Contents

A message from Ramón Baez ................................................................. 4
Strategy ..................................................................................................... 5
HP IT organizations .................................................................................. 6
Bring Your Own Device .......................................................................... 24
HP Cyber Defense Center ....................................................................... 28
HP on HP: A showcase for HP technologies ......................................... 30
Over two years ago, I decided to become Global CIO at Hewlett-Packard. It’s been a fantastic journey. Technology is disrupting business and changing the role of the CIO. We are working to drive innovative solutions designed to solve our customers’ most challenging problems — and ultimately improve HP’s business outcomes. I’m proud of our employees and Computerworld recently ranked HP as one of the top 100 places to work in IT.

Success hinges on consistency of leadership, focus, execution and — most importantly — great products and services. We are on a multi-year journey to restore HP to growth. We have the people, the plan, and the foundation in place to help us succeed on the next phase of the journey.

Today’s CIO must innovate more than ever and move faster than the speed of business. We continually re-examine whether we are making the right investments to move the needle and improve business outcomes. During the past year we have moved beyond data center consolidation to bring innovative solutions to HP and its customers:

HP IT implemented Workday — marking a major pivot for us. Our challenge was to optimize our HR processes and capabilities, enable timely and effective decision-making for HP’s workforce, and give significant time back to employees and managers.

We created an instrumentation dashboard for our enterprise group to improve revenue projects. This innovative tool saves HP about USD 4.5 million annually.

HP IT developed our global Cyber Defense Center (CDC) as a showcase for security and IT operational excellence. The CDC provides around-the-clock monitoring across multiple business units with the immediate response by the CDC Security Incident Response Team.

The launch of the IT employee development program improved the skills and capabilities of our teams — they are now even more prepared to be successful in the New Style of IT. About 2,300 people have participated with about 92 percent of those surveyed saying they would apply these new concepts in their day-to-day work.

At HP, each of our business groups faces different challenges and the IT team works to help them thrive amidst technology disruption. Please enjoy this report to better understand our recent achievements.

Ramón Baez, SVP & Global CIO
@RamónFBaez
At this point in HP’s turnaround, the company has executed successfully against its objectives ... keeping customers and partners at the forefront. HP has reignited its innovation pipeline, strengthened its go-to-market capabilities, rebuilt its balance sheet, and inspired its workforce and management teams. The company is now positioned to accelerate performance, drive sustained growth, and demonstrate clear industry leadership in key areas.

Our strategy has been designed around seven key objectives that provide guardrails for us to run IT effectively and bring a new level of innovation to the company. This is more critical than ever as HP completes its turnaround and aims for future revenue growth.

**Drive** financial savings and increase the investment to change the business — this involves reducing our total IT spend and changing our mix of spend.

**Become more responsive** by increasing quality and decreasing cycle time — increasing agility and accelerating time-to-business value will help HP grow its business.

**Be transparent** to our business groups by migrating to a consumption based allocation model — this provides a line of site to portfolio spend and increases transparency to the business.

**Simplify** the environment by rationalizing redundant applications and interfaces, reducing process cycle time and legacy run costs — simplifying the IT environment and business processes helps us operate more effectively.

**Innovate** for the business using the latest and best technology — transform our technology for the New Style of IT.

**Showcase** HP on HP success stories and increase IT’s contribution to transformational deals.

**Inspire** our people and develop a strong innovative culture and identity — invest, inspire, and unleash a compelling culture of innovation.

Essential to our IT strategy is HP’s philosophy that IT should be closely aligned to our business units and to the company’s customers. Doing so means that we can move ahead of the business itself, anticipate challenges before they arise and, most importantly, maximize our products, software, and services to make HP’s customers more successful.
Enterprise Group & Global Sales Operations IT

We deliver User-Centric IT that drives business outcomes. We achieve this by understanding our user community’s underlying business needs, delivering simple, straightforward, and user-friendly solutions, and continually evolving to support changing business needs.

Developing environments in minutes
Understanding that businesses need their development environments to be up and running as quickly as possible, in 2014 we collaborated with HP Cloud and HP Software to launch Forj, an open source cloud-based capability for continuous integration and delivery.

Facilitating pipeline visibility to channel partners
To provide HP Channel Partners pipeline visibility to contract renewals and conversions, opportunity management, and self-service quoting, we launched Services360 Pro, an online services and contract opportunity management solution that provides a 360 degree view of their HP installed base business. Partners can now grow revenue through more effective management and renewal of their pipeline of expiring HP service contracts and Care Packs.

