



Accelerating eClinicalWorks

High Availability, Security and Acceleration

White Paper

Overview

eClinicalWorks is a privately held leader in the ambulatory clinical systems market. The company's unified electronic medical record (EMR) and practice management (PM) solutions are proven for every market segment. In conjunction with the release of its new version, a set of tests were conducted by Dell Professional Services regarding scalability of eCW product line on an enterprise platform consisting of Dell, Intel, EMC, Array Networks and VMWare.

This document summarizes the test results and provides an overview on:

- Enterprise Level Scalability
- Key problems to be addressed
- Solution architecture & benefits



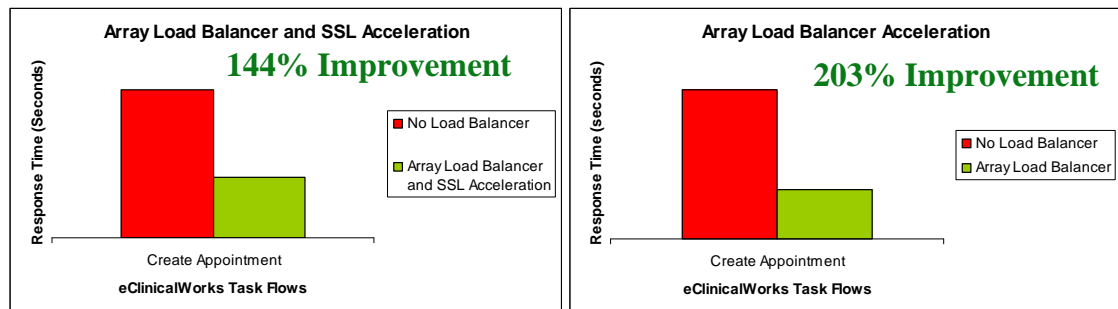
Delivering High Availability, Security & Acceleration for eClinicalWorks

Summary

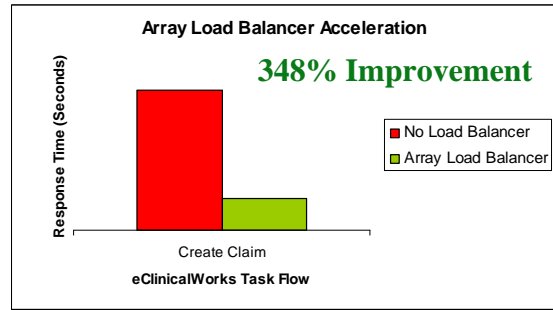
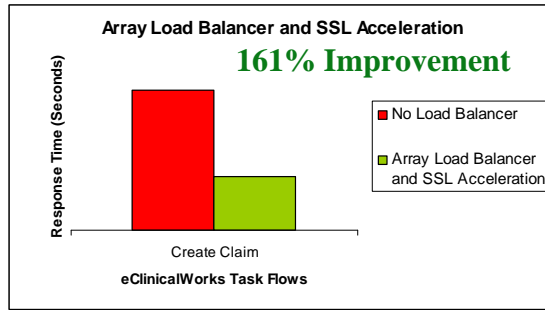
eClinicalWorks is a privately held leader in the ambulatory clinical systems market. The company's unified electronic medical record (EMR) and practice management (PM) solutions are proven for every market segment. In conjunction with the release of its new version, a set of tests were conducted by Dell Professional Services regarding scalability of eCW product line on an enterprise platform consisting of Dell, Intel, EMC, Array Networks and VMWare.

The goal of this paper is to present the enterprise application delivery challenges like availability, acceleration and user experience in today's enterprise and describe a solution that has been tested by Dell and eClinicalWorks that solves these common problems.

