ROBINS AIR FORCE BASE—TECHNOLOGY FORUM AND EXPO 2015

THE VALUE OF A CENTRALIZED AND VIRTUALIZED DESKTOP INFRASTRUCTURE

MATTHEW STRAITER, DIRECTOR - US FEDERAL SALES
CLEARCUBE TECHNOLOGY, INC.

- designs, develops, manufactures and markets
- hardware and software
- enabling centralized and virtualized desktop infrastructures
- 100% sold through loyal channel partners
- delivering customized solutions in high security and high performance environments
- secure supply chain - all products are TAA compliant, assembled in TX and all components come from trade compliant countries
- facility is an approved Secure/ Secret facility sponsored by the Intelligence Community w/cleared engineers to work on classified networks

INNOVATING BUSINESS TECHNOLOGY SOLUTIONS SINCE 1997

Founded 1997. U.S.A.
Headquarters - Austin, TX
Multiple USA sales offices
London for EMEA
Strong partner network support, including Mexico and Brazil.
Awarded over 30 patents, with another 18 patents pending with USPTO.
Regardless whether your enterprise desktops are homogeneous or heterogeneous like most, ClearCube Technology has a solution to satisfy all your user case needs.
Federal and DoD

100% Ultra secure systems
100% 99.999% availability
89% Demanding applications
67% Disaster recovery/BC/Failover
44% Ergonomic improvements
33% Connection broker
30% GPU for power users
22% Technology refresh
22% Lower energy costs
22% Lower IT support costs
### 2014/15 COMMON REQUIREMENTS

**Federal and DoD**

<table>
<thead>
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<th>Percentage</th>
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*Increasingly more important*
ROBINS AFB HAS MANY DIFFERENT USER TYPES

<table>
<thead>
<tr>
<th>Repetitive Workloads</th>
<th>Multiple Applications Lite Video</th>
<th>Graphics Capabilities Special Applications</th>
<th>Enhanced CPU GPU</th>
</tr>
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<tbody>
<tr>
<td>Task Users 80%</td>
<td>Knowledge Users 10%</td>
<td>Power Users 8%</td>
<td>Extreme Power Users 2%</td>
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</table>

- Enlisted Airmen/women
- Traffic Management
- Nurses Physicians Medical Personnel
- Administrative Personnel
- Supply Management

- Logistics Planning/Scheduling Personnel
- Support Equipment and Vehicles Personnel
- Aircraft Maintenance Personnel
- Aircraft Pilots
- Public Affairs Officer
- Mission Support Personnel

- Communications Engineers
- Video Production Personnel
- Weapons Systems Support Personnel
- Operations Personnel
- Logistician
- Financial management Personnel
- Systems Test Engineers
- C4ISR Personnel
- Intelligence Analysts

- Engineers
- Designers
- Geospatial Analysts
- Navigations
- Medical Specialties
- Space and Missile Operations Personnel
- Reconnaissance/Surveillance/Electronic Warfare Personnel

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SMART

VDI - Hyper-Converged Infrastructure

R Series Blade PC

A Series Blade PC

M Series Engineering Workstation
First OEM to adopt PCoIP as desktop to datacenter protocol

PC-over-IP (PCoIP) is a remote display protocol for delivering remote desktops and applications developed by Teradici.

ClearCube became the first OEM partner for PCoIP with Teradici in 2006 incorporating it in both our zero clients and host adapters for our secure remote access Blade PCs.

In 2008, VMware licensed Teradici’s PCoIP protocol and supports it in VMware Horizon. ClearCube remains the longest tenured manufacturer with the most experience implementing the protocol solving business problems in the Teradici partner universe.

Widely accepted by Information Assurance Officers, PCoIP protocol encrypts pixel transfers with advanced security algorithms including AES-256 and NSA Suite B cryptography.

Zero clients have no operating system to patch, manage or STIG, and no user-writable storage so they are very secure on the high-side networks. Some models have an optional integrated card reader to support NIPR CAC and/or SIPR Token.
Zero Clients

R Series
112 1:1 Dedicated Workstations
42U Rack 14 x 8

Sentral Management

Brokering software for non-view deployments

Fiber or copper connectivity options
Integrating CAC option,
2 - 7 USB ports,
Multiple Security Level support,
Dual or quad display options
Footprint options

OFFICE / WEB / VID / MP3

Display Legend

30" 2560x1600
(2) 2560x1600
(3) 1920 x 1200
(4) 1920 x 1200
CVDI ADDRESSES BIGGEST CONTEMPORARY IT CHALLENGES

Distributed (X86) server environments over-consume
Power, cooling, space, IT staff time, bandwidth, CAPEX, and OPEX

Need to streamline CAPEX

Maximize IT staff efficiency

Reverse hardware sprawl

Optimize desktop & datacenter utilization

Simplify management

Increase organizational agility

Disaster Recovery/ COOP

Insider Threat

Cloud Computing
Increase hardware utilization by consolidation
Maintains workload capacity and performance

Simplifies management - in the datacenter - not at the desktop

Improves efficiency of provisioning, monitoring, servicing, managing, securing, bench-stocking and lifecycle management of the systems

Reduces amount of IT staff time for infrastructure administration

Enables hardware standardization
Unifies the shared model for power, cooling, and security (everyone has same type of access device versus some users with distributed desktops which can be “targeted” based on their work and mission requirements.)

