



En Pointe Response to the
Request for Proposal:
Cisco Systems and Tegile Support

April 27th, 2017

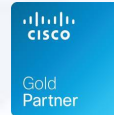
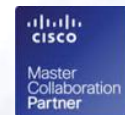
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April 27th, 2017

Cary Gielniak
City of Maricopa
39700 W. Civic Center Plaza
Maricopa, AZ 85138

Dear Mr. Gielniak:

En Pointe is pleased to quote the City of Maricopa (City) on your project for Cisco Systems and Tegile Support. At En Pointe we are committed to making your procurement and business processes cost efficient and easy. When you engage En Pointe and our world class Cisco Team (We are a Cisco National Gold Certified partner), you not only get Cisco expertise, but also expertise in hardware, software, and comprehensive IT services.

En Pointe earned the "Customer Satisfaction Excellence" award for outstanding customer satisfaction, the highest distinction a Cisco partner can achieve within the Cisco Channel Partner Program. Based on our long-standing strategic partnership with Cisco, En Pointe has recently been selected to become one of the relatively few Cisco partners managed by Cisco's "National Partner Organization" This will benefit the City because you will have access to our team of Senior Network Consultants and dedicated post/presales teams that are capable of preparing, planning, designing implementing, operating and optimizing your Cisco specific IT needs.

Our team of engineers with more than 500+ high-end certifications is proficient in leading Cisco technologies including:

- En Pointe Collaboration Solution (ECS) Advanced Security
- Advanced Wireless/Mobility Advanced Routing and Switching
- Advanced Unified Communication

En Pointe is often recognized by Cisco for achieving Cisco Channel Customer Satisfaction excellence. At any given time, less than one partner in three holds this designation. En Pointe brings full value to SMARTnet Service and possesses Cisco Service Expert Program (CSEP) certified team of technicians, to provide you the most effective and efficient support should you be interested. What sets us apart from other service providers is our Contract Management service for Cisco SMARTnet. This service is available to our SMARTnet customers with no additional charges. Our dedicated team having a combined experience of 50 years in Contract Management offers multiple options in contract administration. Some of which are;

- Enterprise SMARTnet Contract Management
- Departmental SMARTnet Contract Management
- Individual SMARTnet Management
- Contract Co-Termination Management

- Contract True ups/Consolidations

We are also a Tegile reseller able to assist you as you procure IntelliCare support. Simplify storage administration and maximize the uptime and efficiency of your Tegile storage arrays with IntelliCare, a comprehensive customer care program driven by cloud analytics and backed by storage experts.



Tegile Systems, the leading provider of flash-driven storage arrays for databases, virtualized server and virtual desktop environments and their successful Lifetime Storage, the finest component of Tegile IntelliCare™ and an industry-first support offering that delivers a storage system to customers every three to five years. With the introduction of its expanded IntelliCare program, Tegile is reinventing the customer experience by ensuring that both new and existing customers realize the performance gains and expanded capabilities of new storage systems and fresh storage media while avoiding excessive capital expenditures or large raises in maintenance costs.

As a company, we always want to work as closely with our customers as possible to guide them to the right technology that fits their needs and budget.

Kind regards,

Brian Hodshire
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Executive Summary

En Pointe Cisco Qualifications

Cisco - As a Cisco Gold Certified Partner, En Pointe has met rigorous standards for networking competency, including the awarding of several advanced specializations, and is a certified service provider. There are only 4 Certified Managed Service Providers, (MSP) in the US. En Pointe has been recognized by Cisco for achieving Cisco Channel Customer Satisfaction excellence. At any given time, less than one partner in three holds this designation.

Certifications:

- Cisco Gold Certified Partner



Specializations:

- Advanced Borderless Network Architecture Specialization
- Advanced Collaboration Architecture Specialization
- Advanced Content Security Specialization
- Advanced Data Center Architecture Specialization
- Advanced Unified Computing Technology Specialization
- Master Collaboration Specialization



Cloud and Managed Services:

- Cloud and Managed Services Master
- Cloud Services Reseller
- Managed Services Reseller

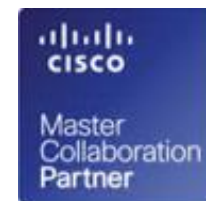


Cisco Powered Services:

- Cloud Services
- Cisco Powered Infrastructure as a Service
- Managed Services
- Cisco Powered Managed Business Communications - BC

Other Cisco Certifications:

- Cisco ONE
- GPN Resale Host
- GPN Subsidiary Agent
- Managed Services Reseller
- Smart Care Registered Partner
- US Federal Authorization
- WebEx Telepresence Program
- ATP - Cisco Application Centric Infrastructure
- ATP - Identity Services Engine



En Pointe Cisco Capabilities & SMART Services

En Pointe earned its Cisco Gold Certified Partner status in 2002, and we have provided Cisco equipment as well as design, implementation, and contract management services for more than 20 years. Cisco solutions which En Pointe resells include Routing and Switching, Security, Wireless, Unified Computing, Unified Communications, UCS Blades, and TelePresence. The services offering includes cloud services, managed services, lifecycle services and professional services. With regard to Cisco Contact Center, we are Cisco Master UC Certified which is the highest level of Cisco voice certification and allows us to provide Cisco Contact Center Express sales and installation.

The En Pointe SMART Services Team collectively possesses over 30 years of experience in managing Cisco SMARTnet contracts. Our team of experts is well versed in Cisco best practices, process and tools (SNTC, CSCC) available for contract management. En Pointe can consolidate all contracts with the same service level. The merging process begins at the quoting level when a



common end date is assigned to all quotes. En Pointe aims to minimize the number of contracts our clients acquire for ease in contract management and service access.

Following quotes being converted to contract, En Pointe audits items to verify all devices are reflected on the designated contract. If this is not the case, En Pointe works with Cisco to reassign items to the proper contract. This is managed through Cisco's Service Contract Center (CSCC) but can also be made visible to our customers through SMARTnet Total Care.

En Pointe provides a High Touch Model including Quarterly Business Reviews specifically for services to ensure any new hardware, consolidations, moves, adds and changes are properly reflected on contract. We further audit and make sure the proper CCO's are mapped to each contract to expedite any Cisco TAC requests and resolution.

En Pointe SMART Services team works with your assigned Account Executive and En Pointe's Advanced Technology Group to effectively diagnose service coverage levels while maximizing your budget and seeking available Cisco service promotions and incentives. En Pointe takes into account the technical abilities of the client IT staff, the criticality of devices to the network core as well as the device location in setting an appropriate services strategy and ensuring uptime.

In addition to the High Touch Model, En Pointe partners daily with Cisco to evangelize the Cisco Total Care Solution. SMARTnet Total Care will identify your Cisco inventory and securely communicate information to Cisco's data center, where it is analyzed against Cisco manufacturing, security, shipping, and contract data. This results in a comprehensive view of your

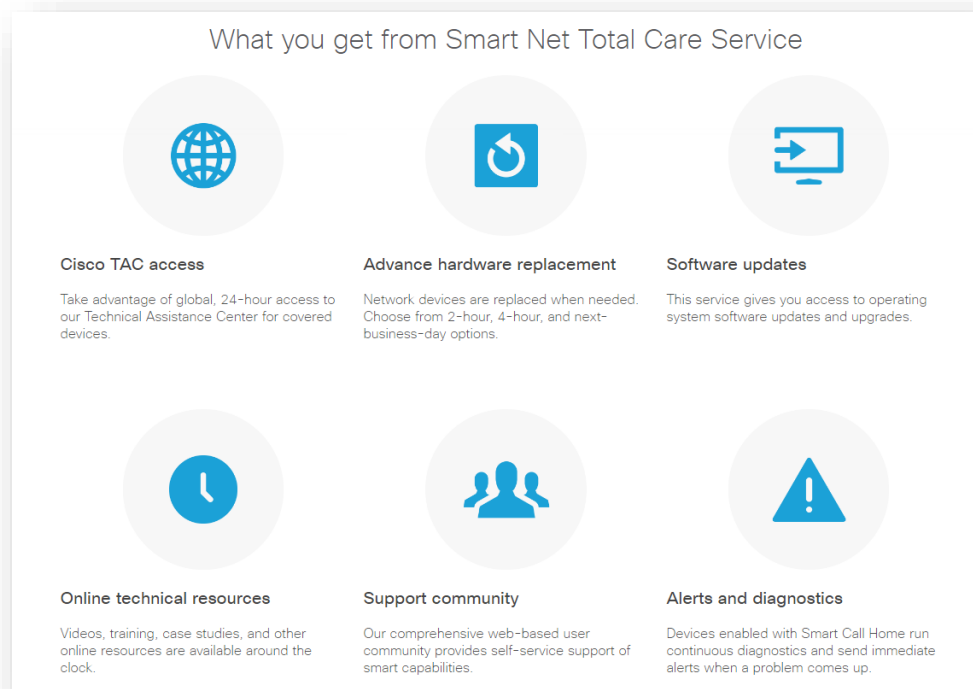
installed base, service contracts, and product alerts. Cisco has a 90% adoption rate for this solution. En Pointe is fluent in the benefits, process, and roadmap for SMARTnet Total Care (SNTC).

The deliverable for SNTC include:

- Accurate view of IB and Contracts
- Actionable Reports for EOS and IOS strategy
- Contract Consolidation
- Entitlement Confidence
- Contract Renewal Ease
- Timely RMA Assurance
- Device Life Cycle Data
- Device Specific Alert (PSIRTs) Notification

SNTC Reports include:

- Detailed inventory reports and analysis via intuitive web portal
- Visibility that critical Cisco products are covered with proper service contract
- Identifies those Cisco products that are not covered by a service contract
- Summary reports
- Delta reports for changes between two collections
- Contract dates, End of Support, End of Life



En Pointe and Tegile

En Pointe is one of the leading providers of Tegile storage solutions and it is our aim to offer infrastructure and cloud services that will help the City of Maricopa transform their IT so that it generates profit rather than costs. We do this by helping our clients reduce their costs and increase productivity through a combination of innovative technologies, processes, and ideas.

About Tegile

Tegile is an award-winning provider of next generation storage solutions designed for use in high-performance environments. Tegile's product range includes all-flash and hybrid storage arrays, designed to help organizations eradicate storage silos, simplify their storage and cut costs by merging their workloads into just one flash platform.

