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Data Center 2.0 RFP

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WV Purchasing Division

Technical Proposal

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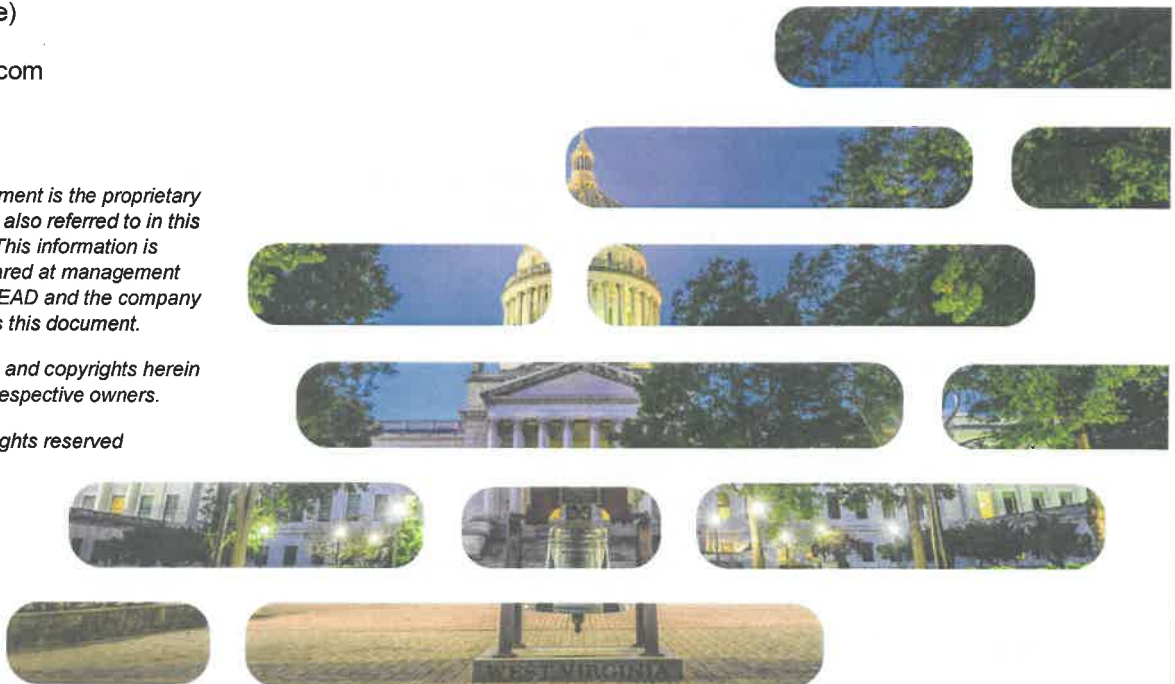


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1. Executive Summary

The West Virginia Office of Technology, under the West Virginia Department of Administration, and its Chief Technology Officer (CTO), sets goals to develop an organized approach to information resource management for the State, while providing technical assistance to State entities in the design and management of information systems.

The State of West Virginia's strategic technology goals (digital government, technology optimization & value, enterprise services, and cybersecurity) interrelate to the strategic initiative known as Data Center 2.0. The Data Center 2.0 initiative strives to accomplish the following:

- Establish a centralized on-premise infrastructure contract enabling the WVOT to support a myriad of applications in a multitenant environment.
- Leverage a co-location model to ensure the cybersecurity, privacy, redundancy, and resiliency standards of the State data center locations adhere to acceptable levels.
- Drive data center consolidation and server virtualization.
- Improve the cybersecurity and privacy posture of the State infrastructure leveraging a risk and compliance-based model.
- Through a centralized, managed enterprise contract, the on-premise infrastructure can be expanded or contracted (technology infrastructure acquisitions, allocation, and provisioning), greatly improving the time to deploy or retract resources, in support of technology projects and initiatives.
- Reduce financial overhead expenses and cyber risk in the maintenance and management of multiple on-premise infrastructure systems with aged and in some cases unsupported infrastructure
- Set the stage for a hybrid data center architecture, ensuring proper design and implementation to support leveraging cloud resources for the greatest return on investment for cloud-appropriate workloads.

The purpose of this RFP is to establish a contract for on-premise data center infrastructure capable of scalability, flexibility, and elasticity. The primary goal of this solicitation is to enable WVOT to provide virtualized x86 compute and storage resources to executive branch agencies who fall under the purview of the West Virginia Office of Technology (WVOT).

Ahead in partnership with Dell EMC, have evaluated the current environments for WVOT, as well as the business requirements in the RFP and are pleased to present a Dell EMC VxBlock 1000 converged infrastructure solution.

This solution will support data center consolidation, infrastructure modernization, and support important and critical applications in the smallest data center footprint. The capability to consolidate into a solution that is engineered, manufactured, managed, supported, and sustained as a single system will lower management costs, improve supportability, and simplify lifecycle management.

The VxBlock 1000 solution was chosen as the platform for the Data Center 2.0 Initiative, because it combines world class storage, enterprise data backup, virtualization, networking, and compute into a single solution.

PowerMax storage will provide the absolute best availability, consolidation, and management for Tier 2 and Tier 1 applications leveraging service level guarantees to ensure that the most critical applications are available and performing as expected.

PowerMax is built from the only architecture that can support mixed workloads including virtual servers, physical hosts, and even Mainframe.

Dell EMC Isilon is the industry's #1 unstructured data platform, which will consume all unstructured data workloads today, and serve as a massively scalable single file structure for all upcoming workloads common in today's environments. Isilon will deliver seamless lifecycle management, scaling, and data availability with comprehensive data services and security for any unstructured workflow.

Unity XT storage is the ideal platform for Tier 0 workloads and will deliver exceptional performance and scale at the lowest possible cost structure, simplest management, scalability, while still providing enterprise data services and security.

Enterprise backup solutions from Dell EMC are the #1 in the world for Data Protection with the best data reduction technology in the market.

The Dell EMC Cyber Recovery Vault provides an isolated and protected part of the data center hosting your most critical data while providing data recovery for increased business resiliency.

Solution provides the power to enable an automated workflow to augment data protection infrastructure with true data isolation and data recovery for increased business resiliency

2. Why AHEAD for the West Virginia Office of Technology

2.1. About AHEAD

AHEAD Inc. is a limited liability corporation established in 2007 and incorporated in Illinois. AHEAD currently employs over 600 professionals and continues to grow rapidly.

AHEAD has hubs in Chicago, IL; Atlanta, GA; and Nashville, TN. Other locations include Birmingham, AL; Norcross, GA; Oak Brook, IL; Indianapolis, IN; Boston, MA; Detroit, MI; Minneapolis, MN; New York, NY; Charlotte, NC; Raleigh, NC; Cincinnati, OH; Columbus, OH; Memphis, TN; Dallas, TX; Madison, WI; and Milwaukee, WI.

AHEAD builds platforms for digital businesses. By stitching together advances in cloud infrastructure, software delivery, automation, and analytics. We help clients deliver on the promise of digital transformation.

2.2. What We Do

We Build Platforms for Digital Business.

A lot of organizations are stuck when it comes to transformation, because they haven't put the right foundation in place to support change. We aim to propel your transformation forward by doing the following things exceptionally well.

We Engineer Enterprise Cloud Infrastructure

We modernize infrastructure – helping architect, migrate, and deploy workloads across public clouds, data centers, and edge locations to meet the digital business needs of our clients. Our approach incorporates a range of technical, operational, and financial capabilities designed to enable our clients to operate with maximum efficiency, security, and reliability.

We Deliver Modern Applications

We deliver better software faster – creating cloud-native applications that drive customer-centric outcomes. Our approach combines culture, tools, and process to continuously deliver software innovation while reducing complexity, and when combined with our Intelligent Operations and Enterprise Cloud capabilities, provides end-to-end solutions for clients.

We Create Intelligent Operations

We help technology organizations run smarter – integrating leading service management, monitoring, and analytics platforms to provide preemptive controls, visibility, and automated remediation. Our approach ultimately delivers material improvements in system performance, user experience, and security across the enterprise cloud.

2.3. How We Do It

AHEAD offers a full complement of services to create and sustain your platform for digital business. From education and strategy development, to complex deployments and ongoing operational management, we've got you covered.

At every stage, we help you:

- Strike a balance between innovation and operational excellence
- Blend technological, operational, and organizational perspectives
- Take a holistic view across your IT infrastructure

Education and Enablement Services

AHEAD offers more than 70 different executive and technical briefings. Your team can use our space to explore new technologies and interact with industry experts, or we can come to your offices. Either way, you stay current on the latest enterprise cloud trends and learn the potential they hold for your business. Our briefing experience typically includes some combination of these experiences:

- Accelerated evaluation process
- Hands-on experience with emerging technologies
- Personalized sandbox environment
- Side-by-side technology comparisons
- Lab demonstrations
- Facilitated discussion of your challenges, requirements, and objectives

Strategy and Roadmap Services

When organizations look to adopt cloud solutions but lack a guiding strategy, delivery suffers and results stall. But with a proper strategy in place, you can drive alignment and achieve success.

Using a workshop-based approach, AHEAD's Strategy and Roadmap offering teaches, unites, and delivers decision makers an actionable strategy and roadmap that incorporates the following:

- Objectives and critical success factors
- Cloud-readiness assessment
- Use case and workload analysis
- Organizational alignment
- Operational models
- Economic analysis
- Billing, including chargeback or showback
- Technology alternatives

- Reference architectures
- Security, governance, and compliance
- Application profiling and rationalization
- Service and business process management

Design and Plan Services

Successful cloud service design is more complex than choosing between technology providers and product features. Architecting the services, you want to deliver with an understanding of the corresponding impact is critical.

AHEAD's Design and Plan offering leverages a collaborative, workshop-based approach to rapidly develop the business, technology, and operational processes required to deliver enterprise cloud services. This includes making key decisions around:

- Application and infrastructure architectures
- Cloud management platform
- Lifecycle management
- DevOps approach
- Blueprints and workflows
- Automation, orchestration, and configuration management
- Service catalog
- Capacity and performance management
- Investment analysis
- Data protection and disaster recovery
- Deployment planning
- Application migration planning

Deployment and Management Services

Whether you are looking to extend or get out of your data center, moving to the cloud will have a significant impact on your business. As with any IT initiative, follow-through and management beyond the initial deployment will help you ensure the success of your cloud platforms.

AHEAD's Deploy and Manage offerings accelerate your adoption of the cloud by leveraging our cloud reference architectures, pre-built IP, best practices, and the deep experience of our experts. We can help you with:

- Service management integration
- Cloud management platform deployment
- Infrastructure deployment
- Configuration management
- Blueprint and workflow development
- Automation and orchestration
- Continuous integration and delivery
- Application migration factory
- Third-party integrations
- Monitoring and log management
- "Day 2" operations
- Ongoing management and optimization
- Training
- Documentation

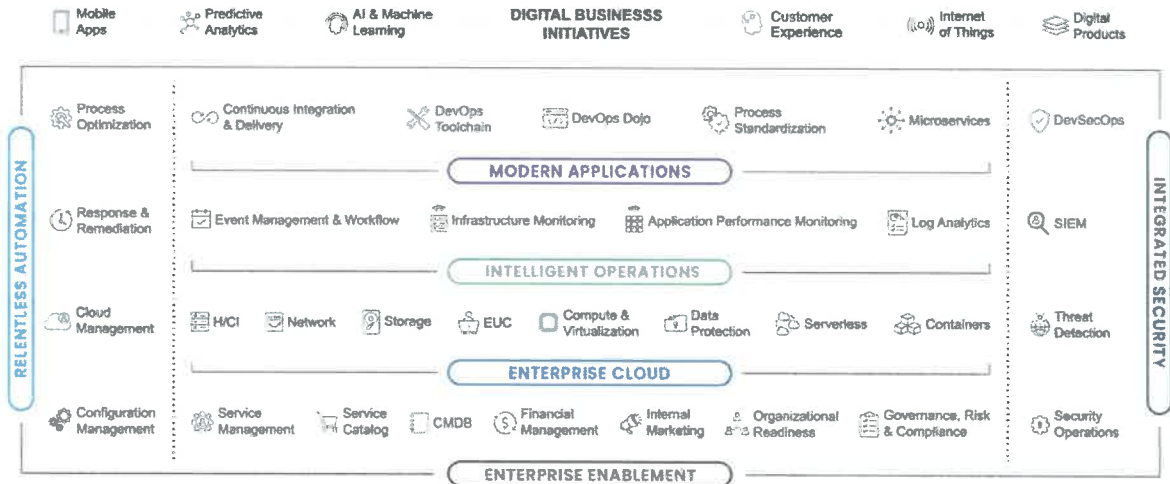
2.4. How We Think

Digital business involves much more than pilots in mobility, artificial intelligence, or IoT. It involves fundamental changes in culture, communications, performance measurement, and how work gets done. Without a foundation in place to enable all of that change, your digital efforts will stall.

