VMware Trust & Assurance

TECHNICAL WHITE PAPER

INTEGRITY

VMWARE TRUST & ASSURANCE

COMMITMENT

SECURITY

RELIABILITY
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Introduction

As an industry-leading virtualization software company, VMware appreciates that the integrity, reliability, and security of its products are of utmost importance to its partners and customers.

The relentlessly advancing threat landscape over the last few years in particular has yielded unprecedented cyber exploits, which not only pose acute potential risk to critical infrastructure, intellectual property, and sensitive information, but also ultimately erodes a company’s reputation. VMware is addressing this new environment with innovative programs designed to get ahead of these problems and anticipate threat trends, along with keenly crafted assurance practices that engender customer trust.

VMware understands what matters to today’s customer, and is committed to furthering this insight through our well-established, candid customer dialogue and our growing transparency about the measures we are taking to ensure that our products and services continue to meet and exceed expectations on quality, performance and safety.

The VMware Trust and Assurance framework was created to drive this initiative of preserving and enhancing the trust customers place in VMware and our products and services. We define trust as the demonstrable ability to execute on our commitments consistently over time—it is transparent, integrated, and proactive. Likewise, we are eager to communicate about our proactive approach to reducing our risk landscape, as well as activities ranging from development to security to support to provide comprehensive assurance—or proof—that our product offerings are secure, reliable, high quality, and can be trusted. This white paper discusses the teams, programs and practices that represent VMware Trust and Assurance’s guiding principles of reliability, integrity, security and commitment.

Reliability

Quality and performance are key stakes in today’s Infrastructure software and services. Our virtualization offerings have earned renown for high quality and high performance. In fact, we have led the creation of industry virtualization benchmarks for measuring workload performance. We take proactive measures to ensure we stay ahead in the area of both quality and performance to ensure our customers can continue to rely on us as we move into the next generation of virtualization software and cloud-based services.

Performance

The Performance Engineering team’s mission is to ensure that VMware products and solutions perform competitively and scale optimally. As critical contributors at every stage of the product lifecycle, this team cultivates a culture where everyone owns performance as an ongoing key differentiator from on-premise to hybrid cloud to end user solutions. This aim is driven by core performance engineering values, which are commitment, collaboration, curiosity, customer focus, and excellence. These principles are illustrated in each of the Performance team’s four main areas of focus: products, research, evangelism, and field.

For product performance, the team works to ensure VMware products and services perform excellently and scale optimally. Performance engineers:

- Ensure new products are architected and designed to perform
- Drive performance improvements for VMware products
- Evaluate progress across releases and competitors
- Prototype and develop product performance enhancements

A component of this effort is improving product performance via improved tier 1 application performance and relentless demonstration that all workloads virtualize. Improving performance also means opening new market opportunities, such as creating low latency for financials and online game hosting in vCloudAir, as well as providing improved management product performance.

**Evangelism and Education**

The Performance Engineering team is committed to evangelizing and educating on Performance practices across the entire VMware ecosystem and beyond by developing and driving benchmarks, including industry leader and a cloud-based benchmark. The team teaches “The Performant Way” to VMware developers, partners, and customers, which results in everyone’s enablement to own performance via practical guidance, which consists of 15 crisp examples across architecture, design, and test. This includes:

- Extending performance knowledge internally and externally
- Driving performance best practices into VMware products
- Developing leading cloud and virtualization benchmarks
- Engaging through RADIO, VMworld, blogs and conferences

**Research**

Performance Engineering embodies a major component of the “R” in R&D at VMware. Exploring and researching opportunities for improvement and innovation in collaboration with developers, universities, and industry groups, this team drives deep-dive investigations into products and features. These relationships with thought-leaders and academics enhances this team’s exploration of emerging technologies and innovations with performance impact. Research likewise informs the development of tools and visualizations for analysis and revelation, illustrated by this team’s growing library of patents, papers, and publications, including twenty-five patent applications in 2014 alone.

**Field Engagement**

Another key vector that the Performance Engineering team pursues is enabling customers, partners, and VMware communities with performance expertise. This team facilitates VMware pre-sales by providing white papers, blogs, and hero numbers, and supports customers post-sale for the more complicated performance problems.