Tegile have recognized that we now demand more data – both in our professional and personal lives – and their technologies are designed to maximize the benefits of flash storage. Tegile have developed an innovative new operating system which leverages flash technology, resulting in them holding the top four places over the past three years in the DCIG Buyers Guide for Mid-Range Hybrid Storage Arrays competing against established and new manufacturers.

In addition, Tegile has won a host of other accolades, such as 'Storage Company of the Year' at the SVC Awards in December 2015 and 'Datacenter ICT Storage Hardware Product of the Year' at the 2015 DCS Awards. Tegile have also been selected as a Visionary by Gartner in the 2014 Magic Quadrant for General Purpose Disk Arrays and the 2015 Magic Quadrant for Solid-State Disk Arrays.

En Pointe is a Tegile Partner and our services are available throughout the United States. If you would like further information on Tegile, or advice on their storage solutions, we are happy to provide advice on which would be the best for your organization.

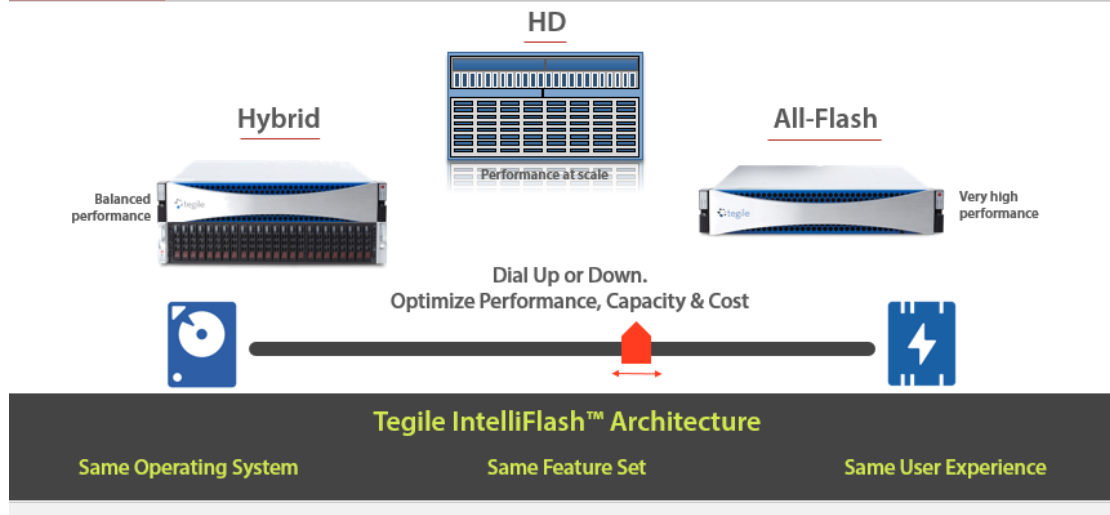
One Flash Platform

Flash storage has the power to fundamentally transform how you do business, but until now solutions have forced you to compromise on performance, price, or features.

At Tegile, we don't believe in compromises. Our hybrid and all-flash storage arrays are engineered to support multiple grades of storage media to deliver optimal performance with the best possible economics. They also include a full suite of advanced data services, multi-protocol support, and robust management capabilities.

So why compromise? Get a flash storage that's fast, flexible and affordable.

One Platform. Any Workload.



Could Your Organization Benefit from Tegile?

Regardless of whether your organization is in the public or commercial sector and provided you want to accelerate your business applications, cut down on your storage footprint and reduce costs, you could benefit from using Tegile storage.

Tegile is of particular benefit to organizations which run virtualized services, databases and/or VDI.

The Advantages of Tegile Storage to Your Organization

Enterprise Applications are accelerated with Tegile

- Analytics are speeded up
- Tegile offers a virtual desktop experience that outstrips those offered by physical desktops
- Database transaction wait time is cut to sub-milliseconds

Achieve More with Less

- Cooling and power costs are reduced thanks to Tegile's energy efficient flash technology
- Consolidate workloads with native support for both block and file protocols
- Your storage footprint could be reduced by as much as 90% thanks to in-line duplication and compression

Reliable, Trustworthy Storage

- In-line data encryption keeps your most sensitive information safe and secure
- Built-in snapshot and replication capabilities protect against a loss of data
- Dual-ported media and active/active controllers achieve an impressive 99.999% availability
-

How is Tegile Different

With Tegile you have one software architecture but a multitude of configurations. With protocols ranging from native support for iSCSI, Fibre Channel, NFS, and CIFS/SMB 3.0. Tegile offers superior data reduction with inline compression and data deduplication. Tegile has an extremely simple administration, it comes with an intuitive web UI and application integration with cloud monitoring and support. It provides enterprise resiliency with dual-ported media and active/active controllers. It comes with advanced disaster recovery options where you can replicate between all-flash and hybrid configurations.

How Is Tegile Different?



Why Your Organization Should use Tegile

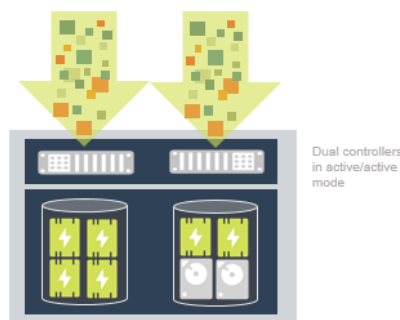
Tegile is the only storage solution to offer:

- Inbuilt protection for your data
Using Tegile allows you to eradicate the risk of a data loss or downtime. Tegile arrays are designed with the inclusion of snapshot and replication capabilities as standard and it is also possible to natively replicate data between all-flash and hybrid systems to enable cost-effective disaster recovery.

- **Get the Best of Both Worlds with All-Flash & Hybrid Storage Solutions**
Alongside Tegile's hybrid storage solutions which are designed to provide a balance between performance and capacity, they also provide all-flash designed to meet ultra-high performance requirements. Tegile is the only provider to do this and offers a single storage platform that supports both hybrid and all-flash configurations, enabling a cost-effective, adaptable up-scale through the addition of flash and disk.
- **Multi-Protocol Support**
Tegile flash arrays are designed to natively support SAN and NAS storage protocols, including iSCSI, Fiber Channel, NFS and SMB 3.0. Tegile is the only next generation storage vendor to provide multi-protocol support.
- **Impressive Efficiency Combined with Exceptional Data Reduction**
Tegile makes the most of the in-line block-level deduplication and compression to massively optimize storage capacity, so you'll get the most effective usable capacity offered by any vendor in the marketplace today. Data is de-duped and compressed before it even arrives at the array, enabling you to reduce your storage footprint and, in turn, reduce your current spend on power and cooling.

IntelliFlash Simultaneous Data Access

- Tegile arrays are built on a dual-controller architecture
- Both controllers can be used simultaneously in active/active
- Create all-flash **AND** hybrid storage pools
- Isolate workloads to optimize performance and avoid IO contention
- Pools can be failed-over transparently—with no disruption



Additional Benefits of Using Tegile

- **Security**
In-line data encryption is offered as standard when you use Tegile. In addition, should you decide to turn the encryption on, you'll find that there is no noticeable compromise to performance, deduplication, and compression benefits. You will also find that there aren't any external key management expenses and no further staff training will be required.

- **Straightforward Administration**
Tegile offers an intuitive web interface, combined with application integration, cloud monitoring, and support.
- **Cost-effective Storage with No Hidden Extras**
Tegile offers an all-inclusive software model which includes cloning, thin-provisioning, and snapshots etc., without additional licensing expenses.
- **Cost-Effective Support**
Tegile provides a range of low-cost support packages, typically available at around 10% of RRP.
- **Dial Home Support Included as Standard**
You will be automatically alerted of any known problems.
- **Enterprise MLC SSDs**
2-3PB worth of writes to a single drive before any performance issues are encountered in comparison to the 200-300TB of writes which are available with standard flash drives. This offers 10 x the integrity of standard commercial SSDs.
- **Enterprise Resiliency**
Dual-ported media with active/active controllers to provide 99.999% availability.
- **Multi-Connectivity**
Gigabit and optional 10 Gigabit and Fiber Channel connectivity available.

Top Tegile Benefits

Flexibility	<ul style="list-style-type: none"> ▪ Block (FC, iSCSI) AND File (NFS, CIFS, SMB3) ▪ All-Flash at Primary Site with seamless replication to Hybrid at Secondary Site ▪ Virtual AND Physical environments
Performance	<ul style="list-style-type: none"> ▪ Patented metadata acceleration
Data Reduction	<ul style="list-style-type: none"> ▪ Inline deduplication – SSD & HDD ▪ Inline compression – SSD & HDD
Cost Efficiency	<ul style="list-style-type: none"> ▪ Scale-up – no need to pay for controllers to add capacity ▪ No line item charges for replication
Manageability	<ul style="list-style-type: none"> ▪ Cloud based Big Data analytics – access via customer portal ▪ Fully integrated with VMware hypervisor

Profit from IT with En Pointe

Here at En Pointe, it is our aim to help organizations profit from IT; enabling them to cut costs, improve productivity and implement innovative strategies.

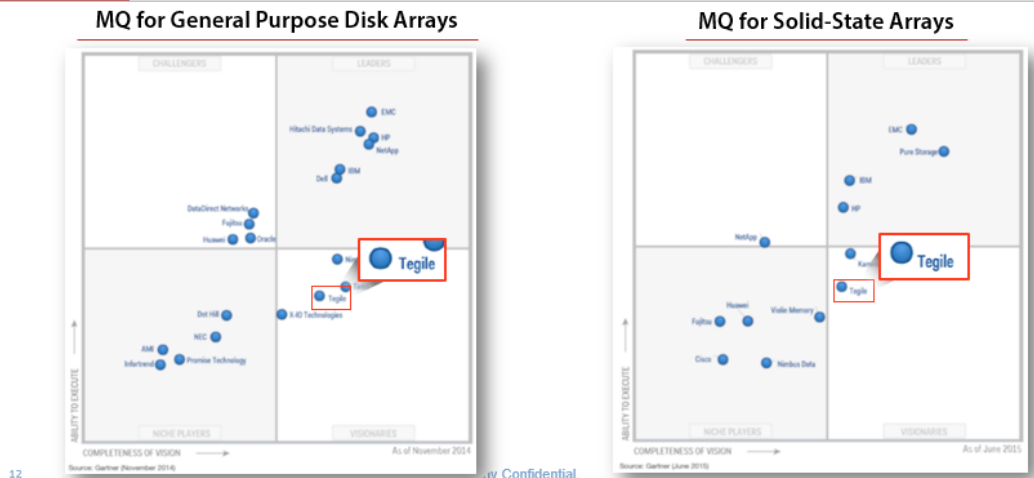
We believe that using Tegile's storage solutions can help your organization achieve this in a range of ways:

- Tegile is a next generation, multi-award-winning storage vendor which innovates constantly to help organizations make the most out of their storage.
- Tegile can help you dramatically accelerate your business applications by increasing throughput and reducing latency. Application response times are cut which is something which is of particular importance for any organization which runs high-performance workloads.
- In-line deduplication and compression will optimize your storage, effectively reducing the cost per usable terabyte. You will also find that when you reduce your storage footprint, your operating costs in the form of power and cooling will also fall, as will the cost of software licenses.

