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vCloudPoint Zero Client Deployment Planning

This guide provides a detailed overview of how to plan and size the underlying infrastructure needed to support vCloudPoint zero client deployments. Performance results are highly dependent upon the individual host hardware, memory, storage, applications being used, OS and network conditions. Host requirements will vary, please test your multi-user environment before deployment.

1. Software Requirements

1.1 vMatrix Server Manager per shared host

The latest version of vMatrix Server Manager is obtainable at www.vcloudpoint.com/support/downloads/.

1.2 Windows Operating System mounted on each shared host

Supported Operation Systems by vMatrix Server Manager:

- Microsoft Windows XP SP3 Pro 32-bit (excluding Home Basic)
- Microsoft Windows 7 32-bit & 64-bit (excluding Home Basic)
- Microsoft Windows 8 32-bit & 64-bit (excluding Starter)
- Microsoft Windows 8.1 32-bit & 64-bit (excluding Starter)
- Microsoft Windows 10 32-bit & 64-bit (excluding Starter and Insider)
- Microsoft Windows Server 2003 32 bits
- Microsoft Windows Server 2008R2
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012R2
- Microsoft Windows Multipoint Server 2011
- Microsoft Windows Multipoint Server 2012

Note: do not use a 32-bit Windows operating system in your real deployment, as it supports only 3.25 GB maximum memory.

1.3 Multi-User Application

vMatrix doesn't contain a component or application to allow multiple users to access the host simultaneously, to allow a simultaneous multi-user login, you need to install RDP Wrapper (download and learn more at www.vcloudpoint.com/support/add-ons) or obtain Microsoft RDS CALs. To properly license vCloudPoint zero clients in a Microsoft environment, you are recommended to obtain Microsoft RDS CALs for each vCloudPoint seat. For more information on licensing with Microsoft operating systems see: Article 02 at www.vCloudPoint.com/support/faq-how-tos/

Note: You are licensed by vCloudPoint to use the vMatrix Server Manager software under the terms of the EULA. You cannot use the vMatrix Server Manager software with Windows Client software (i.e., Windows XP, Windows 7, Windows 8/8.1, Windows 10) unless a single user and no other user accesses the same Windows Client software at any one time, or you are authorized to do so under an applicable license from Microsoft. In all cases, your rights and obligations with respect to the use of vMatrix Server Manager software with Windows Server software and Windows Client software are defined by both the vCloudPoint vMatrix Server Manager software EULA and the applicable Microsoft Software License Agreement or EULA.

2. Hardware Requirements

2.1 Preliminary Guideline

The preliminary guideline below provides an estimated starting point from which administrators can test and, if needed, adjust the hardware specifications of their chosen host systems. vCloudPoint recommends you always test your environment in advance of deployment to ensure it meets your expectations.

| | |
|---------|--|
| CPU | 2.5 users per thread/core of a 3.6GHz, 22nm, 1150 pin CPU (e.g.: i7-4790) |
| Memory | 1.5GB per task user running office, browser, messenger, video on VLC player, etc. |
| | 2GB per power user running Photoshop, Illustrator, Auto-CAD, etc. |
| Storage | SSD for system and program files + HDD for user data; Storage size to be determined by actual needs. |

| | |
|----------------|---|
| Network | Average 15Mbps per user within LAN (a single users may consume up to 30Mbps). |
|----------------|---|

Note:

- 1) Always reserve more resources for the host itself, e.g., 32GB memory for hosting 20 task users = 1.5GB per user *20 users + additional 2 GB for the host itself.
- 2) the above preliminary shows average resource usage by users simultaneously working under desktop resolution of 1366*768; keep in mind that resource usage will vary depending on the desktop resolution and the average usage habit of those users.

2.2 Practical Recommendations

2.2.1 Host Configurations (5-60 Users):

While the vMatrix Server Manager itself can support up to 99 S100 zero client connections, the host specifications required to provide an optimal user experience will vary by the number of users connecting to a given host and the average usage habits of those users. Performance results are highly dependent upon the individual host hardware, memory, applications being used, OS and network conditions within any LAN. The recommendations below cover best practices for estimating host hardware requirements to support 5 to 60 users on a single host unit. You can use more than one host units for deployments over 60 users. Contact us if you need help in supporting other number of users on a single host unit.

- **5 Users**

Baseline:

| Components | Minimum Requirements |
|-------------------|---|
| CPU | Intel i5-4460 or equivalent that supports 10 (12)G Max. memory. |
| Memory | 10G (for task users) or 12G (for power users); Compatible with CPU (DDR3). |
| Storage | 7200rpm hard drive (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA1150; DDR3, 10/12G or above Max. memory support); Gigabyte LAN controller. |

| | |
|------------|---|
| CPU Cooler | Efficient cooling (separate purchase); Compatible with CPU (LGA1150). |
| Power | 350W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|---|
| CPU | Intel Core i5-4460 (4 cores, 4 threads, 3.2GHz, 22nm, 1150 pin) |
| Mainboard | ASUS B85M-E R2.0 (Intel B85/LGA 1150) |
| Memory | Kingston Hyper Fury DDR3 1600MHz 8GB *2 |
| HDD | Seagate ST1000DM003 (1TB, 7200RPM, 64M, SATA3) |
| Case | SAMA Craftman 3 |
| Power | SAMA Gold 80plus 500W |
| CPU Cooler | DEEPCOOL GAMMAXX 400 (air cooling, heat pipe) |

- **10 Users**

Baseline:

| Components | Minimum Requirements |
|------------|---|
| CPU | Intel i5-4690K or equivalent that supports 18 (22)G Max. memory. |
| Memory | 18G (for task users) or 22G (for power users); Compatible with CPU (DDR3). |
| Storage | SSD plus HDD (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA1150; DDR3, 18/22G or above Max. memory support); Gigabyte LAN controller. |

| | |
|------------|---|
| CPU Cooler | Efficient cooling (separate purchase); Compatible with CPU (LGA1150). |
| Power | 400W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|--|
| CPU | Intel Core i5-4690k (4 cores, 4 threads, 3.5GHz, 22nm, LGA 1150) |
| Mainboard | ASUS B85M-E R2.0 (Intel B85/LGA 1150) |
| Memory | Kingston Hyper Fury DDR3 1600MHz 8GB *3 |
| HDD | Seagate ST1000DM003 (1TB, 7200RPM, 64M, SATA3) |
| SSD | ADATA ASP550SS-120GM-C (120G, 2.5 inches, SATA3) |
| Case | SAMA Craftman 3 |
| Power | SAMA Gold 80plus 500W |
| CPU Cooler | DEEPCOOL GAMMAXX 400 (air cooling, heat pipe) |