AHEAD Digital Delivery Platform

We created the digital delivery platform to propel your transformation forward. It represents the components required for transformation to take hold in your business and includes a mix of technologies and practices. Consider it a reference architecture to make your own.

AHEAD Digital Delivery Platform[®]



The Five Digital Imperatives

A platform for digital business is comprised of five pillars – we call them imperatives because they’re “must have” not “nice to have.”

Relentless Automation

If you can’t automate it, ask yourself why? Always automate where it makes sense for the business, which in most cases are those hi-frequency, mundane tasks that pull resources away from more impactful work.

Intelligent Operations

Digital requires a whole new level of insights and controls. AIOps may be the ultimate end goal, but there’s a lot of progress to be made today in stitching together monitoring with log analytics, connected to event management and workflow.

Modern Applications

A digital business demands better software, faster – but now done at enterprise scale. And where ‘better’ includes more secure software as well.

Integrated Security

Security should be included in every conversation and project – not as roadblocks, but as guardrails that safely allow the business to move faster.

Enterprise Cloud

The IT industry is filled with competing terms – public cloud, private cloud, multi cloud, hybrid cloud, and on. But in reality, there's only your cloud – your enterprise cloud. And for the foreseeable future, that enterprise cloud must be a mixture of on-premises and off-premises tailored to your business.

2.5. Workshops, Briefings, and Lab Access

Our clients want to explore the art of the possible, but they lack the time required to stay current on the latest digital infrastructure technologies and trends. That's why AHEAD has invested so heavily in our briefings center and lab facilities.

Each year we host more than 300 clients to our offices for educational briefings, visioning workshops, and access to our state-of-the-art labs, to explore the possible across all facets of the digital delivery platform, from cloud strategy, to enterprise monitoring and analytics, to security operations, and the latest in data center modernization.

Visioning Workshops

These accelerated assessment and roadmap development sessions are facilitated by AHEAD principal consultants and tailored completely to your requirements. Using AHEAD frameworks as guides, we create a vision realization plan which includes a baseline assessment, high level roadmap, risk mitigation strategies, and critical success factors.

Briefings

Briefings come in two forms: Executive Briefings and Technical Briefings.

In executive briefings, we take an emerging trend and explore how its latest developments stand to affect your company, and more importantly, how you should respond. Our facilitators are experienced practitioners, not academics. They guide the discussion, outline different solution options; and share best practices.

In technical briefings, we provide a deeper examination into one of the many digital technologies that we design and implement with clients, including some of the most cutting-edge technologies just hitting the market. Our engineers review and refine your technology roadmaps and evaluate different technology choices in light of your company's objectives.

Lab Access

Our labs serve as home to the latest digital technologies, so that you can explore their capabilities alongside our certified engineers and architects. Our labs are located in Chicago (at both our HQ and at Equinix), Nashville, and Atlanta. Lab access is designed to meet the following needs:

- New Product Demonstrations, where you get to see certain technologies in action.
- Personal Sandboxes, for deeper exploration and hands-on access for your team.
- Configurations and Upgrades, where we test either processes with you in a safe environment.
- Proof of Concepts, where we actually mimic your workloads.

2.6. Partners, Awards, and Recognition

Selective Partner Program

AHEAD sells, implements, and supports the offerings of more than sixty providers of digital platform technologies, across datacenter infrastructure, public cloud, automation, operations, security, and DevOps.

Strategic Partnerships

- AWS
- Azure
- Cisco
- Dell EMC
- ServiceNow
- VMware

Core Partnerships

- AppDynamics
- Arista
- BigPanda
- Bluemedora
- Box
- Carbon Black
- Chef
- Citrix
- CloudBees
- Cloud Checkr
- Cohesity
- Commvault
- Ctera
- Cybereason
- Datadog
- Docker
- Dome9
- DUO
- Equinix
- Expanse
- F5
- GitHub
- HashiCorp
- Hitachi
- Imperva
- Infoblox
- Liquidware
- Nasuni
- NetApp
- Nutanix
- Nvidia
- Okta
- Paloalto Networks
- Proofpoint
- Puppet
- Pure Storage
- Redhat
- Riverbed
- Rubrik
- Splunk
- Sumologic
- Symantec
- Turbonomic
- Varonis
- Vast
- Veeam
- Veritas
- Zerto

Recent Awards and Recognition

2019 Dell Technologies Global Titanium Partner President's Circle Award

Recognized for outstanding achievements based on financial performance over the course of the fiscal year, including revenue growth, storage and services revenue.

2019 Dell Technologies Go Big – Win Big Partner of the Year (Data Center)

Recognized for overall growth of services, storage, new business and marketing excellence.

2018 Puppet Partner Solution of the Year

Recognized for contributions made to drive customer success with automation.

2018 Dell EMC Extraordinary Partner of the Year

Recognized as a top North American partner at Dell Technologies World

2017 Puppet Partner MVP, Americas

Recognized for exemplary performance in innovation/implementation and the contributions made in helping customers accelerate their journey to pervasive automation.

2016 Puppet Platinum Partner of the Year

Recognized for attaining Service Delivery Partnership status, Gold Partner Solution status, and have made automation (via Puppet Enterprise) a core component of their go-to-market strategies for delivering world class solutions.

2016 Puppet Momentum Partner of the Year

Recognized for investing in building a long-term, sustainable offering around Puppet Enterprise through multiple levels of the organization

2015 EMC US Partner of the Year

Recognized for exceeding growth expectations and demonstrating a commitment to excellence through innovation and thought leadership to support joint business goals.

2015 EMC Americas Converged Infrastructure Partner of the Year

Recognized for providing customers with the most modernized and comprehensive data center management solutions, comprised of blocks, racks, appliances, and solutions.

2015 VMware Americas Solution Provider Partner of the Year

Awarded for delivering innovative Virtualization and Cloud technologies.

2015 Cisco Architectural Excellence – Data Center Partner of the Year

Recognized for innovation in creating and delivering data center solutions.

2015 VCE Global Partner of the Year

Acknowledged for excellence in driving IT transformation with VCE converged infrastructure.

2.7. Our Mission

To Learn, Grow, and Achieve

Most companies write a mission statement to explain their reason for being.

We put a different twist on a mission statement. To us, it's why we love what we do. We love learning together, growing together, and achieving results together. This means professionally and personally, and doing so together with our peers, our partners, and our customers.

We believe in the concept so much that we made it our tagline.

2.8. Our Commitment to Clients

To Be Easy To Do Business With

Our team members are empowered to make decisions, and don't have to navigate layers of red tape in order to help clients succeed. We'll continue to grow, but we won't act like a big company.

To Provide the Top Problem Solvers

Our engineers are experienced practitioners, providing the frameworks and IP that accelerate timelines and help realize successful outcomes. And if we align with a technology provider, we'll be in their top tier of partners.

To Deliver Memorable Experiences

Expertise may set us apart, but passion puts us ahead. We aim to deliver value beyond what's specified in the contract, and to always bring energy and creativity to the table. It never hurts to have fun along the way.

Project Goals and Mandatory Requirements:

3. Architecture and Design

Vendor's solution architecture should be designed to accommodate future growth without requiring a major redesign during the contract.

AHEAD is recommending an On-Premise, Converged Infrastructure solution that provides WVOT a robust architecture that is both scalable and futureproof.

This solution provides WVOT with the resources they need for today while accommodating the future growth of tomorrow.



4. Physical Data Center Locations



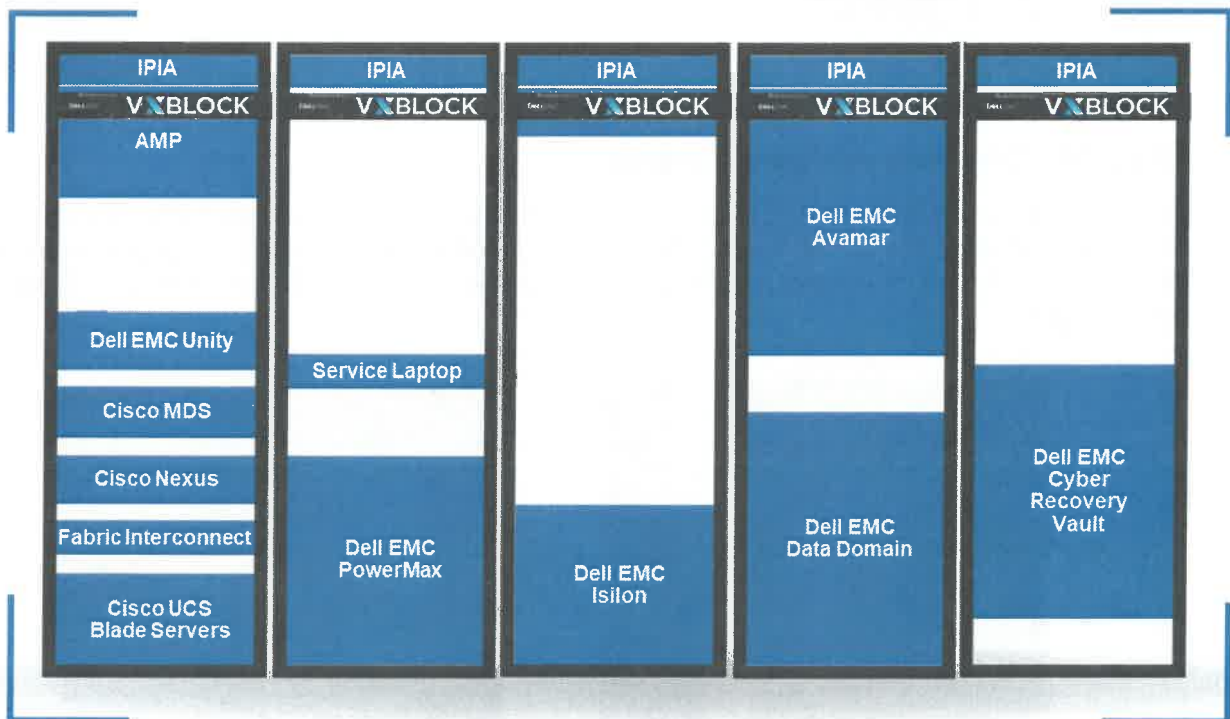
AHEAD's initial deployment is intended to be West Virginia Regional Technology Park, 2020 Union Carbide Drive, Building 6000, South Charleston, Kanawha County, West Virginia, USA while taking

into consideration that a secondary site may be leveraged by the State to implement an offsite data backup and/or disaster recovery capability for each of the associated tiers.