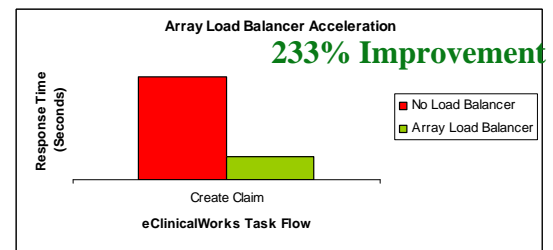
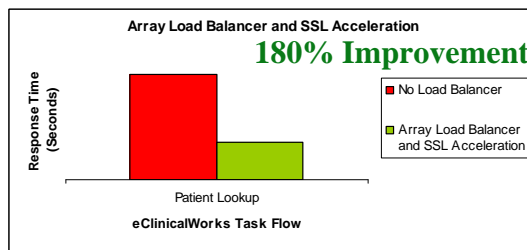
Array APV showed a remarkable 144% improvement in response times with routinely used "Create Appointment" task from eClinicalWorks by exercising load balancing and SSL acceleration techniques. APV showed a 203% improvement in response times with just load balancing.



Array APV showed a solid 161% improvement in response times with routinely used "Create Claim" task from eClinicalWorks by exercising load balancing and SSL acceleration techniques. APV showed a 348% improvement in response times with just load balancing.



Array APV showed a strong 180% improvement in response times with routinely used “Patient Lookup” task from eClinicalWorks by exercising load balancing and SSL acceleration techniques. APV showed a 233% improvement in response times with just load balancing.



Availability Challenges

Load Balancing

The range of requirements for a successful application deployment varies from the nature of the end user needs. An application server farm typically consists of clustered individual servers to support the enterprise level scalability and capacity requirements of the user base in the organization. The challenge is to distribute the load for scaling access to large user base across the application server farm based on predefined algorithms. Demanding applications might require more intelligent and advanced load balancers that make load distribution decisions based on application level intelligence for enhanced performance and usability. Some applications might require complex load balancing policies that can be combined for even better agility and enhanced user experience.



Fail Over

Building 24x7 fault tolerant reliable application access has become critical to ensure productivity of the organization. More and more businesses depend on these mission critical systems to perform day to day activities. Any outages will translate to lost revenues and reduced productivity. Preventing outages is one side of the coin, the other side of the coin is to transparently bringing the application back up for the users, while remediation measures are being undertaken.

Infrastructure Consolidation

Application Manageability is a huge challenge in the data center due to increased physical server count. It may not be always possible to increase the server and application capacity due to budgetary and space considerations. The power and cooling costs will rise exponentially with increased device footprint in the data center.

Challenges in Providing User Experience and Productivity

Acceleration

TCP Multiplexing

TCP multiplexing is a technique used by load balancers that enables the device to "reuse" existing TCP connections that are already open. This reduces the impact of TCP overhead on application performance. TCP multiplexing allows TCP-based connections to be reused over many client application requests, resulting in much greater efficiency of web servers and faster performing applications.

Application and Server Capacity: Every server comes with its own physical limitations on serving the number of users beyond which another server needs to be clustered to meet the load. TCP multiplexing virtually increases the capacity of the application servers and thereby reducing the physical server count required to meet the needs.

Business Continuity: With large number of users business continuity becomes a challenge. A sudden surge of requests will overload the server and brings the server down. By reducing the number of TCP connections required to serve the same number of users and requests, it leaves the server with the ability to open more connections and thus serve more users and requests.

Increasing Security and Compliance Requirements

Encryption and Protection



Compliance regulations like HIPAA, Sarbanes-Oxley, FIPS and authentication requirements force enterprises to implement encryption on sensitive user traffic. Enterprises need to prevent access from external machines, unauthorized users and networks. For productivity reasons, protecting the enterprise assets from denial of service attacks is absolutely critical.

SSL Offloading

Encryption is a CPU intensive task that will cripple the application server performance as the user load increases. It is difficult to ensure fast and reliable secure connections to transactions and applications with general purpose server hardware. Servers could be serving the content that is more critical for the users than the CPU intensive encryption tasks.

Summary

Array APV meets and exceeds the enterprise application acceleration challenges in the data center. APV solves the entire set of tough to crack problems to provide enhanced user experience and productivity for the enterprise. Array has partnered with eClinicalWorks and Dell to bring the best of the breed solution with proven results. Array APV provides lightning SSL processing power and blazing acceleration to the enterprises.

Dell and eClinicalWorks have certified and tested our proven solution for enterprise deployment. They strongly recommend our solution.