Generating tech refresh sales leads
To help drive business by generating valuable leads, in 2014 we began generating highly qualified and valuable tech refresh leads based on installed base information. By mining combined relevant device, obligation, and customer information in one place, this program generates sales leads directly into the Sales Client Relationship Management system (Salesforce.com).
Empowering our partners with a single and secure gateway
Benefiting our partners with improved self-service quote turnaround time, and discount-based guidance analytics, our new Unison Partner Portal offers our partners a single secure gateway to access the tools and content they need to do business with HP.

Simplifying business processes
In 2014 we kicked off the Global Support Delivery (GSD) transformation with an initial release that included new Salesforce Developer Community solutions for lead management, service request management, analytics and reporting. The GSD transformation enables an end-to-end personal, proactive and simplified service experience, a key element of the HP Technology Services initiative to implement the best service experience in the industry supporting the New Style of IT.
We extend well beyond consumer printing and personal system, and provide company-wide support to HP engineering, design, marketing, and HP.com.

Enabling best-in-class supply chain for HP and our enterprise customers

Through a competitive selection process, we selected HP Enterprise Services as our new managed services partner for supply chain efforts. This is an example of how HP uses its own services to achieve greater success. There are many key advantages to this decision, including flexibility, time-to-value, time-to-market, and first-to-market advantage. Supporting one of the largest supply chains in the world, HP Enterprise Services brings supply chain knowledge and capabilities to the marketplace at any scale.

Internally developed solution for improving the customer experience

We launched HP’s new mobile store (HP Shopping) for U.S. consumer products on our go-forward eCommerce platform, replacing a former third-party solution. The new HP IT solution has increased functionality, including allowing customers to configure products they would like to purchase. Throughout the project, the team used their expertise and creativity to integrate innovation and quality for this customer-facing solution that allows customers to research HP products “on the go.”
Agile and analytical solutions
In collaboration with Printing and Personal Systems IT Finance, we launched the Segmentation Dashboard — a solution that displays product performance across markets and geographies, allowing for faster, tailored product offerings that our customers want — and in the countries where they want them. After its pilot run, the dashboard was globally implemented to operate HP-wide.

Increasing capacity and improving recycling
To help drive manufacturing efficiencies, the Imaging and Printing IT and Ink Supplies business teams collaborated to increase manufacturing capacity of ink supplies for the OfficeJet Pro printers by 17 percent — or up to 72,000 per month — for 12 months. We also improved our process of recycling unacceptable supplies by reworking them into marketable cartridges.

Improved customer service through reduced call times
Further improving consumer satisfaction and the customer experience is a top HP goal. In 2014, we deployed Salesforce to all 55 HP consumer call centers, including 6,500 agents worldwide in nine different languages, and reduced customer call times by 90 seconds per customer call, on 19.5 million calls annually.
We provide the Information Technology services and platforms to enable the development and delivery of solutions for HP Software.

Strengthening our networking virtualization technology
To strengthen HP’s networking virtualization technology, in 2014 we acquired long-time partner Shunra and successfully relocated their IT operations to an HP support facility without customer or sales disruptions. The Shunra acquisition enabled us to not only strengthen our networking virtualization technology, but also save on annual software commissions.

Improving self-solve capabilities for customers
To improve software support’s customer experience, this year we implemented the OneService Portal. With increased usability and self-solve capabilities, the portal provides HP customers with a support community that reduces assist-solve by phone and ticket costs. In addition, the improved search of HP’s knowledge base provides our customers with more self-solve options.

Improving Pronq’s user experience
Page load time has a strong influence on a customer’s perception of a product’s quality. To accelerate page load speeds on HP Software’s Pronq web-selling platform, we helped deploy Akamai’s web acceleration product. Using Akamai’s worldwide service optimization network improved page load time by 54 percent, provided a better customer experience, and enabled HP to scale significantly without incremental hardware investment; even during event-driven and seasonal spikes.
Improved Software Publishing Services operations

USD 11.5 million in additional yearly revenue

54% improvement to Pronq online performance

Shunra acquisition:

USD 7 million annually saved in software commissions

20% reduction in Support Cases

HP Software OneService Portal

... The collaboration [on the Shunra move] with various business teams was smooth and a testament to the careful planning and leadership put forth by the team.

