



Apple Technical White Paper

# Supporting Mac Users: The Self-Support Model

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## Introduction

This white paper explores some methods IT departments that manage, support, secure, and control Mac computers can use to reduce costs while increasing user satisfaction with IT staff, policies, and processes.

The consumerization of IT and bring your own device (BYOD) trends are becoming mainstays of many businesses and enterprises. These changes potentially bring many benefits to medium and large organizations, including increased user engagement and productivity because users can work with the tools they find most efficient. These trends can also provide an increase in overall job satisfaction, boost employee satisfaction with IT experiences, and potentially reduce both hardware and software costs. In fact, a self-supporting philosophy can be a very powerful catalyst to empower users while potentially lowering costs.

These new self-support approaches are being explored in a wide range of companies across virtually every industry. Although these practices may not be right for every organization, they're well worth considering as organizations plan and allocate resources. Keep in mind that implementing all aspects of these approaches isn't necessary in order to increase user satisfaction and reduce costs. And with every offering, it's important to strike a balance so that users who prefer a self-support approach, as well as users who prefer a centralized IT support approach, are both satisfied.

## User Empowerment

Some of the common questions IT managers and staff in larger organizations are asking include:

- What if IT removes most, if not all, automated restrictions and controls on users' computers?
- What if the primary decision makers for the day-to-day operations of a computer are the people who spend most of their time using that computer?
- What if users are expected to understand the basics of their systems and be responsible for their operation, just like they may be responsible for their personal vehicle or house?

Over the past few years, ubiquitous access to the Internet, mobile solutions including Apple iOS devices, and cloud-related technologies have launched a trend of user self-support. Web portals have taken the place of phone support centers. Automated systems have supplemented human interaction in many support experiences. In the face of budget pressures, and with a workforce more accustomed to self-support, it's only natural many IT departments have begun considering this approach.

The concept of "consumerization" in the workplace is intriguing. For instance, the message of consumerization is: If you need something, get it yourself. You don't need to wait on hold or bring your system to a depot.

Instead, you can use available tools and fulfill your needs via a variety of automated systems.

Taking a completely consumerized approach may not be a viable option for every organization. Some organizations might be required by law to operate their computer systems with specific policies or standards rigorously enforced. Other organizations might have a culture or business model that's not well served by permitting increased user flexibility.

However, a number of organizations are implementing self-supporting and BYOD elements. Sometimes this is through a concerted effort on the part of IT departments to put more responsibility into users' hands. Other times, it's due to user dissatisfaction with existing support resources. These ideas, which might have sounded crazy and unworkable a few years ago, have now become commonplace.

Also worth noting is many new employees have grown up with mobile technology, social networks, and ubiquitous broadband. Studies show the generation of workers now entering the workforce prefers self-support models and mechanisms beyond the traditional help-desk phone line when it comes to requesting service. Many look to support themselves and their colleagues before considering more traditional centralized support channels. Combined with an almost universal desire for efficient and effective solutions (and their willingness to share such solutions), these attributes make them excellent assets to any organization.

## Software Installation and Updates

One of the more frequent IT tasks is application and patch provisioning. Software is constantly being updated. In most cases, it's desirable to ensure the latest software is in use. Keeping the user population on the same major versions of applications can significantly reduce user confusion and improve interoperability between different business units.

In the past, this task was performed via a very laborious process of carrying around installation media to each system and then installing applications or updates manually at each workstation. Later, a range of management suites and deployment tools became available that enabled IT to push applications and updates out to systems over a corporate network and install them with no user interaction at all. These systems can dramatically increase an IT department's efficiency, allowing thousands of computers to be updated with the push of a button.

However, these systems also brought along some challenges. They made it too easy to load applications that might never be used onto every system. After all, it just takes the push of a button. Site licensing facilitated this philosophy, making it legal and accepted to have a single application load across sizable organizations. Perhaps an extra software cost was involved, but it was more than made up for by the standardization of the systems. Little thought had to be put into what applications go where, and all users

could expect a consistent baseline of functionality on each computer they used.

As IT systems became more intricate, it also became easy to consider a more complex solution that would actually streamline the process and deliver users the software best suited to their individual jobs and needs.

Allowing users to individually select their unique software load is a core component of the consumerization movement (with or without users selecting or buying their own devices and computers in a BYOD model). This approach takes much of the selection and deployment work away from the IT department and simultaneously promotes a more efficient use and licensing of software.

## User Installation

At a basic level, self-supporting software distribution involves allowing users to go to a web page and just download software. Users have to be admins on their systems for many application installations, which does involve risk, but no IT hands necessarily need to touch the computer, and no third-party software is required.