- **15 Users**

Baseline:

| Components | Minimum Requirements |
|------------|--|
| CPU | Intel i5-6600K or equivalent that supports 26 (32)G Max. memory. |
| Memory | 26G (for task users) or 32G (for power users); Compatible with CPU (DDR4). |
| Storage | SSD plus HDD (storage size to be determined by actual needs). |

| | |
|------------|---|
| Mainboard | Compatible with CPU and memory (LGA1151; DDR4, 26/32G or above Max. memory support); Gigabyte LAN controller. |
| CPU Cooler | Efficient cooling (separate purchase); Compatible with CPU (LGA1151). |
| Power | 400W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|--|
| CPU | Intel Core i5-6600k (4 cores, 4 threads, 3.5GHz, 14nm, LGA 1151) |
| Mainboard | ASUS B150M-PLUS D3 (Intel B150/LGA 1151) |
| Memory | For Task Workers: Kingston Hyper Fury DDR4 2133MHz 8GB *4 |
| HDD | Seagate ST1000DM003 (1TB, 7200RPM, 64M, SATA3) |
| SSD | ADATA ASP550SS-120GM-C (120G, 2.5 inches, SATA3) |
| Case | SAMA Craftman 3 |
| Power | SAMA Gold 80plus 500W |
| CPU Cooler | DEEPCOOL GAMMAXX 400 (air cooling, heat pipe) |

- **20 Users**

Baseline:

| Components | Minimum Requirements |
|------------|--|
| CPU | Intel i7-6700 or equivalent that supports 32 (42)G Max. memory. |
| Memory | 32G (for task users) or 42G (for power users); Compatible with CPU (DDR4). |

| | |
|------------|---|
| Storage | SSD plus HDD (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA1151; DDR4, 32/42G or above Max. memory support); Gigabyte LAN controller. |
| CPU Cooler | Efficient cooling (separate purchase); Compatible with CPU (LGA1151). |
| Power | 450W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|---|
| CPU | Intel Core i7-6700 (4 cores, 8 threads, 3.6GHz, 22nm, 1150 pin) |
| Mainboard | ASUS B150M-PLUS D3 (Intel B150/LGA 1151) |
| Memory | For Task Workers: Kingston Hyper Fury DDR4 2133MHz 8GB *4 |
| | For Power Workers: Kingston Hyper Fury DDR4 2133MHz 16GB *3 |
| HDD | Seagate ST2000DM001 (2TB, 7200RPM, 64M, SATA3) |
| SSD | ADATA ASP550SS-240GM-C (240G 2.5 inches SATA3) |
| Case | SAMA Craftman 3 |
| Power | SAMA Gold 80plus 500W |
| CPU Cooler | DEEPCOOL GAMMAXX 400 (air cooling, heat pipe) |

- **25 Users**

Baseline:

| Components | Minimum Requirements |
|------------|----------------------|
| | |

| | |
|------------|---|
| CPU | Intel i7-6700K or equivalent that supports 40 (52)G Max. memory. |
| Memory | 40G (for task users) or 52G (for power users); Compatible with CPU (DDR4). |
| Storage | SSD plus HDD (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA1151; DDR4, 40/52G or above Max. memory support); Gigabyte LAN controller. |
| CPU Cooler | Efficient cooling; Compatible with CPU (LGA1150, separate purchase). |
| Power | 450W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|--|
| CPU | Intel Core i7-6700K (4 cores, 8 threads, 3.6GHz, 22nm, 1150 pin) |
| Mainboard | ASUS B150M-PLUS D3 (Intel B150/LGA 1151) |
| Memory | For Task Workers: Kingston Hyper Fury DDR4 2133MHz 16GB *3 |
| | For Power Users: Kingston Hyper Fury DDR4 2133MHz 16GB *4 |
| HDD | Seagate ST2000DM001 (2TB, 7200RPM, 64M, SATA3) |
| SSD | ADATA ASP550SS-240GM-C (240G, 2.5 inches, SATA3) |
| Case | SAMA Craftman 3 |
| Power | SAMA Gold 80plus 500W |
| CPU Cooler | DEEPCOOL GAMMAXX 400 (air cooling, heat pipe) |

- **30 Users**

Baseline:
1) PC as host

| Components | Minimum Requirements |
|-------------------|---|
| CPU | Intel i7 5820k or equivalent that supports 48 (62)G Max. memory. |
| Memory | 48G (for task users) or 62G (for power users); Compatible with CPU (DDR4). |
| Storage | SSD plus HDD in RAID (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA2011- v3; DDR4, 48/62G or above Max. memory support); Gigabyte LAN controller. |
| CPU Cooler | Efficient cooling (separate purchase); Compatible with CPU (LGA2011- v3). |
| Power | 500W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|-------------------|---|
| CPU | Intel i7 5820k (6 cores, 12 threads, 3.3GHz, 22nm, 2011-3 pin) |
| Mainboard | MSI X99A SLI PLUS (Intel X99/LGA 2011-V3) |
| Memory | For Task Workers: DDR4 2133MHz 8GB *6 For Power Users: DDR4 2133MHz 8GB *8 |
| RAID Card | SYBA FG-EST17A (RAID 0 1 10 & HyperDuo) |
| HDD | 1TB, 7200RPM, 128M, SATA3 *2 in RAID 0 |
| SSD | 240G, 2.5 inches, SATA3 |

| | |
|------------|---|
| Case | SAMA Craftman 3 |
| Power | SAMA Gold 80plus 500W |
| CPU Cooler | DEEPCOOL NEPTWIN (air cooling, heat pipe) |

2) Server as host

| Components | Minimum Requirements |
|------------|---|
| CPU | Intel Xeon E5-2620 v3 *2 or equivalent that supports 48(62)G Max. memory. |
| Memory | 48G (for task users) or 62G (for power users); Compatible with CPU (DDR4). |
| Storage | SSD plus HDD in RAID (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA2011- v3; DDR4, 48/62G or above Max. memory support); Gigabyte LAN controller. |
| CPU Cooler | Efficient cooling (separate purchase); Compatible with CPU (LGA2011- v3). |
| Power | 500W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|--|
| Server | Dell PowerEdge R430 |
| CPU | Intel Xeon E5-2620 v3 *2 (6 cores, 12 threads, 2.4GHz, 22nm, 2011-3 pin) |
| Memory | For Task Workers: DDR4 2133MHz 8GB ECC *6 |
| | For Power Users: DDR4 2133MHz 8GB ECC *8 |
| RAID Card | PERC H330 (RAID 0 1 5 10 & 50) |

| | |
|-----|--|
| HDD | 1TB, 7200RPM, 128M, SATA3 *2 in RAID 0 |
| SSD | 240G, 2.5 inches, SATA3 |

- **40 Users**

Baseline:

| Components | Minimum Requirements |
|------------|---|
| CPU | Intel Xeon E5-2630 v3 *2 or equivalent that supports 64 (82)G Max. memory. |
| Memory | 64G (for task users) or 82G (for power users); Compatible with CPU (DDR4). |
| Storage | SSD plus HDD in RAID (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA2011- v3; DDR4, 64/82G or above Max. memory support); Gigabyte LAN controller. |
| CPU Cooler | Efficient cooling (separate purchase); Compatible with CPU (LGA2011- v3). |
| Power | 500W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|--|
| Server | Dell PowerEdge R430 |
| CPU | Intel Xeon E5-2630 v3 *2 (8 cores, 16 threads, 2.3GHz, 22nm, 2011-3 pin) |
| Memory | For Task Workers: DDR4 2133MHz 8GB ECC *8 For Power Users: DDR4 2133MHz 8GB ECC *11 |
| RAID Card | PERC H330 (RAID 0 1 5 10 & 50) |

| | |
|-----|--|
| HDD | 1TB, 7200RPM, 128M, SATA3 *3 in RAID 0 |
| SSD | 480G, 2.5 inches, SATA3 |

