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DEPLOYING A SECURE WINDOWS OPERATING SYSTEM  
AND APPLICATIONS

By

Russell Slater Miles  
B.S., University of Louisville, 2004

A Thesis  
Submitted to the Faculty of the  
University of Louisville  
Speed School of Engineering  
As Partial Fulfillment of the Requirements  
for the Professional Degree

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Department of Computer Engineering and Computer Science

MAY 2007



DEPLOYING A SECURE WINDOWS OPERATING SYSTEM  
AND APPLICATIONS

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## ABSTRACT

Many businesses have poor IT infrastructure and are in need of a major overhaul. University of Louisville Properties (ULP), in particular, needed the ability to share files between staff, backup data, secure data, and eliminate viruses and malware. Along those lines, ULP was looking for a secure, stable, reliable, and most importantly, a cost-effective Microsoft solution to their IT woes.

For consistency and reliability, a Symantec Ghost image was created of such a system. This system was created using Windows XP Professional, Microsoft Office 2003, Symantec Client Security, and Microsoft Sysprep. The image was deployed to all ULP computers, creating the exact environment for which they were looking. Each user began logging in with a user name and password, which alone increased security significantly. A file server was implemented so that data could be centralized and shared among staff members. In addition, a backup system was implemented that automated the backup process to cover all PCs including the central file server. Also, Microsoft Sysprep enabled one image to be distributed to multiple hardware platforms, which reduced image creation time drastically. Symantec Client Security added the antivirus and firewall components needed to control network traffic, viruses, and malware.

These changes eliminated the problems that ULP faced and allowed the staff more functionality in their IT environment. With data redundancy, file security, and system reliability, the staff now enjoys a care-free computing experience for very little cost.

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## I. INTRODUCTION

Operating system installation and configuration is no small task. Particularly, Microsoft Windows XP, the latest version of the Windows operating system, arguably contains more options, features, and configuration settings than any other PC operating system on the market. A person who has the experience and knowledge to accurately configure an OS based on the environment in which it will be used possesses a powerful understanding of the software; however, the common method of answering these configuration questions is to consult manufacturer documentation rather than memory. So, what kind of hardware and software environment and associated installation and configuration procedures are necessary for a given software deployment? This problem encompasses part of a larger question which ponders the degree of configuration that must take place to render an OS and its applications secure, “hardened”, reliable, stable, efficient, and, most importantly, cost-effective in any small or medium business environment.

A solution to this problem was developed experimentally beginning September 27, 2004 at University of Louisville Properties (ULP), a group of three residence halls located on the west side of University of Louisville’s campus. Initially, this research and implementation were performed for the sole benefit of learning and solving ULP’s information technology (IT) problems without further compensation. Approximately one year later and after a couple of implementation updates and proof of concept, a computer service company was created to continue this service to ULP and other customers.

ULP suffered from numerous, persistent computer-related problems before this work began. The University's IT department, which controls ULP's local area network and internet access, automated the search and deactivation of network ports that were involved in port scanning, malicious attacks, or any other illegal network transmissions. Since ULP's computing resources were virus and malware (adware, spyware, email worms, etc.) infected, they constantly had network ports being deactivated due to such activities. With many business office machines and several resident-use computer labs to maintain, this posed an enormous problem. Internet access is required for business critical functions within ULP (Braden, 2005).

In addition, the business didn't have the ability to share data over the network. If one employee wished to share files with another, a floppy disk copy was made and physically delivered. With offices located in three separate buildings, this created quite an issue. Also, two of the most significant surprises found at ULP were that there was little or no user/password security in conjunction with very poor data redundancy and backup procedures. In other words, no passwords were needed to access business critical data on top of the fact that if a hard drive failed, the data stored would simply be lost.

Therefore, the purpose of this research was to design, fully implement, and document a working "production" system that attempts solve the above problems which stem from the main problem statement. Along with these goals, maximum security, reliability, stability, efficiency, and minimum expense represented further objectives. Documentation of the procedures and results were also very important to this project. This documentation creates a set of guidelines and procedures so that someone with a computer background could utilize the concepts learned here with other entities in need

of system reconditioning. Computer technicians hired by ULP prior to this project's inception simply didn't exhibit the capability to solve such a complex, growing problem. They failed due to lack of research, investigation, and therefore, knowledge (Braden, 2005). The research and investigation that follows will illustrate a solution that any small to medium sized business experiencing conditions like ULP could utilize to their IT advantage.