It's not too much work to also create a license key distribution method at the same time, which allows users to get their own license key for a particular piece of software, if required, without having to go through a laborious purchasing process. Done well, and with some policing, this enterprise app store approach can eliminate the need for site licenses when only a fraction of the user base actually uses a particular application.

This model closely resembles what users do on their home systems and mobile devices, therefore it's easily understood by the vast majority of users. Most application vendors either use the Apple installer package format or have put time and effort into making the installation process simple, so little IT intervention is required to install an application on a Mac system. However, some applications—often custom-developed ones—may require some work before inexperienced users can easily do the install on their own.

## Mac App Store

Organizations are also able to leverage the Mac App Store for user self-support options. Individual users can easily download free software. Users can be reimbursed when selecting items for purchase, or they can be given gift codes purchased by IT or their business unit to download the software they need. Purchases made through the Mac App Store can also be redownloaded at no cost if a Mac system is replaced or an application is accidentally deleted, and they may be useable on more than one system depending on your environment.

## Automated Installation

A number of client management suites offer self-supporting portals that use this enterprise app store model. Many of these have a very similar look and feel to using iTunes or the Mac App Store. Users can “subscribe” to an application just by selecting a checkbox. A local management agent on the user’s computer then installs the application for the user, negating the need for the user to have elevated privileges. Users are asked to provide credentials to ensure that only applications appropriate to their jobs or positions are installed.

Once the application is installed, its available licenses can be decremented, and IT can automatically track the systems onto which that application is installed (including how frequently it’s used). This becomes an amazingly powerful tool when patching is required. All known instances of a given application can be automatically updated throughout the organization when patches are available, or users can be alerted and then given the option to update their software when a new version is available—similar to that of the Mac App Store.

If a system is lost or damaged, it can be quickly replaced with the user’s currently subscribed applications distributed to his or her new computer. Apple already uses a very similar method for applications purchased for the Mac via the Mac App Store. Once an application is purchased, the user is notified of updates. Users can redownload a purchased application, onto a new Mac for example, without having to repurchase the app. A lost laptop can be replaced and quickly restored (minus any personal data, which has other methods of being backed up and restored) with almost no user interaction or forethought.

License reclamation can also be integrated into this process. Many of the management suites offer application usage reports that allow the actual use time of an application to be monitored. A regular report can then be generated showing how often an application is launched during any given period of time. Applications that aren’t actively used can then be pulled from the system by the management agent, and the license reclaimed. This process provides for very precise reporting and perfect provisioning with no expenses for unused licenses.

Using a management agent also allows for some applications to be mandatory, which requires no user decision and would be initiated automatically when the management agent first connects to the network. It’s quite easy to create a short list of required applications, such as office suites or antivirus software, for every Mac in an organization.

## Non-Application Installation

Keep in mind that more than just applications can be accessed via a self-supporting portal. Corporate templates, common personnel documents, and software updates can be distributed this way and made either optional or mandatory system components.



Taking this concept further, organizations can employ user self-supporting approaches to adding available printers, VPN and 802.1X configurations, or even light IT tasks such as checking disk integrity. All these tasks and more can be done from a well-provisioned portal.

## System Provisioning

Although applications make up the majority of the software load, they're not the only things needed on a new computer. Depending on the level of security required and complexity of other aspects of the master image (be it a monolithic image or a thin image) used in deploying new systems, a number of operating system files and configuration settings may need to be added, edited, or removed. If you're using a management agent on the systems, you also have the initial challenge of getting the agent onto the computer in the first place.

A self-support approach to provision systems eliminates IT as a "middleman" in providing users with their systems. After all, requiring an IT person to unpack a system, image it, and then repack and ship that system to the final destination is a time and resource drain.

### Zero-Touch Model: Option 1

One approach to avoiding this initial system provisioning challenge is to leverage the automated imaging capability most hardware vendors and resellers provide for customers. Historically, this has been a very widely used feature, but it almost always required a large monolithic image requiring frequent tuning to account for new hardware and operating system or application updates.

A more streamlined approach that works well as a thin imaging workflow is to have the vendor install the management agent you'd like to use on your systems, and ship the system directly to the user, who can turn the system on and connect it to a network. Once connected, the management agent can "phone home," apply all the necessary critical patches, and then provision the user account. The user can then select additional software and other items from a self-supporting portal. This keeps the process fully automated while ensuring a baseline of functionality and security.