- **50 Users**

Baseline:

| Components | Minimum Requirements |
|------------|--|
| CPU | Intel E5-2640 v3 *2 or equivalent that supports 78 (102)G Max. memory. |
| Memory | 78G (for task users) or 102G (for power users); Compatible with CPU (DDR4). |
| Storage | SSD plus HDD in RAID (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA2011- v3; DDR4, 78/102G or above Max. memory support); Gigabyte LAN controller. |
| CPU Cooler | Efficient cooling; Compatible with CPU (Socket 2011- v3). |
| Power | 550W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|---|
| Server | Dell PowerEdge R430 |
| CPU | Intel Xeon E5-2640 v3 *2 (8 cores, 16 threads, 2.6GHz, 22nm, 2011-3 pin) |
| Memory | For Task Workers: DDR4 2133MHz 8GB ECC *10 For Power Users: DDR4 2133MHz 16GB ECC *7 |
| RAID Card | PERC H330 (RAID 0 1 5 10 & 50) |

| | |
|-----|--|
| HDD | 1TB, 7200RPM, 128M, SATA3 *3 in RAID 0 |
| SSD | 480G, 2.5 inches, SATA3 |

- **60 Users**

Baseline:

| Components | Minimum Requirements |
|------------|---|
| CPU | Intel E5-2660 v3 *2 or equivalent that supports 92 (122)G Max. memory. |
| Memory | 92G (for task users) or 122G (for power users); Compatible with CPU (DDR4). |
| Storage | SSD plus HDD in RAID (storage size to be determined by actual needs). |
| Mainboard | Compatible with CPU and memory (LGA2011- v3; DDR4, 92/122G or above Max memory support); Gigabyte LAN controller. |
| CPU Cooler | Efficient cooling; Compatible with CPU (Socket 2011- v3). |
| Power | 550W. |
| Case | Compatible with mainboard and CPU cooler. |

Examples:

| Components | Recommendations |
|------------|---|
| Server | Dell PowerEdge R430 |
| CPU | Intel Xeon E5-2660 v3 *2 (10 cores, 20 threads, 2.6GHz, 22nm, 2011-3 pin) |
| Memory | For Task Workers: DDR4 2133MHz 16GB ECC *6 For Power Users: DDR4 2133MHz 16GB ECC *8 |
| RAID Card | PERC H330 (RAID 0 1 5 10 & 50) |

| | |
|-----|--|
| HDD | 1TB, 7200RPM, 128M, SATA3 *4 in RAID 0 |
| SSD | 480G, 2.5 inches, SATA3 |

Tips:

- 1) CPU: When you are configuring hosts for the number of users, CPU selection should be given the highest priority and then choose other components compatible with the CPU and the others. View CPU Benchmark in the section below for CPU selection.
- 2) CPU cooler: If you choose assembly desktop PCs, use separate CPU cooler priced over US\$13 as most free CPU cooler that comes in bundle with the CPU is not efficient and durable.

Note: resource usage testing was performed under the following conditions, keep in mind that resource usage will vary with these conditions changing. Actual sizing requirements depend on particular workload. Always validate sizing using your own applications.

- 1) Operation system: Windows Server 2012 R2;
- 2) Client desktop resolution: 1366*768;
- 3) vMatrix Server Manager version: 2.0.3;
- 4) Client Firmware version: 2.0.0.10;
- 5) Applications was run by the corresponding number of simultaneous working users on zero clients;
- 6) Video testing was performed using VLC player 2.15 with rendering done on zero clients.

2.2.2 Networking Hardware :

| | | |
|---------------|-----------------------------------|--------------------------------------|
| Switch | | 10/100/1000Mbps Base-T |
| Cable | Connecting zero clients | 10/100Mbps or 10/100/1000Mbps Base-T |
| | Connecting hosts/ switches | 10/100/1000Mbps Base-T |

Note:

- 1) For deployments over 60 users on a single host unit, the host network controller, the switch connecting to host (primary switch), the cables connecting to host and primary switch should support

10/100/1000/10000Mbps Base-T.

- 2) Some switches in the market are not qualified to be 10/100/1000Mbps Base-T supported as their manufacturers claim. vCloudPoint recommends you always test transmission speed of the switches in advance of deployment to ensure it meets your expectations.
- 3) Although vCloudPoint zero clients have a WIFI option, you are recommended to use standard Ethernet network as unreliable WIFI network may cause disconnection or experience compromised.
- 4) Most of the Wide Area Networks (WAN) have excessive latency and lower bandwidth. This compromises with the rich PC-like experience over the network.

For more information on networking configuration, view [Network has a great impact on zero client performance](#) at Knowledge Base on vCloudPoint website.

3. CPU Benchmarks

The following benchmarks are taken from internet to help you deciding CPU for your deployment. To learn more, view the resource website at www.cpubenchmark.net/.

3.1 System With Single High End CPU - Updated 21th of March 2016

| CPU Model | Benchmark (higher is better) | Price (USD) |
|---------------------------------|------------------------------|-------------|
| Intel Core i7-5960X @ 3.00GHz | 16,000 | \$1,049.99 |
| Intel Xeon E5-1680 v2 @ 3.00GHz | 15,994 | NA |
| Intel Xeon E5-2658 v3 @ 2.20GHz | 15,700 | NA |
| Intel Xeon E5-2695 v2 @ 2.40GHz | 15,502 | \$2,339.99 |
| Intel Xeon E5-2650 v3 @ 2.30GHz | 15,225 | \$1,159.00 |
| Intel Xeon E5-2670 v2 @ 2.50GHz | 14,983 | \$1,559.99 |
| Intel Xeon E5-2687W @ 3.10GHz | 14,480 | \$2,276.91 |

| | | |
|---------------------------------|--------|-------------|
| Intel Xeon E5-2690 @ 2.90GHz | 14,308 | \$1,513.51 |
| Intel Xeon E5-2685 v3 @ 2.60GHz | 14,154 | NA |
| Intel Xeon E5-2640 v3 @ 2.60GHz | 14,073 | \$974.00 |
| Intel Core i7-4960X @ 3.60GHz | 13,891 | \$1,024.99* |
| Intel Xeon E5-2658 v2 @ 2.40GHz | 13,875 | NA |
| Intel Xeon E5-2689 @ 2.60GHz | 13,869 | NA |
| Intel Xeon E5-1660 v2 @ 3.70GHz | 13,772 | \$1,137.50* |
| Intel Xeon E5-2660 v2 @ 2.20GHz | 13,659 | \$1,399.99 |
| Intel Xeon E5-2643 v3 @ 3.40GHz | 13,626 | \$1,792.06 |
| Intel Core i7-5930K @ 3.50GHz | 13,620 | \$579.99 |
| Intel Xeon E5-1650 v3 @ 3.50GHz | 13,490 | \$657.94 |
| Intel Xeon E5-2680 @ 2.70GHz | 13,410 | \$952.95 |
| Intel Xeon E5-1660 v3 @ 3.00GHz | 13,331 | \$1,138.99 |
| Intel Xeon E5-2663 v3 @ 2.80GHz | 13,081 | NA |
| Intel Core i7-4930K @ 3.40GHz | 13,054 | \$820.65 |
| Intel Xeon E5-2650 v2 @ 2.60GHz | 13,026 | \$1,139.95 |
| Intel Core i7-5820K @ 3.30GHz | 12,990 | \$349.99 |
| Intel Xeon E5-2630 v3 @ 2.40GHz | 12,902 | \$684.99 |