5. Data Center Footprint

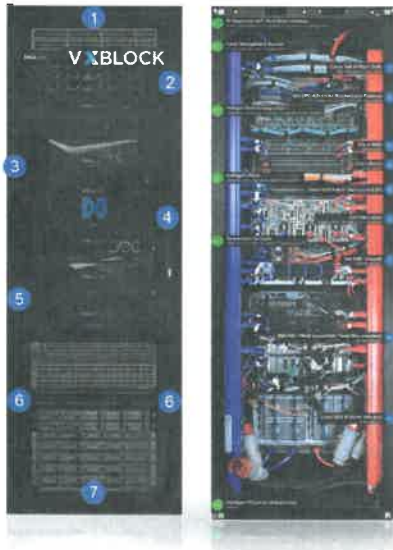
AHEAD is proposing the next-generation Dell EMC VxBlock System 1000. The new system is a pre-integrated, turnkey solution that can reduce management cost and data center footprint reduction by as much as 60% (fewer cabinets, LAN and SAN switches, power supplies, and system management hardware and software).

For this implementation AHEAD is proposing a solution with five cabinets. Cabinet 1 will include the networking and compute for all three tiers, and it will also house the performance storage for Tier 0. Cabinet two will house the performance storage for Tier 1 and Tier 2. Cabinet 3 will include the volume storage for all three tiers. The Enterprise Data Backup solution will be in Cabinet 4 and a Cyber Recovery Vault will be contained separately within Cabinet 5.

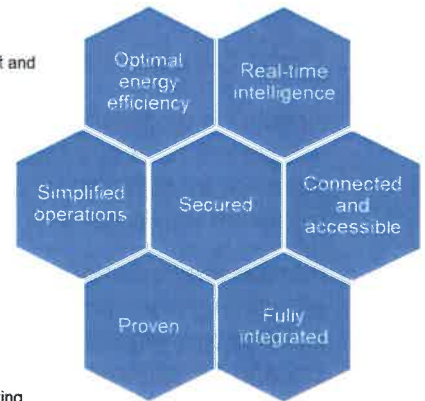


6. Rack Specifications

AHEAD's proposed solution includes Intelligent Physical Infrastructure Appliance which is an Intelligent cabinet for ongoing optimization. The customized cabinet displays the VxBlock logo, provides a customized cable management system, and includes casters.



1. **IPIA* with SmartZone gateway**
SNMP-based gateway for simplified power and sensor management
2. **Door sensors**
Door contact sensors (microswitch) are used to detect and provide real-time door access and control status
3. **Temperature sensors**
Detect environmental information in and around rack for real-time monitoring and management
4. **Electronic swing handle**
Provides intelligent electronic locking and monitoring for advanced security
5. **Cable management system**
Simple, organized cable management
6. **Intelligent PDUs**
Redundant PDUs with smart power management
7. **VxBlock Central integration**
Utilize VxBlock Central software for monitoring, reporting, tracking, and access controls



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7. Physical Cabinets Access Control

The cabinets come with locking front and back cabinet doors. Keys are shipped attached with cable ties to the front door and can be used both the front and back doors. The cabinet doors are equipped with microswitch contact sensors that are used to detect and provide real-time door access and control status.



HID Front Door Handle



HID Rear Door Handle

AHEAD

Cabinets are shipped with two side panels. The cabinets are designed to be built contiguously and bolted together. Because of this, there is no need for side panels between the cabinets.

Note: *AHEAD and Dell EMC do not encourage customers to put space between cabinets, because this requires an extended lead time on the order. The cross-cabinet connections would not reach, and custom cables would need to be ordered.*

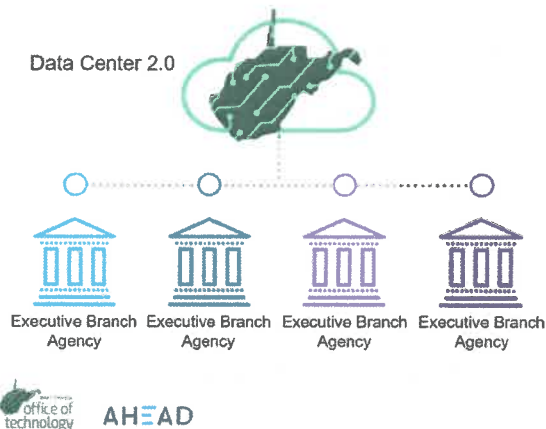
8. Infrastructure Ownership

To help the State achieve their goals and objectives around cost optimization and modernization in technology management, AHEAD is positioning a solution where WVOT will own the on-premise infrastructure provided. This will allow the State to modernize their environment while delivering the best value.

9. On-Premise Infrastructure Proposal

WVOT's Background and Objectives

The West Virginia Office of Technology is seeking on-premise data center infrastructure that is capable of scalability, flexibility, and elasticity that is unified, secure, cost-effective and state sanctioned solution for agencies under their purview. As a single point of contact to provision and manage IT services, WVOT believes the State will benefit leveraging economies of scale, commoditizing IT infrastructure, and a pay per-use model.



State's Objectives

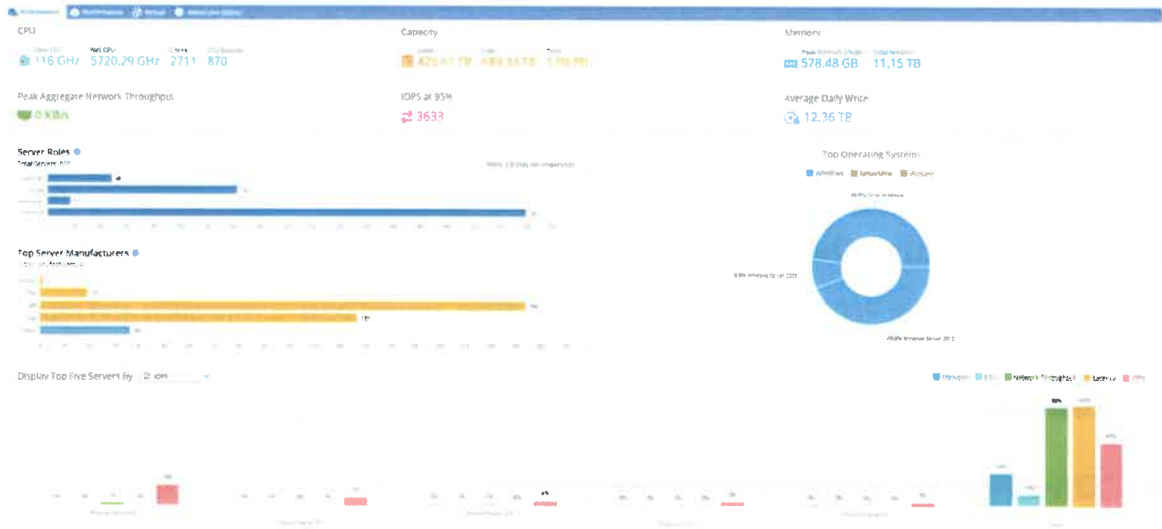
- Support a myriad of apps in a multitenant environment
- Ensure cybersecurity, privacy, redundancy, and resiliency standards
- Drive consolidation and virtualization
- Improve the cybersecurity and privacy posture of the State infrastructure
- Improve time to deploy or retract resources
- Reduce financial overhead expense and cyber risk
- Set the stage for a hybrid data center architecture

The State of West Virginia's strategic technology goals of digital government, technology optimization & value, enterprise services, and cyber security interrelate with the Data Center 2.0 initiative.

AHEAD's proposal addresses all these points and more for the State.

9.1. Data Center Consolidation

VxBlock 1000 systems offer significant opportunities to consolidate workloads and infrastructure. By moving to a converged infrastructure solution, we will greatly reduce the number of cabinets, networking, silos of resources, etc. By also taking this as an opportunity to aggressively begin virtualizing the physical workloads we can achieve the most consolidation.



9.2. Cost Efficiencies and Optimization

The VxBlock 1000 system is a cost-effective and efficient business platform that will provide improved performance, agility, and reliability for the State.

This solution will help WVOT achieve these improvements by:

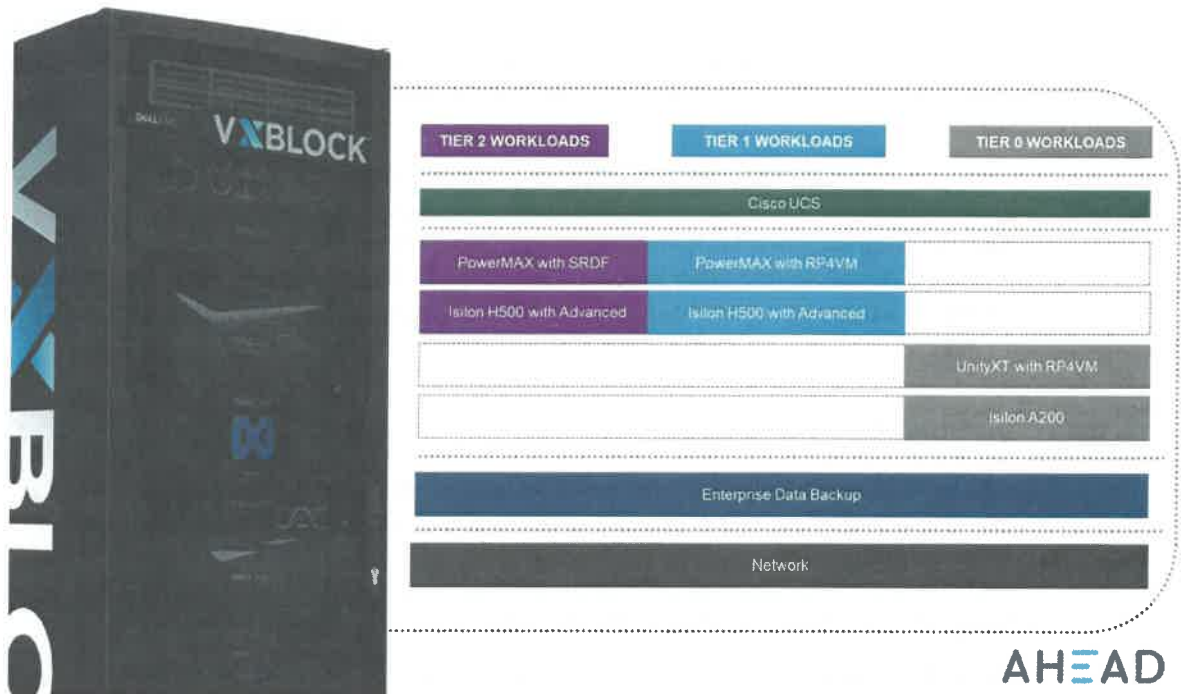
- *Increasing IT performance and agility to address more requests from Executive Branch Agencies*
- *Reducing the impact of unplanned outages on business operations*
- *Requiring less staff time to deploy, manage, and support, thereby freeing up time for innovation and other activities*
- *Costing less than other IT platforms considered*

9.3. Agility and Flexibility

Enabling agility and flexibility in data center resources

The VxBlock Systems integrate compute, network, storage, virtualization, and management resources into a single engineered, factory-assembled, and pretested system that eliminates slow, complex, and costly processes associated with traditional infrastructure approaches, while flash storage and pooled compute and storage resources ensure sufficient capacity to meet business demand. These attributes coalesce to ensure a modern, high performing, reliable, and agile IT platform that can run a full spectrum of business applications and services.

