

# BI Publisher Memory Guard Properties in Fusion Applications

## Best Practices Guide

ORACLE WHITE PAPER | AUGUST 2018





## Introduction

Oracle BI Publisher in Fusion Application uses the memory guard settings to prevent system overload. This document describes the critical memory guard properties that are preconfigured to optimize the reporting process in BI Publisher.

## Critical Memory Guard Properties

The following memory guard and data model properties have significant impact on BI Publisher performance if the properties are not configured appropriately.

- [Maximum report data size for offline \(scheduled\) reports](#)
- [Maximum report data size for online reports](#)
- [SQL Query Timeout](#)
- [Online SQL Query Timeout](#)
- [Timeout for online Report \(Process Timeout\)](#)
- [Maximum Rows for CSV output](#)

## Maximum report data size for offline (scheduled) reports

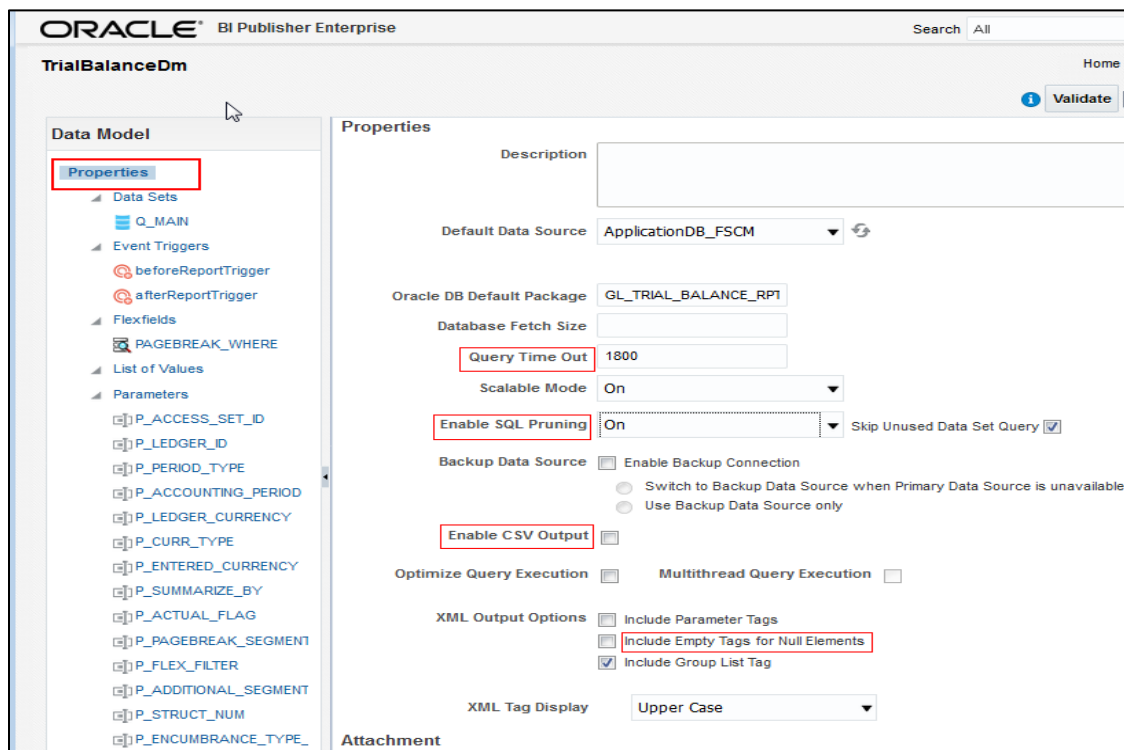
The **Maximum report data size for offline (scheduled) reports** property sets the XML data size limit for the scheduled jobs. If the XML data size exceeds the limit, BI Publisher cancels the report request and displays the following error message.

Error Message: ***Stopped processing the report. Report data size of datasize bytes exceeds the maximum limit of <xx bytes>. The estimated XML data size is <xxx> bytes. Review your data model SQL queries. Add more filters to limit the data fetch size.***

## Recommendations

- Make sure your data models generate only the data required to run specific report. Data Model designed to support multiple reports usually generates excessive data and easily reach the data size limit. Design the data model for a specific report requirement rather common data model to support multiple reports.

- Deselect the **Include Empty Tags for Null Elements** data model property to remove the null XML elements from the XML data.
- Select the **Enable SQL Pruning** data model property to parse the layout template and prune the unwanted XML elements from the XML data. This feature is supported only for RTF template.



- For layout types other than RTF, review the layout template and edit the data model to remove the unused columns and data sets from the data model and SQL query.
- If the XML element names are too long, reduce the element name by using the column alias in SQL query. For example, change CUSTOMER\_BANK\_ACCOUNT\_NUMBER to CUST\_AC\_NO.
- Add additional filters to reduce the data size.