| | | |
|----------------------------------|--------|-------------|
| Intel Xeon E5-2628L v3 @ 2.00GHz | 12,844 | NA |
| Intel Core i7-3960X @ 3.30GHz | 12,740 | \$1,011.79 |
| Intel Core i7-3970X @ 3.50GHz | 12,674 | \$807.95 |
| Intel Xeon E5-1660 @ 3.30GHz | 12,614 | \$1,104.00* |
| Intel Xeon E5-1650 v2 @ 3.50GHz | 12,551 | \$529.95 |
| Intel Xeon E5-2670 @ 2.60GHz | 12,545 | \$1,549.99* |
| Intel Xeon D-1541 @ 2.10GHz | 12,141 | NA |
| Intel Xeon E5-2665 @ 2.40GHz | 12,126 | \$1,075.23 |
| Intel Core i7-3930K @ 3.20GHz | 12,072 | \$519.99 |
| Intel Xeon E5-4650 @ 2.70GHz | 11,960 | \$3,899.99* |
| Intel Xeon E5-2660 @ 2.20GHz | 11,891 | \$203.62 |
| Intel Xeon E5-1650 @ 3.20GHz | 11,792 | \$929.77 |
| Intel Xeon E5-2643 v2 @ 3.50GHz | 11,735 | \$1,808.61* |
| Intel Core i7-4790K @ 4.00GHz | 11,213 | \$319.99 |
| Intel Core i7-5775C @ 3.30GHz | 11,141 | \$371.99 |
| Intel Core i7-6700K @ 4.00GHz | 11,007 | \$373.98 |
| Intel Xeon D-1540 @ 2.00GHz | 10,883 | NA |
| Intel Core i7-5950HQ @ 2.90GHz | 10,850 | NA |

| | | |
|----------------------------------|--------|------------|
| Intel Xeon E3-1285L v3 @ 3.10GHz | 10,483 | NA |
| Intel Xeon E5-2650 @ 2.00GHz | 10,436 | \$609.00 |
| Intel Xeon E5-2630 v2 @ 2.60GHz | 10,421 | \$609.99 |
| Intel Xeon E3-1270 v5 @ 3.60GHz | 10,382 | \$359.99 |
| Intel Xeon E5-2667 @ 2.90GHz | 10,351 | \$1,837.78 |
| Intel Xeon E3-1275 v5 @ 3.60GHz | 10,339 | NA |
| Intel Xeon E5-2637 v3 @ 3.50GHz | 10,306 | \$1,042.07 |
| AMD FX-9590 Eight-Core | 10,251 | \$229.99 |
| Intel Xeon E3-1245 v5 @ 3.50GHz | 10,245 | NA |
| Intel Xeon E3-1276 v3 @ 3.60GHz | 10,235 | \$339.99 |
| Intel Xeon E5-1630 v3 @ 3.70GHz | 10,220 | \$407.49 |
| Intel Core i7-4770K @ 3.50GHz | 10,156 | \$390.99 |
| Intel Xeon E3-1271 v3 @ 3.60GHz | 10,140 | \$342.99 |
| AMD Opteron 6380 | 10,082 | \$1,110.99 |
| Intel Xeon E3-1240 v5 @ 3.50GHz | 10,081 | NA |
| Intel Xeon E3-1281 v3 @ 3.70GHz | 10,081 | \$455.00 |
| Intel Core i7-4980HQ @ 2.80GHz | 10,066 | NA |
| Intel Core i7-4790 @ 3.60GHz | 10,023 | \$309.99 |

| | | |
|---------------------------------|--------|-------------|
| Intel Xeon E3-1241 v3 @ 3.50GHz | 10,006 | \$277.99 |
| Intel Core i7-6700 @ 3.40GHz | 9,987 | \$319.99 |
| Intel Xeon E3-1290 V2 @ 3.70GHz | 9,925 | \$885.00* |
| Intel Xeon E5-2620 v3 @ 2.40GHz | 9,923 | \$429.99 |
| Intel Xeon E5-2640 v2 @ 2.00GHz | 9,914 | \$889.99 |
| Intel Core i7-4771 @ 3.50GHz | 9,887 | \$320.00 |
| Intel Xeon E3-1246 v3 @ 3.50GHz | 9,865 | \$279.99 |
| Intel Core i7-4960HQ @ 2.60GHz | 9,855 | \$623.00* |
| Intel Xeon E3-1270 v3 @ 3.50GHz | 9,852 | \$339.99 |
| Intel Core i7-4770 @ 3.40GHz | 9,832 | \$306.99 |
| Intel Core i7-4770R @ 3.20GHz | 9,822 | NA |
| Intel Xeon E3-1275 v3 @ 3.50GHz | 9,783 | \$760.70 |
| Intel Core i7-4820K @ 3.70GHz | 9,776 | \$455.57 |
| Intel Core i7-4940MX @ 3.10GHz | 9,772 | \$1,008.95* |
| Intel Xeon E3-1230 v5 @ 3.40GHz | 9,755 | NA |
| Intel Xeon E3-1280 V2 @ 3.60GHz | 9,751 | \$644.99* |
| Intel Xeon E5-2640 @ 2.50GHz | 9,737 | \$560.45 |
| Intel Xeon E3-1240 v3 @ 3.40GHz | 9,677 | \$316.83 |

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|----------------------------------|-------|-------------|
| Intel Xeon E5-1620 v3 @ 3.50GHz | 9,659 | \$307.99 |
| Intel Core i7-4790S @ 3.20GHz | 9,634 | \$304.99 |
| Intel Xeon E3-1231 v3 @ 3.40GHz | 9,626 | \$241.80 |
| Intel Xeon E3-1280 v3 @ 3.60GHz | 9,615 | \$800.49* |
| Intel Core i7-3770K @ 3.50GHz | 9,575 | \$559.50 |
| Intel Xeon W3690 @ 3.47GHz | 9,569 | \$1,228.99* |
| AMD FX-9370 Eight-Core | 9,525 | \$199.99 |
| Intel Xeon E3-1245 v3 @ 3.40GHz | 9,524 | \$299.99 |
| Intel Core i7-4910MQ @ 2.90GHz | 9,513 | \$784.02* |
| Intel Xeon E5-2658 @ 2.10GHz | 9,484 | \$899.95* |
| Intel Xeon E3-1270 V2 @ 3.50GHz | 9,484 | \$359.99 |
| Intel Xeon E5-1620 v2 @ 3.70GHz | 9,479 | \$314.99 |
| Intel Core i7-3940XM @ 3.00GHz | 9,477 | \$539.00* |
| Intel Core i7-6920HQ @ 2.90GHz | 9,468 | NA |
| Intel Core i7-4930MX @ 3.00GHz | 9,456 | \$1,096.00* |
| Intel Xeon E3-1535M v5 @ 2.90GHz | 9,436 | NA |
| Intel Xeon W3680 @ 3.33GHz | 9,390 | \$1,108.95* |
| Intel Xeon E3-1286 v3 @ 3.70GHz | 9,388 | NA |