Performance Engineering continues to optimize IT outcomes across all products in the software defined datacenter (SDDC) with performance scorecards for every product. The team develops tools for sizing and analysis, and draws heavily on metrics with end-to-end impact across development, test, and integration. Their outcomes are also advanced by emerging research and differentiating technologies.

End User Computing is supported by improved desktop and mobile products, technologies, solutions, and benchmarks. Additionally, the Performance team is expanding virtualized desktop capabilities, such as EUC and ESX, and is exploring new technologies such as vCUDA, 3D, and containers.

**vCloud Air**

For this prime service offering, these engineers ensure that hybrid and dev-ops solutions scale and perform competitively. They are also responsible for ensuring solutions are well architected and products deployed effectively. They drive performance improvements for VMware products and evaluate progress across releases and competitors.
VMware has the data to prove our performance and cost advantage in competitive cloud environments: while big public clouds are cheap and easy for transient computing needs, if you need enterprise availability (24/7/365) then dedicated infrastructure can be much cheaper and more flexible. In fact, VMware Performance Engineers have demonstrated significant cost advantages over AWS and Google for long-lived enterprise workloads using published pricing.

Current team initiatives include exploring new product and/or feature concepts and architectures, designing and implementing well performing code subsystems, structuring meaningful experiments, and analyzing results and tuning code.

As VMware continues to expand into the cloud, this team plays a vital role in driving to cloud scale performance. This shift requires an aggressive and innovative strategy to keep the enterprise at the vanguard of this ever-evolving space. By teaching developers how to fish, so to speak, this team can enable them to build and track high-performance products. Focusing performance engineers on the higher level difficult problems is crucial in transitioning into this environment, as is engaging earlier in conceptual and architectural product phases. Finally, the team will develop more Performance as a Service solutions, such as self-service portals, benchmark kits, and sizing tools.

**Quality**

Quality has always been a bedrock principle for VMware, as the multiple, enterprise-wide efforts on this front attest. Ensuring that our customers deploy new releases and updates in confidence, and all VMware products reliably interoperate as expected are key facets of our quality vision.

VMware has a quality process in place for each of our software products. The quality process consists of test plans, test designs, test procedures, and test exit criteria. These documents are updated and revised for each new version of our product and serve as the plan of record for the project. Requirements and designs are documented and tracked as part of the software development lifecycle process. Multiple phase checkpoints during the development lifecycle that require stakeholder sign-off of quality criteria are conducted to ensure that the program is tracking to plan and if adjustments are needed, they are assessed and implemented accordingly. Always conscious of customers’ perspective, quality teams are focused on root cause analysis of customer issues. VMware strives for continuous process improvements, and tracks metrics for product release against prior versions of the product.

VMware has a training program in quality that consists of bootcamp training for all new quality test engineers. The entire R&D organization has specific training for new employees on standard tools and process.

Independent internal audits, reviews and checkpoints are conducted across the company, encompassing products and processes. Code reviews are conducted as part of the software development process, and reviews and checkpoints are conducted at various milestone points to ensure that entry and exit criteria are being satisfied.

In a continued effort to strengthen its customer-centric perspective, VMware has also created the Quality System team, which works to understand quality issues at VMware, and consults with teams across the enterprise to get an in-depth understanding of what quality means to VMware customers. Examples of this collaboration include working with Customer Advocacy to understand the customer view of quality, and conferring with the Global Support Services (GSS), Continuing Product Development (CPD), and Ecosystems teams to understand their quality concerns and review their metrics and processes. The Quality System team closely examines R&D teams to learn about their processes and metrics, and review industry quality standards like CMM and 6-Sigma. Accordingly, this team works to improve quality through process...
changes within R&D, GSS, and CPD teams, tracking releases using predictive metrics, and sharing quality practices across the organization.

**Integrity**

Our software is developed, built, and delivered with integrity so that our customers, who include all of the Fortune 100, continue to entrust critical workloads to VMware. Our rigorous software development lifecycle and release management ensure product readiness and consistency, while our Compliance and Cyber Risk Solutions program helps customers foster a compliant-capable, audit ready posture. We manage Supply Chain security issues through a program that addresses risk associated with the use of third-party code and our IP sharing practices.