9.4. Technical Specifications



To meet the objectives of the tiered pricing model proposed by the State, AHEAD has put together the following:

- **Tier 0 – Limited Performance Tier**
 - To host non-critical / deferrable applications with reduced performance requirements AHEAD is recommending leveraging Dell EMC UnityXT for performance storage and Isilon A200 Scale-out NAS for volume storage.
 - This combination of performance and volume storage **exceeds** the minimum requirements for this tier
- **Tier 1 – Balanced Performance Tier**
 - To host deferrable and important applications with standard performance capabilities requirements AHEAD is recommending leveraging Dell EMC PowerMAX 8000 with Service Levels and RP4VM for performance storage and Isilon H500 Scale-out NAS for volume storage
 - This combination of performance and volume storage **exceeds** the minimum requirements for this tier
- **Tier 2 – High Performance Tier**
 - To host both important and critical applications with high performance capabilities requirements AHEAD is recommending leveraging Dell EMC PowerMAX 8000 with Service Levels and SRDF for performance storage and Isilon H500 Scale-out NAS for volume storage
 - This combination of performance and volume storage **exceeds** the minimum requirements for this tier

9.5. Performance Storage Design

PowerMax 8000 is the world's fastest data storage array and the flagship of the all-flash PowerMax family. This enterprise array is built with end-to-end NVMe to offer the highest levels of performance for the most demanding mission-critical workloads in the modern data center.

Unity XT All Flash Storage is NVMe-ready and implements a dual active architecture that is designed to include linear multicore scaling, inline data reduction with zero detect for block and file, zero impact drive firmware-based garbage collection, write coalescing minimizing IO, and intelligent wear leveling capabilities, high density SSD's including 15.3TB 3D NAND TLC drives to deliver consistent performance with low response with simplicity in mind.

Answer

9.6. Volume Storage Design

Isilon H500 supports a wide range of enterprise file workloads and provides high throughput for demanding applications and easy scalability to handle unstructured data growth. With an efficient hybrid storage design that combines four Isilon nodes in a single 4U chassis and delivers over 80% storage utilization, the massive efficiency of the Dell EMC Isilon H500 helps lower your storage and related data center costs.

Isilon A200 scale-out NAS provides near-primary data access and lowers the cost to storage aging data assets. With the proven scale-out architecture of Isilon, you can keep pace with growing archive needs. Powered by the OneFS operating system and its single volume design keeps your solution simple to manage no matter how large your data environment becomes.

9.7. Storage Offerings Design

PowerMAX 8000 meets enterprise IT requirements with six nines of high availability and massive scalability. The built-in machine learning engine uses predictive analytics and pattern recognition to maximize performance with no management overhead. An intuitive management interface allows IT managers to maximize human productivity by dramatically reducing the time required to provision, manage, and monitor storage assets. SRDF provides the gold standard in disaster recovery, offering unmatched flexibility and massive scalability to deliver remote replication over extended distances or across multiple sites. PowerMax also offers no single points of hardware failure and hot swappable components to extend availability. It also includes inline, global data dedupe and compression and data-at-rest encryption.

Unity XT All Flash Storage starts in a sleek 2U form factor with a modern architecture designed for performance and scale. Higher system efficiency is achieved with All-inclusive software including advanced data reduction ratios delivering more effective usable capacity lowering overall TCO. Higher density in the lowest form factor means reduced floor space and simplified management means reduced time not delivering value back to the business.

Isilon cluster components are orchestrated by OneFS to work in concert to create a unified pool of highly efficient storage – with a storage utilization rate mentioned earlier up to over 80%. Leveraging data deduplication, you can further reduce your data storage requirements by up to 35% in environments with redundant data across multiple sources. The unmatched efficiency of the storage systems means that less physical storage and space is required to house the same amount of data – reducing both initial capital outlay and ongoing costs. The OneFS AutoBalance function allows you to quickly and easily add nodes without downtime,

manual data migration, or application logic reconfiguration, saving precious IT resources. Because the storage is so easy to manage, it requires fewer IT resources for storage administration than traditional storage systems, which further reduces overall operating costs.

10. Enterprise Data Backup

The VxBlock 1000 provides business agility, data center efficiency, and operational simplicity in one fully integrated converged infrastructure including Enterprise Data Backup technologies from Dell EMC. AHEAD recommends DPS Suite, Dell EMC, Avamar and Data Domain to be included for the State's enterprise data backup solution along with CR Vault to meet additional Cyber Recovery requirements.

10.1. Enterprise Data Backup Capability

Dell EMC Data Protection for Converged Infrastructure simplifies backup, recovery, and failover of your VxBlock System 1000. Dell EMC offers the most advanced data deduplication, replication, and data protection technologies for achieving your Recovery Point Objective and Recovery Time Objective requirements.

10.2. Industry Best Practices in Enterprise Data Backup Capabilities

Dell EMC is the market leader by revenue for as long as we've been tracking the market. Dell EMC purpose built backup appliances provide IT organizations with a solution to common problems associated with backup/recovery operations as well as improve service-level delivery for data restore and availability.

10.3. Enhanced Cybersecurity Protection

Cyber Recovery Vault leverages an architecture that not only isolates critical data, but also includes a robust process to support customers in the design and implementation of their overall recovery strategies.

- *The Vault hosts critical data*
- *The Vault is offline from the network (air-gapped and removed from the surface of attack). It is only accessible to users who have proper clearance*
- *The solution includes management tools that "operationalize" a data recovery, starting with the creation and automation of recovery restore points*
- *Restore points can be leveraged not just for recovery, but also for integrity checking and security-related analytics through the creation of sandbox copies. Analysis would take place on data-at-rest and cause no impact to the production environment. The sandbox copies could be the perfect way to perform offline malware/ransomware detection testing, such as looking for indicators of compromise or integrity attacks.*
- *Recovery is everything and this solution allows organizations to bring critical systems and data assets back online fast and securely*

10.4. Compliant Cost-Efficiencies and Optimization in Data Storage Requirements

This solution provides the most efficient and flexible data protection options while taking advantage of cost-effective space saving and storage technologies.

10.5. Transition Timeline

AHEAD and Dell EMC will ensure a successful transition from the existing enterprise data backup to the Vendor's solutions within sixty (60) days of the contract award.

10.6. Transition Plan

Ensuring WVOT is successful in Data Center 2.0 is paramount. It is a privilege to help WVOT realize their goals and providing a seamless transition will be key. This will include plans for education & training, operations playbooks, and proper documentation.

11. Infrastructure Operations Monitoring

AHEAD recommends LogicMonitor which can monitor everything in your IT stack, in one platform, automatically correlating data to provide answers on how to model, avoid issues, and optimize your IT environment.

11.1. Enable Network and System Monitoring

Vendor's proposed solution should provide supported hardware, software, middleware, technical dependencies and/or managed services (where applicable) to enable network and system monitoring that is accessible to both the State and the Vendor

Answer

11.2. Monitoring Capabilities

LogicMonitor helps IT Operations gain visibility into cloud, on-premises, and hybrid infrastructure. From networks to containers, LogicMonitor integrates with 1200+ technologies out-of-the-box all from a single pane of glass.

11.3. Notification and Response

LogicMonitor creates and responds to alerts via email, text, voice, etc. The LogicMonitor collector can act as a script-runner. Meaning that scripts can be written that look at conditions, act on what they see and report back to LogicMonitor after taking one of the actions. For example, you could set it up to restart a Windows service, or you could have Windows run a specified command when it detects an alert.

11.4. System Reporting

LogicMonitor has a robust reporting engine that has many useful functions from capacity planning to SLA calculation, and dashboards that help users visually digest the raw data of the reports.

11.5. Cost Effectiveness

LogicMonitor is an efficient solution for WVOT, because it's agentless. Collecting data via well know protocols (SNMP, WMI, SSH, etc.) to gather infrastructure status periodically. Individual

metrics and frequencies of collection can be controlled to a very fine level, allowing for customization to balance visibility with efficiency concerns.

11.6. Industry Best Practices in Infrastructure Management

LogicMonitor provides industry best practices to help you avoid an alert system failure by setting up alerts properly, tuning thresholds, avoiding alert fatigue and alert storms, and learning from missed alerts

11.7. Critical Capabilities of Infrastructure Management

LogicMonitor is a monitoring solution that helps businesses monitor on-premise, cloud-based and hybrid data centers, as well as physical devices, from a single platform. LogicMonitor automatically discovers devices connected to the network, captures their information and starts monitoring performance.

LogicMonitor offers tools to break down large data chunks into smaller silos for data monitoring and issue resolution. The dashboard allows users to monitor live performance indicators along with a list of system issues and statuses.

LogicMonitor automatically collects performance data from connected servers, networks and workstations. In-house IT teams can receive alerts via text message, email or voicemail when an issue is found. Users can prioritize issues, configure escalation rules for alerts and schedule downtime according to their service standards. LogicMonitor comes with custom graphs and charts to compare multiple devices on the same graph and view system health indicators in real time.

11.8. Flexible Implementation

LogicMonitor Accelerate Silver accelerates your LogicMonitor time-value through a core implementation with your team. This will take your team through a deep look at your requirements and current monitoring solutions through delivery of advanced training, guidance, and deployment assistance. This will allow for a go-live within 3 weeks for monitoring of the initial 250 devices.

12. On-Demand Professional Services Proposal

AHEAD has a strong bench of resources with a variety of experience levels and backgrounds to fulfill the On-Demand Professional Services requirements.

12.1. Statement of Work Enablement

AHEAD has a very strong consulting practice which delivers on SOWs on a regular basis to our enterprise customers.

13. Solution Support Documentation

AHEAD and Dell EMC agree to create planning documents outlining all necessary elements of solution management that should be updated continuously during the lifetime of the contract.


13.1. Similar Implementations

AHEAD has successfully delivered numerous other projects similar to this one and we can provide lots of reference examples. Below are a few:

Speed and Collaboration Across Agencies

Client Success Story

<p>CHALLENGES</p> <p>State Dept. of Transportation couldn't innovate due to slow processes</p> <p>State agencies rely on Dept. of Administration for simple server builds</p> <p>Lacking standards based approach to on-boarding a cloud provider</p> <p>Disagreements over tools for Cloud Native development and DevOps hosting</p>	<p>SOLUTION</p> <ul style="list-style-type: none"> • Create an approach to onboard single cloud provider • Facilitate information sharing between agencies to improve trust • Increase platform automation to speed delivery • Centralize service delivery for common elements of DevOps Pipeline and infrastructure • Create prioritization quadrant to focus on highest value initiatives first 	<p>RESULTS</p> <ul style="list-style-type: none"> • DevOps teams armed with tools and trust for both simplicity and speed
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AHEAD

Application Assessment for AWS

Client Success Story

<p>CHALLENGES</p> <p>A large American holding company for various life insurance companies and investment firms was having difficulty rationalizing and assessing an application portfolio in order to meet their end goal of migrating to AWS.</p> <p>Needed assistance with migrating existing workload to AWS and to perform discovery on their application portfolio to identify dependent systems.</p> <p>Client also wanted to build out an enterprise-ready AWS environment to support the deployment of the pilot workload plus future application deployments.</p>	<p>SOLUTION</p> <ul style="list-style-type: none"> • Application Assessment Service to create a process for rationalizing a portion of their application portfolio for cloud readiness. • AHEAD then developed the process for rationalization with a subset of applications and enabled the client to complete the rationalization for all remaining applications. 	<p>RESULTS</p> <ul style="list-style-type: none"> • Fully defined server-to-application mapping • Detailed measure of application performance • Understanding of how application performance should be measured for migration
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AHEAD

GRC Design on ServiceNow

Client Success Story

CHALLENGES

A large American financial services company that owns and operates banks was using Archer RSA as their primary system of record for Governance, Risk and Compliance.

With the addition of Service-Now GRC, the Corporate Risk team needed to configure a set of controls aligned to SANS 20 Critical Security Controls.