- Brian Fleckenstein, Solution Architect, HP IT

Optimizing customers’ software product lifecycle

To better address Software Publishing Services customers’ needs, in 2014 we partnered with Enterprise Group’s IT SAP team to develop new capabilities that optimized customers’ software product lifecycles. These enhancements included streamlining existing operations, ensuring consistency, reliability, and quality of delivery by improving order loading processes, and development of a new serial number scanning tool for product tracking. As a result, we have estimated USD 11.5 million in additional yearly revenue as well as improved customer satisfaction.
Company-wide, we provide shared services and technologies that deliver information, master data, business intelligence, application integration and process orchestration.

Enabling automation and self-service
Provisioning, copying, and refreshing databases now takes seconds — not weeks — for HP employees. The Cloud Database Portal is a self-service solution that offers six database-as-a-service technologies, including a new open-source technology. The portal also provides executives with visibility into HP IT Private Cloud usage costs, and enhances our HP on HP story by leveraging several HP Software products and services.

Delivering accurate revenue predictions
Enterprise Group (EG) wanted to increase the probability of meeting its revenue goals and reduce risks associated with predicting HP’s performance. The answer: the Instrumentation Solution and its novel approach to analytics. In collaboration with EG, Global Business Improvement, and Development Services, we improved the prediction of quarterly revenues to within less than one percent of actuals.

Increasing renewals and sales opportunities
In 2014 we released the Autonomy Technology Services Care Pack tool, connecting HP’s Intelligent Data Operating Layer with the Europe, Middle East & Africa Order Management System. The tool greatly enhanced customer records’ data quality, and drove an increase in Care Pack renewals.
Improving staffing resources
Reviewing resumes can be time consuming and inefficient for staffing agencies. In 2014, we addressed this by collaborating with Human Resources and Enterprise Services (ES) to develop the TalentSearch application. ES can now staff customer accounts faster and with the right resources and skills, significantly reducing the amount of time spent reviewing resumes. This new application allowed Labor Demand Supply Management to reach its cost reduction and revenue increase objectives for the year.

Listening for improvements
To measure employee satisfaction, HP IT launched myITfeedback, an automated sentiment analysis solution that captures feedback from internal users. HP’s Intelligent Data Operating Layer, combined with the Autonomy Explore Platform, allows us to analyze the experiences employees have with various HP services. Employee feedback allows us to create and improve solutions for a better employee experience.

Increasing customer retention
Positive conversations and engagements help us understand the needs of our customers. To improve customer interactions, we introduced the RAPID Global Technology Services solution — an automated, 360-degree view of customers’ accounts, buying trends, upcoming renewals, Care Pack conversions, and growth opportunities. By integrating data from multiple systems into a single business intelligence service, this solution makes sales processes more efficient and enables proactive conversations with customers about their needs. Additionally, in leveraging the Vertica platform, this solution further advances our HP on HP story.
By offering technology solutions that are scalable and collaborative, we look to increase customer satisfaction and promote the New Style of IT.

Removing barriers, simplifying, and automating
To improve the experience of our customers, in 2014 our Helion solution brought together our global cloud products and services in one unified portfolio — combining private, public, and hybrid cloud, as well as traditional IT and the New Style of IT. This portfolio allows us to more easily engage customers and help them confidently implement their hybrid IT deployments. In addition, the recent release of the Helion Cloud portal greatly simplifies and automates new customers on boarding to Helion and integrating to HP Service Manager.

Enabling better business decisions
To solve the challenges that exist in merging financial, technology, and operational data to deliver improved analytics and automate processes, we implemented Apptio Cost Transparency solution — a Software as a Service application designed to manage IT like a true business function. Apptio calculates the true cost of IT applications and services, and dramatically improves everyday decision making across IT.

Resourcing smartly
Operations Orchestration is a service automation tool that efficiently reduces manual efforts for IT
Operations organization. It is a versatile automation tool and we use it for incident handling, batch job recovery, application problem resolutions, server provisioning, infrastructure error handling and other IT Operational tasks. With this tool, we have closed over 190,000 service tickets for HP IT, and reduced server builds from weeks to approximately four hours.

**Customizing portals with Propel**
To provide users a unified, consumer-oriented services shopping experience, in 2014 we offered HP Propel and its fully integrated open framework that complements existing systems. HP Propel is an easily personalized, customizable, and administered portal featuring a combined service catalog, knowledge management, support, and IT news.
As a global function, our solutions enable HP to balance the books, manage its people, remain compliant, and operate the enterprise faster and easier.

**Transforming the employee experience with Workday**

HP IT recognizes that the way managers and employees work is evolving. To help support this shift in expectations, we executed the world’s largest deployment of Workday; transforming the way managers and employees do their jobs across HP by providing easy access to HR programs, transactions, and access to real-time data analytics.