## Maximum report data size for online reports

The **Maximum report data size for online reports** property sets the XML data size limit for online report execution and web service calls. If XML data size for the report exceed this limit, BI Publisher cancels the report request and displays the following error message.

Error Message: ***Stopped processing the report. Report data size of <datasize bytes> exceeds the maximum limit <xx bytes> for online reports.***

### Recommendations

- If the online report data size exceeds the data size limit, use scheduler to execute the report (Scheduler supports higher data size limit) or reduce the XML data size.
- If PublicReportWSSService.runReport web service exceeds the XML data size limit, reduce the data size or use the SchedulerReportWSSService web service instead of the PublicReportWSSService web service. The SchedulerReportWSSService web service makes an asynchronous call and supports a higher data size limit. See BI Publisher documentation for more details.

## SQL Query Timeout

The **SQL Query Timeout** property limits the execution time for SQL query in BI Publisher data models and prevents runaway queries. If an SQL query execution time exceeds the limit, BI Publisher cancels the database query and displays the following error message.

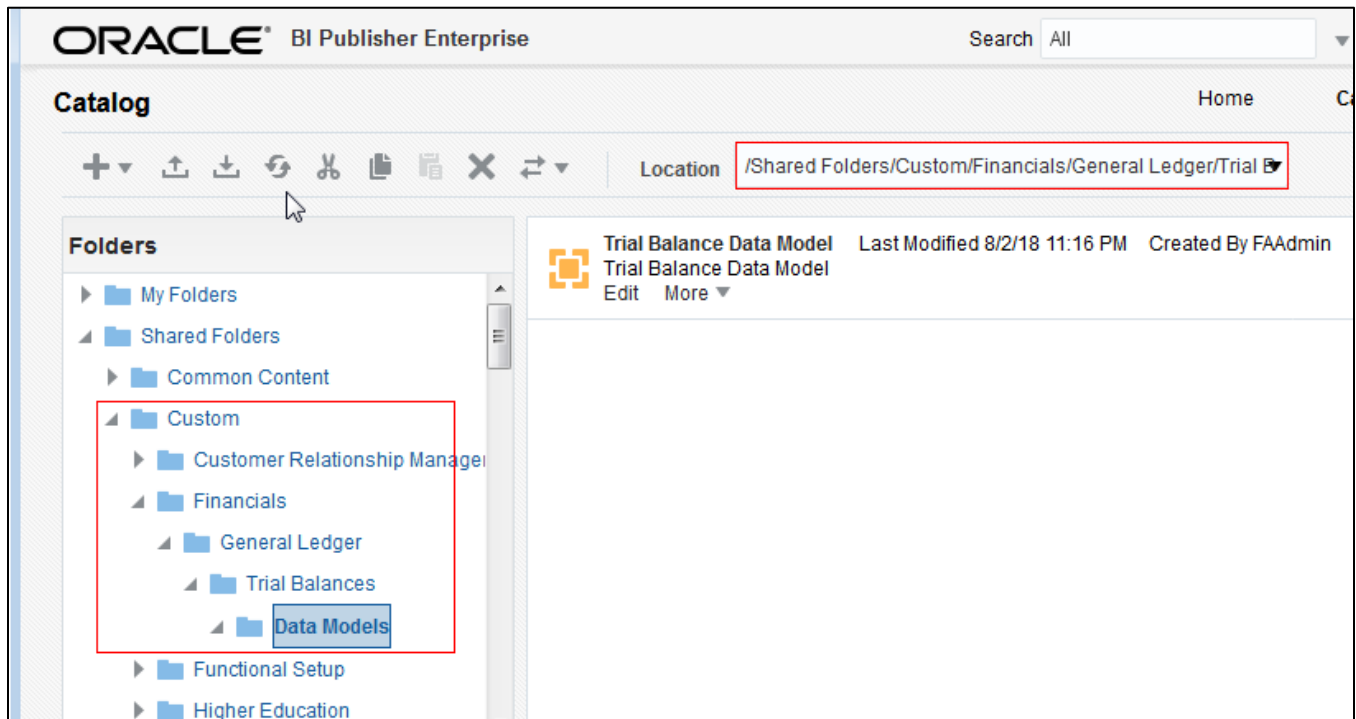
Error Message: **SQL query time exceeds the limit (<offline limit> sec). Stopped processing.**

### Recommendations

- Optimize the SQL query so that the query execution completes within the SQL query timeout limit. If query is well optimized and you have a valid business reason to use a higher SQL timeout value, you can set the **SQL Query Timeout** property at the data model level. You don't need to request a property change at the server or pod level.
- Edit the data model of the report to set the **SQL Query Timeout** data model property to a suitable limit. Please refer the screenshot mentioned in **Max Report Data Size for Offline reports** section.

