

Fixing Bad Parameter Sniffing



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Agenda



Cause of bad parameter sniffing

Ways of fixing bad parameter sniffing

- Prevent plan caching and reuse
- Ensure a specific plan is cached
- Allow different plans for different parameter values
- Forcing plans with the Query Store

Compare and contrast solutions

Bad parameter sniffing is caused by inappropriate reuse of cached plans.



Prevent Plan Caching and Reuse

```
SELECT  o.Reference AS OrderReference,
        o.Country AS CountryCode,
        DATEADD(MONTH, DATEDIFF(MONTH, 0, o.OrderDate), 0) AS OrderMonth,
        SUM(od.ItemPrice * od.Quantity) AS Total
FROM    dbo.Orders o
        INNER JOIN dbo.OrderDetails od ON od.OrderID = o.OrderID
WHERE   o.Country = @Country
        AND o.Status != 'C'
GROUP BY o.Reference,
        o.Country,
        o.OrderDate
ORDER BY OrderMonth DESC, Total DESC
OPTION (RECOMPILE);
```



Demo



Prevent plan caching and reuse



Ensure a Specific Plan Is Cached

Eliminate parameter sniffing

Use variables

Use query hint

**Ensure a specific value is
sniffed**

Use query hint



Eliminate Parameter Sniffing

```
SELECT  o.Reference AS OrderReference,
        o.Country AS CountryCode,
        DATEADD(MONTH, DATEDIFF(MONTH, 0, o.OrderDate), 0) AS OrderMonth,
        SUM(od.ItemPrice * od.Quantity) AS Total
FROM    dbo.Orders o
        INNER JOIN dbo.OrderDetails od ON od.OrderID = o.OrderID
WHERE   o.Country = @Country
        AND o.Status != 'C'
GROUP BY o.Reference,
        o.Country,
        o.OrderDate
ORDER BY OrderMonth DESC, Total DESC
OPTION (OPTIMIZE FOR (@Country UNKNOWN));
```



Ensure a Specific Parameter Is Sniffed

```
SELECT  o.Reference AS OrderReference,
        o.Country AS CountryCode,
        DATEADD(MONTH, DATEDIFF(MONTH, 0, o.OrderDate), 0) AS OrderMonth,
        SUM(od.ItemPrice * od.Quantity) AS Total
FROM    dbo.Orders o
        INNER JOIN dbo.OrderDetails od ON od.OrderID = o.OrderID
WHERE   o.Country = @Country
        AND o.Status != 'C'
GROUP BY o.Reference,
        o.Country,
        o.OrderDate
ORDER BY OrderMonth DESC, Total DESC
OPTION (OPTIMIZE FOR (@Country='UK'));
```



Demo



Ensure a Specific Plan is Cached

- Using Variables to prevent parameter sniffing
- Using a Query Hint to prevent parameter sniffing
- Using a Query Hint to ensure a Particular Parameter Value is sniffed



Allow Different Plans for Different Parameter Values

```
IF (@Country IN ('MU', 'RE'))  
    EXEC dbo.SalesTotalsPerMonthSmallCountry @Country  
ELSE  
    EXEC dbo.SalesTotalsPerMonthLargeCountry @Country
```



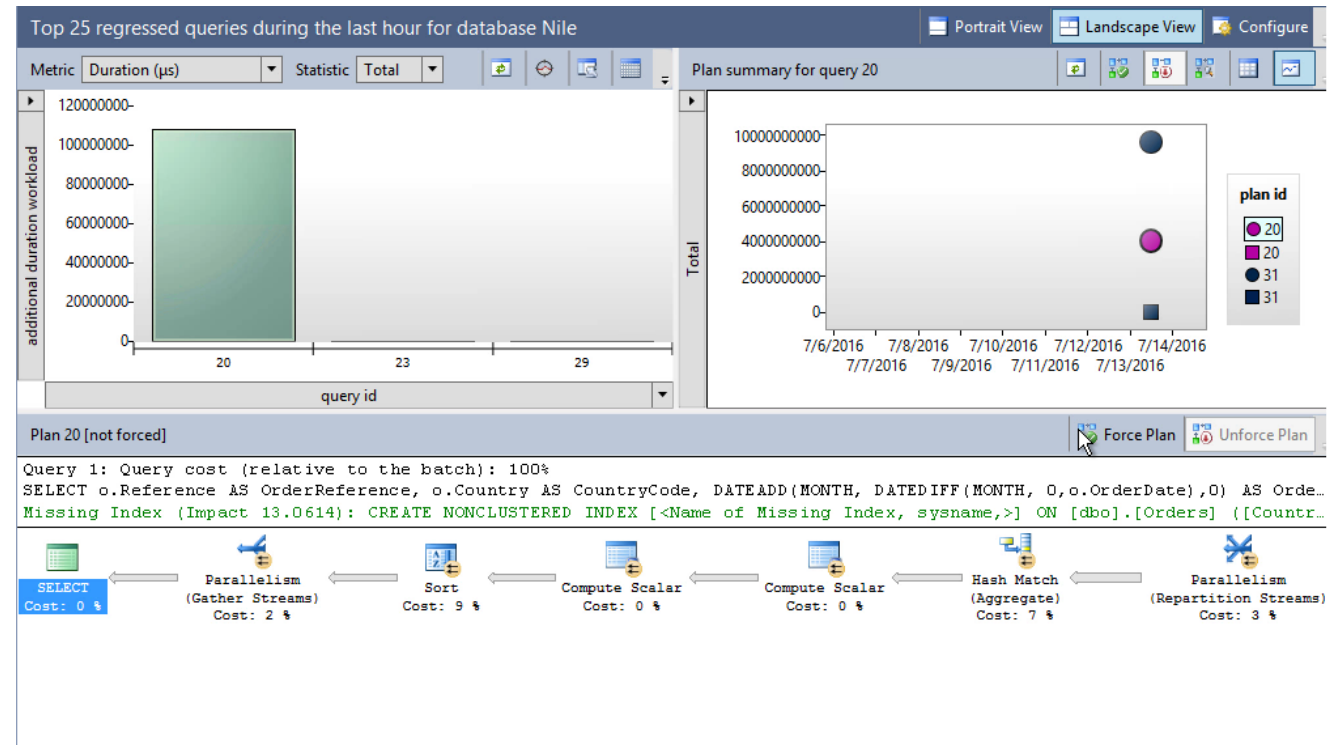
Demo



Allow different plans for different
parameter values



Use the Query Store to force a specific plan



Demo



Forcing plans via the Query Store



Compare and Contrast

Prevent plan caching and reuse

Recompile hint

Ensure a specific plan is cached

Optimize for hint or use variables

**Allow different plans for
different parameter values**

Multiple stored procedures

Force a specific plan

Using the Query Store



Summary



Ways of fixing bad parameter sniffing

- Prevent plan caching and reuse
- Ensure a specific plan is cached
- Allow different plans for different parameter values
- Force a plan using the Query Store