### Zero-Touch Model: Option 2

An even more progressive way of using the zero-touch model is to have the user acquire the system and then as the only admin on the system, install the required agents and other software to bootstrap the system into the corporate environment. This approach works well with mobile device and client management suites that use secure and authenticated mechanisms like SCEP to provision a system.

This approach entails installing the management agent from a publicly accessible website (keeping in mind that the VPN is most likely not functional until some basic provisioning has been done) or via an installation disk or USB key fob shipped to the user in parallel with the system purchase.

You can even keep the user as a non-admin if you want to keep the IT/standard user dichotomy. This is handled by using a custom boot DVD or USB key fob to provision the management agent and then a basic user account.

## Customer Self-Help (Tier 0 Support)

A significant factor in reducing support costs in a self-supporting model is enhancing and promoting self-help (or tier 0) support options. These options allow users to support themselves before turning to traditional support facilities. The richer the tier 0 environment, the more significant the reduction on the following tiers of support.

A basic tier 0 offering can be as simple as just a mailing list, which can give users an outlet to ask questions and participate in solving those questions. An archive of the mailing list then becomes the seed for institutional knowledge within the organization.

Web-based offerings such as internal social networks, wikis, and forums are also very effective tier 0 support tools. Allowing the user population to give immediate feedback and constantly revise the materials keeps the documentation as timely and user-relevant as possible. It also allows IT staff to post notices and detailed information for users when needed.

Screencasts and podcasts of specific activities can be coordinated with an online help desk solution. When filing a support ticket, users can first be offered a variety of educational tools and materials to solve the problem themselves. Done effectively, over half of all help desk tickets can be closed out before they're even submitted.

## Self-Fulfilling

With proper planning and execution, creating a tier 0 support offering that begins to grow organically is possible. Initial seed materials are required, but once a critical mass of a user population has been created, community relationship managers (CRMs) can be established. A CRM can be a member of IT who is tasked with guiding the user community and occasionally pruning or organizing its content as part of his or her job. However, some organizations are empowering normal users to become local CRMs. These employees aren't members of the IT staff, but are interested in helping other users. Such people can significantly enhance the overall support offering by providing real-world experience and personal interaction. They're also more often seen as peers of fellow employees rather than part

of a separate team or department in the way that IT staff are seen in large organizations.

Effectively leveraging CRMs who are normal users requires promoting their development and successes; this can be as simple as giving them star ratings on the self-help forum, or something more substantial like public awards or incentives (such as refreshing a CRM's computer more often than normal).

An argument can be made that using CRMs is not cost free. CRMs certainly have other duties that aren't necessarily being done if they're helping others with IT issues on internal support sites. This cost, however, is very hard to calculate—if it even exists. Salaried workers' productivity is typically valued in terms of work produced, not hours worked. Therefore, CRMs won't necessarily produce less. Instead, many CRMs may find helping others to be motivating or interesting enough to accomplish their regular work in addition to supporting others, though they'll likely be further motivated with recognition or awards.

## Backup

A robust application portal and a possible management agent can satisfy the reinstallation of the applications and other system-level packages, but it won't back up user data. This may or may not be an issue depending on existing backup service-level agreements (SLAs). It's quite common for IT departments to offer no local backups and require users to manually store important information on network file shares, cloud services, and collaboration systems that are regularly backed up.

A self-support model can greatly enhance this with potentially little to no impact on budgets.

## Bring Your Own Backup

Most operating systems have some form of basic user backup facility. Apple offers Time Machine, which allows users to back up all of their files, including system files and applications if desired, to an external hard drive. Users can restore files themselves and can even do a bare-metal recovery of the system if required. This protects from most common cases of data loss, although it doesn't provide for an offsite backup unless the users are especially diligent about rotating out backup drives.

The biggest danger with this method is the user may never know if the system is actually functioning until it's too late. If a management agent is in use on a system, the agent can be configured to regularly check the backups. Such a configuration can ensure that at least the backup system is functional and creating new backups on a regular basis.

## Commercial Backups

Commercial backup offerings now include online backup (as “Software as a Service,” or SaaS). For a relatively minor cost per year, users get a backup agent that pushes files to the provider’s servers in the cloud. Users can still initiate their own restore process and have full control over what they’re backing up.

This setup satisfies any offsite backup requirement at minimal cost. Although it’s impossible to perform a basic backup or restore process this way, the important user information can be protected with no involvement by the IT department.

In most cases, the backup in the cloud can be encrypted, so you don’t have to worry about storing sensitive data offsite with another company.