**Release Management**

The Release Management (RM) team’s mission is to drive product teams through efficient and measurable Software Development Life Cycle (SDLC) processes to deliver high quality product releases that implement the company goals for Suite and Cloud. RM works with all business units and all cross-functional groups and is responsible for delivering all VMware releases, which exceed 400 each year. As the team is centrally hosted, it is optimally situated to drive consistency in release execution and in process compliance, maintain independence in status reporting and in escalation paths, and embed with engineering and quality teams.

RM provides active project management of VMware product releases, which includes driving product teams to build and release high quality products and services, using metrics to measure progress and to ensure release compliance to quality standards. RM additionally drives reporting and visibility on the state of releases and the release portfolio. Broadcasting metrics-driven release status updates provides invaluable information for the organization to stay at a competitive vanguard, while highlighting issues that require attention ensures the product or service is in an optimal condition before it is released.

RM establishes and improves release process best practices, and works with product teams to increase adoption of and consistency around release processes. It maintains the readiness of the product checklist, which ensures release compliance with legal requirements (open source, EULA, export compliance, country-of-origin, etc.), as well as ensuring compliance with accounting standards and federal certifications. For more information on our federal certifications, please see the VMware Product Security white paper at [http://www.vmware.com/files/pdf/VMware-Product-Security.pdf](http://www.vmware.com/files/pdf/VMware-Product-Security.pdf).

**The VMware Software Development Lifecycle (SDLC)**

The VMware SDLC defines a clear and repeatable process and creates a structured and organized execution that helps enable us to deliver secure, high-performing products, services, and solutions. The SDLC integrates best practices into the development process so that developers can focus on creating innovative products. It spans the product lifecycle end-to-end, and includes:

- Requirements and product definition
- Development
- Testing
- Legal requirements
- Documentation
- Security
- Performance
- Globalization and Localization
- Release
- Supportability
• Pre-release user testing, including dogfooding (VMware-internal hands-on usage), alpha testing, and beta testing

SDLC processes are executed by cross-functional release teams, and operate following either an agile/scaled agile or waterfall methodology. The processes are:

• Agile, mostly scrum for small and medium-sized product teams
• Waterfall for larger product teams

Oversight is exercised at multiple stages of release planning and execution, and the executive team is actively engaged in approving transitions between release phases.

**Release Lifecycle: Key Activities**

**Ongoing SDLC Dynamics**
Current SDLC dynamics reflect the fact that increasingly, teams are looking for ways to accelerate their release cadence and are likewise working on transformations to deliver SaaS in vCloud Air. Some SaaS teams are also adopting continuous delivery approaches, deploying smaller increments of capability at a higher frequency (weekly, daily).

**Release Life Cycle: Metrics**
A powerful tool for communicating and planning, metrics can provide valuable insight into processes, goal attainment, and what the future may hold. At VMware, metrics are at the center of tracking, reporting on and making decisions on releases. Metrics and related goals (release criteria) are locked down as part of release planning, and criteria are defined for each key release milestone. Metrics and criteria are defined by area:

• Testing (Functional, System/Integration, Functional Stress, Interop)
• Scale
• Performance
• Security
• Readiness for Support / Maintenance

**Release Life Cycle: Readiness**
Finally, prior to release, product/service increments need to comply with a number of mandatory readiness and compliance aspects. Product engineering teams are directly responsible for ensuring this compliance by
taking action throughout the release cycle, and audits are conducted at various intervals in the release cycle to validate compliance. Key readiness aspects for product releases include:

- Security compliance
- Open Source license compliance
- EULA / Copyright / Trade Export Compliance
- Globalization / Internationalization
- Usability review
- Accessibility / 508c compliance
- Training / knowledge transfer to field and support personnel

Compliance & Cyber Risk Solutions

Today’s government and business executives are familiar with the benefits that come from improving their information technology operations by using server virtualization when moving to the cloud. Those benefits--the ability to respond rapidly, isolate applications from one another during a cyberattack, and maintain business continuity while keeping resource costs low--have been proven. However, executives chartered with maintaining continuous compliance practices continue to be concerned about managing risk, particularly in regulated environments, such as PCI, FedRAMP, FISMA, HIPAA or CJIS.

