Recommended Top-Performing Servers

Qlik® Scalability Center

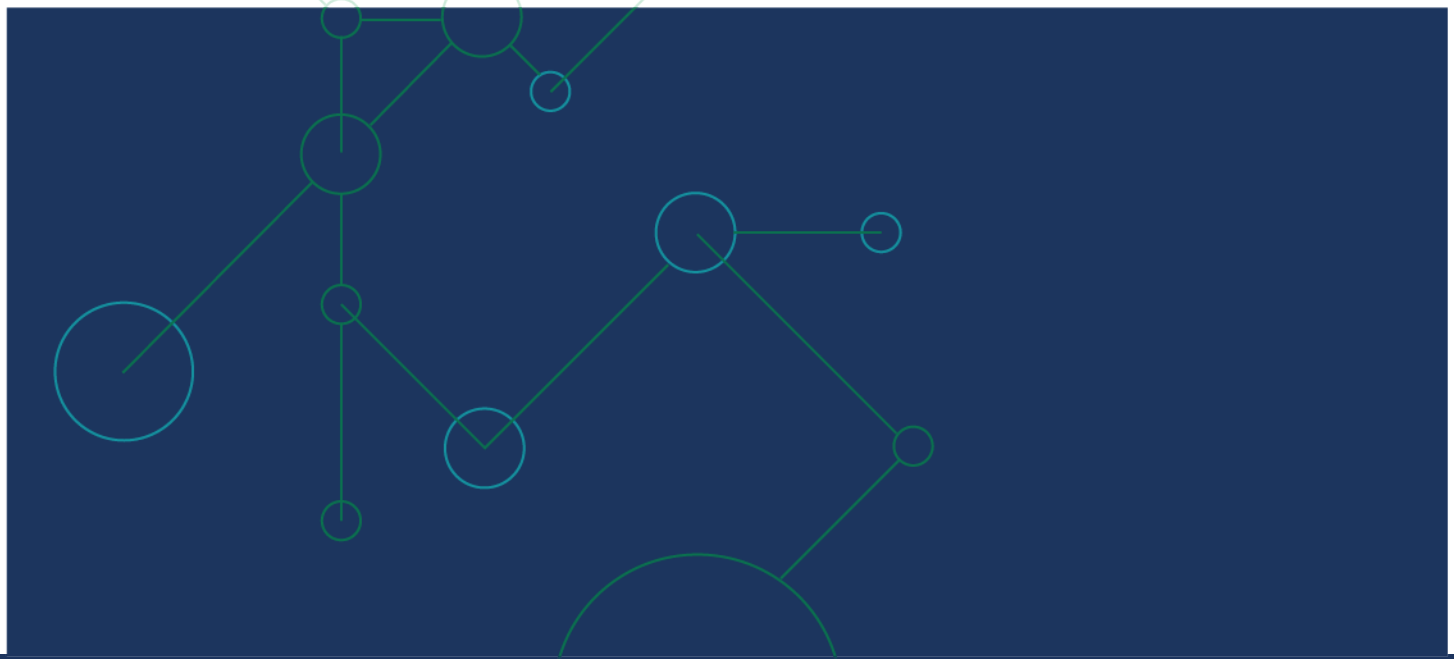

TABLE OF CONTENTS

Introduction

The Qlik Scalability Center manages and performs benchmarking tests that compare different hardware configurations, Qlik product versions, and use cases. The test results are used to determine which combinations perform well and which do not. In this context, “perform well” means a server that delivers good throughput and short response times compared to other servers of similar size within the tested environment.

While the Scalability Center cannot make specific recommendations or endorse server solutions, we can provide processor, memory, and architecture information to make the procurement of such hardware easier.

Considerations When Selecting Server Hardware

One of the most common questions posed to the Scalability Center is, “Which server should I buy?” This is a difficult question to answer as it depends on many variables in the data processing environment. The most important ones to consider in Qlik Sense® and QlikView® deployments are the processor, memory, and architecture.

Processor

For a long time, the Intel® processors and their corresponding chipsets provided the best Qlik Sense and QlikView performance. We have recently found that the second-generation AMD EPYC™ Rome processors deliver top performance as well.

Memory

More RAM allows more result sets to be cached, which typically results in better performance.

The Qlik Associative Engine allocates memory uniformly over all available RAM, which means that it is important to always have the amount of memory per CPU socket evenly distributed.

For information on the memory configurations for best performance (including which RAM configurations can be deployed whilst keeping the bus speed as high as possible), contact the server manufacturer.

Architecture

To compare the performance of different servers, you can use the theoretical calculation capacity:

$$Theoretical\ Calculation\ Capacity = \#sockets\ \times \#CPU\ cores \times base\ clock\ speed$$

This gives the theoretical number of calculations that a server can do every second. Servers with higher theoretical calculation capacity generally perform better than servers with lower theoretical calculation capacity.