## Internal Backups

Many vendors offer solutions that allow an IT department to host its own backup server in a data center. Users still have the same experience, including doing their own restoring. The organization maintains the back-end storage and, in return, you can increase backup quotas as needed.

This method is more complex, but may be less costly. However, the primary benefit is closer control over the backed-up data. For the most part, the user experience is the same regardless of whether the backup is kept internally or externally.

## Security

A self-support model isn’t necessarily an insecure model. You can use full disk encryption, antivirus software, and other methods to maintain security. The goal is to make their installation and use as easy as possible for users.

For most security functions, the ideal configuration is unnoticed by the user. Individual needs vary, even within an organization, since users might need differing levels of protection.

## Encryption

Secure protocols, such as HTTPS and SSL VPNs, easily create layers of security for data in motion. Users who do online banking may already be familiar with these protocols.

Data at rest requires a bit more preparation, but is mostly unseen by the user when done right. FileVault, the Apple app that encrypts all of a user’s data, and even full-disk encryption solutions like PGP, Check Point, or WinMagic are seen only when a system is booting. They’re otherwise

running in the background while still securing data in case a portable computer is lost or stolen.

## Hardware Support

With preparation of both application delivery and user backup solutions, hardware repair can become fairly simple. As long as users can get back to the application portal (or install the management client) on the same computer or a replacement, they can completely replicate their environment from the last time they backed up. With that in mind, hardware support becomes a question of user convenience and desired SLAs.

A central location may have enough employees to consider operating a service depot. Apple offers a variety of support programs that allow customers to conduct warranty repairs on their own systems, including the option to stockpile parts. Organizations can maintain loaner pools of hardware so that users have an immediate replacement and can continue working while their computers are repaired.

A more hands-off approach is to use an authorized repair center or reseller. Users can also call to get a repair. A number of onsite service offerings are also available.

## Infrastructure Reduction

A self-support portal can further reduce traditional IT infrastructure. If a user can add and remove applications with a management agent, even without an administrator account, what other services can you reduce? The first one to go is typically directory services.

### Directory Services

Organizations aren't contemplating removing directory services entirely. Instead, many are questioning the need to provide directory services all the way to the portable computer. In most corporate environments, the only person who actually uses a portable computer is the user to whom the computer has been assigned. Any materials from other users is always delivered through an intermediary. A user get files via email, a file share, cloud service, or removable media. When the user does get the file, the user is the de facto owner of the file, so heavyweight authentication and identification services don't need to be provided to the portable computer. This model is actually an extension of how mobile devices are often deployed and managed within an organization.

Portable computers are an easy place to reduce directory services and can significantly reduce the demand on back-end services, allowing servers and other infrastructure to be reprovisioned to better uses or just retired.

Desktop computers are certainly less of a perfect fit for this as they can be used by multiple users.

## Wireless Authentication

Another easy place to contemplate infrastructure reduction is with wireless authentication. Many organizations have put significant budget and time into creating robust authentication methods for securing their wireless networks. An entire industry has sprung up around 802.1X to satisfy this need.

However, at the same time, almost every organization has a very robust VPN solution that provides a similar, but different, level of security. Most portable computers are licensed for both VPN access and wireless access, so an overlapping of services occurs. At the same time, wireless authentication can be one of the most troublesome IT tasks as it features a complicated situation of competing vendors and standards.

Some organizations have seen this overlap and removed the wireless authentication. They follow a “coffee shop” model and allow unfettered wireless access, but treat the wireless network as untrusted. Portable computer users are then required to use the VPN, similar to when they’re on their home network (or any public network), to gain access to internal resources.

## Funding

A major component of the success of a self-support model is keeping the users interested in IT. Users who care about the functionality of their system take better care of it, update it with software patches as appropriate, and generally use the system more responsibly.

Some users take on this responsibility when organizations give them more trust. However, a more powerful method is to give users ownership of the computers.

## Hardware Allowance

Giving users significant flexibility in choosing a system may be cost prohibitive, but organizations can give users a fixed allowance for hardware. The actual amount varies, but it’s usually enough to choose from a range of possible systems.

Employees might be provided with the allowance:

- As an amount that they’re permitted to spend on a corporate purchase card
- As a choice from a set of systems, with or without costs charged to the individual or department

- As “IT flex dollars” that they get to purchase equipment
- As a cash stipend paid either all at once, or over an extended period

Some companies still consider the computers a corporate asset, while others see them as a personal asset required as part of the job. In this situation, employees might buy a computer from a set of approved choices, paying for any overage out of their own pocket, or have total flexibility.