IntelliFlash
Scale Up Economically



Gartner Names Tegile “Visionary” Twice



Proposed Tegile Solution: T4100 Hybrid Array with (1) HE-25 Shelf

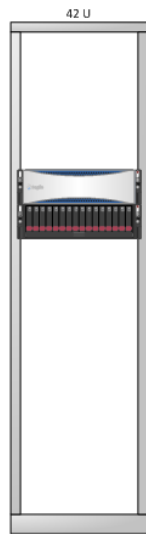
A Total of 52TB Raw, 38.2 Useable, Consisting of:

1 x T4100 Hybrid Array

- (4) Xeon E5-2640 v.3 per Array (6 Cores per CPU, 24 total Cores)
- 256GB of DRAM
- Raw Capacity – 26TB, 1.5TB Flash
- Usable Capacity – 10.9 or 19 TB depending on RAID
- Effective Capacity – 100+TB
- Software included (at no cost): Snapshots, clones, replication, and D@RE (if required)
- 3 Year 4-Hour Support
- Applicable professional services

(1) HE-25 Hybrid Shelf

- Raw Capacity- 26TB, 1.5TB Flash
- Usable Capacity – 10.9TB or 19TB depending on RAID, 3 Year 4-hours support



- **Array Stats**

- **Capacity**

- Usable Capacity – 38.2 TB or
 - Effective Capacity – 100+ TB

- **Performance**

- 8k Block @ 80/20 R/W- 50,000 IOPS
 - 4k Block @ 100% R – 300,000 IOPS

- **1 Storage Pool Deployed**

En Pointe and VMware

VMware Premier Partner: En Pointe

En Pointe is a certified VMware Premier Corporate Reseller to public sector and corporate customers. Together, En Pointe and VMware provide a host of effective solutions to safeguard critical business assets, systems, and applications in virtual and cloud environments.

To stay on top of the heightened demands placed on IT departments, businesses need cutting-edge virtualization solutions and a partner who can help navigate the journey to the cloud. En Pointe specializes in providing business continuity through the use of multiple VMware solutions ranging from building disaster recovery capabilities to ensuring a system-based and people-centric business continuity plan.

Why En Pointe for VMware Solutions

With a focus on business continuity using VMware-based virtualization and cloud solutions, En Pointe has the licensing expertise and adept engineers to provide a full spectrum of support to your organization.



En Pointe's services for VMware solutions

Licensing Services:

- Dedicated team of licensing specialists
- My VMware specialists
- Renewal & Co-terming specialists

Virtual Infrastructure Assessments

- Automation consulting and deployment
- VDI consulting and deployment
- Version and edition upgrade/expansion consultation
- Performance analysis
- Problem resolution

En Pointe's engineering team also provides consulting services around business continuity, supported by virtualization and cloud solutions. Examples of services En Pointe provides include:

- Server consolidation and infrastructure optimization
- Enterprise desktop and infrastructure management

- Virtual lab automation
- Backup and recovery automation
- Public and private cloud solutions

Extensive VMware Expertise by En Pointe

En Pointe is certified in all VMware product lines. As a reflection of our expertise, we hold the following specializations and competencies.

Cloud & Virtualization Specializations

- Business continuity
- Desktop virtualization
- Infrastructure virtualization
- Cloud Infrastructure as a Service
- Management
- Virtualization of business critical applications
- Hybrid cloud
- Data management

VMware Services from En Pointe

At En Pointe, we are the go-to resource for disaster recovery and business continuity, specializing in traditional infrastructure, on-premise and hybrid cloud deployments. We are a VMware Premier Partner, ranked in the top ten in the nation for the service offering we have developed to support their technology suite.

If you're transitioning to the cloud, we work with you through every step of the migration process to expand your network to the public and eventually private cloud. As a VMware specialist, our methodology is focused on the software-defined data center, NSX Micro-segmentation, End User Computing, vSphere with Operations Management, VCHS, and VSAN platforms. Using this approach, we can help you significantly lower your total cost of operation, improve your storage performance, and simplify infrastructure management.

Our VMware Services Methodology

Our methodology begins with data collection and assessment, followed by solution design, on-site deployment, and support and solution validation throughout the product lifecycle. See below for the multi-step methodology we employ to help you get the most from your VMware investment.



Software-Defined Data Center Services from En Pointe

Our business continuity planning will help you assess, migrate, and maintain your organization's data center infrastructure. Our VMware SDDC services enable abstraction, pooling, and automation.

vCloud Hybrid Services from En Pointe

As a hybrid cloud specialist, we help extend your data center to the cloud. Leveraging VMware's leading technology, we deploy and manage your private network so that your business gets the most from its existing and new applications, including recovery-as-a-service.

NSX – Network Virtualization Services from En Pointe

To virtualize your infrastructure, our engineers help you architect a plan that begins with an assessment of your environment, leading you through the entire execution and post-implementation process. We can help your organization leverage VMware's NSX platform to share applications across your virtual and physical security platforms. With it, we can optimize network operations, allowing you to treat your physical network as a pool that can be consumed and repurposed on a case-by-case basis.

Virtual SAN Services from En Pointe

As a Premier Elite Program Partner, we were one of the first partners authorized to offer and support Virtual SAN (VSAN). Our VSAN methodology, and targeted support services, ensure that if your disk, host or network fails, your data is never lost. We can also implement a scalable storage tier solution that extends the vSphere Hypervisor to pool both compute and direct-attached storage.

En Pointe's VMware Virtualization Services

Well-versed in virtualization, our team of engineers can help you migrate to a virtualization strategy, saving your organization valuable dollars and improving your overall functionality. We provide ESX installation and configuration services, QuickStart accelerated deployment, health checks, diagnostics and more to ensure that your system is running efficiently.

VMware Virtualization

En Pointe VMware virtualization solutions are built on VMware vSphere with Operations Management, the leading virtualization and cloud management platform.

Reduce capital and operational costs by increasing energy efficiency and using less hardware with server consolidation. Gain policy-based automation and ensure compliance and performance with a zero-touch infrastructure using VMware vRealize Operations for virtualization management. En Pointe VMware Software-Defined Data Center is the best and most efficient cloud infrastructure solution.

Server Virtualization

Abstracting the operating system and applications from the physical hardware gives you a more cost-efficient, agile and simplified server environment. Using En Pointe VMware server virtualization, multiple operating systems can run on a single physical server as virtual machines, each with access to the underlying server's computing resources.

Most servers operate at less than 15 percent of capacity, leading to server sprawl and complexity. Server virtualization addresses these inefficiencies. En Pointe VMware vSphere solution offers a complete server virtualization platform that delivers:

- 80 percent greater utilization of server resources
- Up to 50 percent savings in capital and operating costs
- 10:1 or better server consolidation ratio

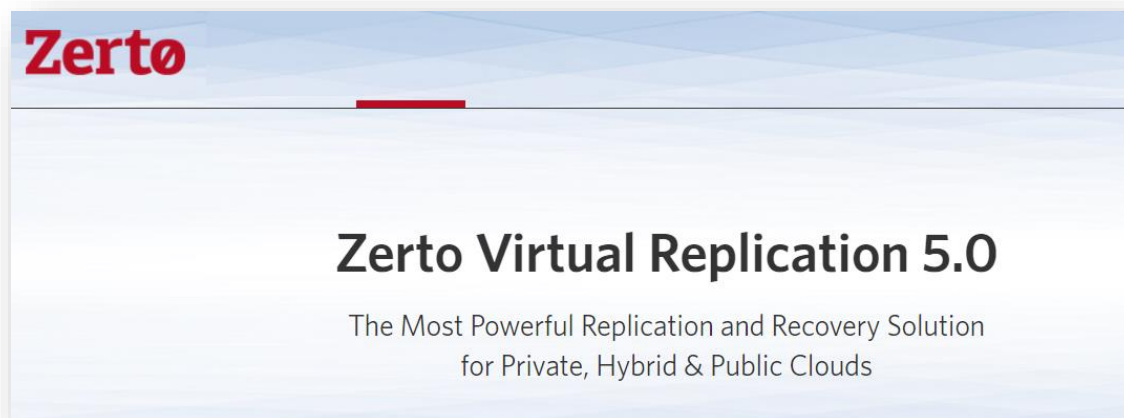
Since virtualized infrastructure has unique management needs, En Pointe VMware offers vSphere with Operations Management, which delivers vSphere optimized with critical capacity and performance management capabilities. It is designed for businesses of all sizes to run applications at high service levels and maximize hardware savings through even higher capacity utilization and consolidation ratios.

vSphere with Operations Management

VMware vSphere with Operations Management delivers vSphere optimized for efficient server virtualization management by adding critical capacity management and performance monitoring capabilities.

It is designed for businesses of all sizes to run applications at high service levels and maximize hardware savings through higher capacity utilization and consolidation ratios. En Pointe can allow you to create an easy-to-manage virtual environment with the most trusted virtualization platform, vSphere.

Zerto and En Pointe



And what goes better with VMware than Zerto Virtual Replication? Nothing.

Maricopa can simplify VMware vSphere Replication: Business Continuity and Disaster Recovery using Zerto. Zerto's replication software for VMware vSphere enables automated data recovery,

failover and failback and lets you select any VM in VMware's vCenter. It's that simple — no storage configuration necessary, no agent installation on guest required.

VMware Replication Solution without Storage Constraints

Zerto's VMware Replication software protects at the VM and VMDK level, which means that protection decisions can be made without any storage constraints.