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|---------------------------------|-------|-------------|
| Intel Core i7-4870HQ @ 2.50GHz | 9,367 | NA |
| Intel Xeon E5-2637 v2 @ 3.50GHz | 9,354 | \$1,068.24* |
| Intel Core i7-4770S @ 3.10GHz | 9,349 | \$302.99 |
| Intel Core i7-4860HQ @ 2.40GHz | 9,347 | NA |
| Intel Core i7-3770 @ 3.40GHz | 9,341 | \$329.99 |
| Intel Xeon E3-1230 v3 @ 3.30GHz | 9,326 | \$256.95 |
| Intel Xeon E3-1275 V2 @ 3.50GHz | 9,321 | \$455.32 |
| Intel Xeon E5-2440 @ 2.40GHz | 9,319 | \$1,039.44* |
| Intel Xeon E3-1240 V2 @ 3.40GHz | 9,281 | \$304.41 |
| Intel Core i7-990X @ 3.47GHz | 9,242 | \$1,509.99 |
| Intel Core i7-3920XM @ 2.90GHz | 9,222 | \$1,096.00* |
| Intel Xeon X5690 @ 3.47GHz | 9,203 | \$410.00 |
| Intel Core i7-4850HQ @ 2.30GHz | 9,143 | \$434.00* |
| AMD Opteron 6282 SE | 9,116 | \$1,089.99* |
| Intel Xeon E3-1245 V2 @ 3.40GHz | 9,101 | \$607.59 |
| Intel Core i7-4760HQ @ 2.10GHz | 9,101 | NA |
| Intel Core i7-4900MQ @ 2.80GHz | 9,098 | \$559.99* |
| Intel Xeon E5-1620 @ 3.60GHz | 9,097 | \$349.99* |

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|---------------------------------|-------|-------------|
| Intel Core i7-6820HK @ 2.70GHz | 9,060 | NA |
| Intel Core i7-4790T @ 2.70GHz | 9,050 | NA |
| Intel Xeon E5-2623 v3 @ 3.00GHz | 9,041 | \$483.81 |
| Intel Core i7-6700T @ 2.80GHz | 9,020 | NA |
| Intel Core i7-3820 @ 3.60GHz | 9,000 | \$394.38 |
| Intel Xeon X5680 @ 3.33GHz | 8,983 | \$505.65 |
| AMD FX-8370 Eight-Core | 8,983 | \$189.99 |
| Intel Core i7-4770HQ @ 2.20GHz | 8,978 | NA |
| AMD Opteron 6276 | 8,971 | \$129.54 |
| Intel Core i7-980X @ 3.33GHz | 8,960 | \$959.00 |
| AMD FX-8350 Eight-Core | 8,949 | \$159.99 |
| Intel Xeon E5-2630 @ 2.30GHz | 8,926 | \$738.13* |
| Intel Core i7-3770S @ 3.10GHz | 8,901 | \$349.99 |
| Intel Core i7-3840QM @ 2.80GHz | 8,880 | \$500.00 |
| Intel Xeon E3-1230 V2 @ 3.30GHz | 8,849 | \$275.74 |
| Intel Core i7-980 @ 3.33GHz | 8,849 | \$1,108.95* |
| Intel Core i7-2700K @ 3.50GHz | 8,826 | \$440.00* |
| Intel Core i7-4810MQ @ 2.80GHz | 8,781 | \$432.40* |

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|----------------------------------|-------|-----------|
| Intel Xeon E3-1265L v3 @ 2.50GHz | 8,773 | \$508.95 |
| Intel Core i7-4770T @ 2.50GHz | 8,720 | \$474.34 |
| Intel Xeon E3-1290 @ 3.60GHz | 8,704 | \$885.00* |
| Intel Xeon E5-2620 v2 @ 2.10GHz | 8,671 | \$388.98 |
| Intel Xeon E3-1275L v3 @ 2.70GHz | 8,665 | NA |
| Intel Xeon E5-2420 v2 @ 2.20GHz | 8,629 | \$438.58 |
| Intel Core i7-6820HQ @ 2.70GHz | 8,604 | NA |
| Intel Xeon X5675 @ 3.07GHz | 8,585 | \$209.00 |
| Intel Core i7-5700HQ @ 2.70GHz | 8,580 | NA |
| Intel Xeon E3-1280 @ 3.50GHz | 8,567 | \$654.99 |
| Intel Core i7-4800MQ @ 2.70GHz | 8,542 | \$509.95* |
| Intel Core i7-970 @ 3.20GHz | 8,534 | \$855.95 |
| Intel Core i7-3820QM @ 2.70GHz | 8,532 | \$602.97* |
| Intel Core i7-2600K @ 3.40GHz | 8,520 | \$565.15 |
| Intel Xeon E5-2643 @ 3.30GHz | 8,474 | \$988.79 |
| Intel Xeon W3670 @ 3.20GHz | 8,437 | \$964.60 |
| Intel Core i7-3740QM @ 2.70GHz | 8,397 | \$389.99* |
| Intel Xeon E3-1275 @ 3.40GHz | 8,350 | \$369.89 |

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|----------------------------------|-------|-----------|
| Intel Xeon E5-2430 v2 @ 2.50GHz | 8,324 | \$569.99 |
| Intel Xeon E3-1270 @ 3.40GHz | 8,284 | \$961.81* |
| Intel Core i7-2600 @ 3.40GHz | 8,267 | \$348.50 |
| Intel Core i7-5700EQ @ 2.60GHz | 8,239 | NA |
| Intel Core i7-4750HQ @ 2.00GHz | 8,218 | NA |
| Intel Core i7-3720QM @ 2.60GHz | 8,215 | \$309.99* |
| Intel Core i7-3770T @ 2.50GHz | 8,211 | \$329.99* |
| Intel Xeon E3-1505M v5 @ 2.80GHz | 8,178 | NA |
| Intel Xeon X5670 @ 2.93GHz | 8,130 | \$167.29 |
| Intel Xeon E3-1245 @ 3.30GHz | 8,105 | \$309.99 |
| Intel Core i7-4720HQ @ 2.60GHz | 8,100 | NA |
| Intel Core i7-4722HQ @ 2.40GHz | 8,052 | NA |
| Intel Core i5-5675C @ 3.10GHz | 8,030 | \$289.99 |
| AMD FX-8320 Eight-Core | 8,020 | \$143.30 |
| Intel Core i7-6700HQ @ 2.60GHz | 8,019 | NA |
| Intel Xeon X5660 @ 2.80GHz | 8,010 | \$148.00 |
| Intel Core i7-4710MQ @ 2.50GHz | 7,989 | \$219.00* |
| Intel Xeon E3-1240 @ 3.30GHz | 7,974 | \$294.99 |