Assessing risks and then developing adequate controls can be difficult in evolving environments. With complexity comes rising costs: the costs of audits and remediating the findings; the longer time needed to develop and implement new offerings; and the costs of maintaining and operating the environment as new vulnerabilities are discovered.

With this in mind, and in collaboration with the VMware partner ecosystem, VMware has developed the Compliance Reference Architecture Framework (RAF), which allows organizations in regulated IT environments to automate and orchestrate technology and policy enabling more effective cyber risk management. VMware delivers regulation specific guidance, which includes validated compatible software and hardware solutions enabling a Compliant Capable, Audit Ready Platform.

For more information, please visit VMware Compliance and Cyber Risk Solutions, where full compliance Reference Architecture documents for PCI, CJIS, FedRAMP and HIPAA are available. Please contact the Compliance and Cyber Risk Solutions team at compliance-solutions@vmware.com for details on the Compliance and Cyber Risk Solutions Program.

Software Supply Chain Security

With the global expansion of the software industry, security concerns have increased that a product or service could be compromised by malicious code introduced during product development or maintenance. Technological innovation and changes in sourcing and supply chain strategies have made software supply chain security a global challenge. Threats ranging from risks associated with using third-party code and open-source components to IP theft have dramatized the vulnerability of this new risk domain. VMware is actively engaging in proactive measures to minimize the occurrence of these risks and has launched several initiatives to address the security of our supply chain.

Managing Supply Chain Risk

VMware is formalizing a Supply Chain Risk Management program that is primarily focused on secure sourcing and hardware, firmware, and software integration relating to building solutions. It is developing an approved vendor list for several of its BUs and functions. Also, VMware’s recycle program for hardware products addresses supply chain risk by securely recycling equipment that may hold information sensitive to the supply chain. For example, hard drives that are at end of life and were used in the source control systems are properly recycled to ensure that the data from the source control systems is removed. VMware has established processes around partnerships with entities deemed to be of increased supply chain risk.
and around the sharing of source code with third parties. With respect to partnerships, VMware has an established process to validate if a partner is considered to be of increased security risk. Partners are carefully vetted prior to gaining access to programs. Both inbound and outbound contracts that have software supply chain security implications are reviewed by the Legal and Product Security teams. VMware includes terms that set minimum software security standards in its OEM (original equipment manufacturer) and third-party software license agreements that are in keeping with or exceed industry best practices.

**Privacy**

VMware is committed to protecting the privacy of its customers, with the overall goal of earning and maintaining the trust of VMware customers, employees, and others, in how VMware collects and uses their personal information.

Many of our contracts with our customers contain privacy terms that describe what data we collect, how we process it, and how we secure it. VMware encourages every customer to review what is in their specific legal agreement.

VMware also has a Privacy Policy that details what personal information VMware collects online. This Privacy Policy can be found at [http://www.vmware.com/help/privacy.html](http://www.vmware.com/help/privacy.html). It applies to data collected through the vmware.com site and other web pages that are linked to it. For personal information relating to individuals in the European Economic Area and Switzerland, VMware adheres to the U.S.-EU Safe Harbor Privacy Principles, and this commitment extends to all personal data it receives from the EU and Switzerland. These principles are described in more detail in the VMware General Safe Harbor Privacy Notice which is referenced in the Privacy Policy.

The Privacy team works with VMware developers and security during the development of VMware products and services to ensure that VMware is following a "privacy by design" framework. Privacy and transparency are regarded as integral parts of VMware products, and as part of the program, the Privacy team works with the engineers during product development to:

- Evaluate where security and privacy risks may emerge
- Provide guidance for making critical privacy changes in a timely fashion

This practice of reviewing privacy implications early in the development process has helped promote a privacy-conscious approach and culture.

Employees are trained, when and where appropriate, on privacy matters. The Privacy team frequently works with employees in security, customer service, engineering, marketing, professional services, and sales to provide relevant privacy instruction.