- Replicate single or multiple VMs
- Use an intuitive GUI embedded in VMware's vCenter
- Protect multiple virtual disks connected to the same VM
- Recover immediately with the click of a button
- Support replication of RDM devices
- View and manage local and remote sites from the same vCenter
- Deliver consistent protection across your company with the ability to support multiple sites

Pricing




















Please see our pricing on the next page.






PCM Sales
11001 Lakeline Blvd. Ste #350
Austin, TX 78717
Phone: (512) 340-7301

Quote Number:	1961199	Created By:	Marc Villalba
Description:	Cisco / Tegile/Zerto/VMWare	Created Date:	4/24/2017 2:48:49 PM
Contact Name:		Modified By:	Marc Villalba
Contact Email:		Modified Date:	4/25/2017 11:09:42 AM
PO Number:		Order Notes:	
Phone Number:			
Fax Number:			
Ship Via:	FedEx Ground		

BILL TO	SHIP TO
CITY OF MARICOPA (916144) ATTN: CARY GIELNIAK 39700 W CIVIC CENTER PLAZA MARICOPA AZ 85138	CITY OF MARICOPA (39700) 39700 W CIVIC CENTER PLZ MARICOPA AZ 85138

QUOTE ITEMS		Avail	Qty	Price	Ext Price
System 1					
	UCS SPS Select B200M4 Adv5 w/2xE52650v4,8x16GB,VIC1340 Mfr: CUSTOM SKU Mfr #: UCS-SP-B200M4-BA5	0	4	0.00	0.00
	UCS SmartPlay Select B200 M4 Advanced 5 (Not sold Standalone) - Xeon E5-2650V4 2.2 GHz - 128 GB - 0 GB Mfr: Cisco Mfr #: UCS-SP-B200M4-B-A5	0	4	5706.53	22826.12
	Intel Xeon E5-2650V4 / 2.2 GHz processor Mfr: Cisco Mfr #: UCS-CPU-E52650E	0	8	0.00	0.00
	DDR4 - 16 GB - DIMM 288-pin Mfr: Cisco Mfr #: UCS-MR-1X161RV-A	0	32	0.00	0.00
	flash memory card - 32 GB - SD Mfr: Cisco Mfr #: UCS-SD-32G-S	0	4	65.47	261.88
	UCS Virtual Interface Card 1340 - network adapter Mfr: Cisco Mfr #: UCSB-MLOM-40G-03	0	4	0.00	0.00
	drive blanking panel Mfr: Cisco Mfr #: UCSB-MLOM-40G-03	0	8	0.00	0.00
	CPU asset tab ID label Mfr: Cisco Mfr #: UCSB-MLOM-40G-03	0	4	0.00	0.00
	processor heatsink Mfr: Cisco Mfr #: UCSB-MLOM-40G-03	0	4	0.00	0.00
	processor heatsink Mfr: Cisco Mfr #: UCSB-MLOM-40G-03	0	4	0.00	0.00
	vSphere Standard (v. 6) - license - 1 processor Mfr: Vmware Mfr #: VS6-STD-C-L1	0	1	820.95	820.95
System Subtotal:					23908.95
System 2					
	UCS 5108 Blade Server Chassis SmartPlay Select - rack-mountable - 6U - up to 8 blades Mfr: Cisco Mfr #: UCS-SP-MINI	0	1	9537.82	9537.82
	PWR CORD250VAC16A TWIST LOCK NEMA L6-20 Mfr: Cisco Mfr #: CAB-AC-C6K-TWLK	0	4	0.00	0.00
	UCS 5108 Blade Server Chassis - 6U - up to 8 blades Mfr: Cisco Mfr #: N20-FW014	0	1	0.00	0.00
	fan unit Mfr: Cisco Mfr #: N20-FAN5=	0	8	0.00	0.00
	Platinum - power supply - hot-plug - 2500 Watt Mfr: Cisco Mfr #: UCSB-PSU-2500ACDV	0	4	0.00	0.00
	packaging Mfr: Cisco Mfr #: UCSB-5108-PKG-HW	0	1	0.00	0.00
	power distribution unit Mfr: Cisco Mfr #: N01-UAC1=	10	1	0.00	0.00
	blank panel Mfr: Cisco Mfr #: N20-CBLKB1=	23	8	0.00	0.00

	Chassis Accessory Kit - system accessory kit Mfr: Cisco Mfr #: N20-CAK=	0	1	0.00	0.00
	UCS 6324 Fabric Interconnect - switch - managed - plug-in module Mfr: Cisco Mfr #: UCS-FI-M-6324	0	2	0.00	0.00
	UCS Manager (v. 3.1) - license Mfr: Cisco Mfr #: N10-MGT014	0	2	0.00	0.00
	SFP+ Copper Twinax Cable - direct attach cable - 10 ft Mfr: Cisco Mfr #: SFP-H10GB-CU3M	0	4	60.10	240.40
	SFP+ Copper Twinax Cable - direct attach cable - 16.4 ft Mfr: Cisco Mfr #: SFP-H10GB-CU5M=	459	4	90.16	360.64
	SMARTnet Onsite - extended service agreement - on-site Mfr: Cisco Mfr #: CON-OSP-B200BA5	0	4	308.00	1232.00
	SMARTnet Onsite - extended service agreement - on-site Mfr: Cisco Mfr #: CON-OSP-UCSPMINI	0	1	217.83	217.83
	SMARTnet Onsite - extended service agreement - on-site Mfr: Cisco Mfr #: CON-OSP-FIM6324	0	2	300.02	600.04
System Subtotal:					12188.73
System 3					
	Tegile T4100 Intelligent Flash Array Mfr: CUSTOM SKU Mfr #: T4100 Tegile T4100 Intelligent Flash Array (Dual Controllers; 4 * Xeon E5-2620 per Array; 256 GB total memory; 1.5TB SSD & 26TB HDD in 3U) w/ IntelliFlash OS Software License, which includes: - Intelligent caching - Block and file protocols - Inline deduplication and compression - Space efficient snapshots and clones - WAN optimized replication and data encryption	0	1	25000.00	25000.00
	Tegile HE-25 Expansion Shelf (1.5TB SSD, 26TB HDD in 3U) Mfr: CUSTOM SKU Mfr #: HE-25	0	1	15625.00	15625.00
	Dual Port 10Gbps Ethernet SFP+ NIC Mfr: CUSTOM SKU Mfr #: CARD-10G-E-2-SFP+	0	2	1330.28	2660.56
System Subtotal:					43285.56
System 4					
	Tegile 3-Year Premier Proactive Support Mfr: CUSTOM SKU Mfr #: HE-25-3YR-4HR Tegile 3-Year Premier Proactive Support for HE-25 (Onsite parts, 7 * 24 call support, 4 hour onsite parts replacement, health checks, reviews)	0	1	3409.09	3409.09
	Tegile 3-Year Premier Proactive Support Mfr: CUSTOM SKU Mfr #: T4100-3YR-4HR Tegile 3-Year Premier Proactive Support for T4100 (Onsite parts, 7 * 24 call support, 4 hour onsite parts replacement, health checks, reviews)	0	1	5454.55	5454.55
System Subtotal:					8863.64
System 5					
	vSphere Standard (v. 6) - license - 1 processor Mfr: Vmware Mfr #: VS6-STD-C-L1	0	6	932.90	5597.40
	VSphere Std Most Current Production Maint VMWARE-3 Years (Prepaid) American English (Multiplatform) 1 User Corporate Mfr: Vmware Mfr #: VS6-STD-3P-SSS-C	0	6	881.81	5290.86
	vSphere Standard Acceleration Kit (v. 6) - license - 6 processors Mfr: Vmware Mfr #: VS6-STD-AK-C	0	1	10738.30	10738.30
	Support and Subscription Production - technical support - for vSphere Standard Acceleration Kit - 3 years Mfr: Vmware Mfr #: VS6-STD-AK-3P-SSS-C	0	1	8190.09	8190.09
System Subtotal:					29816.65
System 6					
	Zerto Replication License - 25 VM zPack Mfr: ZERTO LTD Mfr #: ZVR-VM-ZP-25	0	1	15079.90	15079.90
	ZERTO REPLICATION LICENSE - SINGLE VM Mfr: ZERTO LTD Mfr #: ZVR-VM-ZP-1VM	0	15	634.94	9524.10
System Subtotal:					24604.00
System 7					
	Premium M&S for 25 VM zPack, including 24x7 phone and email support, 1 hour response, software maintenance updates Mfr: ZERTO LTD Mfr #: ZVR-MS-PRM-ZP25-1Y 3 Year	0	1	10555.93	10555.93

PREMIUM M&S FOR SINGLE VM, INCLUDING 24X Mfr: ZERTO LTD Mfr #: ZVR-MS-PRM-ZP-1VM-1Y 3 Year	0	15	444.45	6666.75
System Subtotal:				17222.68
Subtotal:				159890.21
FedEx Ground:				0.00
Tax:				12855.51
Total:				172745.72

Approved By: _____

Print Name: _____

Purchase Order Number: _____

Additional Info: _____

Thank you for giving PCM Sales the opportunity to quote you these items.

We look forward to doing business with you in the future.

Product Prices and Sales Tax are subject to change without notice and a Freight charge may be added to the invoice.

Availability is based on ETAs provided by the vendors on the day this quote was generated.

SOW with Pricing

Please see our SOW on the next page.

CITY OF MARICOPA

Budgetary Proposal for

Data Center Refresh Disaster Recovery Replication

Presented by PCM Sales, Inc.

PCM SARCOM Contact:

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INTRODUCTION OF SERVICE

The City of Maricopa, AZ is engaged in refreshing their production information technology (IT) infrastructure as part of their Smart City Initiative. They are also using this opportunity to enhance their disaster recovery capabilities by re-purposing their legacy IT infrastructure as a replication target for their critical systems.

PROPOSED ACTIVITIES

PCM Sales, Inc. (PCM) proposes the following services to accomplish the objectives stated above:

Phase 1 – Project/ Engagement Preparation & Planning

1.1.1 Project Kickoff

The purpose of this activity is to identify the project team members, and facilitate a common understanding of the project objectives, roles and responsibilities within the scope of the Services covered by this SOW.

1.1.2 Project Plan Preparation and Review

PCM will assign a Project Manager who will prepare a comprehensive project plan for delivery prior to start of Phase 2 that will identify and map the following:

Phase 2 – Solution Design

1.1.3 Develop Low Level Design

The purpose of this activity is to develop the low level design document, which will be based on the high level design, the bill of materials and additional data collected in previous activities.