**Forecasting accurately across HP**

To develop better forecasting tools, we worked jointly with Global Analytics and HP Finance to develop a solution that allows analysts to compare model output to historical revenue, as well as past and future Flash submissions. Using an open source code base called “R,” we created predictive algorithms for the most accurate forecasting possible. This is a vast departure from the way HP previously managed its forecast.

**Strengthening regulatory compliance**

Complying with the Regulatory Compliance Review Board (RCRB) is of paramount importance to HP IT. In 2014, we took measurable steps to strengthen that commitment:

- Backlog reduction — completed 28 of the 56 projects identified as RCRB backlog
- Backlog prevention — delivered an additional 121 Plan of Action projects
- HP risk reduction — reduced HP’s compliance risk by approximately ten percent
The new [HP Financial Services Customer and Partner] portal couldn’t come at a better time for partners who are driving an increasing number of leasing/operating-expenditure-based-deals.

-Irv Rothman, CEO, HP Financial Services

Driving revenue and reducing operational costs
To maximize its online capability for both the customer and partner communities, in 2014 HP Financial Services (FS) consolidated those capabilities with the help of two newly launched portals: Partner Connection Tools and Customer Portal. Driving additional revenue and reducing operational costs for FS, both platforms offer around-the-clock self-service, giving partners and customers flexibility in meeting timelines and requirements.

Transforming payroll by retiring legacy systems
To revolutionize current ADP payroll services and time-tracking systems, Global Functions continues to partner with Global Business Services on a multi-year deployment of a cloud based payroll and time tracking system. Once deployed, the system will reduce financial risk and increase HP’s global compliance capabilities. To date, 11 systems have been retired, with 20 countries live on the payroll platform and 14 live on the time tracking platform.
Recognizing the need for quick time-to-market solutions, we offer cost-effective New Style of IT solutions to our customers and partners.

Contributing to major business programs
In 2014 we collaborated on the majority of projects on the IT Plan of Action; including major programs from all IT groups. These projects included assisting Global Functions on the Lighthouse migration and Bluesky/Workday, and implementing the customer and partner portals. In addition, we assisted in the development of the Partner Portal for Enterprise Group, as well as Propel and 360 Dashboard for Enterprise Services.

Migration and compatibility
For our customers and partners, we completed many migration services in 2014, including:

- “Cloud Migration Factory”: In partnership with Infrastructure & Operations IT, we accelerated the migration of IT applications to HP’s Private Cloud
- “Microsoft Upgrade Test Factory”: We tested pan-HP web applications to ensure compatibility with Internet Explorer 11
- “Big Data migration validation”: Developed to assist with migrations from a third-party platform and enterprise data warehouse to new platforms, our “Woodstock” tool validates data structure and content integrity following a platform migration in less time than traditional methods
Microsoft Upgrade
Test Factory launched
1,800 web applications

Collaborated on 76% of all IT POA projects

Cloud Migration Factory
completed 63 applications in 2.5 months

7,700 volunteer hours logged by employees

Showcasing staff creativity
In September we hosted Global TechDay 2014 in China, India, Malaysia, and Mexico. A professional-grade event held to promote and showcase employee creativity and innovation, this year’s event received 701 abstracts and presented to over 3,000 attendees and guests.

Developing talent and recognizing innovation
To continue offering the best talent to our customers and partners, in 2014 we focused on helping our people succeed and rewarding their efforts. Our managers went through formal development training, and we had 12 technical masters promotions. In addition, our applications security group was honored by the Information Security Asia forum, we had six patents awarded, and we presented papers at Informatica World and Americas SAP User Group.

Giving and connecting with others
In 2014 our employees contributed over 7,700 volunteer hours to programs such as Reforestation in Mexico, beach cleanup, and assistance to orphans and the elderly in India. Our employees also contributed time to a student summer camp and elderly care in China, Second Harvest Food Bank in America, and various charitable events in Malaysia.
To help identify value, we manage and define HP IT’s portfolio to make sure our overall focus is on beneficial and balanced projects.

Streamlining software development lifecycle
In 2014 we simplified the administrative aspects of software development projects by reducing the artifacts required to complete a project. This allows executives to tailor which artifacts are relevant to their unique projects, resulting in reduced project overhead. As a Lean Six Sigma project, this effort was showcased by the Continuous Improvement team to all of HP IT.

New tools for managing portfolios
Our Portfolio Support office implemented a new suite of portfolio planning tools and processes that enable improved business submission, evaluation and prioritization of project requests, and optimization of the portfolio. With the new dashboards, executives have improved visibility to projects, programs, and overall portfolios.