**Security**

As industry exploits attest, security cannot be bolted on just before a project is shipped--it must be an integral part of development from Day One. VMware builds our products with security from the ground up using leading security development tools, processes and methodology. VMware products are built on a comprehensive Security Development Lifecycle (SDL) methodology. Our VMware Security Response Center continuously monitors the security ecosystem and responds quickly to remediate vulnerabilities affecting our products and to mitigate risk for our customers.

**Product Security**

VMware’s Product Security team, internally known as the vSECR--VMware Security Engineering, Communication and Response--is responsible for protecting the VMware brand from a software security perspective. Its mission is to identify and mitigate security risk in VMware products and services. To achieve this, VMware has established oversight mechanisms and policy structures that identify and mitigate potential
product security risks throughout the development lifecycle. VMware has likewise instituted programs and practices that support both the development of secure products and solutions and drive security awareness across the enterprise. In response to risks to critical infrastructure, intellectual property, and sensitive information posed by the constantly evolving threat landscape, VMware has developed comprehensive and rigorous software security assurance processes and procedures that demonstrate the integrity of its products and address potential vulnerabilities.

VMware is active in the broader software industry security community, becoming an early member of BSIMM (Building Security In Maturity Model) in 2009 and is a member of SAFECode (Software Assurance Forum for Excellence in Code), an organization driving security and integrity in software products and solutions. VMware is also active in the security research community and its Security Evangelism team works to actively cultivate relationships in this community. For example, VMware regularly brings speakers from the research community onto the VMware campus in Palo Alto, CA, to present technical talks on security topics, and annually hosts a two-day internal security engineering conference, which includes external security researchers and internal security experts from across the globe.

Security Development Lifecycle

VMware’s Security Development Lifecycle (SDL) program is designed to identify and mitigate security risk during the development phase of VMware software products. The vSECR group owns the definition and practice of SDL processes. It is continuously assessed for its effectiveness at identifying risk and new techniques are added to SDL activities as they are developed and mature.

VMware Security Development Lifecycle

The SDL is the software development methodology that vSECR and VMware product development groups use to help identify and mitigate security issues so that the development group’s software is safe for release to customers. The vSECR group updates the methodology in regular releases, and vSECR and the VMware product development groups apply the methodology as an end-to-end set of processes to use at specific times in the development group’s software development lifecycle, with the goal of helping teams to remediate these security issues early in the lifecycle. The SDL’s end-to-end set of lifecycle processes help product development groups perform these tasks:

- Reduce their component's risk profile and attack surface
- Identify and remediate costly security-related design flaws early in the development process before much coding has taken place.
• Discover and remediate security vulnerabilities prior to availability
• Educate their teams on security issues and security best practices

Security Response Center (VSRC)

Established in 2008, VSRC is responsible for managing and resolving security vulnerabilities in VMware products once products are released to customers. VSRC has a mature process to investigate reports, coordinate disclosure activities with researchers and other vendors when appropriate, and communicate remediation to customers via security advisories, blog posts, and email notifications. VSRC is well established within the security research community and participates in many external security events in order to foster strong working relationships with the security research community. For example, VMware participates at major security conferences such as RSA, Black Hat, DEF CON, and CanSecWest, and is involved in the Bay Area security community. VMware’s security response policies are well established and are publicly documented on the VMware website at http://www.vmware.com/support/policies/security_response.html.

Security Engineering

Part of vSECR, the Security Engineering team has deep technical expertise both in domain areas such as systems, networking, and web applications, and in products such as VMware’s vSphere product line, Management Products, and VMware’s End User Computing product lines. This engineering team is responsible for investigating and developing long-term risk reduction technologies and techniques that can be applied to VMware products. In addition, it acts as a center of expertise for security engineering and is often called upon to solve complex software security challenges. As an example of the Security Engineering team creating preventive controls that anticipate potential future vulnerabilities, the NoScape project is a method and strategy designed to prevent and/or contain VM escapes, and ensures that even if an escape were to take place, the malicious user is prevented from contaminating other guests.


IT Information Security

The IT Information Security team maintains a formal, approved, resourced, and robust Information Security Program with the full support of the VMware executive leadership team which protects the Confidentiality, Integrity and Availability of any and all data within the VMware networks and systems.