The result of this activity will be per device/system configurations and a low level design as per the deliverable materials guidelines in the appendices of this document.

1.1.4 Low Level Design Review Session and Acceptance

The purpose of this activity is to review the low level design developed in activity 1

Phase 3 - Production Implementation

The purpose of this activity is to deploy the solution by using the configurations, procedures, and plans developed in the earlier activities.

1.1.5 Validate Bill of Materials Components

The purpose of this activity is to validate that the bill of materials and components.

1.1.6 Equipment Staging

The purpose of this activity is to stage and configure the hardware before deployment into production

1.1.7 Install and configure one (1) UCS-Mini 5108 Blade Chassis

1.1.8 Install and configure one (1) Tegile storage array

PCM engineering team will build the new storage array based on the implementation plan defined above.

1.1.9 VMware Implementation

PCM engineering team will build the new VMware vSphere 6.X environment based on the implementation plan defined above.

1.1.10 VM Guest and Data Migration

PCM engineering team will work with the customer to migrate compute and storage for virtual machines from the existing environment to the new VMware vSphere 6.X environment. **NOTE:** The migration of compute resources may require downtime.

Phase 4 – Recondition Legacy Equipment for DR

1.1.11 Recondition Legacy Infrastructure for DR

PCM engineering team will repurpose the legacy equipment as a disaster recovery target for the production infrastructure in City Hall.

1.1.12 Relocate DR Equipment – From City Hall to the Police Department

PCM engineer will monitor the physical relocation of equipment to the Police Station and will power on the equipment. PCM will re-establish Zerto replication.

1.2 Deliverables

The following items will be delivered to MARICOPA and shall constitute the work product of this engagement.

- 1) A project completion form.
- 2) As Built Documentation

PRICE

What follows is an estimate of the price of the proposed engagement. The prices represented below are subject to change in the final statement of work based on additional information, scope modifications, or discovery of the customer environment. The pricing below should not be considered final or binding.

Estimated Pricing

Service Description	Deliverable	Item Price
Project Management	Project Management Activities	\$3,970.50
Engineering Services	Engineering Activities	\$21,270.00
SERVICES SUBTOTAL		\$25,240.50
Post Project Support (Per hr. rate)	As needed after project completion	
TOTAL PRICE		\$25,240.50
Travel (Check one)		
<input type="checkbox"/>	Yes: Actual travel costs will be billed	
<input type="checkbox"/>	No: Travel is not required as part of this service	

Services related to this engagement will be provided on a fixed-fee basis. The total amount for the service will be billed in full upon project completion.

Project Total - Product and Services

To make it convenient we have summed up the total pricing for the products and services which is \$197,986.22.

Attachments

Please see our product support documentation on the following pages.



Data Sheet

Cisco UCS B200 M4 Blade Server

Product Overview

The Cisco Unified Computing System™ (Cisco UCS®) combines Cisco UCS B-Series Blade Servers and C-Series Rack Servers with networking and storage access into a single converged system with simplified management, greater cost efficiency and agility, and increased visibility and control. One of the newest servers in the Cisco UCS portfolio is the Cisco UCS B200 M4 Blade Server.

The UCS B200 M4 Blade Server (Figure 1) delivers performance, flexibility and optimization for data centers and remote sites. This enterprise-class server offers market-leading performance, versatility, and density without compromise for workloads ranging from web infrastructure to distributed databases. The Cisco UCS B200 M4 server can quickly deploy stateless physical and virtual workloads, with the programmable ease of use of the [Cisco UCS Manager](#) software and simplified server access with Cisco® [SingleConnect](#) technology. Based on the Intel® Xeon® processor E5-2600 v4 and v3 product family, it offers up to 1.5 TB of total memory when using 64 GB DIMMs, up to two drives, and up to 80 Gbps I/O throughput. The Cisco UCS B200 M4 offers exceptional levels of performance, flexibility, and I/O throughput to run your most demanding applications.

In addition, Cisco UCS has the architectural advantage of not having to power and cool excess switches, NICs and HBAs in each blade server chassis. Having a larger power budget per blade server provides uncompromised expandability and capabilities, as in the new Cisco UCS B200 M4 server with its leading memory-slot and drive capacity.

Figure 1. Cisco UCS B200 M4 Blade Server



Cisco UCS B200 M4 Overview

The Cisco UCS B200 M4 provides:

- Up to two multicore Intel Xeon processor E5-2600 v4 and v3 series CPUs for up to 44 processing cores.
- 24 DIMM slots for industry-standard DDR4 memory at speeds up to 2400 MHz and it offers up to 1.5 TB of total memory when using 64 GB DIMMs.
- Two optional, hot-plug, SAS and SATA hard disk drives (HDDs) or solid-state drives (SSDs).
- Cisco UCS Virtual Interface Card (VIC) 1340: a 2-port, 40 Gigabit Ethernet, Fibre Channel over Ethernet (FCoE)-capable modular LAN on motherboard (mLOM) mezzanine adapter.
 - 2x ports - 40 Gbps Unified I/O ports or 2 sets of 4 x 10-Gbps unified I/O ports
 - Delivers 80 Gbps to the server
 - Adapts to either 10 Gbps or 40 Gbps fabric connections

- Cisco FlexStorage local drive storage subsystem provides flexible boot and local storage capabilities. It allows you to:
 - Support for optional NVIDIA M6 GPU
 - Configure the Cisco UCS B200 M4 to meet your local storage requirements without having to buy, power and cool components that you do not need.
 - Choose an enterprise-class RAID controller, or go without any controller or drive bays if not utilizing local drives
 - Easily add, change, or remove Cisco FlexStorage modules
- The Cisco UCS B200 M4 server is a half-width blade. Up to eight can reside in the 6-rack-unit (6RU) Cisco UCS 5108 Blade Server Chassis, offering one of the highest densities of servers per rack unit of blade chassis in the industry.

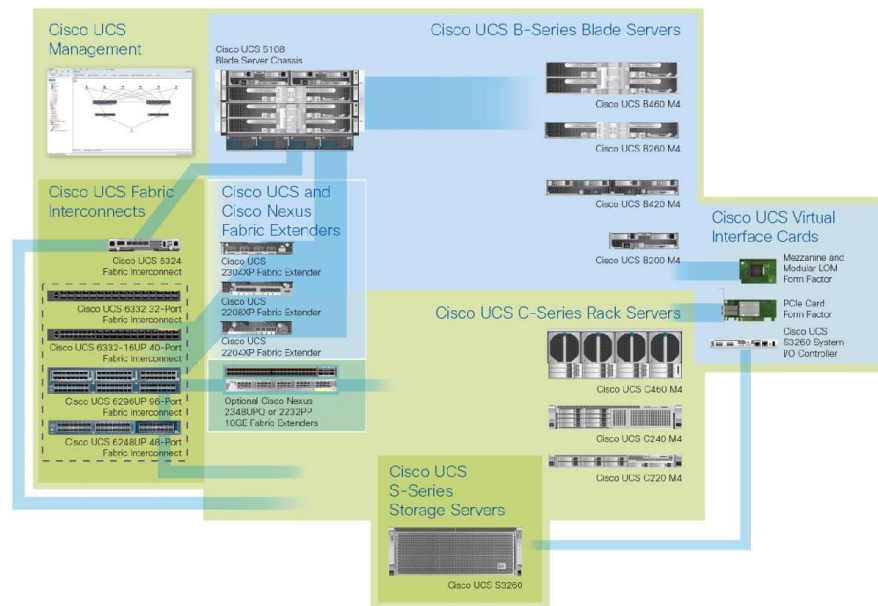
Overview

The Cisco UCS B200 M4 server is suited for a broad spectrum of IT workloads, including:

- IT and web infrastructure
- Virtualized workloads
- Consolidating applications
- Virtual desktops
- Middleware
- ERP and CRM applications
- Single-instance and distributed databases

The Cisco UCS B200 M4 Blade Server is one member of the Cisco UCS B-Series Blade Servers platform. As part of Cisco UCS, Cisco UCS B-Series servers incorporate many innovative Cisco technologies to help customers handle their most challenging workloads. Cisco UCS B-Series servers within a Cisco UCS management framework incorporate a standards-based unified network fabric, Cisco Data Center VM-FEX virtualization support, Cisco UCS Manager, Cisco UCS Central, Cisco UCS Director software, and Cisco fabric extender architecture (Figure 2)

Figure 2. Cisco UCS Server Innovations Change the Economics of the Data Center by Enabling Customer Workloads to Benefit from Cisco UCS Simplification and Operational Efficiencies



Features and Benefits of the Cisco UCS B200 M4 Server

Table 1 lists the main features and benefits of the Cisco UCS B200 M4.

Table 1. Main Features and Benefits

Feature	Benefit
Cisco SingleConnect Technology	<ul style="list-style-type: none"> Lower operational and capital expenditures network access simplification. SingleConnect technology: wire once and provision or repurpose any workload in minutes, not days. No need to rewire as the server application-centric personality is assigned through software. Fewer cables, HBAs, NICs, and switches to purchase, warranty, power, cool, and maintain. True server unification of servers, LAN and SAN with a single pane of management (UCS Manager/Central). Wire servers once, deploy and repurpose servers through software - no more rewiring.
Cisco UCS Manager (Greater Flexibility, Lower Cost)	<ul style="list-style-type: none"> Lower operational and capital expenditures. Helps reduce the number of manual steps required to deploy servers in the data center, improving server policy consistency and coherency. Deploy servers for any application in a consistent, automated and repeated manner through UCS Manager/Central/Director and service profiles. <ul style="list-style-type: none"> a Less configuration drift among servers. Future foundation and management paradigm for fast, consistent server provisioning of new servers and repurposing of old servers for other workloads. Allows servers and support infrastructure to be provisioned in minutes instead of days, shifting IT's focus from maintenance to strategic initiatives. Enables service profile movement from blade to blade, rack server to blade, blade to rack server, or blade to blade in another chassis.