## II. HARDWARE AND SOFTWARE ENVIRONMENT

ULP possesses 27 PCs across their three buildings. Each PC has sufficient speed and capacity resources to process and function in today's age. In other words, all of the PCs were purchased in the last 6 years, so none of them are obsolete just yet. This creates a highly manageable situation for this type of experiment due to its significant, but not overwhelming number of current technology computers. These PCs consist of HP and Dell brand hardware, some even with the older Compaq name. The fact that ULP's hardware consists of different types, ages, and configurations makes the problems faced much more realistic compared to the simplicity of having only one brand, type, and configuration of PCs in the hardware environment. In assessing this hardware environment, a table of PCs and their associated hardware attributes including any directly connected printers was generated. This table proved a valuable reference in the design of the software system when making software driver and other configuration choices in addition to having an asset management reference (refer to Appendix I for Asset Inventory). It should be noted that all printers at ULP are directly connected to PCs via parallel and USB cables and do not have the capability to be connected directly to the network without the purchase of expensive printer network adapters. In addition, all of the PCs in the ULP environment can "see" and "talk" to each other due to the fact that they all exist on the same subnet within the University network. This local area network concept is very important in the angle of attack for the problems faced. If, for some reason, some PCs were cut off from the rest, then the solution to follow wouldn't suffice. In this situation, the network should most likely be reconfigured to bridge the

connections within the business to enable the most effective use of their computational resources.

The software environment before this project began consisted of every PC having different versions of software with problematic issues for every one. Furthermore, since many of the PCs were virus and malware ridden with serious security issues, it made sense to start from scratch and wipe every machine clean. The question then became: what software licenses does the business already own, and what additional licenses need to be purchased for the conceived plan to work? Fortunately, ULP already owned Microsoft Windows XP Professional operating system and Microsoft Office 2003 licenses for each PC on their property. This is fortunate because licenses for these Microsoft products on 27 PCs would cost many thousands of dollars. The fact that most name brand computers such as HP and Dell ship from the factory with these licenses explains why ULP already owned them.

ULP lucked out again when it was discovered that they qualified for University academic pricing for the two Symantec products that needed to be purchased. These two products were Symantec Client Security (SCS) and Symantec Ghost. SCS is a comprehensive, central server managed security suite that consists of a firewall component and an anti-virus/anti-malware component. The server is responsible for monitoring and updating each client automatically around the clock. Ghost is well-known imaging software that has the ability to create and restore hard drive images by performing a sector-by-sector copy of a disk. Assuming each computer has identical hardware, Ghost can be used to make a copy of one computer's hard drive and then restore that copy onto the other computer's hard drive creating a bootable, working

duplicate of the original PC including all associated settings, configuration, and files.

The cost of this software was negligible in ULP's case, near \$300 total for all necessary SCS and Ghost licenses. However, if ULP had received regular pricing, the total cost of this Symantec software would have been closer to \$5,000.

The above assumption that each computer has to be of identical hardware in order for a Ghost image to succeed brought in another piece of software distributed free via download from Microsoft called Sysprep. This piece of software and associated documentation is a part of the "Windows XP Resource Kit" which is used in the planning, configuration, and deployment of their Windows XP operating systems. Basically, Microsoft Sysprep allows the same Ghost image to be distributed across multiple hardware platforms while simplifying the post-image installation process to a couple of prompts rather than many (this will be discussed in more detail in following sections). This concludes the major pieces of software involved in the design to follow. Of course, other supporting software such as the Java Runtime Environment, Adobe Acrobat Reader, and many others were needed as well, but their configuration and settings are negligible compared to the software mentioned above. Therefore, the procedures below will focus mainly on the complex installations only briefly touching on the more minor ones.

### III. CLIENT PROCEDURE

Preparation of the client Ghost image is the most important step in this process. A single PC had to be chosen on which to create the image, and this decision was made based on the PC's usual availability since much time would be spent there. The first step taken on this client PC was BIOS setup. Two settings were checked in the BIOS after referring to the corresponding BIOS documentation (Compaq Computer..., 2002). First, the boot sequence was confirmed to start with the floppy drive, then proceed to the CD-ROM drive, and end with the hard drive. Second, a BIOS password was entered to secure the BIOS settings from tampering. These two steps were performed on every single machine as the final image was deployed to enhance consistency and security.