New architectures usually improve on the number of instructions per clock cycle and thus provide improved performance in comparison to older architectures.

Sockets

Since the Qlik Associative Engine is good at using both memory and the processing capacity of all CPUs, the chipset architecture must provide fast communication between the CPU sockets in order to keep the latency towards the memory as low as possible. Chipset architectures that allow for direct connections between all available CPU sockets via high bandwidth links are therefore preferred.

- *Single-socket configurations*: The AMD® single-socket configurations perform very well as all memory is directly connected to the CPU.
- *Two-socket configurations*: These configurations perform very good providing there is enough bandwidth between the CPUs and towards the memory. For example, Intel CPUs with two or three processor interconnects perform better than those with just one. Using a single Intel CPU in a two-socket configuration also provides good performance.
- *Four-socket configurations*: These configurations only perform well if there is a direct connection between each CPU socket, which means that processors with at least three processor interconnects are needed. While a four-socket configuration may have twice the number of cores compared to a two-socket configuration – and thus twice the theoretical calculation capacity – the architecture of four-socket configurations slows down the operation as only one-fourth of the RAM is directly attached to the CPU performing the calculation and the rest of the memory has higher latency. However, at the point where a two-socket configuration becomes saturated, a four-socket configuration with the same CPUs will, in most cases, start to outperform the two-socket configuration.
- *Eight-socket configurations*: Do not use these types of configurations with Qlik Sense or QlikView as they do not provide direct connections between all sockets.

Core Count and Clock Speed

It is important to find a good balance between the core count and the clock speed. Even though the Qlik Associative Engine is very good at multi-threading and uses all cores available to it, some procedures are still single-threaded and run faster with higher clock speed.

BIOS and Operating System Settings

Server BIOS and operating system settings can have a significant impact on the performance of Qlik Sense and QlikView deployments. For more information on the recommended settings please visit http://community.qlik.com/t5/Qlik-Scalability/Quick-tips-8-Server-Settings-For-Best-Performance/gpm-p/1487578#M1304.

List of Top-Performing Systems

The following table contains a list of top-performing processors that have been tested on specific servers with a set of predefined benchmarking tests for Qlik Sense and QlikView.

The list can be used as a preliminary guide for Qlik pre-sales and consulting services personnel, **but actual server selection for any given customer should be based on recommendations provided by trained Qlik professionals. The list is for informational purposes only and should not be considered as a recommendation or endorsement of any hardware or system, or otherwise be solely relied upon for the selection of any server or processor to use with the Qlik products.**

Family	Recommended processors	CPU sockets	Servers used for validation (*)	Recommendations
AMD EPYC Rome (Gen 2)	• 7xx2P • 7xx2	1	• Dell® PowerEdge® R6152 (1 x EPYC® 7702P) • Dell PowerEdge R6152 (1 x EPYC 7302P)	-
Intel Xeon® Scalable Processors Gen 3 (***)	• Silver • Gold • Platinum	1 and 2	• Dell PowerEdge R650 (2x Gold 6348) • Dell PowerEdge R750 (2x Platinum 8358)	
Intel Xeon Scalable Processors Gen 2 (**)	• Silver • Gold 52xx • Gold 62xx • Platinum	1, 2 and 4	• Dell PowerEdge R640 (2 x Silver 5220S) • Dell PowerEdge R640 (2 x Gold 6240) • Dell PowerEdge R640 (2 x Gold 6254) • Dell PowerEdge R640 (1 x Gold 6254)	All CPUs perform well in 2-socket configurations. In 4-socket configurations, it is not recommended to have more than 18 cores per CPU.

(*) Similarly configured servers from other leading manufacturers are expected to provide the same level of performance.

(**) The CPUs are referred to by a 4-digit product number together with an optional suffix. The suffix of interest for Qlik products is “M”, which designates processors where the memory capacity per socket is 1.5TB (instead of the standard 768GB).

(***) Not including the CPUs with suffix H or HL that are built on older generation technology.

Note that the list does not address whether a specific configuration is sufficient for a certain deployment. Which or how many servers are needed for a deployment depends on many factors not covered by the general benchmarking tests (such as the number of users, usage pattern, application design and performance expectations). However, choosing a processor from the list is a good starting point when it comes to determining which is the best server to suit your needs.

About Qlik

Qlik's vision is a data-literate world, where everyone can use data and analytics to improve decision-making and solve their most challenging problems. Our cloud-based Qlik Active Intelligence Platform® delivers end-to-end, real-time data integration and analytics cloud solutions to close the gaps between data, insights, and action. By transforming data into Active Intelligence™, businesses can drive better decisions, improve revenue and profitability, and optimize customer relationships. Qlik does business in more than 100 countries and serves over 38,000 active customers around the world.

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