F4 search Performance Tracking and Performance Improvement on F4 Search for Navigation Attribute

SAP

Applies to:

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Summary

This article can be used as step by step document to track the performance of F4 Search element and will give brief explanation on how to increase F4 Search performance for navigational attribute.

Author: Maruthi Chowdary Movva

Company: HP

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Author Bio

Maruthi Chowdary Movva is a SAP BI consultant having around 5 years of experience in SAP BI, working in HP. He has extensively worked in SAP BW/BI Development, Production Support, BI Technical Upgrade and Functional upgrade projects.

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Introduction:

This is the generic article which will help every one working in SAP BI environment. This article will explain how to track F4 Search element time and will give brief explanation on, how to increase F4 Search performance for navigational attribute.

Live Scenario:

We want to know the performance of every query element in BI report. The intention behind it is, by knowing the query element performance we can take certain steps in order to over come of performance issues. In this article we will discuss on how to track F4 Search element time and will give brief explanation on, how to increase F4 Search performance for navigational attribute.

Detailed Steps to check F4 Search timing:

Step 1:

Open the web report from RSRT transaction and Keep the Query display option with HTML as shown in the figure 1, in this scenario I am taking test query called "ZQUERY_PERFORMANCE_TEST".
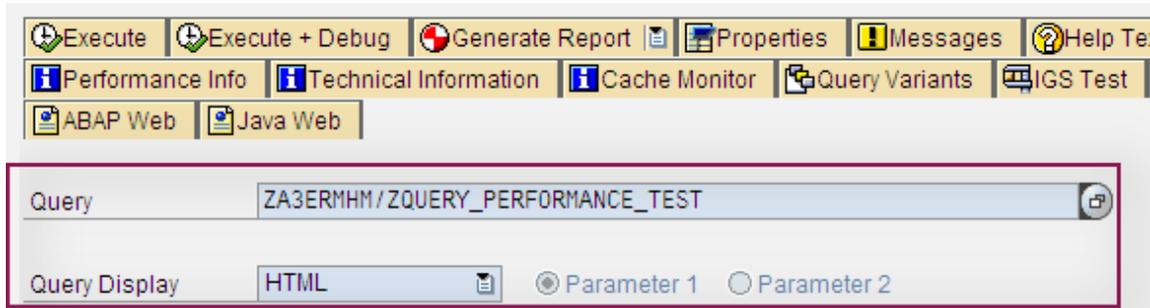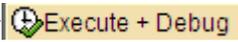
Figure 1: RSRT transaction initial screen

Step 2:

Execute the report (ZQUERY_PERFORMANCE_TEST) with Execute +Debug (Execute + Debug) option in RSRT transaction and select debug options "Display Statistics data" & "Do Not Suppress Messages/Warnings" as shown in the figure 2.

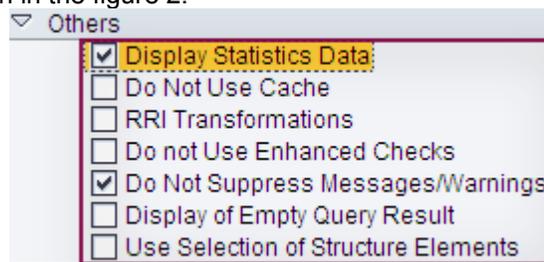Figure 2: RSRT Debug Options

Step 3:

Selection screen of the Query (ZQUERY_PERFORMANCE_TEST) will be available as shown in the figure 3 after executing the report with Execute +Debug option in RSRT transaction.

Variables for Ad Hoc Report			
Changed by (Agent ID/Name)			Insert Row
Completed Date		To	
Completed Date with Hierarchy			Insert Row
Created by (Agent ID/Name)			Insert Row
Created by (Agent Level)			Insert Row
Created by (Agent Position)			Insert Row
Created by (Agent Reporting Group)			Insert Row
Created Date		To	
Created Month		To	
Created Week		To	
Created Year		To	
Customer Country			Insert Row
Product Line			Insert Row

Figure 3: Selection screen of report "ZQUERY_PERFORMANCE_TEST" .

Step 4:

Execute F4 help of selection screen fields. In this example I am considering Product line for F4 help as shown in the figure 4, here my intention is, to find the time taken for retrieving F4 help data in selection screen.

☑ Industry Standard Se	06
☑ Inkjet Supplies	1N
☑ UNIX Systems	1X
☑ Online Baseline Arra	1Y
☑ Handheld Info Produc	21
☑ IPG Attach	2A
☑ Personal Laser - Mon	2B
☑ Business PC Solution	2C
☑ Consumer Accessories	2G
☑ Consumer Desktop Acc	2H
☑ AiO-Low End	2N
☑ Consumer AiO Lasers	2Q
☑ VoodooPC	2S
☑ Performance Gaming S	2T
☑ Wide Format Printing	30
☑ Tape Mechanism	3C
☑ Education Services	4J
☑ HP Consulting	4K
☑ Internet Security	4U
☑ Scanners	4X
☑ Calculators	52
☑ Equipment Management	55

Figure 4: F4 help of Product line.