Feature	Benefit
Cisco UCS Manager Open XML API (Increases Automation)	<ul style="list-style-type: none"> • UCS Manager is an open architecture with an API-first, automation-friendly design; rich interoperability across management and platform ecosystem. • Unique visibility into the UCS system above UCS Manager to UCS Director and other third-party management tools. • An almost unsurpassed ability to monitor, query and automate server hardware at a granular level. • UCS Manager XML APIs enable integration with new and existing data center infrastructure and XML-based SDK for commercial & custom implementations. • UCS Manager/Central offer full APIs, such as IPMI, SMASH-CLP, WS-MAN, and XML to enable third party software to integrate into UCS Manager. • Complete Cisco UCS PowerTool for PowerShell scripting for automation of nearly every UCS Manager action.
Cisco UCS FlexStorage® technology	<ul style="list-style-type: none"> • Allows you to choose exactly the blade storage and storage controller, you need; with a choice of hard disks (SSD, SATA, or SAS) with a 12Gb SAS controller, or no disks or controller with blanking disks.
Performance	<ul style="list-style-type: none"> • Cisco UCS servers have delivered over 111 world records to date and the UCS B200 series blade servers have contributed 30 world records spanning a wide range of workloads including: <ul style="list-style-type: none"> ◦ a VMware VMmark ◦ b VMware View Planner ◦ c Oracle E-Business Suite ◦ d SAP ◦ e JD Edwards ◦ fSiebel ◦ g SPECjbb2013 ◦ h SPEC_fp_rate_2006 ◦ iSPEC_int_base_2006 <p>This diversity of world records underscores the history of ground-breaking performance upon which the Cisco UCS B200 M4 is built.</p>
Autodiscovery	<ul style="list-style-type: none"> • Requires no configuration; like all components in Cisco UCS, blade and rack servers are automatically recognized and configured by Cisco UCS Manager.
Extensive monitoring	<ul style="list-style-type: none"> • Through Cisco UCS Manager, provides extensive environmental monitoring for each blade. • Allows use of user thresholds to optimize environmental management of the blade. • Cisco UCS Manager XML API enables unique monitoring, visibility, and automation for nearly every server attribute.
Cisco UCS Virtual Interface Card (VIC) 1340	<ul style="list-style-type: none"> • 1200 Series VICs enable advanced networking features including Netflow for network statistics, and DPDK, USNIC for low latency computing applications. • 1300 Series VICs include all of the 1200 Series features plus additional enhancements including network overlay offload support for NVGRE and VXLAN, and RoCE services. • 2-port, 40 Gigabit Ethernet, Fibre Channel over Ethernet (FCoE)-capable modular LAN on motherboard (mLOM) mezzanine adapter. • 2x ports - 40 Gbps Unified I/O ports or 2 sets of 4 x 10-Gbps unified I/O ports. • Delivers 80 Gbps total I/O throughput to the server. • Adapts to either 10 Gbps or 40 Gbps fabric connections. • Creates up to 256 fully functional unique and independent PCIe adapters and interfaces (NICs or HBAs) without requiring single-root I/O virtualization (SR-IOV) support from operating systems or hypervisors. • Provides virtual machine visibility from the physical network and a consistent network operations model for physical and virtual servers. • Supports customer requirements for a wide range of operating systems and hypervisors Microsoft Windows, Red Hat Enterprise Linux, SUSE Linux, VMware vSphere, and Citrix XenServer.
Mezzanine adapters	<ul style="list-style-type: none"> • Provides choice of VIC adapters, providing flexibility, increased performance, compatibility with industry standards, and network policy coherence for virtualized environments.
Cisco FlexFlash	<ul style="list-style-type: none"> • Dual SDHC flash card sockets are provided on the front left side of the server.
Optional local storage	<ul style="list-style-type: none"> • Provides support on each blade for up to two optional front-access SAS, SATA or PCIe NVMe HDDs and SSDs.

Feature	Benefit
Intel Xeon processor E5-2600 v3 product family	<ul style="list-style-type: none"> The Intel Xeon processor E5-2600 v4 and v3 product family is designed to deliver the best combination of performance, built-in capabilities, and cost effectiveness. DDR4 memory technology Offers built-in measuring and monitoring capabilities that make the Intel-powered platform the smart choice for a software-defined world. Provides a broad set of platform options that deliver choice and value for different market segments. Incorporates Intel Xeon Processor E5-2600 v4 and v3 Product Family newest and latest virtualization and security features: <ul style="list-style-type: none"> Virtualization: <ul style="list-style-type: none"> Virtualization: VM Control Structure (VMCS) Shadowing Cache QoS Monitoring A/D bits for Extended Page Tables (EPT) Security: <ul style="list-style-type: none"> General Crypto Assist† Asymmetric Crypto Assist† Symmetric Crypto Assist† SMM External Call Trap (SECT) Cisco UCS B-Series servers keep pace with Intel Xeon processor innovation by offering the latest processors with increased processor frequency and improved security. Based on the Intel Xeon Processor E5-2600 v4 and v3 Product Family, Cisco UCS B-Series Blade Servers offer improved price-to-performance, making Cisco UCS servers one of the best values in the industry.

Specifications

Table 2 provides specifications for the Cisco UCS B200 M4.

Table 2. Product Specifications

Item	Specification
Processors	<ul style="list-style-type: none"> 2 Intel Xeon Processor E5-2600 v4 and v3 Product Family CPUs For a complete list of processor options, please refer to the corresponding spec sheet.
Processor cores	<ul style="list-style-type: none"> 4, 6, 8, 10, 12, 14, 16, 18, 20, and 22 cores, varying by processor model For a complete list of processor options, please refer to the corresponding spec sheet.
Memory	<ul style="list-style-type: none"> 24 DIMM slots Maximum of 1.5 TB with 64 GB DIMMs For a complete list of memory options, please refer to the corresponding spec sheet
Mezzanine adapter slots	<ul style="list-style-type: none"> 2 Advanced ECC
Disk drives	<ul style="list-style-type: none"> Up to 2 optional, hot-plug, front-access SAS, SATA, and PCIe NVMe HDDs or SSDs.
Disk drive options	<ul style="list-style-type: none"> For a complete list of disk options, please refer to the corresponding spec sheet.
Maximum internal storage	<ul style="list-style-type: none"> Up to 3.2 TB
Drive controller	<ul style="list-style-type: none"> Optional 12Gb SAS RAID Controller (LSI SAS 3108) <ul style="list-style-type: none"> > Optional 12Gb SAS RAID Controller (LSI SAS 3108) with built-in 2GB flash-backed write cache RAID 0 and 1 support
Flash memory	<ul style="list-style-type: none"> 2 slots for 32 or 64-GB SD flash memory cards
Management	<ul style="list-style-type: none"> Managed from the Cisco UCS 6300, 6200 and 6100 Series Fabric Interconnects by Cisco UCS Manager.
Temperature: Operating	<ul style="list-style-type: none"> 50 to 95°F (10 to 35°C)
Temperature: Nonoperating	<ul style="list-style-type: none"> -40 to 149°F (-40 to 65°C)
Humidity: Operating	<ul style="list-style-type: none"> 5 to 93% noncondensing
Humidity: Nonoperating	<ul style="list-style-type: none"> 5 to 93% noncondensing
Altitude: Operating	<ul style="list-style-type: none"> 0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1°C per 300m.
Altitude: Nonoperating	<ul style="list-style-type: none"> 40,000 ft (12,000m)

Table 3. Regulatory Standards Compliance

Specification	Description
Regulatory compliance	Products should comply with CE Markings according to directives 2004/108/EC and 2006/108/EC.
Safety	<ul style="list-style-type: none"> • UL 60950-1 No. 21CFR1040 Second Edition • CAN/CSA-C22.2 No. 60950-1 Second Edition • IEC 60950-1 Second Edition • EN 60950-1 Second Edition • IEC 60950-1 Second Edition • AS/NZS 60950-1 • GB4943 2001
EMC: Emissions	<ul style="list-style-type: none"> • 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR22 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC: Immunity	<ul style="list-style-type: none"> • EN55024 • CISPR24 • EN300386 • KN24

Warranty Information

Find warranty information at Cisco.com on the [Product Warranties](#) page.

Cisco Unified Computing Services

Using a unified view of data center resources, Cisco and our industry-leading partners deliver services that accelerate your transition to a unified computing environment. Cisco Unified Computing Services can help you create an agile infrastructure that accelerates time to value, reduces costs and risks, and maintains availability during deployment and migration. After deployment, our services can help you improve performance, availability, and resiliency as your business needs evolve, and mitigate risk further. Quickly deploy your data center resources and optimize ongoing operations to better meet your business needs. For more information about these and other Cisco Data Center Services offerings, visit <http://www.cisco.com/go/unifiedcomputingservices> or <http://www.cisco.com/go/dcservices>.

Cisco Capital

Financing to Help You Achieve Your Objectives

Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)

For More Information

For more information about Cisco UCS B-Series Blade Servers, visit
<http://www.cisco.com/en/US/products/ps10280/index.html> or contact your local Cisco representative.




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San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

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Printed in USA

C78-732434-04 11/16

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Data Sheet

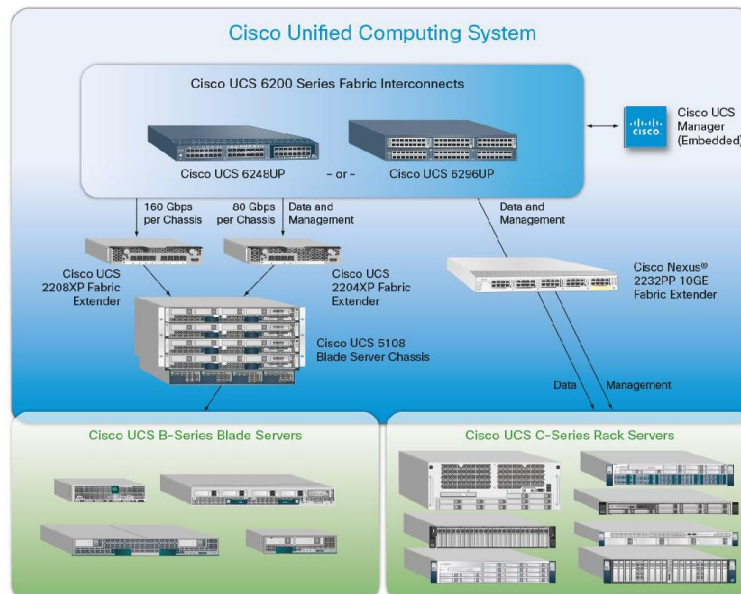
Cisco UCS 5100 Series Blade Server Chassis



Cisco Unified Computing System Overview

The Cisco Unified Computing System™ (Cisco UCS®) is a next-generation data center platform that unites computing, networking, storage access, and virtualization resources into a cohesive system designed to reduce total cost of ownership (TCO) and increase business agility. The system integrates a low-latency, lossless 10 Gigabit Ethernet unified network fabric with enterprise-class, x86-architecture servers. The system is an integrated, scalable, multichassis platform in which all resources participate in a unified management domain (Figure 1).

