

Acceleration

- Reduces application response time over the WAN by more than 95%

Virtualization

- Enables flexible, easy download and deployment of applications
- Delivers scalability by allowing IT to provision hardware dynamically for user workloads
- Optimizes the use of server resources through platform sharing between acceleration and other applications

Management

- Provides centralized provisioning and management through integration with virtualization management systems
- Allows greater control of virtual appliances

Virtual Appliance

- aCelera Virtual Appliance can be purchased as ready-to-load software for any industry-standard server

Supported Virtual Machine Operating Systems

- VMware® ESX or ESXi
- Microsoft® Hyper-V (*when available*)

Mix and Match

- aCelera appliances can be used for the application acceleration of both virtualized and non-virtualized environments

Acceleration in a Virtual Appliance: Faster Response Time, Less Hardware

Today's enterprises are implementing consolidation initiatives to reduce the amount of hardware which is consuming ever-increasing amounts of space, energy and IT dollars. Even in small to medium sized companies, IT managers have multiple systems and proprietary appliances, including application acceleration appliances, collocated in data centers and branch offices, requiring separate and costly maintenance and management. This proprietary, single-purpose hardware approach to supporting applications is inefficient, hard to manage, and expensive.

To maintain the flexibility of the modern virtualized enterprise and still gain the remote access performance benefits of application acceleration, IT managers must consider a solution that leverages a virtualized infrastructure and integrates application acceleration into that environment. Now with aCelera, application acceleration can be delivered in software and deployed as a virtual appliance. aCelera provides a more scalable, flexible, cost-effective, and manageable solution for IT managers and their remote users than traditional proprietary application acceleration or WAN optimization approaches.

aCelera Virtual Appliance for Application Acceleration

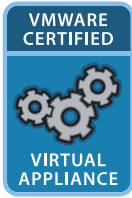
Certeon's aCelera is the first and only application acceleration VA to run natively within a VM operating system and provide true application acceleration across the wide area network (WAN). aCelera software delivers the same reduction in application response time as its proprietary hardware appliance counterparts do, with the added benefit of eliminating the hardware footprint and high cost of separately managed, single-purpose boxes.

Supported on industry-standard server hardware and virtual machine operating systems such as VMware ESX or ESXi, aCelera delivers a more than 95% reduction in application response time to remote branch office users.

aCelera Virtual Appliance Benefits

Provisioning aCelera as a VA inside a VMware system allows other virtualized applications to benefit from aCelera's performance enhancements. aCelera also allows IT managers to, on demand, allocate application performance and system resources where they are needed most. aCelera appliances can be provisioned from a VM management system such as VMware Virtual Center — the same central system that monitors and controls all VMware systems and virtualized applications.

Finally, the cost and performance benefits of aCelera application acceleration enable IT managers to deploy virtualized applications to remote branch offices faster and more easily, bringing greater productivity to all users.



Performance

aCelera VA software delivers a more than 95% reduction in application response time when accessing applications over the WAN (see diagram, right). aCelera's optimal performance is delivered with minimal server overhead.

Why Distributed Enterprises Need WAN Optimization

Enterprise users who are local to corporate data centers typically experience great performance when accessing applications and services over a LAN. However, their counterparts in remote offices experience very different results when accessing those same resources over the WAN. Accessing applications across a WAN introduces network congestion, latency, and packet loss that can dramatically slow remote end user response time. Many IT organizations increase their spending by adding more network bandwidth to address these issues, only to find that poor application response time over the WAN has not changed.

With the addition of virtualization, many enterprises are consolidating servers into corporate data centers. But the consolidation of applications out of the branches and into the data center puts even more strain on the corporate WAN. In some cases, this degrades end user response time even further.

To correct these problems, IT managers use WAN or network optimization appliances. These proprietary appliances sit at both ends of the network and attempt to mitigate the network impact on performance. These devices use techniques such as data packet compression, caching, and protocol optimization to reduce end user response time.

Application Acceleration vs. Network Optimization

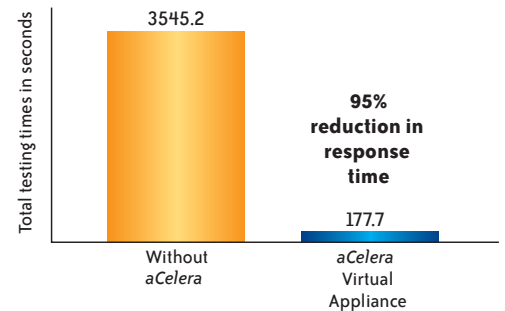
Application acceleration is all about reducing application response time. Application acceleration is different from what is typically referred to as appliance-based WAN optimization in that it not only performs data packet compression, caching, and protocol optimization, but also knows enough about an application's semantics to effectively reduce the amount of application traffic being transmitted over the WAN. Effective application acceleration techniques can identify and reduce application traffic to only the essential data objects (i.e., changes). By reducing the amount of data traffic sent over the WAN, application response time can be dramatically improved.

