The Berkeley Desktop

Project Details

Title
The Berkeley Desktop

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Summary
The Berkeley Desktop provides numerous and previously disparate IT infrastructure service offerings in one place and reduces the administrative labor costs and overall time sink previously associated with the use of these services. The Berkeley Desktop also provides a platform for researching, testing and determining standards for laptops and desktops.

The Berkeley Desktop is a structured and unique collaboration between UC Berkeley central campus IT, UC Berkeley Campus Shared Services IT, and UC Berkeley departmental IT. The Berkeley Desktop also collaborates closely with UC San Francisco on the Joint Administrative Computing Standards (JACS) Program to create standards for desktop computing hardware.

The Berkeley Desktop is an automated, secure and unobtrusive service model for the UC Berkeley campus. It is technology infrastructure that provides critical operating system updates to and dramatically reduces security vulnerabilities for the campus population. Laptops and desktops receive regular patches without a disruption in service or performance. By design, users are secure and undisturbed.

The Berkeley Desktop deploys a wide range of service offerings with a vision of self-service for everyday IT needs, providing support to departments, faculty, staff and research, and increasing the automation and sophistication of campus-wide infrastructure services. The Berkeley Desktop delivers the following:

- Preconfigured campus Windows OS image
- Preconfigured campus Mac OS X image
- Software Central license administration and distribution
- Self-service software distribution
- Anti-virus management
- Managed desktop backup deployment and provisioning
- Managed delivery of campus licensed applications
- Remote support infrastructure
- Power management in testing phase
- Hardware standards in collaboration with UCSF
- Centralized configuration management
- Centralized and automated patching and updates for OS and applications
- Centralized management of security configuration to meet campus security requirements
- User environment management
The Berkeley Desktop provides a reliable, secure, and integrated administrative computing environment that reduces the amount of time faculty and staff spend maintaining their computers. The Berkeley Desktop delivers a campus-wide standard environment for desktops and laptops that combined with automated maintenance means that you see fewer problems and are able to get help faster.

The Berkeley Desktop is designed and managed by the Endpoint Engineering and Infrastructure (EEI) team within Information Services and Technology (IST) on the UC Berkeley campus. EEI serves the campus by providing new, efficient, and scalable infrastructure that in essence provides individual departments with a reliable platform on which to operate and expand. EEI respects the uniqueness of each department while simultaneously promoting standards for centralized offerings and cost savings.

The Berkeley Desktop is supported by Campus Shared Services (CSS). The nature of this collaborative effort is also a new approach to service offerings on campus. CSS provides the face-to-face support and interfacing needed to get users on board with the Berkeley Desktop. CSS works closely with EEI by providing feedback on users and various environments. EEI, in turn, generates solutions for CSS and its users based on this iterative communication loop. The combined effort of this collaboration improves both departments - by virtue of cross pollination and mutual respect - and provides the framework for a cost-effective and productive relationship.

The Berkeley Desktop also functions as the home for the Joint Administrative Computing Standards (JACS) Program. JACS is a collaboration between UC Berkeley and UC San Francisco to research, test and create standards for desktop computing hardware. All JACS standard hardware is recommended for the Berkeley Desktop. JACS models are also fully tested for use with Berkeley Desktop software and services. By creating and administering the program for hardware standards across both campuses, the JACS Program in conjunction with the Berkeley Desktop creates a comprehensive computing solution that is compact and deployable across the UC complex.

As a comprehensive one-stop infrastructure service for university faculty, staff and students to access information on hardware, software and getting help, the Berkeley Desktop consolidates services that were previously disparate and hard
to find. The Berkeley Desktop team brainstorms, develops, tests and implements a long range vision of the best possible tools to reach the largest possible audience to make their lives on campus better.

The Berkeley Desktop provides support to the following populations on campus:

- Campus Shared Services IT - EEI develops, manages and automates the Berkeley Desktop components that enable CSS-IT to provide fast and efficient support to faculty and staff.
- Campus Departmental IT - The Berkeley Desktop provides campus departments with a reliable platform on which to operate and develop specialized services. The Desktop's flexibility allows departments to build upon and meet their unique needs while simultaneously promoting standards, efficiency, and cost savings.
- Central Campus IT - The Berkeley Desktop serves as a unifying and coherent service offering built on top of infrastructure components already provided by IT.