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|----------------------------------|-------|------------|
| Intel Xeon E5-2620 @ 2.00GHz | 7,970 | \$358.59 |
| Intel Xeon E3-1230 @ 3.20GHz | 7,909 | \$251.99 |
| Intel Core i7-4710HQ @ 2.50GHz | 7,874 | NA |
| Intel Xeon E5-2630L @ 2.00GHz | 7,868 | NA |
| AMD Opteron 6328 | 7,813 | \$617.94 |
| Intel Core i5-6600K @ 3.50GHz | 7,792 | \$248.89 |
| Intel Core i7-4700HQ @ 2.40GHz | 7,776 | \$383.00* |
| Intel Xeon E3-1235 @ 3.20GHz | 7,764 | \$1,325.66 |
| Intel Core i7-4700MQ @ 2.40GHz | 7,751 | \$188.95* |
| AMD FX-8370E Eight-Core | 7,720 | \$218.00 |
| Intel Core i5-4690K @ 3.50GHz | 7,705 | \$219.99 |
| AMD FX-8310 Eight-Core | 7,669 | NA |
| Intel Core i7-3630QM @ 2.40GHz | 7,623 | \$239.99* |
| Intel Core i5-4670K @ 3.40GHz | 7,622 | \$279.90 |
| AMD FX-8150 Eight-Core | 7,621 | \$165.99* |
| Intel Core i5-4690 @ 3.50GHz | 7,617 | \$224.50 |
| Intel Xeon X5650 @ 2.67GHz | 7,611 | \$105.00 |
| Intel Xeon E3-1265L V2 @ 2.50GHz | 7,602 | \$732.58 |

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|----------------------------------|-------|-------------|
| Intel Core i7-4702HQ @ 2.20GHz | 7,583 | NA |
| AMD FX-8300 Eight-Core | 7,580 | \$109.99 |
| Intel Core i5-6600 @ 3.30GHz | 7,542 | \$229.99 |
| Intel Xeon E3-1240L v3 @ 2.00GHz | 7,507 | NA |
| Intel Core i7-4712HQ @ 2.30GHz | 7,496 | NA |
| Intel Core i7-4785T @ 2.20GHz | 7,480 | NA |
| Intel Xeon E3-1220 v5 @ 3.00GHz | 7,471 | NA |
| Intel Core i7-3610QM @ 2.30GHz | 7,461 | \$399.99* |
| AMD FX-8320E Eight-Core | 7,443 | \$135.99 |
| Intel Core i7-4700EQ @ 2.40GHz | 7,417 | NA |
| Intel Core i7-4770TE @ 2.30GHz | 7,410 | NA |
| Intel Xeon E3-1226 v3 @ 3.30GHz | 7,403 | \$224.99 |
| Intel Core i5-4690S @ 3.20GHz | 7,387 | \$224.99 |
| Intel Core i5-4670 @ 3.40GHz | 7,372 | \$222.99 |
| Intel Core i7-3615QM @ 2.30GHz | 7,367 | NA |
| Intel Xeon E5-1410 @ 2.80GHz | 7,312 | NA |
| Intel Core i7-4765T @ 2.00GHz | 7,310 | NA |
| Intel Core i7-2960XM @ 2.70GHz | 7,272 | \$1,096.00* |

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|----------------------------------|-------|-----------|
| Intel Xeon X5687 @ 3.60GHz | 7,219 | \$187.00 |
| Intel Core i5-4590 @ 3.30GHz | 7,213 | \$199.99 |
| Intel Xeon E3-1230L v3 @ 1.80GHz | 7,199 | NA |
| Intel Core i7-4712MQ @ 2.30GHz | 7,184 | NA |
| Intel Core i7-4702MQ @ 2.20GHz | 7,168 | NA |
| Intel Xeon D-1521 @ 2.40GHz | 7,164 | NA |
| Intel Core i7-2860QM @ 2.50GHz | 7,152 | \$599.99* |
| Intel Core i5-3570K @ 3.40GHz | 7,143 | \$359.99 |
| Intel Xeon E5-2420 @ 1.90GHz | 7,136 | \$633.99 |
| Intel Core i7-2600S @ 2.80GHz | 7,081 | \$186.26 |
| Intel Xeon E5649 @ 2.53GHz | 7,079 | \$113.95 |
| Intel Xeon X5677 @ 3.47GHz | 7,048 | \$129.98* |
| Intel Core i5-6500 @ 3.20GHz | 7,043 | \$204.99 |
| Intel Xeon L5639 @ 2.13GHz | 7,021 | NA |
| Intel Core i5-4570 @ 3.20GHz | 7,017 | \$199.99 |
| Intel Xeon E3-1225 v3 @ 3.20GHz | 6,998 | \$354.85 |
| Intel Core i5-4590S @ 3.00GHz | 6,998 | \$209.99 |
| Intel Core i5-3570 @ 3.40GHz | 6,977 | \$385.00 |

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|---------------------------------|-------|-------------|
| Intel Core i7-2920XM @ 2.50GHz | 6,957 | \$1,096.00* |
| AMD FX-6350 Six-Core | 6,955 | \$129.99 |
| Intel Core i7-3632QM @ 2.20GHz | 6,926 | \$389.95* |
| Intel Core i5-6600T @ 2.70GHz | 6,921 | \$472.40* |
| Intel Xeon E5-2430 @ 2.20GHz | 6,878 | \$290.00 |
| Intel Core i7-3612QM @ 2.10GHz | 6,832 | NA |
| Intel Xeon E5-1410 v2 @ 2.80GHz | 6,822 | NA |
| Intel Core i5-3550 @ 3.30GHz | 6,819 | \$209.00 |
| Intel Xeon E3-1225 V2 @ 3.20GHz | 6,802 | \$506.59 |
| Intel Core i5-3550S @ 3.00GHz | 6,776 | NA |
| Intel Xeon E5-1607 v3 @ 3.10GHz | 6,767 | NA |
| Intel Core i7-2840QM @ 2.40GHz | 6,766 | NA |
| Intel Core i7-3615QE @ 2.30GHz | 6,758 | NA |
| AMD Opteron 6272 | 6,748 | \$325.00 |
| Intel Core i5-4690T @ 2.50GHz | 6,714 | NA |
| Intel Xeon L5640 @ 2.27GHz | 6,711 | \$290.00 |
| Intel Core i7-3612QE @ 2.10GHz | 6,684 | NA |
| Intel Core i5-2550K @ 3.40GHz | 6,657 | \$499.60* |

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|---------------------------------|-------|-------------|
| Intel Core i7-2760QM @ 2.40GHz | 6,648 | \$378.00* |
| Intel Core i7-2820QM @ 2.30GHz | 6,635 | \$318.11* |
| Intel Core i5-4460 @ 3.20GHz | 6,624 | \$183.99 |
| Intel Core i5-4570S @ 2.90GHz | 6,621 | \$194.99 |
| Intel Xeon E3-1220 v3 @ 3.10GHz | 6,620 | \$204.99 |
| Intel Core i5-3570S @ 3.10GHz | 6,593 | NA |
| Intel Core i7-3635QM @ 2.40GHz | 6,586 | NA |
| AMD FX-8120 Eight-Core | 6,574 | \$173.18* |
| Intel Core i5-3470 @ 3.20GHz | 6,562 | \$259.99 |
| Intel Xeon W3580 @ 3.33GHz | 6,560 | \$1,083.47* |
| Intel Xeon E5645 @ 2.40GHz | 6,556 | \$272.68* |
| Intel Xeon E3-1260L @ 2.40GHz | 6,534 | \$576.10* |
| Intel Xeon E3-1220 V2 @ 3.10GHz | 6,512 | \$257.95 |
| Intel Core i5-6400 @ 2.70GHz | 6,508 | \$189.99 |
| Intel Core i5-4570R @ 2.70GHz | 6,485 | NA |
| Intel Core i5-2500K @ 3.30GHz | 6,454 | \$311.22 |
| Intel Core i5-3450 @ 3.10GHz | 6,447 | \$598.29 |
| Intel Core i5-4670S @ 3.10GHz | 6,436 | NA |