SOLUTION

- Client partnered with AHEAD to design their governance, risk, and compliance and formalize their compliance management process

RESULTS

- Identified and referenced 20 Critical Security Controls as a security compliance framework
- Cataloged 20 high-level controls that provides continual reporting for compliance or non-compliance
- Scheduled manual and automated control indicators to validate that sub-controls are compliant
- Tracked and managed all related non-compliant controls from related issues that are auto-generated
- Produced reporting and dashboard output that can be used to assess compliance for Archer GRC



Migrating to AWS to Facilitate Growth

Client Success Story

CHALLENGES

Since 1998, our client has acquired over 475 brokerages. Due to these acquisitions and integrations, the client experienced complex infrastructure sprawl and needed to consolidate their data centers and increase their overall operational agility.

SOLUTION

- Developed a desired state architecture design
- Mapped application components to AWS services and defined networking requirements
- Deployed the AWS infrastructure and configured the environment
- Provided guidance and assistance while client migrated applications
- Built an image factory for distribution cross multiple AWS accounts and regions

RESULTS

- Migrated over 380 VM's and eliminated over 800 VMs
- Positioned to more quickly expand into new markets and acquire available assets that offer a competitive advantage.



Next Generation Data Center Networking

Client Success Story

CHALLENGES

Large manufacturing company recognized the benefits that Cisco Application Centric Infrastructure (ACI) can bring to a data center environment.

They approached AHEAD to help, and our experts proposed services to not only design and build a new Cisco ACI fabric-based data center network, but to integrate it with the existing data center to develop migration procedures for support staff.

SOLUTION

AHEAD migrated existing data center networks (including converting existing vBlock switches) and connectivity from the legacy data center infrastructure to the new ACI-based fabric.

AHEAD network engineers installed and configured a new, limited-scale Cisco Application Centric Infrastructure (ACI) fabric for use as a sandbox/test environment.

RESULTS

Newest generation of data center with programmable, centrally managed, and flexible data center network



Creating a Platform for Innovation

Client Success Story

CHALLENGES

BGD was looking to expand business and needed a cutting edge IT platform that would help its lawyers provide world class services to its clients.

Their member data was not being easily accessible or actionable, and they lacked analytical talent and scale.

SOLUTION

- A Vblock for production
- A Vblock for backup
- Converged and managed networking, storage, and compute all in one frame
- Increase agility and efficiency
- Ready-to-go and scalable solution

RESULTS

Completely upgrade entire back office systems while being able to support a growing organization with new applications and new services being added daily



Improving Utilization with Converged Infrastructure

Client Success Story

CHALLENGES


- Experiencing a rapid growth
- Spending too much time on old hardware
- Needed an IT environment that could scale with the business.

SOLUTION

- VCE Vblock 540 with XtremIO
- Virtualized 80-90% of their servers
- Converged and managed networking, storage, and compute all in one frame
- Increase agility and efficiency
- Ready-to-go and scalable solution
- Zero or minimal downtime

RESULTS

Positioned IT for several years of expansion and growth, giving the business an edge in the market

 **AHEAD**

Modernizing Aging Infrastructure

Client Success Story

CHALLENGES

Customer had an immediate need to upgrade its aging and costly infrastructure because their uptime was being compromised.


Additionally, they had five different types of storage and seven different types of servers. There was no standard for consistency so they had to have different skill sets on the team for every one of those platforms

SOLUTION

- Vblock for converged infrastructure
- Networking, storage, and servers replaced simultaneously
- Removed silos of systems
- Improved response time and uptime

RESULTS

Provided the architectural platform for 10 years to come while reducing maintenance and support costs from 44% to 10% of the budget

 **AHEAD**

13.2. Guide for On-Going Operations Sample

Ahead can provide hundreds of pages of sanitized content, but we cannot treat this content has “a leave behind” that would become a public document out of respect for our other customers and to protect our business. This is part of the unique value that our company provides to our customers that sets us apart from our competitors. We would be happy to share in person.

13.3. Example Solution Transition and Contract Exit Plan

Ahead can provide hundreds of pages of sanitized content, but we cannot treat this content as “a leave behind” that would become a public document out of respect for our other customers and to protect our business. This is part of the unique value that our company provides to our customers that sets us apart from our competitors. We would be happy to share in person.

13.4. Support for Cybersecurity and Privacy Audits

The solutions provided in this proposal generate various reports that can be leveraged to support auditing requirements.

13.5. On-Premise Infrastructure Lifecycle Management Plan Example

Ahead can provide hundreds of pages of sanitized content, but we cannot treat this content as “a leave behind” that would become a public document out of respect for our other customers and to protect our business. This is part of the unique value that our company provides to our customers that sets us apart from our competitors. We would be happy to share in person.

13.6. Communication Timeline

The State desires regularly scheduled meetings and/or calls to discuss the following areas:

- *Architecture and Design*
- *Implementation*
- *Ordering and Billing*
- *Service and Support*
- *Project Management*

AHEAD's and Dell EMC's project management teams hold regular meetings with whatever cadence is appropriate for the project. Once an award has been made a Project Manager will be assigned and that resource will begin coordinating internally and with WVOT to setup a kickoff meeting for the project.

Ahead can provide samples of sanitized examples of maintenance plans, but we cannot treat this content as “a leave behind” that would become a public document out of respect for our other customers and to protect our business. We would be happy to share in person.

13.7. On Site Notification

Upon implementation of a solution, customers receive access to an engaging proactive support portal from Dell EMC where maintenance activities can be initiated and things like code releases and code level recommendations can be accessed (these are also e-mailed). Once a maintenance event is scheduled, there is proactive communication with customer stakeholders to determine the best time and day for the maintenance event to be performed.

In the event of unplanned maintenance, Dell EMC proactively opens a Severity One (most critical) case if a system goes down. This occurs via ESRS, Dell's enterprise secure remote service that enables proactive monitoring of all implemented systems. The contacts listed in

the Dell EMC customer database and service portal are alerted and communicated with as well as the local Dell EMC account team, supporting the customer. Engineers can access remotely to triage a system down event and if any onsite presence it required; an engineer is immediately scheduled.

14. Contract Management

14.1. Contract Management

This proposal includes everything necessary from a business management perspective to deliver centralized ordering, billing, financial auditing, and reporting

14.2. Included Professional Services

All necessary professional services, training, and documentation have been included in this proposal.

14.3. Billing

This proposal includes everything necessary to provide the billing capabilities designed to simplify the procedures of a chargeback model, as well as, provide a holistic view of service.

Ahead can provide hundreds of pages of sanitized content, but we cannot treat this content has "a leave behind" that would become a public document out of respect for our other customers and to protect our business. This is part of the unique value that our company provides to our customers that sets us apart from our competitors. We would be happy to share in person.

14.4. Financial Reporting

This proposal includes developing and providing financial reporting to meet the State's reporting obligations and the State's goals of transparency and technology optimization

14.5. Third Party Terms and Conditions

AHEAD works very closely with Dell EMC and our customers to limit pass-through of third-party terms and conditions. We are very willing to work with WVOT to come to a mutual agreement on third party terms that need to be passed through.

We already work very closely with several of the Executive Branch Agencies in this manner.

15. Mandatory Project Requirements

The following mandatory requirements relate to the goals and objectives and must be met by the Vendor as part of its submitted proposal. Vendor should describe how it will comply with the mandatory requirements and include any areas where its proposed solution exceeds the mandatory requirement. Failure to comply with mandatory requirements will lead to disqualification, but the approach/methodology that the vendor uses to comply, and areas where the mandatory requirements are exceeded, will be included in technical scores where appropriate.

15.1. General Mandatories:

AHEAD agrees to all the following requirements:

- a. The State of West Virginia reserves the right to move, change or add additional Data Center locations
- b. WVOT will not accept penalties for scaling down any tier solution, expansion node, expansion storage or infrastructure monitoring node(s)
- c. The Vendor must agree that the State owns all data gathered under the scope of this contract. The Vendor must produce and/or return the data upon the State's request in an editable format mutually agreeable to both parties. If any component (e.g. disk drive) fails, the Vendor must ensure any data on said component is destroyed in accordance with WVOT policies and certify, either in writing or some other mutually agreeable format, that any data on said component was destroyed
- d. Vendor shall provide the State full access to any and all encryption keys the Vendor may generate in support of this contract
- e. Vendor shall ensure all solution expenses associated with their contract are captured within the pricing sheet

15.2. Cybersecurity Mandatory Requirements

AHEAD agrees to all the following requirements:

- a. Vendor proposed solution must be capable of adherence to federal and state law
- b. Vendor's proposed solution must adhere to the State of West Virginia's Cyber Security & Privacy policies, procedures, and standards; these can be viewed at the following link: <https://technology.wv.gov/security/Pages/policies-issued-by-the-cto.aspx>
- c. Vendor proposed solution must be capable of adherence to all applicable security and privacy standards that are subject to the following:
 - a. Health Insurance Portability and Accountability Act (HIPAA) requirements
 - b. Federal Information Security Management Act (FISMA), National Institute of Standards Technology's Special Publication (NIST SP) 800-53, NIST SP 800-17
 - c. Family Education Rights and Privacy Act (FERPA) requirements
 - d. Criminal Justice Information System (CJIS) requirements
 - e. Payment Card Industry Data Security Standards (PCI-DSS) requirements
 - f. Federal tax Information (FTI) and Internal Revenue Service publication 1075 (IRS 1075) requirements
 - g. Centers for Medicare & Medicaid (CMS) Services Information Security Policy requirements
- d. The Vendor must adhere to personnel security requirements for background checks in accordance with state law. The vendor is liable for all costs associated with ensuring their staff meets all requirements

- e. The Vendor must implement and strictly adhere to physical equipment inventory policy and procedures that are designed to ensure data protection
- f. The Vendor must adhere to industry-standard data destruction measures and provide the state with written attestation of data destruction. This includes failed hardware where State data may reside
- g. All Vendor's must ensure that any equipment or software used is not at manufacturer's specified "end of life" (EOL) or "end of support" (EOS) dates and will be supported by the original manufacturer. Maintenance and Support contracts shall be maintained by the vendor on all equipment and software for the life of this contract. Copies of such contracts should be provided to the State with Vendor's response

15.3. On-Premise Infrastructure Mandatory Requirements

AHEAD agrees to all the following requirements:

Pricing for Vendor's proposed solution must provide supported hardware, software, middleware, technical dependencies and/or managed services (where applicable) to ensure that all the goals/objectives of this RFP are met. The price for each solution, node expansion and storage expansion must be entered on the pricing sheet (Attachment "A")

15.3.1. Virtualization

The on-premise infrastructure solution must be compatible with industry-standard virtualization software. The State currently leverages VMware. The Operating System (OS) and virtualization licensing are outside the scope of the on-premise infrastructure component

15.3.2. Networking

The on-premise infrastructure solution must include all components to enable the internal networking of the on-premise infrastructure. The State will provide boundary networking capability enabling the network connection of the infrastructure to the state's internal network and to the Internet

15.3.3. Active Directory Domain

The on-premise infrastructure solution must be capable of integrating with WVOT's Active Directory (AD) domain

15.3.4. Domain Name Service (DNS)

The on-premise infrastructure solution must be capable of integrating with WVOT's DNS

15.3.5. Base Solution Minimum Specifications

The Base Solution for all tier levels must have the ability to be provisioned by the State with the following minimum specifications:

- 24 vCPU cores at a minimum of 2.6GHz processing speed
- 512 GB RAM

- 500 GB Performance Storage
- 1 TB Volume Storage

The specifications included in our solution exceed these minimum requirements.

15.3.6. Node Expansion Minimum Specifications

The Node Expansion for all tier levels must have the ability, to be provisioned by the State with the following minimum specifications:

- 12 vCPU core expansion
- 256 GB RAM

The specifications included in our solution exceed these minimum requirements.

15.3.7. Storage Expansion Minimum Specifications

The Storage Expansion for all tier levels must have the ability, to be provisioned by the State, with the following minimum specifications:

- 10 TB Performance Storage
- 25 TB Volume Storage

The specifications included in our solution exceed these minimum requirements.