Industry standard processes and controls are implemented and maintained in an up-to-date and secure manner. These fall into three main areas:

Operational:
• 24x7x365 live monitoring of security events and response
• Robust and thoroughly tested Computer Security Incident Response Team which has dedicated procedures for incident handling involving sensitive information and Breach Notification policies in accordance with applicable state, federal and international laws
• Stateful packet inspection firewalls with appropriate inbound and outbound rule sets
• Signature and anomaly based intrusion detection systems
• Application whitelisting controls on critical servers
• Operational intelligence monitoring for VMware, key partners and vendors and supply chain
• Centralized logging and monitoring with industry standard tools
• Regular patching of systems for security vulnerabilities
• Formal vulnerability management and penetration testing processes
• Whole disk encryption of key laptops and desktops
• Data Loss Prevention processes
• Periodic Third Party testing of the entire VMware infrastructure

Architectural:
• Design concepts such as Least Privilege, Separation of Duties, and Defense in Depth for Security Controls
• Separation of production and development environments with prohibitions on utilizing production data within development environments
• Multi-factor authentication for remote access

GRC (Governance, Risk and Compliance):
• Policies, procedures, and standards that are reviewed regularly and approved by senior management—such as the Data Classification Policy, Information Security Policy, Incident Response Policy, Remote Access Policy, and password policies requiring regular changing of passwords meeting complexity requirements
• Use of a Service Catalog approach to providing “Information Security as a Service” to the broader organization—definition and scope of each service offered, Service Level Agreements, and associated reporting and metrics
• Information security awareness training for key security topics through various delivery methods—videos, regular email notifications, and in-person events in VMware office locations
• Holistic assessments of risk across VMware and prioritization of risk mitigation efforts based on risk-ranking
• Overall governance of the Information Security Program utilizing a framework based on ISO 27001 principles and including appropriate components all the way from senior or executive management reporting (as well as the Audit Committee to the Board) down to operational metrics capture and dashboards
• Compliance controls design, monitoring and testing for key requirements such as Sarbanes-Oxley, HIPAA, PCI, and FedRamp

The following graphic illustrates VMware IT Information Security measures to address a variety of threats:
Commitment

VMware’s deep commitment to our customers’ success is well represented by strategically aligned teams that focus on addressing issues and enabling infrastructure. We draw upon many resources to help solve our customers’ challenges by providing a large, virtualization-specialized, Global Support Services (GSS) organization, and a growing ecosystem of certified solution and technology partners.

Continuing Product Development (CPD)

Managing Critical Customer Issues

The Continuing Product Development (CPD) organization provides a single point of contact for escalation management along with the dedicated engineering focus to drive customer satisfaction. CPD’s vision and primary function is to drive customer success through outstanding continuous product development. The team’s mission is to provide dedicated engineering focus to drive customer satisfaction. This is accomplished by enabling business units to focus on innovation and deliver on product roadmap. CPD plays a role in all attributes of maintaining reliability of our product, functional integrity, supporting security activities, and meeting or exceeding commitments to customers.

The following list of service offerings to customers is a value commitment.

**CPD SERVICE OFFERING:**

<table>
<thead>
<tr>
<th>Customer Management</th>
<th>Escalation management for all VMware products</th>
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<tbody>
<tr>
<td></td>
<td>GSS Interface</td>
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<tr>
<td>Customer Engagement</td>
<td>Service Request (SR) – Product Request (PR) handling, 24x7, SLA management</td>
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<tr>
<td></td>
<td>Repro, Hot Patches</td>
</tr>
<tr>
<td>Premier Support</td>
<td>Repro, Hot Patches</td>
</tr>
<tr>
<td></td>
<td>Align with GSS offering</td>
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</tbody>
</table>
CPD is committed to providing VMware customers with on-time and high quality product deliverables. The team also addresses customers’ information security needs with timely updates and patches as necessary.