Building a culture of continuous improvement
The goal was significant: to inspire a culture of continuous improvement. In response, a Continuous Improvement council was formed to focus all IT organizations on Lean Six Sigma’s training and project improvement initiatives.
Supporting planning cycles
To increase the value of project portfolios, we developed the Project Portfolio Optimization tool in support of fiscal year 2015’s planning cycle. Originating in HP Labs, the tool uses advanced mathematics to make portfolio recommendations based on value, resources, business priorities and human judgment — resulting in selecting the best projects for investment.

Managing vendors for improved negotiations
HP IT works with hundreds of software vendors to support the needs of our business groups. To improve measurement, monitoring, and management of vendors and their products, we developed and implemented a software vendor and product database. These tools have contributed significant cost savings through improved vendor negotiations.

Protecting the business
In these changing and unpredictable times, keeping our business operating in the event of disruptions is vital. To support this, we formed a Business Continuity team to drive and support continuity efforts in our organizations and across HP’s business units. As part of this effort, the team deployed specialized tools that assess readiness and build continuity plans.
Our stable technology solutions allow HP’s businesses to improve productivity, so that they can concentrate their efforts on other areas and priorities.

**Transforming collaboration during conferencing**
To help drive a collaborative and dependable conferencing environment for HP employees — who average over 180 million conferencing minutes a month — we migrated to the rich, collaborative features of Lync and provided Lync headsets to over 120,000 HP employees. With easy screen share, mute, any device connection features, and reduced connection times, Lync is gaining in acceptance and quickly becoming the go-to collaboration tool; exceeding InterCall use by nearly 81 million minutes in September 2014 alone.

**Improving the employee experience**
Our new Employee Experience IT Roadmap — a simple and concise look at what’s coming — highlights the IT service changes that help drive productivity and make it easier to work at HP. 2014 included: myITpc centers, myITdashboard, improved WiFi, and more. One of the biggest accomplishments was the launch of myITsupport, a project to replace the Get IT self-service solution. More than just a website, myITsupport provides an easy-to-use interface with vastly improved content along with an agent console that helps our customer care agents be more productive than ever. And, for the first time, employees now have access to IT help from their mobile devices. This is a significant leap forward for one of the most-used websites at HP, with more than 20,000 employees accessing it every day.
Leading the way to the cloud
In 2014 our efforts helped develop IT’s private cloud into an enterprise ready Infrastructure as a Service, providing an enterprise class self-service marketplace for mature enterprise IT solutions. The solution’s architecture provides a proven and highly scalable platform that enables aggressive virtualization of existing workloads and increases resource utilization. And because it is built on enterprise technologies, we have mature management tools, hardened security, infrastructure high availability, and the capability to match traditional IT service levels with existing skillsets.

We are also leading the way in the adoption of Helion OpenStack, HP Helion Development Platform, and Cloud Service Automation solution. A true HP on HP story. Currently, we have over 627 applications with production environments in the cloud.

Delivering project innovation
Supporting the move away from legacy and redundant systems, we increased agility and freed up resources for further innovation by successfully creating an end-to-end comprehensive reference architecture and foundational strategy. With HP’s complex architecture, this newly simplified IT landscape no longer taxes the integration layer and removes multiple points of failure. As customers increasingly change how they consume compute, this enables the transformation of applications and infrastructure in a uniform way. Now, information is accessible to all project team members, providing a consistent set of architectural best practices and a blueprint for all projects.

Continually improving
In 2014 we implemented Lean: a proven, well-established methodology for getting work done that identifies and removes waste in all its forms, while increasing work that is valued by the customer. As a result, waste from workflow was removed and 25 percent capacity realized, time-to-fix percentages were consistently better than the Service Level Agreement, team productivity increased 30 percent, backlogs were reduced, and more training opportunities for employees were made available.
No matter which HP facility employees are working from, they want to use their personal devices and have dependable access: Palo Alto on Monday, Shanghai on Thursday, the end-to-end user experience needs to be seamless.

In 2014, a partnership between HP Labs, HP Networking, and HP IT transformed our WLAN to one that supports Bring Your Own Device (BYOD) and seamless authentication, freeing our employees from their workstations — and extending Internet and limited network services to HP guests.