The Berkeley Desktop accomplishes the following goals:

- Development of tools for automation that greatly simplify and reduce the cost of providing campus IT services.
- Minimize desktop-related loss of productivity for end users.
- Reduction in exposure to security vulnerabilities and compromises thereby minimizing liability.
- Provide a comprehensive and accessible suite of essential software offerings to all of campus.
- Implement and encourage standards and best practices for campus-wide workstation infrastructure.
- Strongly supports UC Berkeley’s One IT program to build IT community, allow IT partners across campus to engage with one another, and improve IT services coordination.

Campus-wide software offerings, by nature of their eligibility criteria, are typically difficult to manage and distribute. The Berkeley Desktop is complementary to Software Central, which is also managed by Endpoint Engineering and Infrastructure, to mirror compatibility on offerings and provide necessary considerations for specialized software packages. As the campus-wide service to manage software licensing and distribution for commonly used software for students, faculty, and staff, Software Central touches nearly every department on campus and includes packages for research, teaching, and administration. Centralized software licensing and distribution has resulted in:

- An overall decrease in the cost for campus to provide software
- A general increase in usage
- A more equitable cost distribution
- Productivity suite, connectivity, mathematics & statistics, operating systems, productivity, security, ergonomics

SOFTWARE CENTRAL PRODUCTS

CONNECTIVITY  MATHMATICS & STATISTICS  OPERATING SYSTEMS  PRODUCTIVITY  SECURITY  ERGONOMICS
Exceed HostExplorer  MatLab  Microsoft Windows  Adobe Office  Cisco VPN  CtrlWORK
SAS and more  Red Hat  and more  and more  Firewall Configurator  Stretch Break

The Berkeley Desktop team actively participates in the following relationship-building and information-sharing activities:

- Outreach and forums to departments that could benefit from EEI tools
- Collaboration with CSS-IT to partner on best practices and enablement
- Proof of concept demos of feature sets to diverse user groups for improvement and adoption
- Informal 1-on-1 with campus IT to gauge interest in new developments and discuss use cases
- Multi campus relationship building for partnering and reuse of shared knowledge and expertise
Implementation Timeframe

Berkeley Desktop Timeline

- Begin campus-wide migration to Trend Micro Core Protection Module anti-virus: March 2013
- Mac inventory and update patching debuts on Berkeley Desktop ecosystem: March 2013
- Campus-wide pilot for departmental inventory and update patching: FY 2012
- Remote desktop support capability introduced for campus IT: February 2012
- UC Berkeley and UCSF adopt Joint Administrative Computing Standards (JACS) Program to provide standard hardware recommendations for both campuses: February 2012

Berkeley Desktop Timeline

- Laptops introduced to Berkeley Desktop ecosystem with same level of support as desktops: January 2013
- File share configuration completed: January 2013
- First Windows image released using ImageDirect: January 2013
- Power management implemented: March 2013

UC Berkeley

- 5000 devices benchmark reached for inventory and patching updates: April 2013
- Berkeley Desktop backup program pilot begins: April 2013
- First EEI customized Windows image released using Microsoft Deployment Toolkit: April 2013
- Berkeley Desktop introduces automation for deployment, user set-up, and department migration: May 2013
- Self-service software installation introduced: May 2013
- Image generalized for broader campus-wide adoption: June 2013
- User environment management improved with automated Active Directory provisioning and management: December 2013

UC Berkeley

- Berkeley Desktops shipped straight from vendor via implementation of factory-based images
- Campus-wide backup program available via Berkeley Desktop
- Campus-wide Mac image in production on Berkeley Desktop
- Campus-wide Windows 8.1 image available on Berkeley Desktop
- Centralized printer management

Additional 25% reduction in time-to-install with release of latest Windows image: April 2014

College of Chemistry onboards to Berkeley Desktop: April 2014
EECS Administrative Computing Group onboards to Berkeley Desktop: April 2014
Energy Biosciences Institute onboards to Berkeley Desktop: April 2014
Graduate Division onboards to Berkeley Desktop: April 2014

University Health Services onboards to Berkeley Desktop: August 2013
College of Letters and Sciences onboards to Berkeley Desktop: August 2013

2012 2013 2014

Future Roadmap
Technology

To deliver the Berkeley Desktop, the Endpoint Engineering and Infrastructure Team utilizes the following major back-end infrastructure components:

- BigFix/IBM Tivoli Endpoint Manager is acknowledged in higher education as a prototype for large-scale desktop management. Our team is highly regarded as best-in-class.
- Microsoft Deployment Toolkit used to assist in the development of Windows OS images
- JAMF Casper used in conjunction with BigFix to provide specialized support for Mac OS X imaging, configuration management, policy management, application deployment, and self-service.
- Bomgar remote desktop support and remote desktop control. Infrastructure used by CSS-IT and departmental IT to provide remote assistance.
- PrinterLogic Printer Installer for upcoming managed printer configuration feature.
- Puppet configuration management tools for internal Unix server infrastructure.
- Zabbix for internal server monitoring and alerting.
- VMWare ESXi and vCenter in collaboration with Windows Server team to manage Virtual Machine clusters.
- NetApp vFiler in collaboration with Storage Team to manage new user and departmental data storage.

Relevant URLs

[desktop.berkeley.edu]
[software.berkeley.edu]

Project Impact

Automated and flexible management infrastructure: As a new invisible service model for UC IT, the desktop is a lightweight and secure powerhouse of services.

Significant reduction in faculty and staff interruptions from typical IT support: Minimizes desktop-related loss of productivity for faculty, staff and students.

Enables stewardship and efficiencies for CSS and Departments: The Berkeley Desktop enables CSS IT and departmental IT to effectively serve their users in a unified, predictable and consistent manner.

UC-ready standards: The JACS Program of the Berkeley Desktop is a comprehensive computing hardware solution that is compact, tested and deployable across multiple UC campuses.

IT Security: The Berkeley Desktop provides a significant reduction in IT security risks and exposure to vulnerabilities through frequent and automated updates.

Provides software that positively affects Teaching, Research and Administration: As the campus-wide service to manage licensing and distribution of software for students, faculty, and staff, Software Central touches nearly every department on campus and includes packages for research, teaching, and administration. Centralized software licensing and distribution has resulted in an overall decrease in the cost for campus to provide software, a general increase in usage, and a more equitable cost distribution.

Cost Effective: Common base reduces costs associated with disparate or non-coordinated offerings. Advanced automation means that maintenance costs are reduced and can easily be cost mapped and accurately predicted for future years.

Best-in-class and scalable: As a centrally-managed and expanding model, the Berkeley Desktop is highly implementable across UC.

Innovation through iteration: The team is constantly improving the image and offerings provided. EEI takes feedback from CSS and departmental IT to customize offerings and fine tune current offerings.
Metrics

- Reduction in overall desktop imaging time for IT staff by 50%
- Over 3000 campus machines updated and secure on the Berkeley Desktop
- Close to 6000 machines managed by EEI
- Approaching 10,000 machines inventoried and managed via departmental IT using EEI systems
- Monthly standard patching, security patching as needed to address immediate vulnerabilities, routinely and automated patches and updates routinely rolled out to machines on a weekly basis with no interruption in user service
- Software Central provides over 100,000 Microsoft licenses and over 67,000 Adobe licenses campus-wide
- Large and complex campus departments are increasingly requesting use of the Berkeley Desktop to manage and administer their infrastructure needs.

Customer Testimonials

Calvin Burnes, End User Device Support Group, Campus Shared Services:
“I love the new imaging process. The easiest imaging process I have come across yet. All devices were recognized in Device Manager, there was no need to install drivers or update device drivers. A big time saver. Minimal intervention was required on my part, just a few taps on the keyboard… Overall, I really love the new imaging process. I think it will be a real time saver. Nice work guys!”

Duane Straub, Supervisor, End User Device Support Group, Campus Shared Services:
“You are new here, so you may be unaware of the Endpoint Engineering and Infrastructure group. They create and routinely update the campus standard Windows and Mac OS images. They are pros. If you could even possibly add all the bells, whistles, and security settings to a clean install of Windows that are standard in the EEI image, it would probably take you at least a day and a half.”

Eric Avila, Procurement and Provisioning Team, Campus Shared Services:
Case Study Project: Machine Deployment for University Health Services
Description: This project will be covering a total of about 300 machines over the span of a year or two. So far Procurement and Provisioning has worked with EEI on 24 of those 300.
Problem: Because of UHS’ security needs, we were asked to make a stripped down version of the image. This involves uninstalling a slew of software and changing a few settings.
Solution: EEI has made a layout that pushes through TEM and does the modifications automatically.
Time Saved: On average, it takes about 15 minutes to do each machine manually. Coordinating the strip through EEI takes a total of about 10 minutes. For this first batch of 24 machines, EEI has saved us a total of 5 hours and 50 minutes.