In return, the user gets to keep the computer after a fixed period of time—typically the same as the organization’s normal computer refresh period. The merging of work and personal life in this model is designed to encourage users to be more creative and flexible in their work habits. Plus, users have direct ownership of their daily-use system and will likely take better care of it. Concerns about inappropriate or illegal material on the computer used for work are usually addressed with HR personnel policies rather than with IT enforcement.

## BYOD and User-Owned Systems

Moving to a system that provides an allowance, which is controlled by the employee, is a major paradigm shift in basic IT philosophy for many organizations. A user-owned system is no longer under centralized control. Users might have non-work-related materials on their systems. If the user owns the computer, not only must this be permitted, but fully expected. The BYOD model is actively being used by many organizations with respect to mobile devices like an iPhone or iPad. Extending that model to include personal portable computers is a natural progression and one that may become commonplace over the next few years.

## Reducing Support Costs

An organization can save money with a social self-support model. The primary savings comes from reducing the amount of institutional support a typical user needs. It’s not uncommon for an organization to see a 50 percent reduction in help-desk tickets for users using Apple systems in a self-support environment.

The reduction in help-desk tickets allows IT personnel to spend more time being proactive about support instead of just answering the phone. IT departments using this model can focus on creating more self-help materials and other tier 0 resources instead of reacting to user problems.

However, this model may conflict with support agreements your organization might have—especially fixed-price, per-month support contracts that have no provision for savings based on reduced need.

## Capital Expenditures vs. Operating Expenses

Depending on accounting regulations, moving from a company-supplied system to one that users purchase for themselves may move the expense from a capital expense to an operating expense. Depending on an organization's strategy and business situation, some may choose to switch from the typical capital depreciation approach to using operating expenses via an employee allowance.

## User Satisfaction

Although a precise cost may not be measurable, users who choose a self-support environment and get the tools to succeed in that environment typically report a much higher satisfaction with both their computers and the support they receive. When implemented properly, it's typical to find very high-user satisfaction scores in these environments.

## User Productivity

Organizations that have implemented this approach report that their users spend less time fixing issues than they would if they were waiting for IT departments to respond to their needs. Users get better service because they're not constrained by the normal support hours. Also, since most employees who choose this setup are already likely to tinker with technology, this model acknowledges and uses that desire to benefit the organization.

## Putting It All Together: A Sample Scenario

You don't need to implement all the elements outlined in this white paper to see significant improvements in costs or employee satisfaction. However, to illustrate how all these elements come together, here's a sample scenario of what an organization might see when a new employee joins:

The new employee joins the organization and gets a computer acquisition budget. The employee is directed to a website where a variety of systems are offered. All the computers are notebooks, but some are more powerful than others. Some have longer battery life, and others are more lightweight. The employee picks a system and provides a personal credit card if the price of the system is over the allotted budget.

The computer is shipped overnight direct to the employee's desk with no special build or operating system. The employee gets a one-page instruction sheet that tells how to log on to the SSL VPN with a user name and password. The system uses either a public Internet connection or the wide-open wireless network in the office.



Once connected with the VPN, the employee looks over a number of applications from an internal application store and chooses the applications that fit the employee's role. Self-help videos and screencasts walk the employee through configuring email and calendar clients. The employee picks from a collection of local printers with the help of a variety of automated systems.

As a last resort, the employee has the toll-free number for the basic help desk. However, it operates only between 10:00 a.m. and 4:00 p.m. on weekdays.

If a problem does arise, a variety of self-help forums and email lists are available for configuration issues. These resources have a collection of volunteer assistants that ensure the information is timely and correct. For hardware problems, the employee works directly through the reseller or manufacturer, or uses the onsite repair depot run by a third party.

When not working, the employee is encouraged to put personal pictures and multimedia projects on the computer. The employee can back up personal data, in addition to work files, to an online backup service that allows for self-support retrieval.

At the end of three years, the employee keeps the old computer for personal use or recycles it for a small reimbursement amount. A new IT procurement budget is given to the employee, and the cycle starts all over again.

## Conclusion

Organizations can save significantly with just a few of the ideas in this white paper. You must carefully create a self-support environment that's a good fit for both your users and your organization, and it's important to remember that not all these approaches work in every organization.

For the greatest return, involve users early in this process and understand what best addresses their needs. With every offering, balance the needs of users who might prefer a self-support approach and those who might prefer a centralized IT support approach.

Apple offers a number of solutions to facilitate self-support models, including initial setup for new systems, the Mac App Store, and the ability for organizations to maintain central repair depots or outsource repair services. For more information, contact your Apple account team or Apple Authorized Reseller.



Apple Inc.

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