After configuring the BIOS, the PC was ready for the installation of Windows XP Professional. So, following an NTFS format, the files were copied and installed. During this installation, the network workgroup, network computer name, administrator password, and time zone had to be set. It is important to have all the computer names mapped out ahead of time so that a standard naming scheme is followed. In addition, all of the machines, at completion, should be in the same workgroup with matching administrator passwords. Once Windows was installed, operating system configuration was necessary to customize the settings to ULP's needs (refer to Appendix II for detailed Configuration and Settings). As part of this configuration, Microsoft updates were downloaded and installed to bring the operating system up to date. This, among many other updates, involved the installation of Windows XP Professional Service Pack 2, a major security update to Windows. A major program that was installed along with



Windows to increase functionality beyond internet and email was Microsoft Office 2003. This robust productivity suite also received many updates through the online Microsoft update website.

Another part of the operating system configuration involved security settings to “harden” Windows. In order to reach this goal, permissions were set to only allow Administrators to modify or create directories on the root drive. In other words, standard users are only able to read the contents of these system folders, but can’t intentionally or unintentionally change or corrupt them, making the system more resilient from user error. Users were only given full control (read, modify, and delete permissions) of their user profile based folders such as Desktop, Favorites, and My Documents. This allowed them the functionality they need without the possibility of operating system corruption (Managing Desktops, 2005). Also, standard users were put in the “Users” security group, not the “Administrators” group, which limited their system configuration access and disallowed them from installing or changing programs.

Once Windows and Office were installed, some security software was necessary to control network traffic, viruses, and malware. Symantec Client Security met this challenge with the Symantec Corporate AntiVirus client which scans for viruses and malware coupled with the Symantec Client Firewall to monitor network traffic and block malicious or other unwanted activity. The advantage of this centralized software is that each client is monitored and controlled so that every PC has the same firewall policy and uniform, updated virus definitions (Symantec Client..., 2004). This security suite basically concluded the major software installations for the client PC; however, a few more configuration items remained.

Around 25 to 30 staff members are employed by ULP depending on the time of year which all require different computational needs. The purpose of this image creation is to encompass all of those needs in one package. The real difference between users, as far as the operating system is concerned, is printer configuration. Which printers does each user need access to and which printer does the user use most often? This problem was addressed, of course, by assigning users with their own login information and passwords. Normally, this task is accomplished through a Windows domain, but since ULP doesn't have the option of having a domain server due to network restrictions, this had to be accomplished in the context of a workgroup with no central user authentication. This challenge was met by creating each user's profile on the client PC that was to be imaged so that when the image was distributed, their profile would exist on every computer. Authentication, in this case, between computers, would take place at the machine (local) level rather than at the domain level.

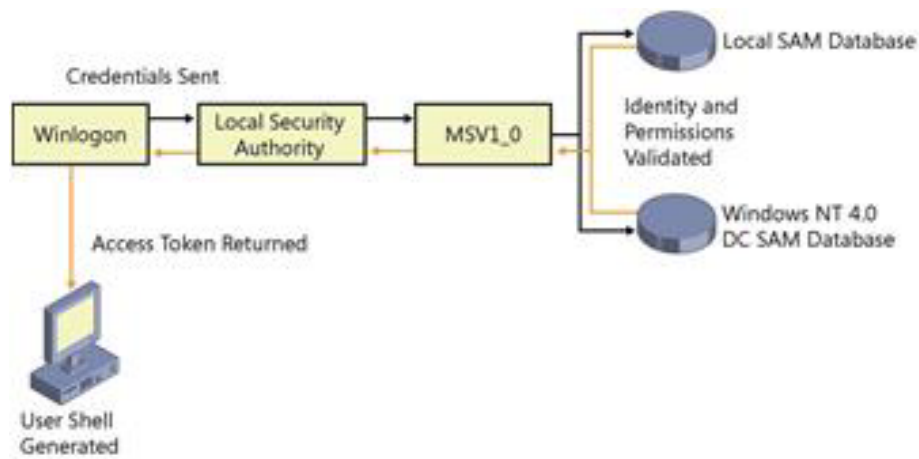


FIGURE 1 – User Authentication Sequence

In other words, if PC A wants to access PC B, then PC A passes the user and password logged into PC A to PC B to authenticate and allow access. This requires that the passwords be the same for each user on all computers, which the image brings to reality.