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Step 5:

Drill down Created by (Agent ID/Name) in initial screen of the report "ZQUERY_PERFORMANCE_TEST" as shown in the Figure 5, to find Drill down time of a particular query element.

Responsible Service Provider	Created by (Agent ID/Name)		# of Emails	Avg TAT (Hrs)	%SLA1
Overall Result			43,292	[6.37]	[67.92]
Sitel Brussels (Western Europe)	HTIERNAN	Howie TIERNAN	2	1.67	100.00
	#	Not assigned	1	3.15	100.00
Twenty4Help Maastricht (NL, BE)	AABOUHAMAD01	Abdeljalil Abouhamad	1	2.13	100.00
	ATERBEEK	Anita Ter Beek	1	3.64	100.00
	BBORSBOOM01	Bram Borsboom	151	5.79	85.43
	BPETERS	Ben Peters	1	19.74	0.00
	BPETERS02	Bart Peters	128	6.79	70.31
	CCLEVEN	Chantal Cleven	1	0.00	100.00
	CHOUBEN	Chris Houben	6	4.20	100.00
	CHUNTJES	Chris Huntjens	10	5.82	90.00
	DBESSEMS	Dennis Bessems	10	6.08	60.00
	DGEUTSELAA	Desiree Geutselaar	3	1.09	100.00
	DHUPPERTZ	David Huppertz	4	8.51	75.00
	DKASPERS	Douwe Kaspers	152	5.90	76.97
	EMAILNL1	E MAILNL1	1	0.00	100.00
	EVANDEND	Eveline van den Dijssel	9	5.16	100.00
	FHABETS	Frank Habets	3	1.66	100.00
	HLAMBERGS	Hanna Lambergs	2	8.22	50.00
	JHENDRIKS	Jack Hendriks	2	3.60	100.00
	JHERMANN	Jurgen Hermann	49	7.84	77.55
	JMOMMERS	Jolanda Mommers	1	8.16	100.00
	JPOST	Johan Post	50	7.81	64.00
	KVERKISSEN	Ken Verkissen	57	9.98	50.88
	MCILISSEN	Michel Cilissen	7	5.62	100.00

Rows
Created by (Agent ID/Name)
Responsible Service Provider

Columns
Key Figures
# of Emails, Avg TAT (Hrs), % SLA1

Free Characteristics
Changed by (Agent ID/Name)
Changed by (Agent Level)
Changed by (Agent Position)
Changed by (Agent Reporting Group)
Completed Date
Completed Time
Created Date
Created Month
Created Week
Created Year
Created by (Agent Level)
Created by (Agent ...)

Figure 5: Initial screen of report "ZQUERY_PERFORMANCE_TEST".

Step 6:

From RSRT transaction, go back , and then you will get statistics screen .which will give us timings of the query elements. In our example for F4 help of Product line, OLAP process took 0.007395 seconds.

	Start Time	Ha...	Hand...	InfoProvider	Object Name	Detail Level	Event I...	Event Text	Duration
	14.12.2009 11:51::		DFLT			2		Not Assigned	0.000037
	14.12.2009 11:51::	1	BRFC		RRW3_WEBRFC	2	10000	RFC call	0.000150
	14.12.2009 11:51::	1	W3_T		ZANALYZER	2	19912	Load 3.x Web Templt.	0.038940
	14.12.2009 11:51::	1	W3_T		ZANALYZER	2	19910	3.x Web Reporting	0.319066
	14.12.2009 11:51::	1	W3_T		ZANALYZER	2	19919	Close Web 3.x	0.000049
	14.12.2009 11:51::	4	OLAP	ZA3ERMHM	ZQUERY_PERFORMANCE_TEST	2	3010	OLAP: Query Gen.	0.033740
	14.12.2009 11:51::	4	OLAP	ZA3ERMHM	ZQUERY_PERFORMANCE_TEST	2	3999	OLAP Other Time	0.019597
	14.12.2009 11:51::	4	OLAP	ZA3ERMHM	ZQUERY_PERFORMANCE_TEST	2	19950	3.x Query View Open	0.003488
	14.12.2009 11:51::	4	OLAP	ZA3ERMHM	ZQUERY_PERFORMANCE_TEST	2	4600	Authorization Buffer	0.005544
	14.12.2009 11:51::	4	OLAP	ZA3ERMHM	ZQUERY_PERFORMANCE_TEST	2	4300	Value Authorizations	0.000323
	14.12.2009 11:51::	4	OLAP	ZA3ERMHM	ZQUERY_PERFORMANCE_TEST	2	3500	OLAP Initialization	0.058054
	14.12.2009 12:24::		DFLT			2	1	Wait Time, User	1,967.2527
	14.12.2009 12:24::		DFLT			2		Not Assigned	0.000035
	14.12.2009 12:24::	1	BRFC		RRW3_WEBRFC	2	10000	RFC call	0.000153
	14.12.2009 12:24::	1	F4	ZA3ERMHM	ZA2PRGUID__0DIVISION	2	4300	Value Authorizations	0.000109
	14.12.2009 12:24::	1	F4	ZA3ERMHM	ZA2PRGUID__0DIVISION	2	6001	F4: Read Data	0.007395
	14.12.2009 12:24::	1	F4	ZA3ERMHM	ZA2PRGUID__0DIVISION	2	6000	F4: Flat	0.008963