Making authentication simple and seamless
We knew that HP Networking had the Intelligent Management Center (IMC) platform, and that it provided a centralized authentication and management point. As we discussed and studied current options, we wondered if the solution could be used to simplify our existing authentication requirements. It sounded simple enough, but only through the inventiveness of our teams and sharing of expertise and insights were we able to find a solution that met employees’ requirements: dependable, wireless access across HP’s network. And for HP guests, offering limited services and Internet access … without authentication.

This meant careful analysis of employee feedback and use cases, as well as investigation into how our existing investment in wireless, plus IMC, could be leveraged to satisfy those use cases.

In early 2014 this collaborative authentication solution, now known as IMC 7.0, was launched as a pilot program and ran on a workstation in a lab. Now, as we near the end of 2014, IMC 7.0 has been brought out of the lab and into the data center,
... Since rolling out our BYOD solution with IMC, we’ve significantly reduced our support call frequency. It’s a much better allocation of engineering resources.

-Jeff Sprankle, Wireless Architect, HP

running with great success on twenty four ProLiant gen7 servers. For our IT teams, this collaborative solution has reduced support calls significantly, allowing engineers to reclaim untold hours of support time.

Management and oversight
This new ease in access seems nearly effortless to HP employees and guests, but behind the scenes there are 20,000 access points in place that serve over 220,000 employees in 125 countries. Utilization is up, support tickets are down, and administrators have greater control over the network with increased reporting and visibility.

Wearables and beyond
The smartphone and tablet markets continue to grow, but wearable devices, electronics packed into glasses, watches, and more, are prompting a new wave of connected possibilities. We need to be ready. Our BYOD platform will continually scale to meet the demands of what is already here — and scale to welcome user-driven changes in the not-too-distant future.
Protecting HP with extensible security capabilities that safeguard our technology is our mission. While maintaining acceptable levels of cyber security risk, we also externally showcase HP security solutions and advance HP business objectives.

Securing an unpredictable world
The Cyber Defense Center (CDC) offers world-class capabilities in operations, engineering, intelligence, and incident management for all of HP. A showcase for HP on HP, it is home to one of the largest ArcSight implementations in the world. In 2014 alone, the CDC hosted over 200 executive customer briefings.

Protecting customers from malicious behaviors and attacks
Payment Card Industry (PCI) is a critical piece of our compliance and protection of key customer data held in credit card transactions. This year, our PCI program successfully completed 246 assessments and gap analyses and leveraged several enterprise level security tools matured within Global Cyber Security. Year on year, we moved merchant-side PCI compliance forward by 60 percent in 2014.

Improving decision making with better insights into security risks
Governance, Risk & Compliance delivers an enterprise-wide cyber risk view with common frameworks, architecture, and collaboration to deliver value and optimize performance. In 2014 we launched the pan-HP Risk Management program and pan-HP Information Security Policy and Standards: a uniform baseline across HP that allows for added customization by businesses.
Embedding security in HP products
To ensure HP products have the best possible security posture prior to production, Product Security steers development teams to apply security within the product lifecycle. In the past year, its pan-HP services (including product security incident response) led to consistent maturity roadmaps, better compliance and regulatory support, and cost reductions from shared services and economy of scale.

Consistent user experience with unified identity and access management
We successfully launched the OneHP Unified ID program in 2014 for secure access to critical resources and business processes across HP. This included on boarding of the HP News Now portal, 179 applications across HP, and processing over 5.35 million authentications for over 235,000 unique HP users.
November 2014 marks the one-year anniversary of HP’s Cyber Defense Center. This achievement demonstrates not only our ability to have a collective 3D view of the entire enterprise, but it also allows us opportunities for unmatched advances.

During the year, the Cyber Defense Center (CDC) protected HP’s enterprise primarily from its own user base by detecting malware and removing it from HP’s network; mostly made vulnerable by users downloading software from unauthorized sites and clicking on harmful links in unwanted emails. The CDC also protected HP from attack types such as Heartbleed and Shellshock — malwares that could have resulted in extreme vulnerabilities and exploitation if not detected and patched.

Since January 2014, the CDC team has provided added significant value to HP sales enablement by hosting over 200 HP on HP customer visits and investing over 980 hours to prepare and deliver briefings for those visits. Of the sales opportunities related to those customer visits, the total potential revenue was USD 11.3 billion and the average potential customer revenue value was USD 44.1 million. The actual closed revenue realized where the CDC was involved was over USD 300 million.