Figure 1. The Cisco Unified Computing System Is a Highly Available Cohesive Architecture



With the introduction of the Cisco UCS 6324 Fabric Interconnect, the management flexibility and cable reduction of the full-scale Cisco UCS solution is now available in a single-chassis implementation. The Cisco UCS 6324 Fabric Interconnect allows a single Cisco UCS chassis to be managed and configured in the same way as a full-scale Cisco UCS solution, providing the advantages of Cisco UCS to smaller businesses and remote sites.

Product Overview

The Cisco UCS 5100 Series Blade Server Chassis is a crucial building block of the Cisco Unified Computing System, delivering a scalable and flexible blade server chassis for today's and tomorrow's data center while helping reduce TCO.

The Cisco UCS 5108 Blade Server Chassis (Figure 2) is six rack units (6RU) high and can mount in an industry-standard 19-inch rack. A chassis can house up to eight half-width Cisco UCS B-Series Blade Servers and can accommodate both half-width and full-width blade form factors.

Four hot-swappable power supplies are accessible from the front of the chassis, and single-phase AC, -48V DC, and 200 to 380V DC power supplies and chassis are available. These power supplies are up to 94 percent efficient and meet the requirements for the 80 Plus Platinum rating. The power subsystem can be configured to support nonredundant, N+1 redundant, and grid-redundant configurations. The rear of the chassis contains eight hot-swappable fans, four power connectors (one per power supply), and two I/O bays that can support either Cisco UCS 2000 Series Fabric Extenders or the Cisco UCS 6324 Fabric Interconnect. A passive midplane provides up to 80 Gbps of I/O bandwidth per server slot and up to 160 Gbps of I/O bandwidth for two slots. The chassis is capable of supporting future 40 Gigabit Ethernet standards.

Figure 2. Cisco UCS 5108 Blade Server Chassis with Blade Servers Front and Back



Features and Benefits

The Cisco UCS 5108 Blade Server Chassis revolutionizes the use and deployment of blade-based systems. By incorporating unified fabric, integrated, embedded management, and fabric extender technology, Cisco UCS allows the chassis to use fewer physical components, has no need for independent management, and enables greater energy efficiency than traditional blade server chassis. This simplicity eliminates the need for dedicated chassis management and blade switches, reduces cabling, and enables Cisco UCS to scale to 20 chassis without adding complexity. The Cisco UCS 5108 chassis is a critical component in delivering the Cisco UCS benefits of data center simplicity and IT responsiveness.

In addition, the Cisco UCS 5108 chassis has the architectural advantage of not having to power and cool excess switches in each chassis. With a larger power budget per blade server, Cisco can design uncompromised expandability and capabilities in its blade servers, as evidenced by the new Cisco UCS B200 M3 Blade Server, with its leading memory slot and drive capacity, and the Cisco UCS B230 M2 Blade Server, with its industry-leading 32-DIMM memory density in a half-width form factor.

Table 1 summarizes the features and benefits of the Cisco UCS 5108.

Table 1. Features and Benefits

Feature	Benefit
Management by Cisco UCS Manager	<ul style="list-style-type: none"> Reduces TCO by managing servers, networking, and storage from a single interface
Unified fabric	<ul style="list-style-type: none"> Reduces TCO by reducing the number of network interface cards (NICs), host bus adapters (HBAs), switches, and cables that need to be managed, cooled, and powered
Support for one or two Cisco UCS 2100 or 2200 Series Fabric Extenders	<ul style="list-style-type: none"> Eliminates switches from the chassis along with complex configuration and management of those switches, allowing a system to scale without adding complexity and cost Allows use of two fabric extenders for both redundancy and aggregation of bandwidth Enables bandwidth scaling based on application needs; blades can be configured from 1.25 Gbps to 40 Gbps or more
Support for Cisco UCS 6324 Fabric Interconnect	<ul style="list-style-type: none"> Allows the simplicity and consistency of a Cisco UCS managed solution to be economically achieved for single-chassis implementations
Autodiscovery	<ul style="list-style-type: none"> Requires no configuration; like all Cisco UCS components, chassis are automatically recognized and configured by Cisco UCS Manager
High-performance midplane	<ul style="list-style-type: none"> Provides investment protection for new fabric extenders, fabric interconnects, and future blade servers Supports up to 2 x 40 Gigabit Ethernet for every blade server slot when used in high-availability mode Provides 8 blades with 1.2 terabits (Tb) of available Ethernet throughput to meet future I/O requirements Provides reconfigurable chassis to accommodate a variety of current and future blade server form factors and functions
Redundant hot-swappable power supplies and fans	<ul style="list-style-type: none"> Provides high availability in multiple configurations Increases serviceability Provides uninterrupted service during maintenance
Hot-pluggable blade servers and fabric extenders	<ul style="list-style-type: none"> Provides uninterrupted service during maintenance and server deployment
Comprehensive monitoring	<ul style="list-style-type: none"> Provides extensive environmental monitoring on each chassis Allows use of user thresholds to optimize environmental management of the chassis
Efficient front-to-back airflow	<ul style="list-style-type: none"> Helps reduce power consumption and increase component reliability
Tool-free installation	<ul style="list-style-type: none"> Requires no specialized tools for chassis installation Provides mounting rails for easy installation and servicing
Mixed blade configurations	<ul style="list-style-type: none"> Allows up to 8 half-width or 4 full-width blade servers, or any combination thereof, for outstanding flexibility

Specifications

The Cisco UCS 5100 Series is designed for use in the Cisco UCS environment and requires Cisco UCS Manager, UCS 6200 Series Fabric Interconnects, and UCS 2100 or 2200 Series Fabric Extenders and blades servers, or the UCS 6324 Fabric Interconnect and blade servers to function in this integrated environment.

Table 2 summarizes the specifications for the Cisco UCS 5100 Series. Table 3 summarizes regulatory standards compliance.

Table 2. Product Specifications

Item	Specification
Height	10.5 in. (26.7 cm); 6RU
Width	17.5 in. (44.5 cm); fits standard 19-inch square-hole rack
Depth	32 in. (81.2 cm)
Blade server slots	8
I/O slots	2

Item	Specification			
Fabric extenders	<ul style="list-style-type: none">• Cisco UCS 2204XP with 4 x 10 Gigabit Ethernet external ports and 16 x 10 Gigabit Ethernet internal ports• Cisco UCS 2208XP with 8 x 10 Gigabit Ethernet external ports and 32 x 10 Gigabit Ethernet internal ports• All ports Fibre Channel over Ethernet (FCoE) capable			
Fabric interconnect	Cisco UCS 6324 with 4 x 10-Gbps uplinks, 1 x 40-Gbps Enhanced Quad Small Form-Factor Pluggable (QSFP+) expansion port, and 16 x 10-Gbps internal ports <ul style="list-style-type: none">• All ports Fibre Channel over Ethernet (FCoE) capable			
Power supplies		AC power supply	-48V DC power supply	200 to 380V DC power supply
	Input voltage	100 to 120V AC 200 to 240V AC	-40 to -62V DC	200 to 380V DC
	Maximum output power	1300 watts (W) at 100 to 120V input 2500W at 200 to 240V input	2500W	2500W
	Frequency	50 to 60 Hz	-	-
	Efficiency	94%	92%	94%
	Redundancy	Nonredundant, N+1 redundant, and N+N grid redundant		
Fans	8 hot-swappable fans			
Management	<ul style="list-style-type: none">• Cisco UCS 6200 Series Fabric Interconnects provide management for mutichassis configurations• Cisco UCS 6324 Fabric Interconnect provides management for single-chassis implementations			
Backplane	1.2 Tbps of aggregate throughput; supports 10BASE-KR connections for 8 blades			
Temperature: Operating	50 to 95°F (10 to 35°C) (as altitude increases, maximum temperature decreases by 1°C per 300m)			
Temperature: Nonoperating	-40 to 149°F (-40 to 65°C); maximum altitude is 40,000 ft			
Humidity: Operating	5 to 93% noncondensing			
Humidity: Nonoperating	5 to 93% noncondensing			
Altitude: Operating	0 to 10,000 ft (3000m); maximum ambient temperature decreases by 1°C per 300m			
Altitude: Nonoperating	40,000 ft (12,000m)			

Table 3. Regulatory Standards Compliance: Safety and EMC

Specification	Description
Regulatory compliance	Products comply with CE Markings per directives 2004/108/EC and 2006/108/EC
Safety	<ul style="list-style-type: none"> • UL 60950-1 • CAN/CSA-C22.2 No. 60950-1 • EN 60950-1 • IEC 60950-1 • AS/NZS 60950-1 • GB4943
EMC: Emissions	<ul style="list-style-type: none"> • 47CFR Part 15 (CFR 47) Class A (FCC Class A) • AS/NZS CISPR22 Class A • CISPR22 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A

Specification	Description
EMC: Immunity	<ul style="list-style-type: none"> • EN50082-1 • EN61000-6-1 • EN55024 • CISPR24 • EN300386 • KN 61000-4 Series

Warranty Information

Find warranty information at Cisco.com on the [Product Warranties](#) page.

Cisco Unified Computing Services

Using a unified view of data center resources, Cisco and our industry-leading partners deliver services that accelerate your transition to a unified computing environment. Cisco® Unified Computing Services help you quickly deploy your data center resources and optimize ongoing operations to better meet your business needs. For more information about these and other Cisco Data Center Services, visit <http://www.cisco.com/go/dcservices>.

Why Cisco?

Cisco has significant experience in listening to customer requirements and providing solid technology innovation for the enterprise data center. Cisco delivers standards-based solutions backed by a broad partner ecosystem of industry leaders to provide end-to-end customer solutions. Unified computing elevates the traditional product classification of network, server, storage, operating systems, and applications to a data center-wide vision. Cisco, as one of the largest technology providers in the world, has the resources, expertise, and customer focus to deliver on the unified computing vision.

For More Information

For more information about the Cisco UCS 5100 Series Blade Server Chassis, visit <http://www.cisco.com/en/US/products/ps10279/index.html> or contact your local Cisco representative.




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Printed in USA

C78-526830-03 07/14

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Simplify storage administration and maximize the uptime and efficiency of your Tegile storage arrays with IntelliCare, a comprehensive customer care program driven by cloud analytics and backed by storage experts.