aCelera Virtual Appliance Acceleration

aCelera Virtual Appliance software is a full-featured application acceleration solution but without the proprietary hardware. aCelera can be downloaded onto a remote server and lives inside a VM system infrastructure. It can be deployed wherever it is needed, and it can be dynamically provisioned for whatever the user workload is in that location. As just another virtual application on a VM, aCelera can be managed and controlled by the central management tools provided by the VM operating environment. aCelera runs on any standard server hardware. aCelera has been tested and certified on VMware ESX and ESXi systems. aCelera will support Microsoft Hyper-V when it becomes available.

In addition, aCelera is based on Certeon's patent-pending Application Intelligent Networking techniques. aCelera contains specific knowledge of mission-critical applications through a technique called Application Acceleration Blueprints. Application Acceleration Blueprints teach the acceleration software VA the language of the specific application making acceleration, even faster. Through the Blueprints, whole application objects can be quickly identified and differenced so that only the changes are transmitted. Blueprints ensure that no unchanged data need be transmitted more than once.

CIFS, HTTP, and HTTPS uploads and downloads
(Latency: 200ms, Bandwidth: 1 Mb/s)



Generic Acceleration Techniques

In addition to Blueprint acceleration for mission-critical applications, Certeon aCelera offers an entire range of standard acceleration techniques. These include but are not limited to:

- **Web Application Optimization** — Optimizes and accelerates all HTTP, HTTPS, WebDAV, and underlying TCP connections
- **Generic Traffic Acceleration** — Two-way history-based differencing accelerates even non-TCP traffic
- **Wide Area File Services (WAFS) Acceleration** — Speeds access to WAFS over the WAN by accelerating the Common Internet File System (CIFS) protocol
- **Network Optimization** — Window resizing, forward-error correction, persistent connections, and small packet aggregation maximize throughput across the network and optimize current bandwidth to support more users/applications
- **Business Traffic Prioritization** — Application-level QoS combined with standards-based packet marking ensures that business traffic is prioritized while ensuring VoIP and video interoperability
- **HTTPS Acceleration** — Secures and accelerates all encrypted (SSL) and non-encrypted HTTP traffic from the desktop to the data center

Application Acceleration Blueprints

Certeon application acceleration solutions offer a wide range of standard acceleration techniques. These include packet compression and differencing, protocol optimization, QoS, caching, and error correction. In addition, for mission-critical applications, Certeon offers specific Application Acceleration Blueprints. These Blueprints turbocharge the acceleration of your most important applications.

Microsoft Office SharePoint® Server (MOSS) and 2007 Office™

Certeon aCelera accelerates the document flow between centralized MOSS environments and Office applications such as Word®, Excel®, PowerPoint®, InfoPath®, and Publisher® by minimizing network traffic and reducing application chattiness.

aCelera accelerates the full range of protocols employed by Microsoft Office and SharePoint, including FrontPage® Remote Procedure Calls (RPC) and Web Distributed Authoring and Versioning (WebDAV) as well as their underlying TCP connections. The result is a significant reduction in the data transmitted and breakthrough performance levels.

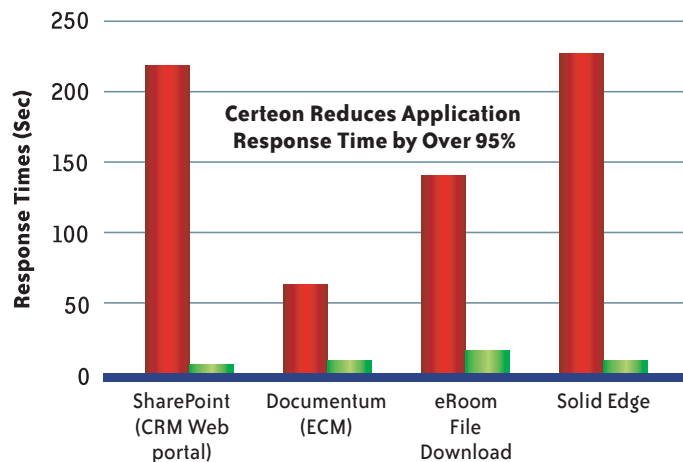
EMC Documentum/eRoom

With its embedded Application Acceleration Blueprint for Documentum, aCelera accelerates the full range of document formats employed by Documentum Content Server without modification to client, server, or application software. aCelera securely accelerates file downloads and Web page renderings over the WAN to enable outstanding performance — an improvement of more than 95%. Response time for both accessing files and rendering Web pages improves with larger file sizes and stays constant as more users are added. The combination of EMC Documentum and Certeon will mean consistent delivery of high performance and security to the most demanding Enterprise Content Management environments.