In alignment with the HP on HP vision that IT should be HP’s best customer showcase, the CDC team deployed the majority of products within the ArcSight product family and integrated data feeds from approximately 600 TippingPoint Intrusion Prevention Systems. Partnering with HP Labs, we implemented...
Domain Name Server (DNS) logging appliances to collect logs from six NDGC-based DNS clusters — which are then sent to Vertica for advanced analytics and alerting the CDC. With the CDC’s Continuous Improvement initiative, security teams continue to identify stretch goals and challenge their imaginations to discover new and inventive ways to create and protect. To arrive at more efficient and powerful outcomes for our customers, business partners, and the CDC, teams are encouraged to self-reflect on customer needs and compare those to current HP product capabilities.

Malware was projected to cause USD 491 billion in damages across the U.S. in 2014.
HP on HP

HP IT is solving the same New Style of IT challenges that our enterprise customers face every day with Cloud, Big Data, Mobility, and Security. Due to sheer size and complexity, the moment we implement a new product — we become the biggest and best reference customer in the world for HP products and services.
HP IT runs on HP products. And because of our size, scale, and early access to products, we are uniquely positioned to influence product direction, test, and provide feedback on improving products before they go to customers. And with first-hand experience, we demonstrate daily how the use of HP products improves HP IT operations.
Big Data helps us identify new opportunities and markets, and deepen our understanding of customer needs and actions.

A Big Data solution found in our own HAVEn

To fully appreciate the value of Big Data, we needed a technology that could help us analyze data sets that were dwarfing the size of traditional databases. As it turns out, the best solution was also the closest to home: the HP HAVEn platform. With HAVEn, we found a comprehensive Big Data analytics solution that improved the hp.com customer experience, while also offering improved clickstream analytics.

Billions of clicks
Visited by nearly 2 million unique visitors every day, hp.com functions as one of HP’s most important communications vehicles. By offering thousands of pages of information on products and services to the public, the site is our virtual storefront, enabling us to engage and do business with HP customers. And with these millions of interactions, hp.com generates ‘clickstream’ data, including information on what pages visitors load, how much time they spend on each page, what links they click, and how they exit the site.

Quickly analyzing this data allows us to deepen our understanding of our website visitors — helping us to further improve the site by making it more user-friendly and navigable. More broadly, analyzing clickstream data yields insight into how customers buy and search. Analyzing this Big Data enables us to refine sales and marketing campaigns, and even product and service offerings.
Big Data analytics, user-friendly model
For improved clickstream analytics capabilities, we leveraged two components of the HAVEn platform that are massively parallel processing systems designed for low-cost Big Data processing: Vertica: a scalable database platform, custom-built for real-time analytics, with sophisticated storage and execution functionality and Apache Hadoop — to serve as the solutions distributed file system.

Since deploying HP HAVEn, our analysts can now get query results exponentially more quickly than they could with the legacy solutions — despite a fourfold growth in the size of the data. Queries that previously averaged 24 hours to process can now be completed in 15 seconds — an impressive improvement in performance. Another advantage delivered by Vertica is that it is based on ANSI SQL, a structure familiar to — and easily embraced by — HP analysts.

We know that our website must deliver an interactive and personalized experience to our visitors. And given the importance of HP.com to the company’s revenue and brand, it’s likely that managing our clickstream data will continue to be an important function of HAVEn.

- We reduced our storage space needs by 60 percent
- The same storage hardware previously needed to manage four and a half months’ worth of data, now manages four to five years’ worth of data
- The reduced storage footprint enables us to avoid USD 10 million per year in future capital costs
HP’s network has 1.4 million network devices, more than 41,000 IT-managed servers, hundreds of thousands of employees, over 148,000 managed mobile devices, and billions of logged security events. With such a vast network, we needed a solution to help us understand who was on the network, what information they were seeing, and what actions they were taking with that information.
We trust HP’s security products to protect HP’s business

Monitoring the network with HP ArcSight

Before ArcSight, the views provided by monitoring solutions were fragmented: we could view the network, servers, and firewall logs, but there was no way to knit the data together into a comprehensive global view — potentially leaving our network vulnerable to fast-moving cyber-attacks.

The who, what and when of everything
With HP ArcSight we can detect, evaluate and escalate potential cyber security incidents in real-time for all of HP. Our internal Cyber Defense Center (CDC) collects billions of security events daily from the various security systems deployed throughout the company. By using ArcSight’s advanced correlation capabilities, we can reduce this Big Data problem to 1,000 actionable alerts per day. Once a potential security incident is identified, it is evaluated and escalated to our internal Cyber Incident Management team for investigation and remediation of the threat.