Provides pathway to the Cloud and DaaS – The user access device stays the same as consolidation increases and applications & services are delivered differently moving into the future.
24.9%\textsuperscript{1} to 46%\textsuperscript{2} reduction in annual IT infrastructure cost per user

Main savings buckets are IT staff time, resources, hardware (server 50% / network 50%), and facility utilization (57%)

Blades reduce physical deployment by 75.1% and system setup and configuration by 46.1%

Wire once, change-ready nature reduces set-up and configuration time up to 46%\textsuperscript{1} to 70%\textsuperscript{2}

Reduced hardware and energy-efficient technology reduces power and cooling more than 37%\textsuperscript{1} to 76%\textsuperscript{2}

1. VDI
2. CDI
Combination of zero clients, blade PCs and virtualization to yield a total of 41.9% additional cost savings

Benefits include flexibility, agility, more control over the virtual layer between the OS/application layer and the underlying hardware

IT also found saving in reductions of licensing fees and IT tool costs

- Pooling of systems based on occupancy rates, or application usage
- CVDI for training environments to provide flexible course delivery from text to GPU intensive work loads based on course content and training room needs.

3. Blended savings VDI and CDI (IDC)
Automating the key management processes make day-to-day maintenance tasks easier translating into real savings

IT resources can focus on value-added initiatives

Physical and virtual resources can be managed in the same way and resource provisioning can be automated

Problem management can be reduced up to 52.3%\(^3\) and maintenance reduced by 49.4%\(^3\)

Unplanned downtime leading to interruptions of business operations and revenue loss reduced dramatically

Average number of annual service incidents experienced in a traditional distributed environment can be reduced by 76%\(^3\)

Built-in intelligence, embedded configuration and provisioning tools streamline set-up, configuration, upgrades, updates, diagnostics and self-healing

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3. Blended savings VDI and CDI (IDC)
**VALUE PROPOSITION – CENTRALIZED & VIRTUALIZED DESKTOP INFRASTRUCTURE**

*ClearCube's products and solutions solve the problems that PCs create.*

<table>
<thead>
<tr>
<th>DISTRIBUTED PC PROBLEMS</th>
<th>CLEARCUBE SOLUTIONS OFFER...</th>
</tr>
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<tbody>
<tr>
<td>Heat &amp; noise at the user desktop</td>
<td>Quiet &amp; ergonomic user environment</td>
</tr>
<tr>
<td>Data and physical assets exposed</td>
<td>Hard drives and physical PC in a secure data center</td>
</tr>
<tr>
<td>PC management is cumbersome</td>
<td>Easier deployment of PCs and quicker Return-To-Service (RTS)</td>
</tr>
<tr>
<td>Desktop management is costly</td>
<td>Strong ROI and increased productivity by allowing staff to focus more time on critical activities of the organization</td>
</tr>
<tr>
<td>PC’s are not energy efficient</td>
<td>55% greater energy efficiency than comparable desktop workstations. When virtualized this can increase more than 5X.</td>
</tr>
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</table>
# Value Proposition – Power Users

*Special problems beyond the basics that impact Power Users.*

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<th>Power Users - Distributed PC Problems</th>
<th>ClearCube Solution Offers...</th>
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<td>Large file transfers over LAN / WAN</td>
<td>All processing occurs in the datacenter with very short hops and big pipes; pixels only sent to the endpoints</td>
</tr>
<tr>
<td>Very tough security SLAs &amp; “intense” audits</td>
<td>Mass Storage Lockout; centralized secure datacenter; no distribution of packets outside of datacenter</td>
</tr>
<tr>
<td>Remote access costly and complicated</td>
<td>ClearCube built for remote access from the ground up; end-to-end</td>
</tr>
<tr>
<td>Licensing for specialized applications is very expensive (SOP is often everyone has their own license)</td>
<td>Sharing exclusive applications is very easy with connection brokering and multiple users access to individual resources delivers huge savings</td>
</tr>
<tr>
<td>Business is cyclical with huge spikes and very skinny lows</td>
<td>Centralized datacenter allows for agile outsourcing and adding unique skillsets is much easier and faster; or adding many seats rapidly is quite easy.</td>
</tr>
<tr>
<td>Specialized labor is really expensive</td>
<td>Faster communication; faster computing resources; faster rendering; easier collaboration; more efficient use of labor</td>
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USE THE RIGHT TOOL FOR THE JOB REQUIREMENTS

Smart Virtual Desktop Infrastructure (SmartVDI) w/GRID smoothly transitions workers from distributed desktop PCs to highly available virtual desktops that deliver an equal to, or better than, end user experience.