**IMPORTANT:** Please note that by increasing the SQL Query Timeout you are increasing the resource consumption on the pod. As such, this should be done sparingly otherwise these actions may result in destabilizing the pod and impacting the broader user base.

Note that you cannot edit the properties of the data models shipped with the product. You have to make the custom copy of the data model to a custom folder (in the same path as the seeded one) and edit the query timeout property.




### Online SQL Query Timeout

The Online Query Timeout limit is set 500 seconds for the SQL queries of online reports and runReport web service calls. BI Publisher cancels report execution if an online report or a web service call for report generation exceeds the online query limit. You cannot change the online SQL query timeout limit. You get the following error message when sql execution hit online query timeout limit.

Error Message: **SQL query time exceeds the limit (<online limit> sec). Stopped processing.**

### Recommendations

- Optimize the SQL query for the online report or schedule the report. Scheduler is designed to execute long running report with higher SQL Query timeout.

- 
- Use the ScheduleReportWSSService web service instead of the PublicReportWSSService.runReport service to generate reports. ScheduleReportWSSService use scheduler to execute the report in asynchronous mode and support higher data size, higher SQL timeout.

### Timeout for online Report (Process Timeout)

The process timeout for online and runReport web service calls is 535 seconds. You cannot change this preconfigured value. This limits the process time for data generation and report formatting. If the process time for any online report or web service call for executing reports exceeds the limit, BI Publisher cancels the reporting process within the next 60 seconds. Limiting the process time avoids the stuck threads that might cause BI Server restart. If the number of stuck threads is more than 25, BI Server restarts.

You get the following error message when online report cancelled due to process timeout limit.

Error Message: **User requested cancel operation**

#### Recommendations

- Optimize the SQL query and report formatting elements to reduce the total report processing time.
- Use the ScheduleReportWSSService web service instead of the PublicReportWSSService.runReport service to generate reports. ScheduleReportWSSService use scheduler to execute the report in asynchronous mode and support higher data size, higher SQL timeout and higher process timeout.

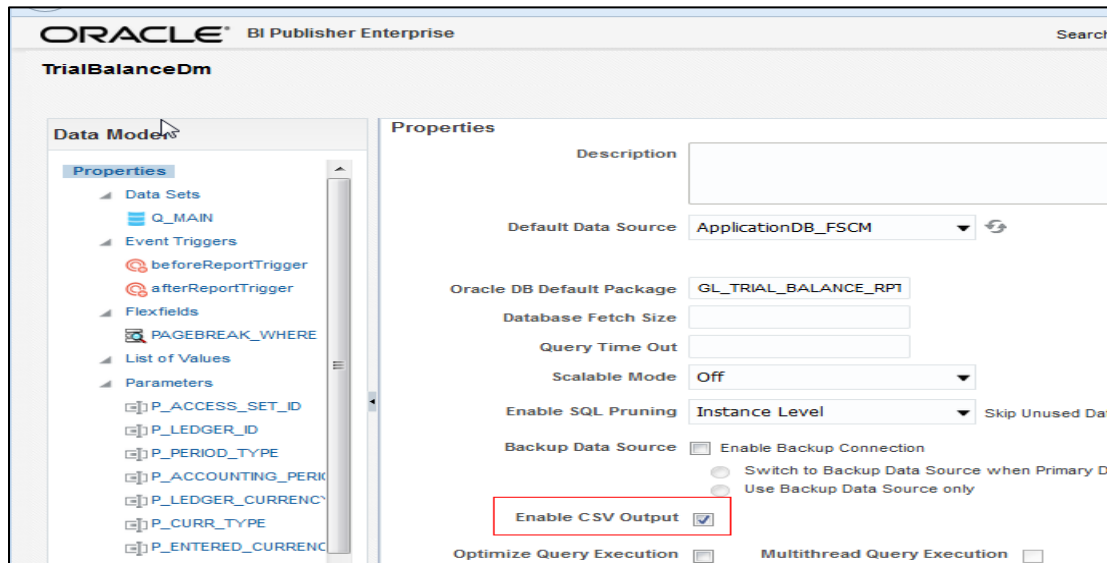
### Maximum Rows for CSV output

The **Maximum Rows for CSV output** limit is 2000000. If you need a higher limit for data extraction, you can use [BI Cloud Connector](#) or [ODI](#) tools, those are designed for ETL process.

