



Upgrade OSA-Express6S to OSA-Express7S: Performance Analysis

Authors:

Danijel Soldo

Nadia Hariz

Table of Contents

1. Introduction.....	3
2. Workload description.....	3
3. Transactional workload (request [bytes] x response [bytes]): rr1c-1x1, rr1c-200x1000...3	
4. Transactional rr1c-200x30k and Streaming str-30k workloads (Throughput-centric).....	4
Summary.....	4
Notices and disclaimer.....	5

Edition notices

Before using this information and the product it supports, read the information in “Notices and disclaimer” on page 5.
© Copyright International Business Machines Corporation 2022. All rights reserved.

1. Introduction

Even after two decades since the ratification of the 10GbE, it is still a spread option for networking architectures dedicated to cloud. Hence, many proposed architectures with IBM Z[®] are equipped with 10GbE OSA adapters. We want to recall in the beginning of this article that the most recent version is the OSA-Express7S which came out with the IBM z15[®]. Furthermore, the z15 can be equipped with previous OSA network adapters such as OSA-Express6S, since both are 10GbE cards. The main target remains to highlight the advantages from a performance perspective that brings a newer version of the card with the same link speed. Throughout this article we will highlight the benefits of upgrading to OSA-Express7S for some workload patterns.

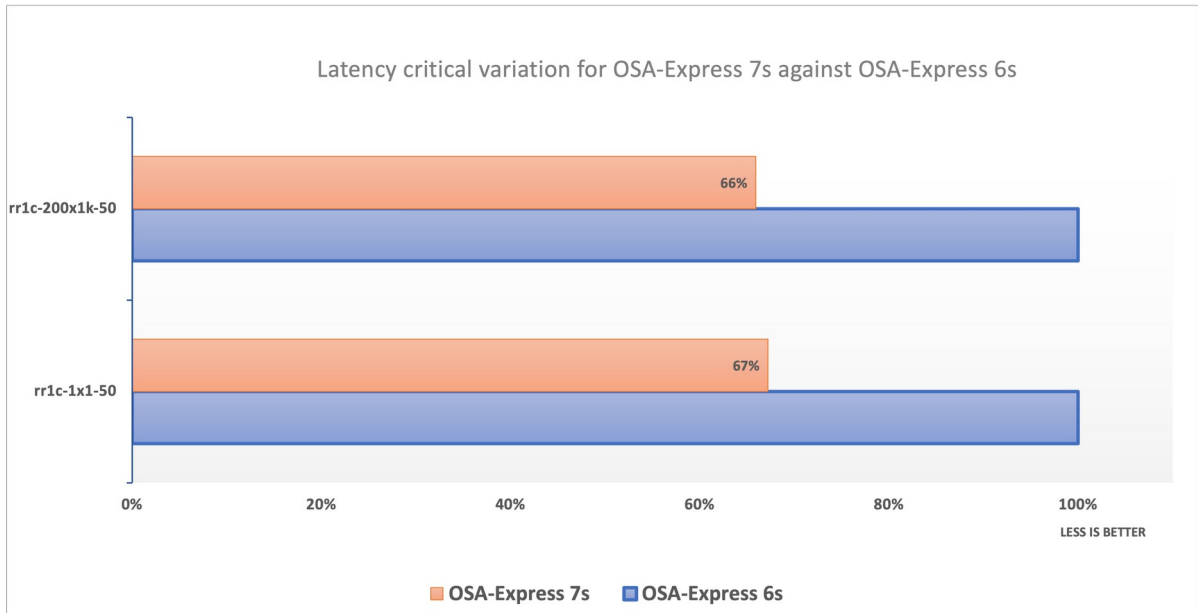
2. Workload description

The measurements were conducted using adapted uperf (github.com/uperf) which enabled us to simulate different workload patterns on two z15 LPARs using separate OSA adapters.

The MTU is set to the size of 1500 bytes and the used Linux[®] distribution is RHEL8.4 with TSO parameter enabled.