The following graphic presents an end-to-end view of supporting customers, illustrating the engineering escalation process and engineering escalation execution:

**Ecosystem Services**

The VMware Ecosystem Services team’s vision is to enable a healthy and growing ecosystem that provides a best-in-class cloud services experience for VMware customers. Their programs and practices bring strategic and essential value to our company-wide initiative of engendering customer trust in our products.
and solutions. This team offers over forty unique programs for over five hundred partner companies worldwide, resulting in more than twelve hundred TAP (Technical Alliance) partners with 13,000+ VMware Certified products.

The Ecosystem Services team’s mission is to accelerate delivery and adoption of quality, compliant, and validated VMware products and services. This involves representing partners internally, VMware representation externally to partners, protecting and promoting the company brand, and optimizing the VMware ecosystem practices, processes, and tools through automation and simplification.

**Ecosystem Services**

<table>
<thead>
<tr>
<th>Technology Program Services</th>
<th>Certification and Validation Services</th>
<th>Product Management and Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan, develop, and sustain partner programs for:</td>
<td>Define, develop, and offer certification and validation services to ecosystem customers in:</td>
<td>Provide operational support for Central Engineering and Ecosystem service offerings:</td>
</tr>
<tr>
<td>• Co-development partners</td>
<td>• Architecture</td>
<td></td>
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<tr>
<td>• Technology adoption</td>
<td>• Development</td>
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<td>• Programs</td>
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<td>• Processing</td>
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<td>• Contract and invoice management</td>
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<td>• Portfolio management</td>
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<td>• Service definition</td>
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<td></td>
<td>• Service marketing</td>
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</tbody>
</table>

In partnering with the business units, the Ecosystem team’s activities cover the full spectrum of support and collaboration. The technical facet of the program encompasses software—SDLC, product knowledge and access (pre-release), and technology enablement with scale.

Partner-facing activities include relationship management, expectation management, and roadmap alignment.

The business imperatives incorporate marketing, pricing and packaging, change management, and contract and legal.

Always critical, the team also oversees scaled communication, processes, and operations as applied to business flows (contracts, payment, support, utilization early access), project management (leadership, metrics), tools (DCPN, VCG, Developer Center, Workbench etc.), and Certification.

The Ecosystem team’s engagement with partners covers the entire spectrum of activities in the program life cycle:
CPD is realizing their program lifecycle process work stream goals to codify the best practices across the different meta phases of the program life cycle and to roll out the adoption of the defined best practices across Ecosystem Services, cross-functional teams, and other BUs.

Customer Advocacy

The Customer Advocacy team’s ultimate vision is to “have our customers and partners recommend VMware above all others.” It is laser-focused on the mission to “create experiences and solutions our customers and partners love.”

Insights from customers, partners, and employees enable this team to pinpoint strengths and, more importantly, acknowledge weaknesses. Customer feedback is the team’s tool for building this understanding of where we are excelling, and where we can do better. Conversations across the company focus on our partners’ and customers’ challenges, needs and expectations, and how VMware can meet them more effectively.

Everything VMware customers tell the team is shared with audiences across VMware. Their methods include:

- **Surveys.** Our customers’ assessment of our overall relationship, along with surveys at key moments, allows us to capture key metrics and identify opportunities for improvement.
- **In-Person and Telephone Interviews.** Meeting regularly with customers and partners—in person and via telephone—is a high point for us. Hearing from customers directly gives us rich detail that completes the picture.
- **Workshops.** Collaborative working sessions with customers and partners allow us to dig deeply into particular areas, in order to better understand their needs.
- **Benchmarking.** Independent validation of our findings ensures accuracy, and helps us to stay ahead of industry norms.
- **Social Media.** Staying tuned in to what is posted online is a rich source of “in the moment” feedback.

Listening is followed quickly by action. Customers’ insights are shared with the rest of the company, allowing teams across VMware to champion customer-focused behavior.

Collaborative design sessions, surveys, usability studies, and various other activities ensure a cohesive digital experience across all VMware online applications. At the same time, the Customer Advocacy team strives to provide a world-class experience. Members are focused on building advocates across the entire company, in every location around the world. To this end, regional leaders communicate country-specific customer feedback and create region-specific action plans that meet the needs of local customers.

This team’s mission is to solve the right problems by taking strategic, organized discovery efforts. These are the three main components of the advocacy process:
• **Identify Patterns.** Customer experience trends reveal themes, such as systematic or emerging issues, and broken or missing processes.