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|--------------------------------|-------|-------------|
| Intel Core i5-4440 @ 3.10GHz | 6,412 | \$189.99 |
| AMD Opteron 3380 | 6,384 | NA |
| Intel Core i5-4460S @ 2.90GHz | 6,376 | NA |
| AMD FX-6300 Six-Core | 6,343 | \$102.33 |
| Intel Core i5-4670T @ 2.30GHz | 6,336 | \$259.00 |
| Intel Xeon W5590 @ 3.33GHz | 6,310 | \$1,759.40* |
| Intel Core i5-3475S @ 2.90GHz | 6,298 | NA |
| Intel Core i5-6440HQ @ 2.60GHz | 6,272 | NA |
| Intel Core i7-975 @ 3.33GHz | 6,269 | \$419.00 |
| Intel Xeon W3570 @ 3.20GHz | 6,256 | \$1,089.99* |
| Intel Core i5-4430 @ 3.00GHz | 6,247 | \$189.99 |
| Intel Core i5-2500 @ 3.30GHz | 6,227 | \$226.00 |
| AMD FX-6130 Six-Core | 6,215 | NA |
| Intel Core i5-3470S @ 2.90GHz | 6,199 | \$319.95* |
| Intel Core i7-3610QE @ 2.30GHz | 6,193 | NA |
| Intel Core i7-2720QM @ 2.20GHz | 6,131 | \$309.00* |
| Intel Core i7-2715QE @ 2.10GHz | 6,120 | NA |
| Intel Core i5-4440S @ 2.80GHz | 6,113 | \$192.99 |

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|-------------------------------|-------|-----------|
| Intel Xeon E3-1220 @ 3.10GHz | 6,113 | \$219.99 |
| AMD FX-6200 Six-Core | 6,105 | \$130.51 |
| AMD FX-8100 Eight-Core | 6,092 | \$142.00* |
| Intel Core i5-2450P @ 3.20GHz | 6,086 | \$214.99* |
| Intel Core i5-3350P @ 3.10GHz | 6,085 | \$189.99* |
| Intel Core i3-6320 @ 3.90GHz | 6,077 | \$168.95 |
| Intel Xeon W3565 @ 3.20GHz | 6,056 | \$322.99* |

3.2 Systems with Multiple CPUs - Updated 21th of March 2016

| CPU Model | Benchmark (higher is better) | Price (USD) |
|--|------------------------------|-------------|
| [Dual CPU] Intel Xeon E5-2698 v3 @ 2.30GHz | 30,217 | \$7,291.04* |
| [Dual CPU] Intel Xeon E5-2697 v3 @ 2.60GHz | 28,092 | \$5,495.98 |
| [Dual CPU] Intel Xeon E5-4669 v3 @ 2.10GHz | 27,457 | NA |
| [Dual CPU] Intel Xeon E5-2690 v3 @ 2.60GHz | 27,279 | \$3,099.32 |
| [Dual CPU] Intel Xeon E5-2695 v3 @ 2.30GHz | 27,267 | \$4,750.20 |
| [Dual CPU] Intel Xeon E5-2680 v3 @ 2.50GHz | 26,013 | \$3,435.24 |
| [Dual CPU] Intel Xeon E5-2699 v3 @ 2.30GHz | 25,798 | \$8,737.98 |
| [Dual CPU] Intel Xeon E5-2696 v2 @ 2.50GHz | 24,833 | NA |
| [Dual CPU] Intel Xeon E5-2666 v3 @ 2.90GHz | 24,804 | NA |

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|---|--------|-------------|
| [Dual CPU] Intel Xeon E5-2687W v3 @ 3.10GHz | 24,751 | \$4,315.90 |
| [Dual CPU] Intel Xeon E5-2690 v2 @ 3.00GHz | 24,513 | \$4,129.98 |
| [Quad CPU] Intel Xeon E5-4627 v2 @ 3.30GHz | 24,511 | NA |
| [Dual CPU] Intel Xeon E5-2687W v2 @ 3.40GHz | 24,501 | \$4,199.98 |
| [Dual CPU] Intel Xeon E5-2697 v2 @ 2.70GHz | 23,982 | \$5,299.98 |
| [Dual CPU] Intel Xeon E5-2663 v3 @ 2.80GHz | 23,581 | NA |
| [Dual CPU] Intel Xeon E5-2660 v3 @ 2.60GHz | 23,493 | \$2,982.34 |
| [Dual CPU] Intel Xeon E5-2673 v3 @ 2.40GHz | 23,446 | NA |
| [Dual CPU] Intel Xeon E5-2680 v2 @ 2.80GHz | 23,323 | \$3,506.02 |
| [Dual CPU] Intel Xeon E5-2667 v2 @ 3.30GHz | 23,295 | \$4,849.72 |
| [Dual CPU] Intel Xeon E5-2670 v3 @ 2.30GHz | 22,953 | \$3,276.10 |
| [Dual CPU] Intel Xeon E5-2667 v3 @ 3.20GHz | 22,730 | \$4,382.36 |
| [Dual CPU] Intel Xeon E7-4890 v2 @ 2.80GHz | 22,412 | NA |
| [Dual CPU] Intel Xeon E5-2670 v2 @ 2.50GHz | 22,210 | \$3,119.98 |
| [Dual CPU] Intel Xeon E5-2695 v2 @ 2.40GHz | 21,980 | \$4,679.98 |
| [Dual CPU] Intel Xeon E5-2683 v3 @ 2.00GHz | 21,613 | \$4,273.98* |
| [Dual CPU] Intel Xeon E5-2643 v2 @ 3.50GHz | 21,394 | \$3,617.22* |
| [Dual CPU] Intel Xeon E5-2687W @ 3.10GHz | 21,269 | \$4,553.82 |