15.4. Enterprise Data Backup Mandatory Requirements

AHEAD agrees to all the following requirements:

Pricing for Vendor's proposed solution must provide supported hardware, software, middleware, technical dependencies and/or managed services (where applicable) to ensure that all the goals/objectives of this RFP are met. The price for the solution must be entered on the pricing sheet (Attachment "A")

15.4.1. Pricing Structure

The pricing structure will account for the following components:

15.4.1.1.1. Data Backup Initial Installation

The initial installation line item is designed to include all aspects to scope, design, architecture, implement, configure, test, train, and operational hand-off the capability to the State

15.4.1.1.2. Data Backup Solution

The data backup solution provides the monthly cost for base level solution. The data backup solution must include:

- Data backup for one-hundred fifty (150) TB
- Data backup capability at two (2), physically separate locations for redundancy

The specifications included in our solution exceed these minimum requirements.

15.4.1.1.3. Data Backup Expansion

The data backup expansion line item is designed to include costs associated with the storage expansion of the solution. The data backup expansion must include:

- *Minimal backup storage expansion of fifty (50) TB*

The specifications included in our solution exceed these minimum requirements.

15.4.2. Physical Infrastructure Location

Any physical infrastructure should be installed at a State-owned or State-leased data center location. Any change of location for the physical infrastructure is a decision held solely by the State

15.5. Infrastructure Operational Monitoring Mandatory Requirements

AHEAD agrees to the following requirement:

Pricing for Vendor's proposed solution must provide supported hardware, software, middleware, technical dependencies and/or managed services (where applicable) to ensure that all the goals/objectives of this RFP are met. The price for each monitored system (or group of monitored systems) must be entered on the pricing sheet (Attachment "A")

15.5.1. Pricing Structure

15.5.1.1.1. Infrastructure Monitoring Initial Installation

The initial installation line item is designed to include all aspects to scope, design, architect, implement, configure, test, train, and operational hand-off the capability to the State

15.5.1.1.2. Infrastructure Monitoring Solution

The solution line item provides the monthly cost for base level solution. The infrastructure monitoring solution must, minimally, include the ability to operationally monitor two-hundred fifty (250) components. A component consists of a physical device or a software instance

15.5.1.1.3. Infrastructure Monitoring Expansion

The expansion line item is designed to include costs associated with component expansion of the solution. The expansion must, minimally, include a component expansion of fifty (50) components

15.6. On-Demand Professional Services Mandatory Requirements

AHEAD agrees to the following requirement:

Pricing for any professional services must be fully "loaded" to capture all direct and overhead expenses, travel, per diem, and any other travel-related expenses. Prices for all positions included in this RFP must be entered on the pricing sheet (Attachment "A")

- *Vendor must agree to an open-end contract method, where prior to each potential engagement of professional services, a Statement of Work will be drafted and mutually agreed upon by both parties. After a SOW is finalized, each engagement will be initiated by the State via Delivery Order that incorporates the SOW. This applies to all professional services positions listed in Specification 4.2.1.4. No statement of work will be permitted to include work unrelated to Data Center 2.0.*

15.7. Contract Management Mandatory Requirements

AHEAD agrees to the following requirement:

1. *The successful Vendor must assign an experienced and skilled Project Manager who will provide a high-level project management plan including key components such as a project charter, issue tracking, statements of work (SOW), work breakdown structures (WBS), implementation schedules, etc. in accordance with the Project Management Body of Knowledge (PMBOK) or other industry standard project management methodology stated in West Virginia State Code (5A-6-4b). The link can be found at: <http://www.legis.state.wv.us/WVCODE/Code.cfm?chap=05A&art=6#06>. The project management plan must be submitted to and approved by the State prior to implementation.*
2. *The successful Vendor's Project Manager must track and report (via written status reports) the following: schedule, scope, budget, issues, risks, specified performance indicators, and other metrics determined appropriate throughout the project and each site implementation.*
3. *Vendor billing errors must be credited back to the State from the effective date of the error. The State reserves the right to withhold payment until credit is received.*
4. For auditing, billing, and support purposes, the State requires any service with an associated rate to be identified on its monthly bill. As such, the State must be provided, at a minimum, the following:
 - a. Billing Period
 - b. Billed Entity Name
 - c. Customer Name/Account (if different from billed entity)
 - d. Itemized Cost for Individual Billing Components
 - e. Total Cost

The cost identified in the bill must match the contract rates for the specified services.

5. The Vendor must invoice on a consistent monthly billing cycle across all services. Increases or decreases for a partial month must be prorated based on the data of the service increase or decrease.
6. All tier Base Solution(s), Expansion Node(s), Expansion Storage, Enterprise Data Backup, and Infrastructure Operations Monitoring pricing must include the cost of delivery, physical installation, and initial physical configuration by the Vendor. The Vendor's unit price should be inclusive of all hardware maintenance and support costs.
7. Vendor must input pricing for each tier Base Solution(s), Expansion Node(s), Expansion Storage, Enterprise Data Backup, and Infrastructure Operations Monitoring in the pricing

page. These costs will be a per month charge and include all costs for providing that service as indicated elsewhere in this RFP. Vendor must also input a per hour charge for those professional services positions listed on the pricing page.

8. Vendor must input percent discount to the corresponding Asset in Service year periods on the pricing page. (Cells G4 through M4). Enter a whole number (e.g. 4) or fraction of a number (e.g. 7.5) corresponding to the percentage discount. The spreadsheet will automatically treat the number as a percentage.
9. The Vendor's price in Asset in Service will be used by the State to calculate the cost of all orders. Orders placed in billing status in Year 1 will be billed at the subsequent Year's monthly unit price beginning in subsequent year. For example, a tier 0 solution ordered in month 1 of Year 1, will be invoiced at the Year 2 unit price beginning in Month 1 of Year 2.
10. The State expects full, complete, and timely cooperation in disentangling the relationship if the Agreement expires or terminates for any reason. In the event of expiration or termination, the State expects that the Vendor shall, among other things: return all State data and documentation to the State, including but not limited to configuration information and allow the State or the replacement provider(s) continued view (read-only) access to all billing, previously placed orders, and previously opened trouble ticket system, and document processes that have been employed in servicing the State and provide the state a copy, in accordance with methods and procedures to be agreed upon and established in the Agreement. **Please acknowledge your acceptance of this.**

AHEAD acknowledges and accepts this

The State expects full, complete, and timely cooperation in disentangling the relationship if the Agreement expires or terminates for any reason. In the event of expiration or termination, the State expects that the Vendor shall, among other things: return all State data and documentation to the State, including but not limited to configuration information and allow the State or the replacement provider(s) continued view (read-only) access to all billing, previously placed orders, and previously opened trouble ticket system, and document processes that have been employed in servicing the State and provide the state a copy, in accordance with methods and procedures to be agreed upon and established in the Agreement.

16. Qualifications and Experience

Please see Section 2 above for our information and documentation regarding our qualifications and experience.

16.1. Qualification and Experience Information

Please see Section 2 for details about our qualifications and experience as well as some examples in Section 13.1 above.

16.1.1. Previous On-Premise Infrastructure Experience

Please see Section 2 and examples listed in Section 13.1

16.1.2. Cybersecurity Support Experience and Process

AHEAD has a Cyber Security Practice and has delivered a number of consulting services and provided a number of Cyber Security solutions to our Enterprise customers

16.1.3. Customer Support Experience and Capabilities

AHEAD and Dell EMC support our customers to the best of our abilities.

16.1.4. Sub-Contractor Assurance


AHEAD only leverages sub-contractors when internal resource options have been exhausted and our clients allow the use of sub-contractors and only after they pass any required background / screen prior ever starting an engagement.

16.1.5. On-Premise Infrastructure Services References and/or Examples

Please see examples listed in Section 13.1.

16.1.6. Staff Experience and Responsibilities

AHEAD and Dell EMC have dedicated account teams to fully support the State and WVOT. Here are some examples from AHEAD:



AHEAD PROFILE

GREG STAM

MANAGING PRINCIPAL – ENGAGEMENT MANAGER

<https://www.linkedin.com/in/gregstam/>

Areas of Expertise

- IT Strategy
- IT Transformation
- Enterprise System Development & Implementation
- Portfolio and Program Leadership
- Operational Excellence

About Greg Stam



At AHEAD, Greg leads our Consulting Advisory Services specializing in helping clients with their Digital Transformation Journey. Functioning as a trusted advisor, he is focused on driving business outcomes through technology.


Experience

- Over 25 years of experience as a senior IT leader and transformation expert.
- Proven experience in building customer-facing products and services in multiple industries.
- Expertise in delivering multi-millions dollar programs.
- Experienced in development and delivery of large scale IT Transformation programs.

Education

- BS in Computer Science
- MBA with concentration in Finance & Marketing



AHEAD PROFILE
STEVEN AIELLO
SECURITY SOLUTIONS PRINCIPAL


<https://www.linkedin.com/in/stevenaiello/>

Content Developed

- Locked Down: Building a Full-Scale IT Security Strategy
- Introduction to Next-Gen Antivirus

Certifications

CISSP, ISACA CISA, SANS GSEC, SANS GCIH, VMware VCP, VMware VCAP-DCD, Cisco CCNA



Areas of Expertise

- Threat Prevention and Detection
- Cybersecurity Program Operations and Integration
- Scripting, Automation, and Endpoint Protection

About Steven Aiello


At AHEAD, Steven focuses on helping clients build a better security operations program, which enables clients to improve their security posture back to the business. He also helps clients identify risks that have been proven to lead to data breaches, and helps remediate those risks. In addition, Steven brings AHEAD's message to the market at various speaking engagements, and works with the marketing team to develop the go-to-market messaging for the security practice.


Questions Steven Helps Clients Address

- How does the security program show value?
- How does the security program show quantifiable improvement?
- How does cybersecurity become better aligned with business objectives?
- How does information security become more operationally efficient?
- How do security teams select the right tools for the job?

Interesting Client Work

- Ensured a SaaS company met ISO 27001 compliance by using ServiceNow's GRC modules to reduce the burden of compliance reporting and increase program effectiveness. The client was able to evolve from ISO 27001 to FedRAMP to ultimately grow their business opportunities.
- Aided a major Chicago-based insurance organization in their migration from PII to AWS in a 60-day timeline to meet business objectives that included data science and big data analytics. The project resulted in a completed evaluation of company policies, a gap analysis of AWS "as-built," and NIST 800-53 compliance (moderate).





AHEAD PROFILE
STEVE WINCUP
SR. PROJECT MANAGER


<https://www.linkedin.com/in/swincup/>

Certifications

- Project Management Professional (PMP)
- ITIL v3 Foundations
- Certified ScrumMaster (CSM)
- VMware Certified Professional v2.0 (VCP)
- Microsoft Certified Systems Engineer

Awards

- CAN Chairman's Aware Recipient (2009)



Areas of Expertise

- Excellent written and verbal communication skills, organization skills, and exemplary customer service skills.
- Comfortable providing executive level program status and plans
- Deep experience in deploying Hyper-Converged Infrastructure, Virtual Desktop Infrastructure, and Cloud Solutions.
- Managing Program/Project budgets of up to \$40M and facilitating the review of third-party vendor contracts

About Steve Wincup


A PMI and ITIL certified Project Management Professional with over 20 years of Information Systems project management and implementation experience within multiple commercial industries.