• **Search for Causes.** Once the team has identified patterns, members work to uncover the most prevalent issues and their root causes. Sometimes, the team discovers opportunities for improvement that no one knew were possible.

• **Build Solutions.** After the team attains a firm grasp on root causes, members share the lessons learned with the appropriate teams, develop recommendations, and create a plan of action.

**Walking in the Shoes of Our Customers: a Case Study**

Customer One is a VMware program that puts our own IT organization on the front lines. While this team has always used VMware products internally, members have taken this effort to the extreme by formalizing product usability feedback channels to R&D, and acting as “Customer One” to experience future install packages and upgrades first-hand, before general availability. The team uncovers potential issues—and fixes them—before customers and partners have to.

VMware’s corporate IT organization also helps to pre-validate the beta experience. Customer Advocacy downloads the same beta bits from the beta community sites as customers would, and use the same support processes without any special treatment, from the same Global Support Services (GSS) channels as customers. The team’s motto: assume nothing.

Ongoing Customer Advocacy priorities are to maintain commitment to product quality and ease of use, to offer continued clarity and transparency around company strategy and product plans, and to reconcile company priorities with customer and partner feedback.

**VMware Global Support**

VMware Global Support Services (GSS) is the world’s largest virtualization support organization with fifteen years of experience supporting complex production and development environments. Working as a comprehensive unit, the team’s mission is to provide outstanding levels of technical support using in-depth virtualization and cloud expertise. With support relationships with 100% of the Fortune 100, and 99% of Fortune 500 companies, this team delivers on aggressive resolution times and fast response times. GSS provides global coverage 24/7, 365 days/year, and follow-the-sun support for Severity 1 Issues. This large and important customer base underscores that VMware and our solutions have been widely trusted. It likewise reaffirms that our expert support organization is committed to maintaining and extending this trust into the future.

**Conclusion**

Due to the ever-increasing complexity of modern infrastructure software, recent high-publicity component vulnerabilities, and high-profile data breaches and privacy concerns, there is a growing need for corporations to be more transparent about their products and processes in order to engender trust with their customers. VMware is meeting and anticipating these rapidly emerging threat trends and increasing customer transparency through the VMware Trust and Assurance framework, which aims at answering the most pressing customer concerns and showcasing why customers can rely on VMware to be their most trusted IT infrastructure vendor.

The programs and practices presented in this document have been designed to create high quality, secure products and solutions that VMware’s customers can trust in the most critical operations of their enterprises. These initiatives have been tuned to advance and adapt to the frontline of our customers’ evolving IT infrastructure needs, and attest to VMware’s continuing commitment to our customers’ success.
Appendix

Privacy Resources


Certifications

Products that have achieved Common Criteria certification include:

- VMware vSphere 6.0 (In-Progress)
- VMware vSphere 5.5
- VMware vSphere 5.1 U1c
- VMware vSphere 5.0
- VMware vCNS 5.5.0a
- VMware ESXi 4.1 and vCenter Server 4.1
- VMware ESX 4.1 and vCenter Server 4.1
- VMware ESXi 4.0 Update 1 and vCenter Server 4.0 Update 1
- VMware ESX 4.0 Update 1 and vCenter Server 4.0 Update 1
- VMware ESX Server 3.5 and Virtual Center 2.5
- VMware ESXi Server 3.5 and Virtual Center 2.5
- VMware ESX Server 3.0.2 and Virtual Center 2.0.2
- VMware ESX Server 2.5.0 and Virtual Center 1.2.0 VMware

For a complete list of VMware’s Common Criteria validated products, visit: http://www.vmware.com/security/certifications/common-criteria.html.

Section 508 Accessibility: http://www.vmware.com/accessibility

vCloudAir Compliance Certifications: http://vcloud.vmware.com/service-offering/security-overview

VMware FIPS-140 crypto module validations: https://www.vmware.com/security/certifications/fips.html

VMware also has STIG for vSphere 5.0 and guides for PCI & HIPAA compliance.

More Information


VMware Trust and Assurance website: http://vmware.com/trustvmware