R-SERIES Blade PCs address needs of users in highly secure environments needing dedicated high performance for user requirements to support legacy apps, in-house-developed apps, and mission-critical applications.

A-SERIES Blade PCs are well-suited for 3D graphics consumers, with support for NVIDIA Quadro K1200/K2200/K4200 GPUs.

M-SERIES Xeon Workstations support NVIDIA Quadro K1200, 2200, 4200, 5200 and M6000 GPUs for CAD,CAM,CAE developers.

*A-Ideally projects starting at 30 users
End User Work Complexity Increases

- Dual or Single Display Zero Clients
- Dual or Single Display Zero Clients w/wo CAC reader
- Dual or Triple Display Zero Clients w/wo CAC reader
- Quad Display Zero Clients ClientCube 2 / KM w/wo CAC reader

Display Legend:
- M-Series Blade Workstation
- A-Series Blade PC
- R-Series Blade PC
- Smart VDI HA
- Smart VDI RDS / GRID
- Smart VDI Base

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DESKTOP ZERO CLIENTS FOR ANY BUDGET AND ENVIRONMENT

Budget-friendly
Light-weight, enforced plastic cases small footprint for light duty normal office environments..

Industrial-grade
All durable, metal, rolled-steel enclosures with tough powder coating to withstand tougher environments and conditions. Highest number of integrated USB ports with optional integrated CAC/SIPR token reader.

Mission-specific
Our standard industrial grade products specially packaged with secure KVMs or KMs for multiple level security environments and extra shielding and hardening to achieve TEMPEST Level 1 and 2 certifications.
### Desktop Zero Clients for Any Budget and Environment

#### Budget-friendly
- Light-weight, enforced plastic cases
- Small footprint for light duty normal office environments

#### Industrial-grade
- All durable, metal, rolled-steel enclosures with tough powder coating to withstand tougher environments and conditions.
- Highest number of integrated USB ports with optional integrated CAC/SIPR token reader

#### Mission-specific
- Our standard industrial grade products specially packaged with secure KVMs or KMs for multiple level security environments and extra shielding and hardening to achieve TEMPEST Level 1 and 2 certifications.

### Available Options

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<th>Industrial-grade Options</th>
<th>Mission-specific Options</th>
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<td>1, 2, 3, or 4 displays</td>
<td>1, 2, 3, or 4 displays</td>
<td>Multiple Level Security</td>
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<tr>
<td>4, 6, or 7 USB ports</td>
<td>4, 6, or 7 USB ports</td>
<td>TEMPEST Level 1</td>
</tr>
<tr>
<td>Optional CAC SIPR token reader</td>
<td>Optional CAC SIPR token reader</td>
<td>TEMPEST Level 2</td>
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<tr>
<td>Fiber or copper support</td>
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Solving our customers desktop needs for over 17 years.

Our customers requirements have been huge drivers of our innovation over our lifetime. ClearCube is credited with inventing Blade PCs as well as garnering over 2 dozen patents on our technologies. We have many zero client marketplace firsts.

- Inventor of Blade PC
- Inventor of hardware base Mass Storage Lockout on Blade PCs
- First OEM to integrate CAC SmartCard reader into Zero Clients
- First OEM to adopt PCoIP as desktop to datacenter protocol
- First fiber zero client available in marketplace
- First quad zero client available in marketplace
- First TEMPEST Level 1 zero client bundle
- First TEMPEST Level 2 zero client bundle
- First zero client w/ 7 USB ports
- First zero client w/ 6 USB with integrated CAC
Multiple level security domain access

For high security sites, ClearCube has developed a family of specialty zero clients. ClientCube 2 and ClientCube KM consolidate multiple network domains (e.g. Top Secret/SCI/ Secret, Confidential, and Unclassified) into one Zero Client-based device at the desktop, while maintaining physical network isolation to centralized computing resources in the data center.

Touted by VMware as the first Zero Client multiple level security desktop solution, ClientCube 2 is sleek, elegant and uncluttered, optimizing every inch of desktop space. ClientCube 2 integrates secure stateless ClearCube VMware Ready Zero Clients with a NIAP-approved secure KVM (keyboard-video-mouse) switch to create a multi-network single desktop device with optimized space savings, reduced cabling, and various integration options.

Ask about ClientCube KM and our TEMPEST Certified Specialty Zero Client Bundles.
ClearCube® Blade PCs deliver the highest datacenter-to-desktop PCoIP remote performance available in blade computers.

- Blade PCs address the needs of VMware Horizon power users in Centralized & Virtualized Desktop Infrastructure (CVDI) environments

- Provide 1:1 dedicated high performance centralized desktop infrastructure (CDI) for mission-critical apps, legacy apps, in-house developed apps where virtual desktop performance will not satisfy the user requirement for speed, graphics, and application compatibility.

- ClearCube’s Smart Virtual Desktop Infrastructure (SmartVDI™) host platform transitions physical Personal Computer desktops to highly available virtual desktops by using VMware core software components.