In the CDC, we showcase how HP envisions cyber security operations on the scale of the HP enterprise. We demonstrate the people, processes, and technology needed to run operations in a fully functional CDC to our customers and partners. We also co-innovate on several cross-business unit initiatives and serve as a full-scale test bed for our various security solutions.
Best practices for proactive prediction, prevention, detection, and response
After deploying ArcSight, one of the first valuable discoveries made was that our network, as is true with all global enterprises of HP’s size, had accumulated a certain degree of malware and spyware. With the help of ArcSight, we were able to uncover issues that were undetectable by users.

Additionally, ArcSight’s global, centralized security data provides a comprehensive view of network activity and permits more robust, intelligent Big Data analysis through integration with HP Vertica Analytics Platform, a big data solution from HP’s own software portfolio. Vertica’s analytics capabilities enable HP to rapidly identify routine vs abnormal network traffic and patterns. This results in an enhanced ability to not only detect but to predict and preempt bad guy activities.

Our security team continues to connect ArcSight to more data feeds — in doing so, information becomes richer and more meaningful. And the longer the CDC uses the solution, the more intelligent it becomes.

Cleaning up after the network, identifying threats
HP ArcSight has also helped us identify cyber-attacks and take remedial action. In one example, we detected a new virus that was attempting to replicate across the environment and set up fake domains; it sped up our domain controllers, potentially locking people out of their accounts. With ArcSight, we were able to detect the virus by its behavior. We were able to move quickly to shut down the infected controllers and contain the virus before it could significantly impact user productivity.

Because it is impossible for us to secure what we cannot see, implementing HP ArcSight was a top priority – this solution is our eyes and ears.

Expanding ArcSight’s HP on HP footprint
What’s next? As announced at HP Protect in September 2014, Global Cyber Security (GCS) is partnering with HP Labs and HP Software’s (HPSW) Autonomy and ArcSight teams to integrate machine learning techniques that will identify advanced stealth attacks. Additionally, the GCS ArcSight team continues to work with HPSW’s TippingPoint Intrusion Prevention Systems (IPS) to improve IPS product payload trace capabilities.

Without HP ArcSight, it would be impossible for us to have an understanding of our security posture or what is happening in our environments. The ability to monitor IT assets and user activity on the network is a foundational enabling technology for our Cyber Defense Center.

- Brandie Anderson, HP Software, Enterprise Security
Blocking malicious traffic with TippingPoint IPS

Integrating with ArcSight, and automating the blocking of malicious traffic at key access points, is HP’s TippingPoint Intrusion Prevention System, or IPS. TippingPoint IPS addresses vulnerabilities throughout the network by blocking malicious traffic at key Internet access points. To illustrate just how vital TippingPoint IPS is to HP, consider that over a recent 30-day period TippingPoint IPS prevented over 100 million events! In addition to countering those threats, TippingPoint also blocks dedicated Denial of Service attacks aimed at halting HP Internet activity.

Proactively protecting applications with HP Fortify

Applications are the most common target of online attacks and constitute the single biggest security headache for any company, regardless of size, but more so for a large scale globally-dispersed enterprise corporation. Proactive security testing to protect and harden applications protects against software security risks from development to production. HP’s Fortify product suite protects mobile and traditional applications by equipping application developers with security capabilities that allow them to find and address software vulnerabilities as part of the application development lifecycle. An example of the significant productivity gains that Fortify has provided within HP: in the pre-Fortify timeframe, the “manual” approach took an average of 80 hours to complete … with Fortify our average decreased to eight hours!
Proactively protecting websites with HP WebInspect

HP’s websites play a vital role in conducting business for the company on a 24/7 basis. Unfortunately, our web sites are also targets of opportunity for hackers who continually prod the network looking for vulnerabilities. We can’t afford to be reactive – we have taken a proactive approach to countering these threats through the use of HP WebInspect. WebInspect is an automated and configurable web application security and penetration testing tool that mimics real-world hacking techniques and attacks, and provides HP with a platform to simulate an attack on our own websites. The WebInspect security solution provides HP with accurate mapping of our own sites and identifies potential vulnerabilities. It also converts the collected data into actionable insights and analytics.

The benefits are tremendous

Using our own tools to lessen the risk of security defects proactively in apps and websites frees our developers from having to become security experts. Blocking malicious traffic with Tipping Point IPS provides us with the ability to monitor and control known vulnerabilities by utilizing digital vaccines, and provides visibility using TippingPoint’s integration with ArcSight. And without HP ArcSight, it would be impossible for us to have an understanding of our security posture or what is happening in our environments. The ability to monitor IT assets and user activity on the network is a foundational enabling technology for our Cyber Defense Center.