Storage administration can be a time-consuming, manual process. You want to focus on projects that add value to the business, but when an unforeseen storage problem occurs, you can easily get sidetracked. You end up spending too much time poring over disparate data in an attempt to pinpoint and resolve the issue. And when the solution proves elusive, you dread contacting customer support; you know you spend hours on the phone and on email, sending logs and answering a long list of troubleshooting questions.

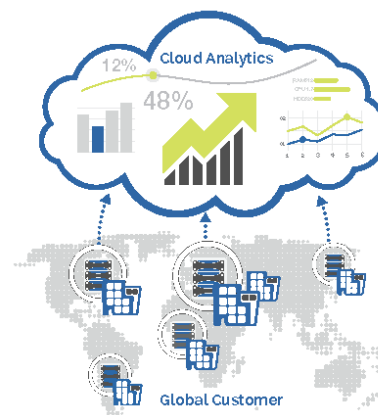
What if you had an easy-to-use tool that would help you monitor the health, performance, and usage of your storage arrays? What if that tool could predict and alert you of imminent component failures? And when you call in to technical support, what if the engineer on the other end of the line already had information about your environment?

That is now possible with Tegile IntelliCare.

IntelliCare is a comprehensive customer care program designed to maximize the uptime and efficiency of your Tegile storage arrays and save you time on storage administration. Driven by cloud-based analytics and backed by a team of storage experts, IntelliCare enables you to quickly and easily monitor the health, performance and usage of all your Tegile storage arrays, predict future requirements, and detect problems before they develop into component and system failures.

Cloud Analytics

IntelliCare collects millions of different data points from every Tegile storage array in deployment*, including capacity usage, configurations, and system health and performance. Servers in the cloud then process and analyze data to detect issues and identify patterns that can help predict trends. Since this is all done in the cloud, there's no need to install any agents or stand up your own infrastructure.



*Data collection on Tegile arrays only occurs if the customer opts in to the service.

IntelliCare Support Program

Monitor All Your Arrays

Monitor all your Tegile arrays holistically via the IntelliCare web portal. Key information includes:

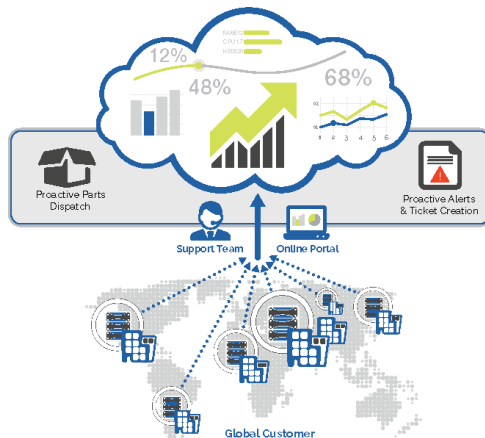
- System information (e.g., firmware version, serial numbers)
- System alerts (e.g., warnings, errors, faults)
- Configuration details (e.g., pools, projects, RAID, etc.)
- Performance metrics (e.g., IOPS, latency, cache hit ratios)
- Data reduction rates (e.g., compression and deduplication ratios)

You can also open and manage support cases online, and have access to technical documentation, "how to" guides, "Tech Talk" webcasts, and knowledge-base articles.

Proactive Alerts

IntelliCare uses trend analysis to anticipate future problems so you can keep your Tegile arrays operating at top condition. Set up alerts for the following events:

- Space alerts based on linear progression analysis of space usage
- Threshold alerts for disks (e.g., media errors, transport errors, SMART stats)
- High Availability (HA) alerts (e.g., improper failover/failback)



Proactive Support

Tegile's team of storage experts use the knowledge gathered by IntelliCare cloud-based analytics to spot issues across the entire customer base. When a problem is detected, they know which arrays are affected and can take proactive measures to quickly resolve the issue. Those measures include notifying customers, fault reporting, opening a support ticket, and/or dispatching replacement parts.



Benefits

The IntelliCare customer care program was designed to give you the intelligence, tools, and support you need to maximize the uptime and keep your Tegile arrays operating at peak performance and efficiency. Its benefits include:

- Lower Operating Expenses: Save time and reduce operating expenses by simplifying storage management.
- Proactively Manage Storage: Anticipate future problems and keep your Tegile arrays operating in top condition.
- Maximize Uptime: Resolve issues before they cause downtime.

For additional information visit www.tegile.com/intellicare



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IntelliFlash™ High-Density Flash Arrays

Models	T10KHD-4-50	T10KHD-4-150	T10KHD-8-100	T10KHD-8-300
Flash as % of Total Usable Capacity	100% Flash			
Controllers	Dual-Active Controller Architecture			
Memory (GB)	464	464	464	464
Storage Capacity				
Flash Memory (TB) †	8	24	15.4	46
High-Density Flash Memory (TB) †	85	238	169	476
Effective All-Flash Capacity (TB) ‡	307	921	614	1843
Physical				
Form Factor (RU)	5U			
Weight (Lbs)	Up to 175			
Power (Watts)	Up to 1250			
Software Services				
Protocols	SAN Protocols (iSCSI, Fibre Channel), NAS Protocols (NFS, CIFS, SMB 3.0)			
Data Services	Inline deduplication and compression, space efficient thin provisioning, snapshots & clones, remote replication, application-aware provisioning			
Management	Web browser, plug-ins for VMware vCenter and Microsoft System Center VM Manager, SSH, IP-KVM, SNMP			
Redundancy	No single point of failure, Active/Active high availability architecture, dual ported storage media			
Network Connectivity				
Lights-out Management Ports	2 x 1 Gbps KVM over IP			
Storage Connectivity	16 & 8 Gbps Fibre Channel, 10GE Copper/Fibre & 1 Gbps Ethernet			
Warranty				
Basic	24x7 support via email and phone, next business day hardware replacement for defective parts and software updates for the first 90 days.			
Optional	Standard, Premier and Lifetime Storage support. Visit www.tegile.com/intellicare for details			

IntelliFlash™ All-Flash Arrays

Models	T4500	T4600	T4700	T4800
Flash as % of Total Usable Capacity	100% Flash			
Controllers	Dual-Active Controller Architecture			
Memory (GB)	240	464	464	464
Storage Capacity				
Flash Memory (TB) †	6	12	24	46
Effective All-Flash Capacity (TB) ‡	22 - 1093	44 - 1116	88 - 1160	170 -1241
Physical				
Form Factor (RU)	2U			
Weight (Lbs)	80			
Power (Watts)	439	495	495	495
Software Services				
Protocols	SAN Protocols (iSCSI, Fibre Channel), NAS Protocols (NFS, CIFS, SMB 3.0)			
Data Services	Inline deduplication and compression, space efficient thin provisioning, snapshots & clones, remote replication, application-aware provisioning			
Management	Web browser, plug-ins for VMware vCenter and Microsoft System Center VM Manager, SSH, IP-KVM, SNMP			
Data Security	Inline 256-bit AES encryption for data at rest			
Redundancy	No single point of failure, Active/Active high availability architecture, dual ported storage media			
Network Connectivity				
Lights-out Management Ports	2 x 1 Gbps KVM over IP			
Storage Connectivity	16 & 8 Gbps Fibre Channel, 10GE Copper/Fibre & 1 Gbps Ethernet			
Warranty				
Basic	24x7 support via email and phone, next business day hardware replacement for defective parts and software updates for the first 90 days.			
Optional	Standard, Premier and Lifetime Storage support. Visit www.tegile.com/intellicare for details			

IntelliFlash™ Hybrid Arrays

Models	T4100	T4200	T4530	T4630	T4730	T4760	T4860
Flash as % of Total Usable Capacity	10% Flash		30% Flash			60% Flash	
Controllers	Dual-Active Controller Architecture						
Memory (GB)	256	464	240	464	464	464	464
Storage Capacity							
Flash Memory (TB) †	1.5	5.8	7.5	17.8	35.6	25.5	51.8
Disk Storage (TB) †	26	52	26	52	104	26	52
Effective All-Flash Capacity (TB) ‡	N/A	N/A	22 - 917	44 - 939	88 - 804	88 - 983	170 - 1065
Effective Hybrid Capacity (TB) ‡	60-780	120 - 840	60 - 660	120 - 720	240 - 720	60 - 660	120 - 720
Physical							
Form Factor (RU)	3U	3U	5U	5U	8U	5U	5U
Weight (Lbs)	105	105	185	185	290	185	185
Power (Watts)	423	441	635	691	887	691	691
Software Services							
Protocols	SAN Protocols (iSCSI, Fibre Channel), NAS Protocols (NFS, CIFS, SMB 3.0)						
Data Services	Inline deduplication and compression, space efficient thin provisioning, snapshots & clones, remote replication, application-aware provisioning						
Management	Web browser, plug-ins for VMware vCenter and Microsoft System Center VM Manager, SSH, IP-KVM, SNMP						
Data Security	Inline 256-bit AES encryption for data at rest						
Redundancy	No single point of failure, Active/Active high availability architecture, dual ported storage media						
Network Connectivity							
Lights-out Management Ports	2 x 1 Gbps KVM over IP						
Storage Connectivity	16 & 8 Gbps Fibre Channel, 10GE Copper/Fibre & 1 Gbps Ethernet						
Warranty							
Basic	24x7 support via email and phone, next business day hardware replacement for defective parts and software updates for the first 90 days.						
Optional	Standard and Premier support. Visit www.tegile.com/intellicare for details.						

IntelliFlash™ Expansion Shelves

Models	HE-25	HE-50	FE-5	FE-10	FE-25	FE-50
Shelf Type	Hybrid Flash		All-Flash			
Storage Capacity						
Flash Memory (TB) †	1.5	5.8	6	12	24	46
Disk Storage (TB) †	26	52	N/A	N/A	N/A	N/A
Physical						
Form Factor (RU)	3U		2U			
Weight (Lbs)	105		80			
Power (Watts)	196		218			

‡ Values indicated are RAW capacity. All storage capacities are measured in Gigabytes (GB) or Terabytes (TB) using base 10 math.

† Effective capacity assumes parity after data protection, metadata overhead, and includes the benefit of data reduction with inline deduplication and compression. Data Reduction is calculated at 5:1-1:1. Where a range is present, the values are Min-Max. All storage capacities are measured in Gigabytes (GB) or Terabytes (TB) using base 10 math.