Education

- BA in General Business
- MS in Business Administration

Experience

- Program Lead for a \$140M Data Center migration and consolidation effort. The effort included the build of a new network, migration of virtual and physical resources and decommission of assets to facilitate the closure of a legacy Data Center.
- Implemented and rolled out Virtual Desktop solutions for teams within Financial and Healthcare Corporations looking to standardize and control their user desktop experience.
- Led AWS and Azure Foundation Implementations followed by the migration of strategic, Business critical workloads to the Cloud.
- Led a Proof of Concept effort to compare Enterprise Data Protection Systems to measure performance, capabilities and suitability to task for a multi-Billion dollar Retail corporation.
- Represented Information Technology (Infrastructure) to various Business Lines and assisted in Portfolio Management activities for the Business





AHEAD PROFILE
SCOTT REDER
CHIEF STORAGE ARCHITECT

<https://www.linkedin.com/in/scottreder/>

Content Developed

- [The Evolving NAS Market](#)
- [Simple Data Visualization in Excel](#)

Areas of Expertise
Storage, Databases, Enterprise Architecture, IT Strategy and Management

About Scott Reder
At AHEAD, Scott works as the Chief Storage Architect, with a focus on the data and storage market for AHEAD. Scott joined AHEAD in June 2008 as a Senior Technical Architect for strategic customers. Scott took on the expanded role of Chief Storage Architect in August of 2011 to provide the highest level of guidance to all AHEAD customers on storage technology, leveraging large enterprise experience, knowledge of industry trends, relationships and a proven approach for strategic planning. Scott took on a temporarily expanded role at AHEAD in January 2017 as a Solutions Principal, covering existing areas of storage and data platforms, and adding accountability for AHEAD's Executive Briefing Center as an executive technology resource.



Scott's 30-year career includes leadership roles in Fortune 100 information technology and with both established and early-stage technology companies. His prior roles in the technology sector include serving as a consultant for large technology companies, including EMC and NCR/Teradata, and two California-based start-ups, Maranti (acquired by EMC) and DATAlegro (acquired by Microsoft).

Questions Scott Helps Clients Address

- What business requirements are driving the majority of your storage growth?
- What is your current cloud strategy and is data an inhibitor to meeting your goals?
- How are you handling storage software licensing and maintenance expense today?
- What is your current on-premises data center strategy?
- What is your current technology lifecycle strategy for storage?

Interesting Client Work

- Helped lead a product comparison and proof of concept for hyperconverged infrastructure (HCI), on-premises object storage, and cloud gateways for the North America branch of an automotive company. Also developed scorecards and test plans for these three product areas that mapped to the client's specific use cases.
- Performed two strategic storage engagements for a major insurance company. The first engagement was a comprehensive performance analysis and assessment of their storage infrastructure and the second was a strategy and roadmap for their NetApp NAS environment.

17. Mandatory Qualifications / Experience Requirements

AHEAD agrees to all the following requirements:

The following mandatory qualification / experience requirements must be met by the Vendor as a part of its submitted proposal. Vendor should describe how it meets the mandatory requirements and include any areas where it exceeds the mandatory requirements. Failure to comply with mandatory requirements will lead to disqualification, but areas where the mandatory requirements are exceeded will be included in technical scores where appropriate. The mandatory qualifications/experience requirements are listed below.

- a. AHEAD supports over 500+ Enterprise customers providing on-premise, public, and hybrid solutions and services all across the country,
- b. AHEAD is currently engaged with another state to provide an Enterprise Cloud Program leveraging our proven Enterprise Delivery and Digital Transformation Frameworks.

These frameworks provide the blueprint to create a state-of-the art Enterprise Cloud (consisting of on-premise and public cloud) and Cloud Management Platform.

The overall solution addresses People, Process, and Technology as it relates to Enterprise Cloud operations and consumption.

AHEAD is also actively engaged with a large, public university that is an Academic and Medical Institution with 35 disparate internal organizations that is largely decentralized IT with a desire to centralize at least 80% of University spend within 5 years. AHEAD is providing a flexible, cost-transparent means for Central IT to capture and consolidate distributed IT workloads and spend while utilizing business logic to determine the optimal operating location (on-premise or public cloud).



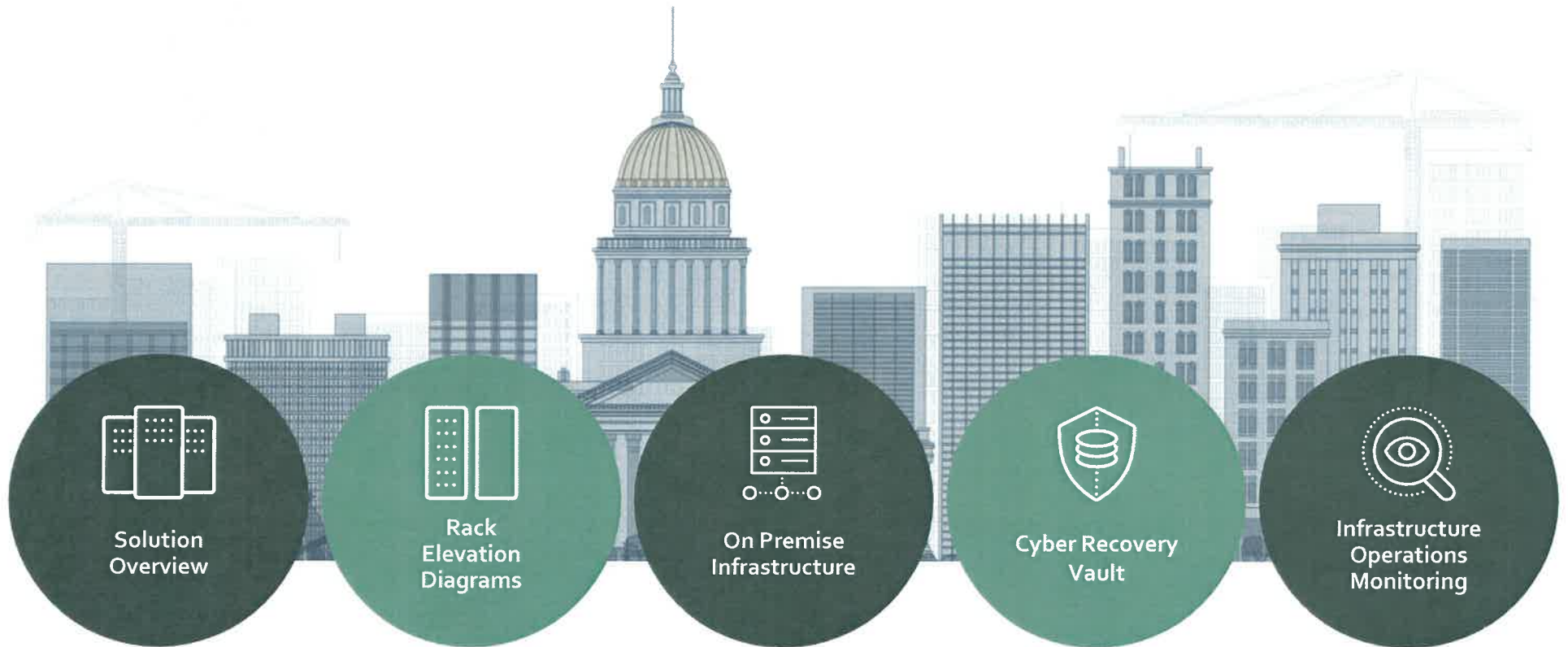
AHEAD

Data Center 2.0 RFP

Solution Details

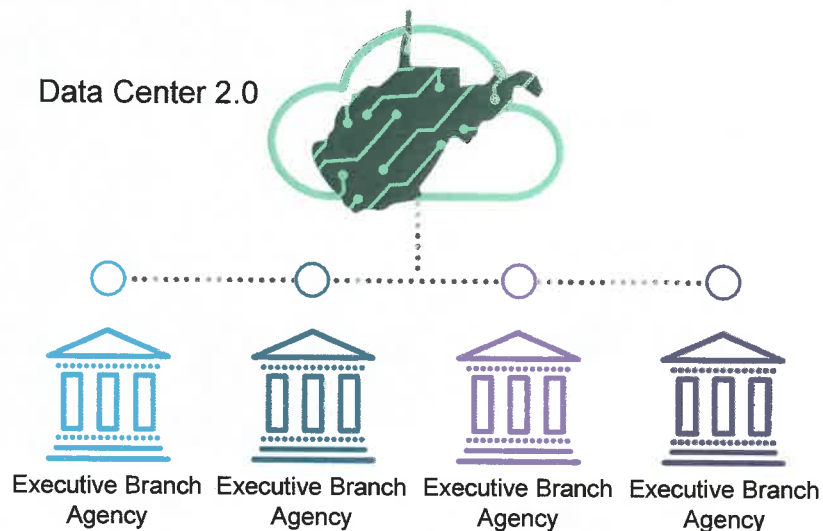


Agenda



WVOT's Background and Objectives

The West Virginia Office of Technology is seeking on-premise data center infrastructure that is capable of scalability, flexibility, and elasticity that is unified, secure, cost-effective and state sanctioned solution for agencies under their purview. As a single point of contact to provision and manage IT services, WVOT believes the State will benefit leveraging economies of scale, commoditizing IT infrastructure, and a pay per-use model.



State's Objectives

- Support a myriad of apps in a multitenant environment
- Ensure cybersecurity, privacy, redundancy, and resiliency standards
- Drive consolidation and virtualization
- Improve the cybersecurity and privacy posture of the State infrastructure
- Improve time to deploy or retract resources
- Reduce financial overhead expense and cyber risk
- Set the stage for a hybrid data center architecture