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|--|--------|-------------|
| [Dual CPU] Intel Xeon E5-2650 v3 @ 2.30GHz | 21,045 | \$2,318.00 |
| [Dual CPU] Intel Xeon E5-2640 v3 @ 2.60GHz | 20,930 | \$1,948.00 |
| [Dual CPU] Intel Xeon E5-2690 @ 2.90GHz | 20,755 | \$3,027.02 |
| [Dual CPU] Intel Xeon E5-2643 v3 @ 3.40GHz | 20,581 | \$3,584.12 |
| [Dual CPU] Intel Xeon E5-2689 @ 2.60GHz | 20,362 | NA |
| [Dual CPU] Intel Xeon E5-4650 @ 2.70GHz | 19,753 | \$7,799.98* |
| [Dual CPU] Intel Xeon E5-4627 v2 @ 3.30GHz | 19,491 | NA |
| [Dual CPU] Intel Xeon E5-2650 v2 @ 2.60GHz | 19,490 | \$2,279.90 |
| [Dual CPU] Intel Xeon E5-2660 v2 @ 2.20GHz | 19,445 | \$2,799.98 |
| [Dual CPU] Intel Xeon E5-4640 v2 @ 2.20GHz | 19,209 | NA |
| [Dual CPU] Intel Xeon E5-2680 @ 2.70GHz | 18,926 | \$1,905.90 |
| [Dual CPU] Intel Xeon E5-2630 v3 @ 2.40GHz | 18,655 | \$1,369.98 |
| [Dual CPU] Intel Xeon E5-2470 v2 @ 2.40GHz | 18,512 | \$3,161.98 |
| [Dual CPU] Intel Xeon E5-2670 @ 2.60GHz | 18,469 | \$3,099.98* |
| [Dual CPU] Intel Xeon E5-2665 @ 2.40GHz | 17,738 | \$2,150.46 |
| [Dual CPU] Intel Xeon E7- 4870 @ 2.40GHz | 17,541 | \$6,199.98 |
| [Quad CPU] Intel Xeon E7- 4850 @ 2.00GHz | 17,269 | \$7,479.96 |
| [Dual CPU] Intel Xeon E5-2660 @ 2.20GHz | 17,199 | \$407.24 |

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|--|--------|-------------|
| [Quad CPU] AMD Opteron 6276 | 17,144 | \$518.16 |
| [Dual CPU] Intel Xeon E5-2667 @ 2.90GHz | 16,924 | \$3,675.56 |
| [Dual CPU] Intel Xeon E5-2637 v3 @ 3.50GHz | 16,904 | \$2,084.14 |
| [Quad CPU] Intel Xeon E5-4617 @ 2.90GHz | 16,874 | NA |
| [Dual CPU] Intel Xeon E5-2470 @ 2.30GHz | 16,613 | \$2,959.98* |
| [Dual CPU] Intel Xeon E5-2630 v2 @ 2.60GHz | 16,197 | \$1,219.98 |
| [Dual CPU] Intel Xeon E5-2637 v2 @ 3.50GHz | 16,148 | \$2,136.48* |
| [Dual CPU] Intel Xeon E5-2620 v3 @ 2.40GHz | 15,607 | \$859.98 |
| [Dual CPU] Intel Xeon E5-2650 @ 2.00GHz | 15,325 | \$1,218.00 |
| [Dual CPU] Intel Xeon E5-2640 @ 2.50GHz | 15,061 | \$1,120.90 |
| [Dual CPU] Intel Xeon E5-2623 v3 @ 3.00GHz | 14,900 | \$967.62 |
| [Dual CPU] Intel Xeon E5-2640 v2 @ 2.00GHz | 14,773 | \$1,779.98 |
| [Dual CPU] Intel Xeon E5-2650L @ 1.80GHz | 14,385 | NA |
| [Dual CPU] Intel Xeon X5690 @ 3.47GHz | 14,372 | \$820.00 |
| [Dual CPU] AMD Opteron 6380 | 14,200 | \$2,221.98 |
| [Quad CPU] Intel Xeon X7560 @ 2.27GHz | 14,025 | \$826.72 |
| [Dual CPU] Intel Xeon X5680 @ 3.33GHz | 13,975 | \$1,011.30 |
| [Dual CPU] Intel Xeon E5-2630 @ 2.30GHz | 13,858 | \$1,476.26* |

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|---|--------|-------------|
| [Dual CPU] Intel Xeon E5-2430 @ 2.20GHz | 13,637 | \$580.00 |
| [Dual CPU] Intel Xeon E5-2630L v2 @ 2.40GHz | 13,636 | NA |
| [Dual CPU] Intel Xeon X5679 @ 3.20GHz | 13,618 | NA |
| [Dual CPU] Intel Xeon E5-2643 @ 3.30GHz | 13,492 | \$1,977.58 |
| [Dual CPU] Intel Xeon E5-2620 v2 @ 2.10GHz | 13,461 | \$777.96 |
| [Dual CPU] Intel Xeon X5675 @ 3.07GHz | 12,955 | \$418.00 |
| [Dual CPU] AMD Opteron 6386 SE | 12,953 | \$4,815.02* |
| [Dual CPU] Intel Xeon X5670 @ 2.93GHz | 12,865 | \$334.58 |
| [Quad CPU] Intel Xeon X7460 @ 2.66GHz | 12,860 | NA |
| [Dual CPU] Intel Xeon E5-2620 @ 2.00GHz | 12,592 | \$717.18 |
| [Quad CPU] AMD Opteron 6272 | 12,587 | \$1,300.00 |
| [Dual CPU] Intel Xeon E5-2420 v2 @ 2.20GHz | 12,487 | \$877.16 |
| [Dual CPU] Intel Xeon X5687 @ 3.60GHz | 12,305 | \$374.00 |
| [Dual CPU] Intel Xeon E7-2850 @ 2.00GHz | 12,145 | NA |
| [Quad CPU] AMD Opteron 6278 | 12,055 | \$2,906.52* |
| [Dual CPU] AMD Opteron 6284 SE | 11,985 | NA |
| [Dual CPU] Intel Xeon X5660 @ 2.80GHz | 11,939 | \$296.00 |
| [Dual CPU] AMD Opteron 4386 | 11,888 | \$719.98 |

| | | |
|--|--------|-------------|
| [Dual CPU] Intel Xeon E5-2420 @ 1.90GHz | 11,832 | \$1,267.98 |
| [Dual CPU] AMD Opteron 6328 | 11,810 | \$1,235.88 |
| [Dual CPU] Intel Xeon X5650 @ 2.67GHz | 11,740 | \$210.00 |
| [Dual CPU] Intel Xeon X5677 @ 3.47GHz | 11,698 | \$259.96* |
| [Dual CPU] AMD Opteron 6344 | 11,178 | \$778.00 |
| [Dual CPU] Intel Xeon E5-2630L @ 2.00GHz | 11,087 | NA |
| [Dual CPU] Intel Xeon E5649 @ 2.53GHz | 10,847 | \$227.90 |
| [Dual CPU] AMD Opteron 6274 | 10,682 | \$1,749.90* |
| [Dual CPU] Intel Xeon E5645 @ 2.40GHz | 10,643 | \$545.36* |
| [Dual CPU] Intel Xeon W5590 @ 3.33GHz | 10,638 | \$3,518.80* |
| [Dual CPU] AMD Opteron 6320 | 10,489 | \$579.98 |
| [Dual CPU] AMD Opteron 6276 | 10,379 | \$259.08 |
| [Dual CPU] Intel Xeon W5580 @ 3.20GHz | 10,201 | \$3,319.98* |
| [Dual CPU] Intel Xeon X5647 @ 2.93GHz | 10,200 | \$2,415.00* |
| [Dual CPU] Intel Xeon L5640 @ 2.27GHz | 10,191 | \$580.00 |
| [Dual CPU] AMD Opteron 6272 | 10,006 | \$650.00 |

More Information

For more detailed information on setting up and managing the vCloudPoint Sharing Computing System, consult the online help and the FAQ and Knowledge Base in the vCloudPoint Support Center at www.vcloudpoint.com.

For more information on the vCloudPoint System or to obtain a trial unit, please visit www.vcloudpoint.com or email us at info@vcloudpoint.com.

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