Frontend/Calculation Layer | Aggregation Layer

Figure 6: Front end calculation

In the similar way we can find other query elements timings i.e. OLAP: Query generation, OLAP initialization, Query read time etc...

Step 7:

There is one more important tab in ST03 called Aggregation tab [Aggregation Layer], which will helps us in taking decision for creating Aggregate.

Thump rule for taking decision on creating aggregate is, Aggregation ratio should not exceed 10.

Aggregation Ratio is Number of records selected /Number of records transferred.

In our scenario as shown in the figure 10, Number of records selected is 208 and Number of records transferred is 208.

Aggregation Ratio is less than 10 and hence there is no need for creation aggregates.

	Step UID	Ha...	Han...	Data Manag...	Acc...	T...	DM...	DM Post...	View...	SID...	Attribute Pr...	Hi...	Records, Selected	Records, Transported	W...
	4G62684O23	4	OLAP	4G6268ZE5X	1		0.000(	0.000000	0.292(	0.0000	0.000000	0.00	208	208	
	4G62684O23	4	OLAP	4G6268Z7E5X			0.155(	0.000000	0.000(	0.0000	0.000000	0.00	8	8	

Figure 7: Aggregation Layer

Detailed Steps by step process for increasing F4 search speed for Navigational attribute:

Step 1:

Create index on X Table of Master Data (i.e. Product ID). The reason why we are creating index on X table to increase F4 speed is Navigational attribute SID's will save in X table of Parent object (i.e. Product ID) as shown in the figure1.

Transp. Table	/BI0/XCRM_PROD	Active
Short Description	Attribute SID Table: InfoObject Product	

Attributes | Delivery and Maintenance | Fields | Entry help/check | Currency/Quantity Fields

Srch Help | Predefined Type

Field	Key	Initi...	Data element	Data Ty...	Length	Decim...	Short Description
S_0CRM_SYS_PR		☑	RSSID	INT4	10	0	Master data ID
S_0DIVISION		☑	RSSID	INT4	10	0	Master data ID

Figure 1: Navigational attribute SID in X table of Parent master data.

Step 2:

Create index on X table of Navigational attribute's (0DIVISION) parent Info object (ZA2PRGUID) via SE14 transaction as shown in the Figure 2.

Indexes of table /BI0/XCRM_PROD

List of all indexes (constraints) of the table /BI0/XCRM_PROD

Index name	Unique	Short description
0	X	Primary index
ZA1		Index on OBJVERS
ZA2		Index on Changed Column
ZA3		Index on CRM_PROD (B-Tree)
ZA4		Index on changed and objvers

Figure 2: Indexing on X table

Step 3:

Query filter values should be read from Master data table as shown in the figure 3. This settings, we will do in multi provider level i.e. Change multi provider→Go to Navigational attribute (Product line) Contest menu→Provider specific properties.
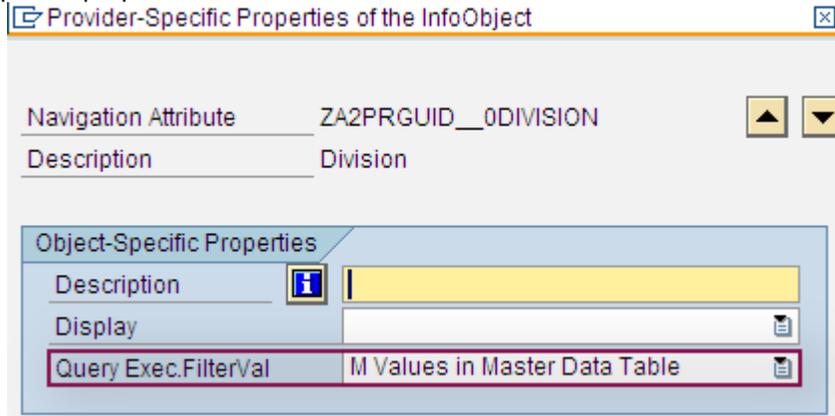

Figure 3: Query filter value selection from Master data table.

