IBM

Upgrade OSA-Express6S to OSA-Express7S: Performance Analysis

Authors:

Danijel Soldo

Nadia Hariz

Table of Contents

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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 The main target remains to highlight the advantages from a performance perspective that brings a newer version of the card with the same link speed.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.
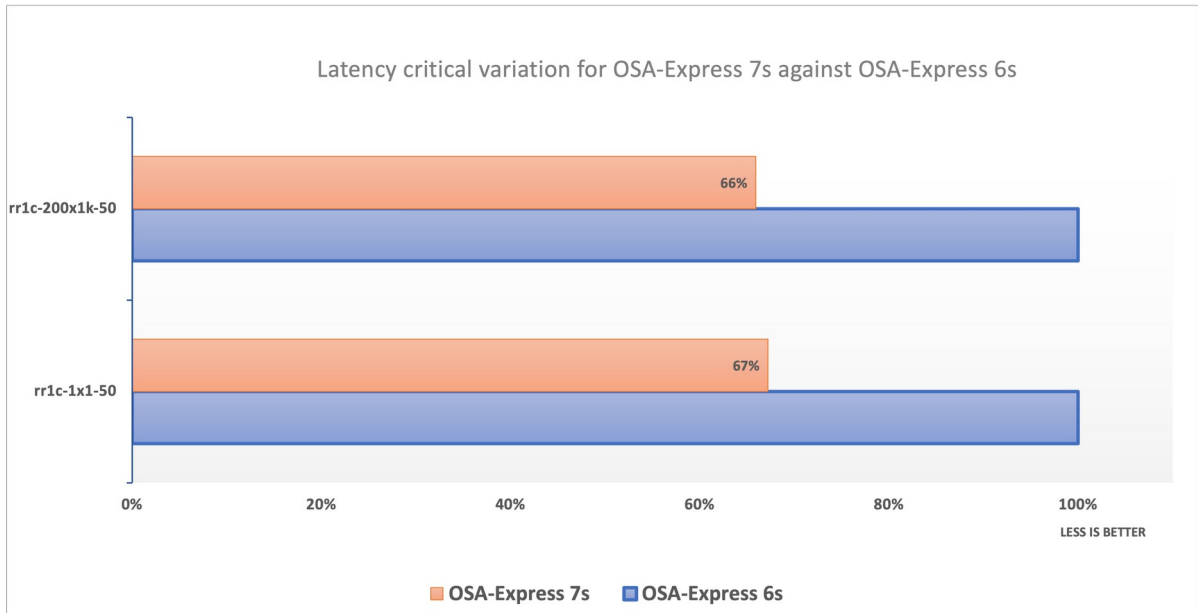
For the latency the results show that transaction duration for OSA-Express7S card is up to 34% better than OSA-Express6S case for small packets.

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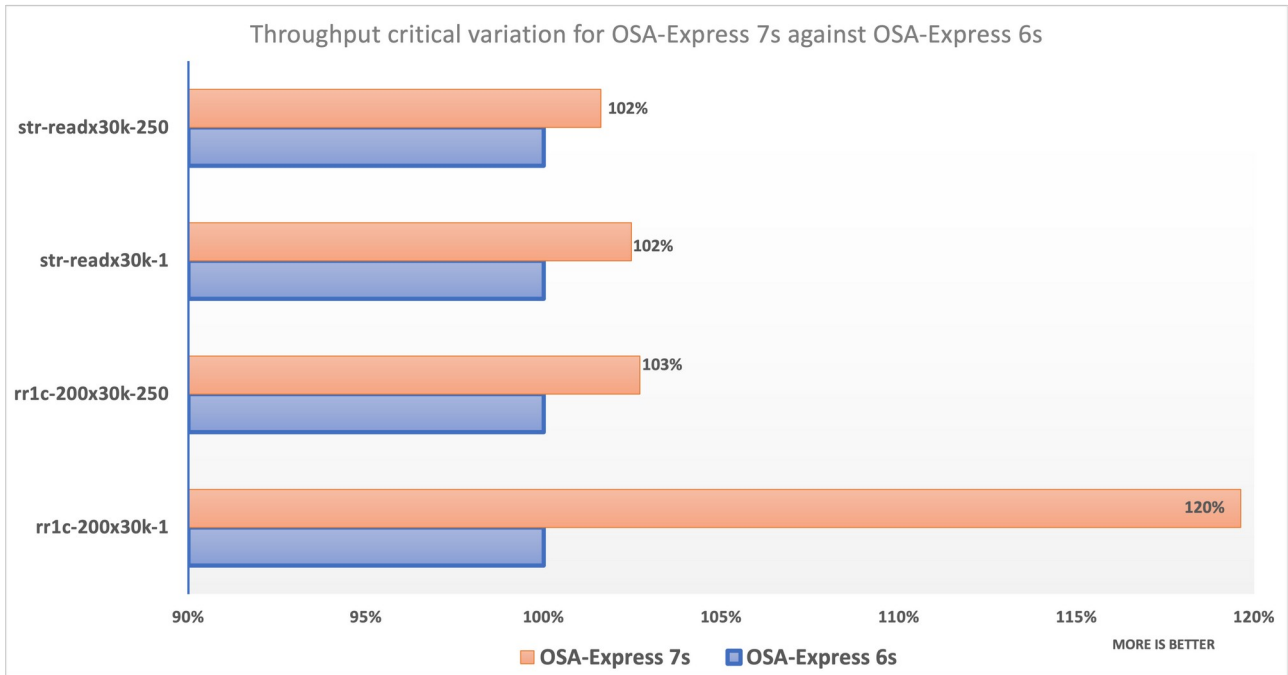
The comparison throws from one side a 20% increase for the workload rr1c-200x30k single connection case. From the other side there is a slight improvement for OSA-Express7S (reaching only 3%) for the streaming packets and all high connection cases justified by the line speed reached for a 10GbE OSA board.

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.

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