

# PortaSwitch MR21: A Guide to Hardware Optimization

<b>INTRODUCTION .....</b>	<b>2</b>
<b>AN EVOLVING GLOBAL VOIP LANDSCAPE .....</b>	<b>2</b>
<b>WORLD-CLASS SERVER SUPPORT .....</b>	<b>2</b>
<b>TESTED PERFORMANCE .....</b>	<b>2</b>
TEST 1: MAXIMUM PERFORMANCE .....	3
TEST 2: PERFORMANCE INCREASE IN MAINTENANCE RELEASE 21 .....	5
<b>SUMMARY .....</b>	<b>5</b>

## Introduction

The debut of Maintenance Release 21 (MR21) in December, 2009 was a milestone for PortaSwitch, PortaOne's flagship communication services and subscriber management software application. PortaSwitch is a core infrastructure component of many of the world's leading VoIP telephony companies, enabling ITSPs and wholesale carriers to reliably deliver a wide range of services quickly, reliably and flexibly. The comprehensive product includes a real-time billing system, class 4 and 5 softswitch, and application servers that deliver converged VoIP billing and provisioning, SIP call control, unified messaging, IP Centrex and hosted IP PBX, callback management, IVRs, conferencing and more.

MR21 takes PortaSwitch to even higher levels of performance. Chief among its improvements is its support for the Linux x64 OS, an innovative system for managing the installed software on each server. Linux x64 OS not only supports easy switching between different software versions, but also the introduction of the unified framework for controlling all the servers within PortaSwitch installation. Other major upgrades were deployed in MR21 as well including a new call recording capability, a new PC dialer/softphone client, support for a distributor model, and integrated CRM/ticketing system.

## An Evolving Global VoIP Landscape

PortaSwitch MR21 was undertaken to specifically address the fast-changing needs of the global VoIP industry. While the VoIP marketplace is sufficiently fragmented to make aggregate sales figures difficult, VoIP is undeniably the fastest growing segment of a worldwide telecom industry that is predicted to grow to \$1.6 trillion USD in revenues by the end of 2010, according to Yankee Group research.

In this exploding marketplace, one of the key issues service providers need to address is performance. Business users and consumers alike demand fast, reliable call connections and voice quality. Heavy subscriber growth simply puts additional strain on already-stretched provider systems. Capacity and scalability, therefore, are prime requirements.

To satisfy these needs, most ITSPs employ a network topology that distributes traffic among multiple servers. However, such systems require significant financial and human resource investments. VoIP service providers faced with burgeoning infrastructure costs are better served by systems that can more efficiently process calls, thereby allowing them to do more with less.

## World-Class Server Support

PortaSwitch Maintenance Release 21 is a true advancement in that it supports 64-bit Oracle Enterprise Linux. This evolution from the FreeBSD operating system enables MR21 to perform optimally on many of the most advanced, carrier-grade hardware platforms, including blade systems. In addition to achieving an even higher level of robustness, MR21 allows PortaSwitch to drastically increase call volume by using large amounts of RAM.

As a 64-bit product, MR21 is optimized for best-in-class x86 server products including Dell PowerEdge products. This class of server is renowned for its operational efficiency, its world-class performance and scalability, and its capability for virtualization and consolidation.

## Tested Performance

To validate the call processing capacity of MR21, PortaOne conducted performance tests on several hardware platforms. Testing was performed non-stop for an extended period of time.

Each session simulated a call in the SIP trunking or hosted IP PBX scenario. This means it included call authorization, routing calculation, processing start accounting at the time, when the call is connected, and processing stop accounting to perform the rating and charging the real-time. Also for each call initiation session, one additional request was generated for user authentication in order to imitate the real-life conditions that take place when calls are initiated by the large number of IP phones. Such IP phones constantly send updates to the switch regarding their location information.

**Test 1: Maximum Performance**

The following hardware configurations were tested:

**System 1:**

- Dell PowerEdge R610 Server
- 2 x Intel Xeon E5530 CPU @ 2.40GHz (quad-core)
- 8GB RAM
- PERC 6/I RAID controller, four hard drives (10K rpm, SEAGATE ST9300603SS)

**System 2:**

- Dell PowerEdge 2950 Server
- 1 x Intel Xeon L5420 CPU @ 2.50MHz (quad-core)
- 8GB RAM
- PERC 6/I RAID controller, four hard drives (15K rpm, SEAGATE ST3300555SS)

