - XML data type methods

Session Setting Precedence: Who Wins?



Server-level settings only take effect when no database-level settings

Database-level settings only take effect when session-level settings have not been explicitly set

Session-level settings can be executed at any time:

- On connection
- Within the application
- Within code (e.g. within the body of a stored procedure)

If your applications explicitly set their session settings then the application may have to be changed or your code may have to change (but, when the application settings are not correct, then the stored procedure will have to be recompiled)

Session Settings

Database-level settings (ALTER DATABASE)

- ANSI_NULL_DEFAULT
- ANSI_NULLS
- ANSI_PADDING
- ANSI_WARNINGS
- ARITHABORT
- CONCAT_NULL_YIELDS_NULL
- NUMERIC_ROUNDABORT
- QUOTED_IDENTIFIER

Server-level settings (sp_configure ⇨ user options)

- 8 = ANSI_WARNINGS
- 16 = ANSI_PADDING
- 32 = ANSI_NULLS
- 64 = ARITHABORT
- 256 = QUOTED_IDENTIFIER
- 1024 = ANSI_NULL_DFLT_ON
- 2048 = ANSI_NULL_DFLT_OFF
- 4096 = CONCAT_NULL_YIELDS_NULL
- 8192 = NUMERIC_ROUNDABORT

Session Settings and Plan Cache Attributes

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-- This gives us the "VALUE" for the Date Format setting
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-- This gives us the "VALUE" for the Language setting
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-- This gives us the "Name" of the Language that's set
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The Nightmare of Session Settings

State of session settings when the stored procedure is created is mostly irrelevant (except for the two settings ANSI_NULLS and QUOTED_IDENTIFIER)

State of session settings if set INSIDE the stored procedure may allow the procedure to use the performance-related feature but when they're not set consistently in the application sessions then it will cause recompilation (and possibly plan changes)

The Nightmare of Session Settings

Mostly it's state that's set at the time of execution that is relevant

- Relevant session settings that don't match will cause a recompile to occur

- That plan will go into cache with that set of session settings, only clients that have exactly the same session settings will use that plan

This causes weird, hard-to-troubleshoot, performance problems

Always check session settings when performance varies between applications

Be sure to ALWAYS connect and create all base objects with consistent session settings

What This Module Covered

Session settings and performance-related features

Session settings that affect results

Special considerations: QUOTED_IDENTIFIER

Special considerations: ANSI_NULLS

Session settings and stored procedures

Best practices