Solution Overview



Cisco UCS



Cisco LAN



Cisco SAN



PowerMax



Unity XT



Isilon Gen 6



Avamar

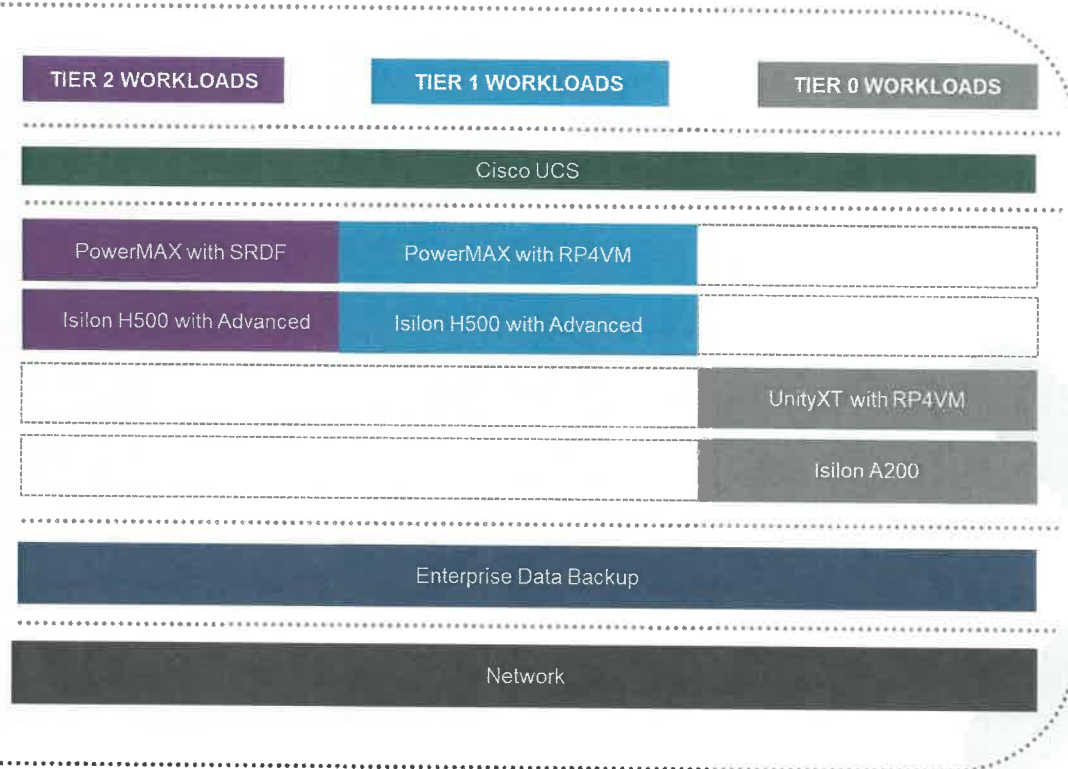


PowerProtect DD



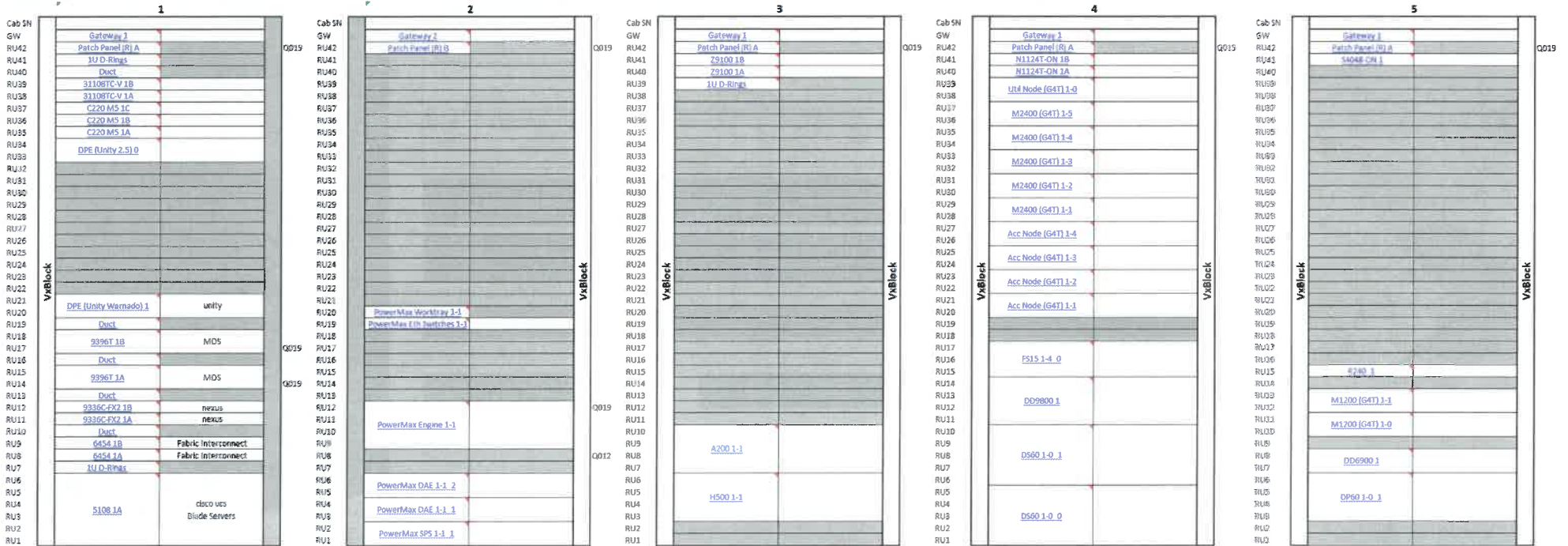
RP4VM

Solution Overview

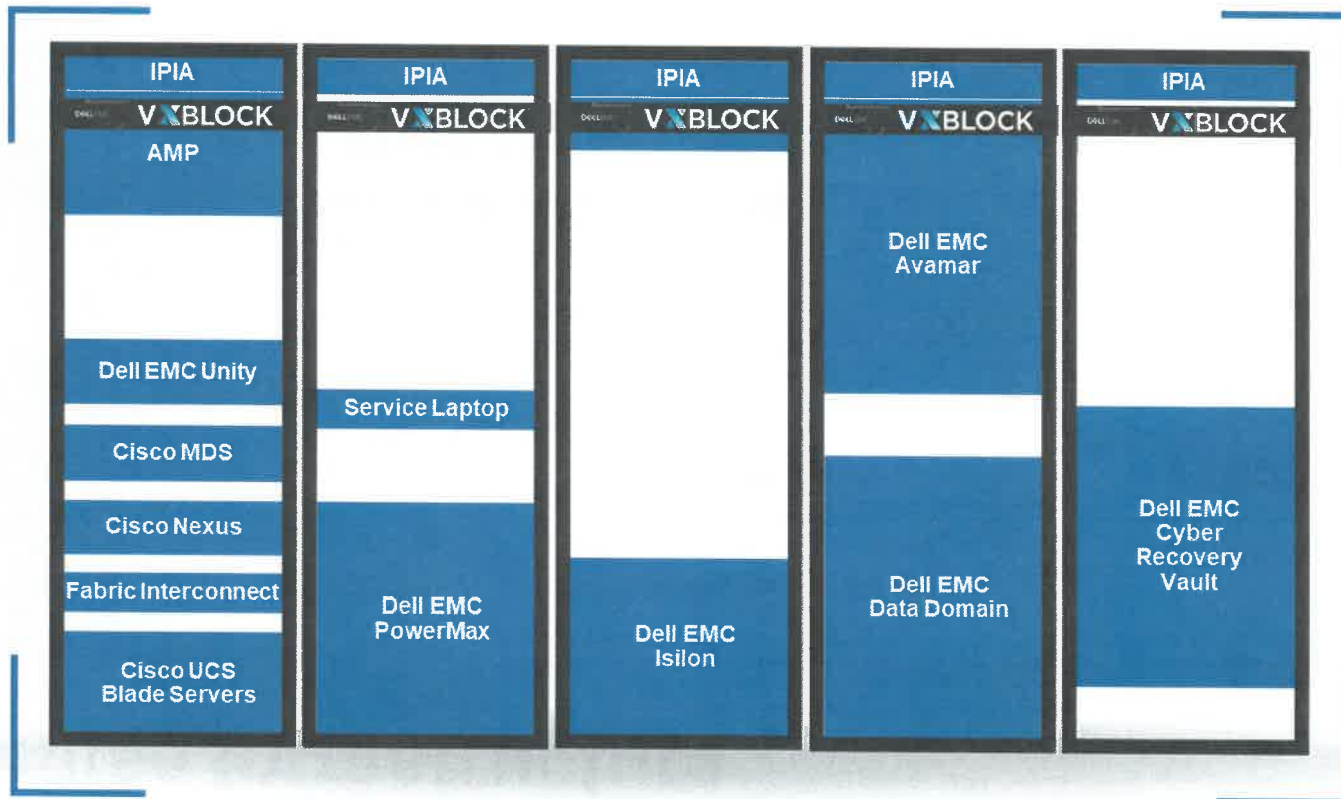


Rack Elevation Diagrams

Viewed from Front



Rack Elevation Diagrams



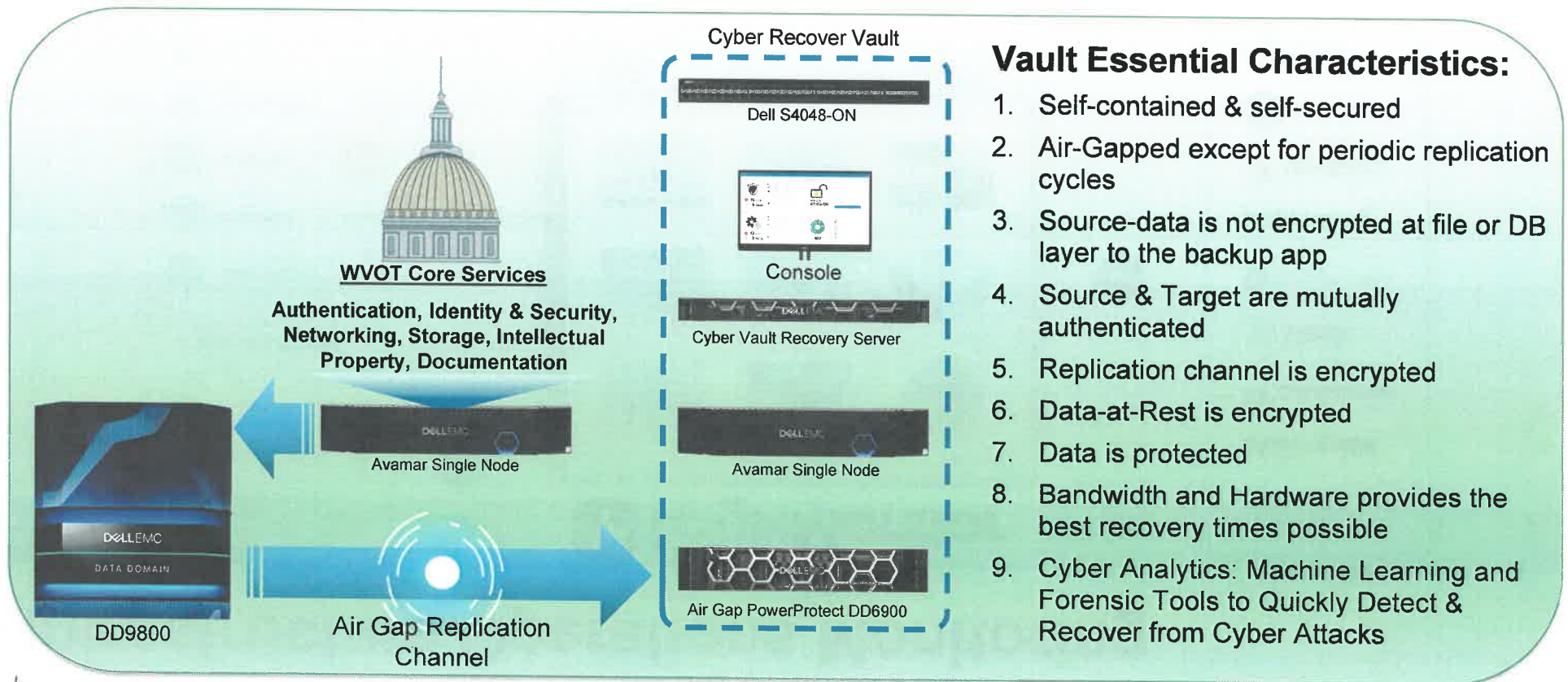
On Premise Infrastructure

Component	Details		
COMPUTE <i>Note: mixing blade servers and rack servers in one system is supported.</i>	Cisco UCS chassis 5108 Cisco UCS B-Series blade servers B200 M5	Cisco UCS Fabric Interconnects 6454 Cisco UCS Virtual Interface Cards (VICs) 1440	
NETWORKING	LAN Cisco Nexus 9336C-FX2	SAN Cisco MDS 9396T	Management Connectivity Cisco Nexus 31108TC-V
STORAGE <i>Note: mixing multiple storage options and types in one system is supported.</i>	Dell EMC Storage PowerMax 8000 Unity XT 680F Isilon Hybrid and Archival H500 • A200		
VIRTUALIZATION	VMware vSphere Enterprise Plus • ESXi • vCenter Server		
DATA PROTECTION	Integrated backup, integrated replication, integrated business continuity Dell EMC Data Domain • Avamar • NetWorker • Data Protection Search • Data Protection Advisor • Data Protection Central • RP4VM • Cyber Recovery		
MANAGEMENT	Compute AMP-3S for single-system management support includes 3 C220 M5 servers and a Dell EMC Unity hybrid storage array	Network TOR Cisco Nexus 31108TC-V • Nexus 3232C	Software VxBlock Central and Lifecycle Management software • Unisphere • InsightIQ (Isilon) • Secure Remote Services (SRS) • Cisco UCS Manager • Dell EMC PowerPath • CloudIQ
CABINET	Intelligent Physical Infrastructure (IPI) solution		



AHEAD

Cyber Recovery Solution



Infrastructure Operations Monitoring



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Thank You

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