Test Iteration on F4 help speed:

Test 1:

In this test, we are not crating index on X table of Master data object (Product ID) and keep the Query filter value as "Only values in Info provider" as shown in the below figure.
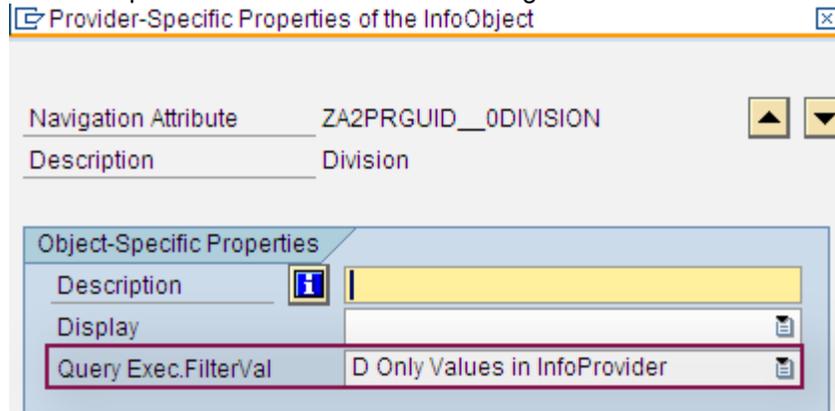

Figure 4: Query filter value as "Only values in Info provider".

Run the report in RSRT with Selection screen of Navigational Attribute (Product line).check the F4 search help in Front-end Calculation layer.

F4 Search Time is for test 1 is 1273.19 seconds as shown in the below figure 5.

4G67PGE31	4G67PJ5XW	BEX3	2	202	16.12		DFLT			2	1	Wait Time, User	48.891871	0	1
4G67PGE31	4G67PJ5XW	BEX3	2	202	16.12		DFLT			2		Not Assigned	0.000034	0	1
4G67PGE31	4G67PJ5XW	BEX3	2	202	16.12	1	BRFC		RRW3_WEBRFC	2	1000	RFC call	0.000143	0	1
4G67PGE31	4G67PJ5XW	BEX3	2	202	16.12	1	F4	ZA3ER	ZA2PRGUID__0DIVISION	2	4300	Value Authorizations	0.000104	0	1
4G67PGE31	4G67PJ5XW	BEX3	2	202	16.12	1	F4	ZA3ER	ZA2PRGUID__0DIVISION	2	6001	F4: Read Data	1,273.198377	0	1
4G67PGE31	4G67PJ5XW	BEX3	2	202	16.12	1	F4	ZA3ER	ZA2PRGUID__0DIVISION	2	6000	F4: Flat	0.007791	38	1

Figure 5: F4 search timing

Test 2:

In this test, we are crating index on X table of Master data object (Product ID) and keep the Query filter value as "Values in Master Data Table" as shown in the below figure.
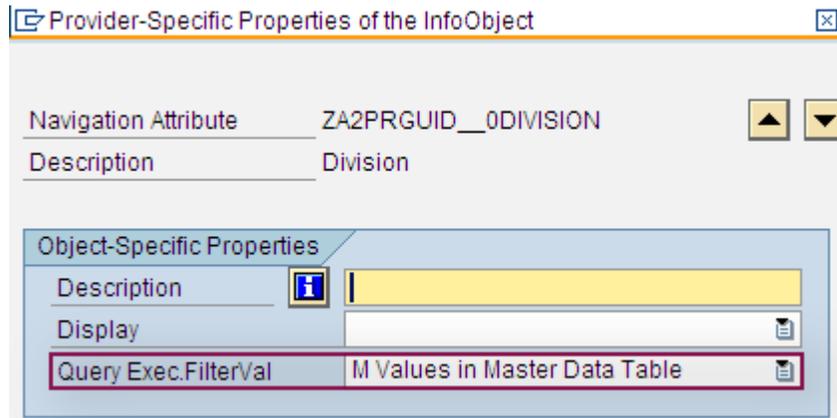
Figure 4: Query filter value as "Values in Master Data".

Run the report in RSRT with Selection screen of Navigational Attribute (Product line).check the F4 search help in Front-end Calculation layer.

F4 Search Time for test 1 is 0.007394 seconds as shown in the below figure7.

Figure 5: F4 search timing

Result: F4 search with test 2 took very less time (0.007394) by comparing with test 1 F4 search timing (1273.19).Hence it preferable to create index on x table of maser data and Query filter value as "Values in Master Data".

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