3. Transactional workload (request [bytes] x response [bytes]): rr1c-1x1, rr1c-200x1000

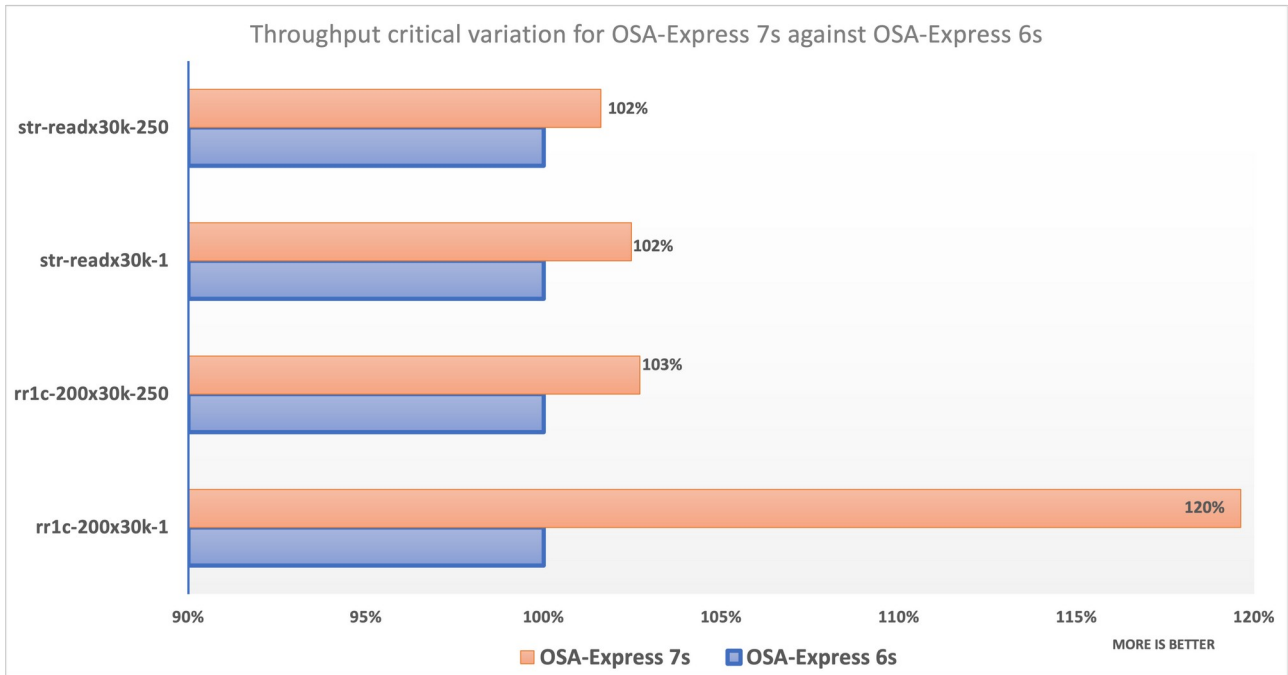
For microservice-based and transactional-type of workloads, the most important aspect of networking performance is the latency of small requests. Therefore, we conducted a series of measurements sending and receiving small data sizes simulating that type of workload.



For the latency the results show that transaction duration for OSA-Express7S card is up to 34% better than OSA-Express6S case for small packets.

4. Transactional rr1c-200x30k and Streaming str-30k workloads (Throughput-centric)

For throughput evaluation, we use both of the streaming type of networking workload by streaming packets of 30 kB of size and transactional rr1c-200x30k workload which represents transactional packets with a high size of data. In this case we observe that increasing the number of parallel connections increases the pressure on the network device and stresses the stability as well.



The comparison throws from one side a 20% increase for the workload rr1c-200x30k single connection case. From the other side there is a slight improvement for OSA-Express7S (reaching only 3%) for the streaming packets and all high connection cases justified by the line speed reached for a 10GbE OSA board.

Summary

This short overview aims to demystify a possible misconception that an upgrade has no impact on the performance since both cards are similarly labelled as 10 Gigabit Ethernet NICs. The difference lies in the highly transactional, latency-critical workload area.

An upgrade from OSA-Express6S to OSA-Express7S would respond to the need of enhancing the performance of transactional workloads remarkably.

Notices and disclaimer

© 2022 International Business Machines Corporation. No part of this document may be reproduced or transmitted in any form without written permission from IBM.

U.S. Government Users Restricted Rights – use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM.

Information in these presentations (including information relating to products that have not yet been announced by IBM) has been reviewed for accuracy as of the date of initial publication and could include unintentional technical or typographical errors. IBM shall have no responsibility to update

this information. **This document is distributed "as is" without any warranty, either express or implied. In no event, shall IBM be liable for any damage arising from the use of this information, including but not limited to, loss of data, business interruption, loss of profit or loss of opportunity.** IBM products and services are warranted per the terms and conditions of the agreements under which they are provided.

IBM products are manufactured from new parts or new and used parts. In some cases, a product may not be new and may have been previously installed. Regardless, our warranty terms apply.

Any statements regarding IBM's future direction, intent or product plans are subject to change or withdrawal without notice.

Performance data contained herein was generally obtained in a controlled, isolated environment. Customer examples are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual performance, cost, savings or other results in other operating environments may vary.

References in this document to IBM products, programs, or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business.

Workshops, sessions and associated materials may have been prepared by independent session speakers, and do not necessarily reflect the views of IBM. All materials and discussions are provided for informational purposes only, and are neither intended to, nor shall constitute legal or other guidance or advice to any individual participant or their specific situation.

It is the customer's responsibility to insure its own compliance with legal requirements and to obtain advice of competent legal counsel as to the identification and interpretation of any relevant laws and regulatory requirements that may affect the customer's business and any actions the customer may need to take to comply with such laws. IBM does not provide legal advice or represent or warrant that its services or products will ensure that the customer follows any law.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products about this publication and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products. IBM does not warrant the quality of any third-party products, or the ability of any such third-party products to interoperate with IBM's products. **IBM expressly disclaims all warranties, expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a purpose.**

IBM, the IBM logo, and ibm.com are trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at:

www.ibm.com/legal/copytrade

The registered trademark Linux® is used pursuant to a sublicense from the Linux Foundation, the exclusive licensee of Linus Torvalds, owner of the mark on a worldwide basis.

The provision of the information contained herein is not intended to, and does not, grant any right or license under any IBM patents, copyrights, trademarks or other intellectual property right. Refer to www.ibm.com/legal for further legal information.