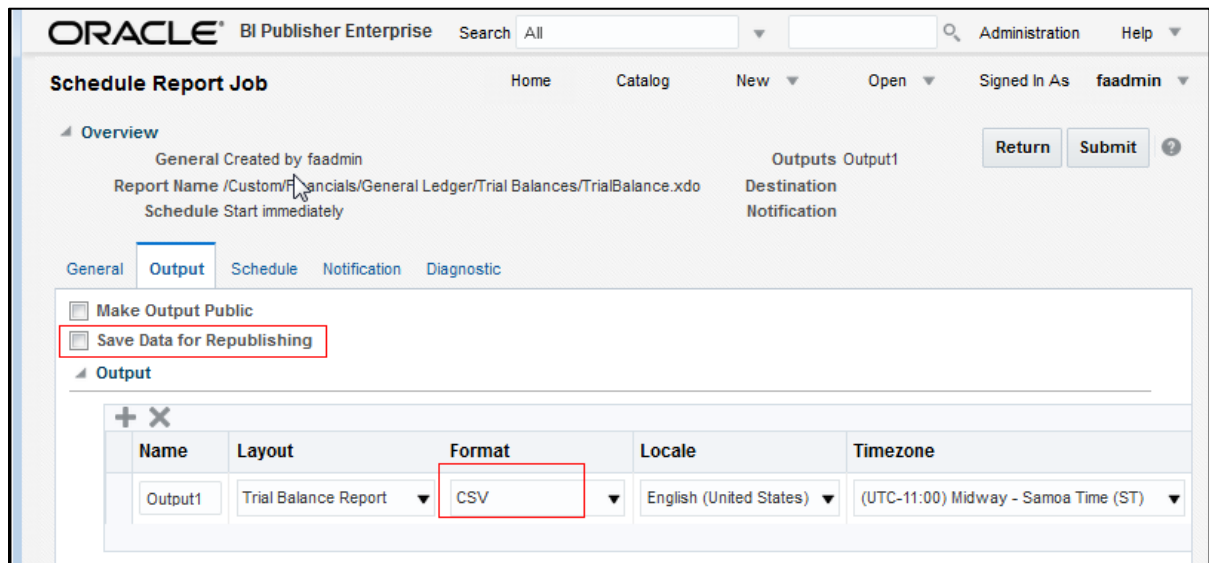
In Fusion Applications Release 13 and later, you can directly generate a CSV output from an SQL query without the intermediate step of generating XML data. This eliminate the need to generate intermediate XML and subsequent formatting. It reduces the processing time and memory usage.

To process a large volume of data, it is recommended that you generate a CSV output directly from a SQL query. If you want to configure the new and existing data models to directly generate a CSV output from a SQL query, do the following:

- Use the SQL to CSV feature only in SQL query based data models. Data Models based on other data sources does not support this feature.
- Use the Data Model Editor to select the **Enable CSV Output** data model property.



- Edit the report properties to uncheck the **Auto Run** and **Run Report Online** properties. Running reports online for a large volume of data might cause performance issues.
- Select the **Data (CSV)** output format and deselect all the other output formats. Make sure the default output format is Data (CSV).
- When you schedule a report, uncheck the **Save Data for Republishing** option to avoid the intermediate step for generating the XML data for republishing purpose. If you select **Save Data for Republishing**, System will not use this feature. It will generate the XML data first and then uses the XML data to generate the CSV output.



#### Limitations with SQL to CSV feature

You cannot directly generate a CSV output from an SQL query if:

- The SQL query contains CLOB/BLOB columns.
- The data model contains complex parent-child data set hierarchy with multiple groups.
- The SQL query contains DFF/EFF columns.
- The data model has a mix of SQL and Non-SQL data sets.
- The data model has a non-standard SQL query.

The scope of this document is limited to Memory Guard properties. To know more about the BI Publisher and BI Publisher best practices, please refer following documents.

- [Oracle BI Publisher Best Practices for SaaS Environments](#)
- [Creating and Administering Analytics and Report for Fusion Application](#)





**Oracle Corporation, World Headquarters**

500 Oracle Parkway  
Redwood Shores, CA 94065, USA

**Worldwide Inquiries**

Phone: +1.650.506.7000  
Fax: +1.650.506.7200

CONNECT WITH US

 [blogs.oracle.com/oracle](https://blogs.oracle.com/oracle)

 [facebook.com/oracle](https://facebook.com/oracle)

 [twitter.com/oracle](https://twitter.com/oracle)

 [oracle.com](https://oracle.com)

**Integrated Cloud Applications & Platform Services**

Copyright © 2018, Oracle and/or its affiliates. All rights reserved. This document is provided *for* information purposes only, and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document, and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group. 08/18

Using Oracle BI Publisher Web Services for Fusion Applications  
August 2018



Oracle is committed to developing practices and products that help protect the environment