Siemens Teamcenter/Solid Edge Insight

Many enterprises deploying the high-performance Teamcenter and Solid Edge Insight applications find that their network infrastructure cannot keep up with the delivery of large CAD files; this negatively impacts their ability to share these files among all their remote facilities. Hence, the improvements that they achieve with Solid Edge Insight's innovative 3-D design software cannot be readily shared among remote organizations. The Certeon aCelera software, with an embedded Application Acceleration Blueprint for Solid Edge Insight, can greatly reduce the amount of data going over the WAN by sending only file differences across the network. The aCelera Application Acceleration Blueprint for Solid Edge significantly reduces the application response times to remote sites.

Application Acceleration



Source: Certeon Customers

■ Without Certeon ■ With Certeon

Flexible

- Enables organizations to dynamically and easily deploy application acceleration to remote offices from a central location

Scalability

- Grows as your needs grow by simply allowing for the provisioning of more server resources when acceleration is needed for more users

Lower Cost

- Combines virtualization with application acceleration for easy management and better use of compute resources

aCelera Virtual Appliance — Provisioning Requirements

aCelera Virtual Appliance software can be loaded on any standard hardware that runs VMware ESX or ESXi.

- CPU Cores: 1–4
- Memory: 512 MB–6 GB
- History Store: 0.1–2.0 TB

For specific provisioning requirements for your users and sites, contact Certeon.

Multiple Virtualization Environments

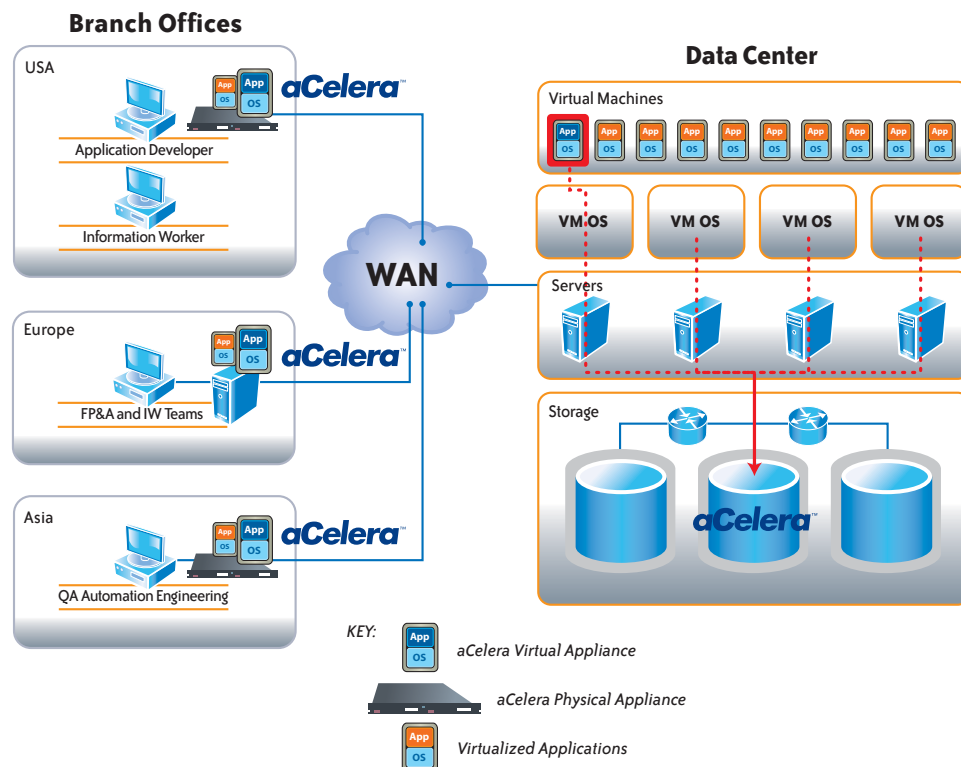
- VMware ESX and ESXi
- Microsoft Hyper-V
(when it becomes available)

aCelera in the Distributed Enterprise

aCelera is software that can be easily deployed by downloading it onto any industry-standard server running a VM operating system. aCelera can be deployed in a remote location by loading it onto a stand-alone server or treated as just one more virtualized application in a larger distributed enterprise. If virtualization does not exist in your remote location, Certeon can deliver a prepackaged hardware and software physical appliance to your remote location. This physical appliance is an open server with VMware and the aCelera software and can support additional applications. An aCelera Microsoft Hyper-V physical appliance configuration will be offered when Hyper-V is available.

In the data center, aCelera can be stored on the disks in a SAN and automatically deployed on one or multiple VM systems. aCelera images can be cloned and moved as needed and can take advantage of other management features within a VM operating system, such as high availability and security. The figure below shows how easy it is to deploy aCelera in a variety of environments.

Application Acceleration in a Virtualized Infrastructure



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