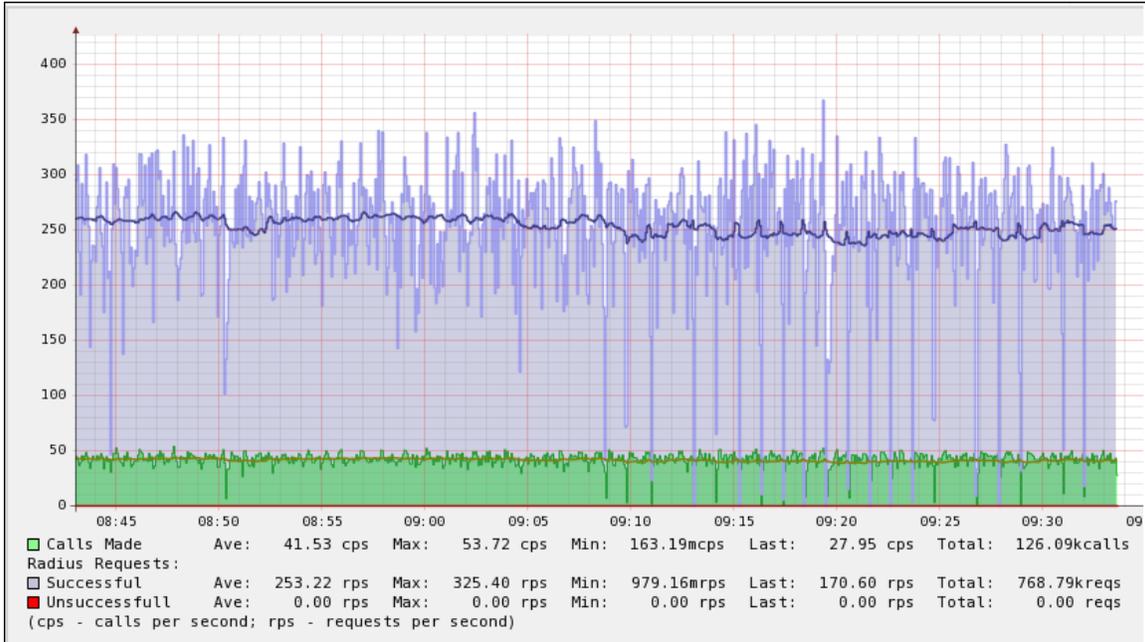
**System 3:**

- Supermicro Server
- 2 x Intel Xeon E5430 CPU @ 2.66GHz (quad-core)
- 8GB RAM
- 3ware Inc 9690SA RAID controller, four hard drives (7.2K rpm)

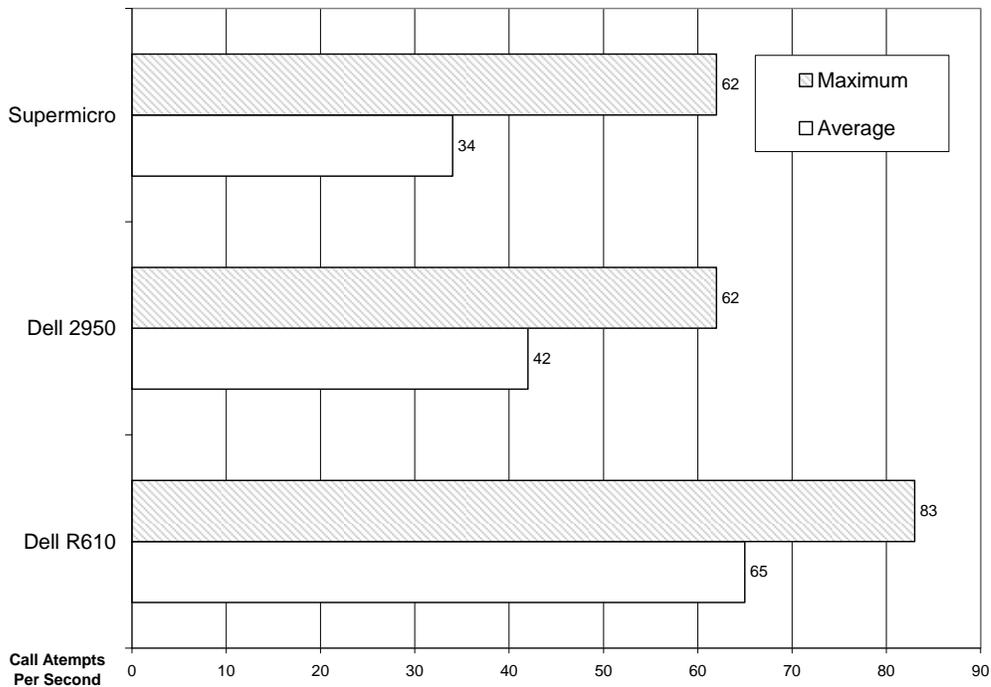
**RESULTS**

Over the test period, PortaBilling100 MR21, a primary PortaSwitch component and the nerve center of the PortaSwitch system, demonstrated the following results:

Performance criteria	System 1 Dell R610	System 2: Dell 2950	System 3: Supermicro
Average number of processed requests per second	398	253	207
Average number of processed call attempts per second (CAPS)	65	42	34
Maximum number of processed call attempts per second (CAPS)	83	62	62



As you can see, the CPU and the disk subsystem play major role in performance and may have almost 100% effect on the performance.



The demonstrated level of performance on a modern carrier-grade hardware allows a carrier to support up to 10,000 concurrent calls on their network (assuming the industry average call success rate and average call length).

**Test 2: Performance increase in Maintenance Release 21**

In this test the same hardware platform was tested running with Maintenance Release 21 (64 bit Linux) and with Maintenance Release 20 (32bit FreeBSD).

System Configuration:

- Supermicro Server
- 2 x AMD Opteron 275 CPU @ 2.2GHz (dual-core)
- 8GB RAM
- 3ware Inc 9690SA RAID controller, four hard drives (10K rpm)

**RESULTS**

Performance criteria	MR21	MR20
Average number of processed requests per second	105	80
Average number of processed call attempts per second	17	13
Maximum number of processed call attempts per second	24	16

As you can see the maintenance release 21 provides 30% increase in performance.

**Summary**

PortaSwitch MR21 represents a major step forward for ITSPs and wholesale VoIP carriers. Its support for today’s most advanced architecture offers users new opportunities and benefits that bring greater robustness, easier management and operation, and enhanced profitability to their core telecom operations.

The impressive results of x64 hardware and software architecture validates the system’s ability to keep users ahead of the VoIP growth curve in performance, network scalability and overall resource efficiency.