In this user creation process, users must also be disallowed to change their passwords, for if they did so, they would have to change their password on every computer they access so that they wouldn't run into authentication problems. So, once the users and profiles were created, they were assigned printers and had a default printer set, so that any computer they used would have this information for them (Understanding Logon..., 2005). It is easiest to edit the default user so that as these 25 to 30 users are created, certain settings don't have to continually configured each time (refer to Appendix II for detailed Configuration and Settings).

The next step in the client image process involves the setup and configuration of Microsoft Sysprep. Sysprep is a small piece of software that allows a Ghost image with Windows to be put on different hardware types without issue (Planning Deployments, 2005). Without Sysprep as part of the image, imaging different types of hardware might cause failures due to the differences in the mass storage devices and other hardware of the systems (Windows stops..., 2006). Sysprep causes these devices to dynamically change for the system on which it's installed. Sysprep is highly customizable; many of the installation tasks that ULP required were written in the Sysprep configuration file (Automating and..., 2005)(refer to Appendix III for Sysprep Configuration File).

Enabling the image to work on different hardware required that the image contained the complete set of drivers to cover the complete set of hardware types. So, a 'drivers' directory was created which included all of the necessary files to successfully install the devices on any system at ULP (Managing Devices, 2005). To keep track of the drivers needed, documentation was maintained to act as a database for this information (refer to Appendix IV for Drivers Documentation). With Sysprep installed and configured, the

only remaining step was to run the sysprep.exe executable to prepare the operating system for the imaging process.

Once the Sysprep execution was complete, the client PC was ready for Ghost imaging. Symantec Ghost is a relatively small program that fits on a floppy disk that puts a sector-by-sector copy of a disk or partition into a Ghost file for future placement onto the same or other PCs. Once an image was created of the entire client PC hard disk, the test phase could commence. Extensive testing of the image needed to occur to make sure it was going to function as designed in the ULP environment. To test the client image, it was “dumped” on several pilot PCs per the Ghost documentation (Symantec Ghost..., 2003). Several users tested functionality and ease of use, and if any problems were found, the necessary changes were made, Sysprep was executed again, and an updated image was created. Once a good, complete image was certified by the staff, it was deployed to each PC in the enterprise. This imaging process still needs to take place once a year or so in order to incorporate new Microsoft updates and software and user/password changes into the environment.

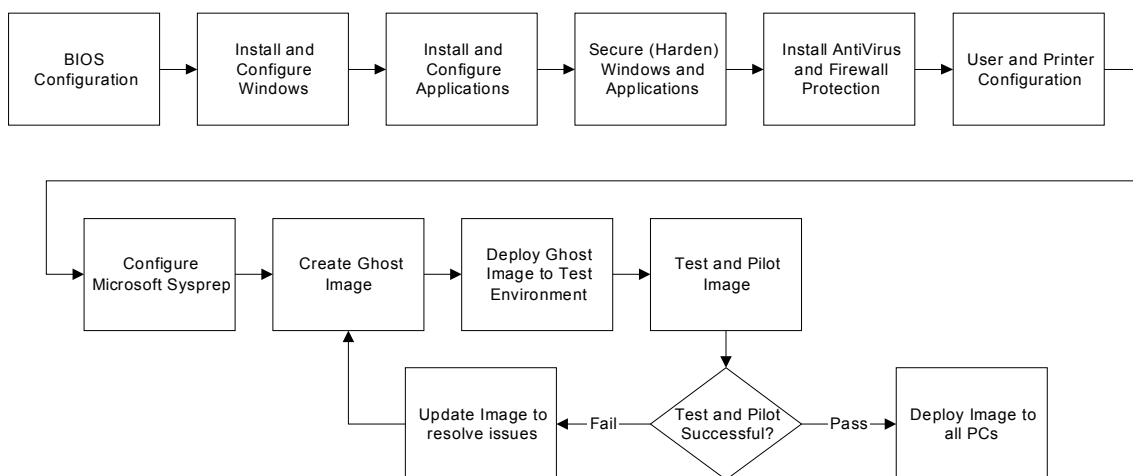


FIGURE 2 – Client Procedure Flow

#### IV. SERVER PROCEDURE

Here, the word “server” doesn’t mean a computer that’s running a server operating system; it means a machine that’s acting as a file, antivirus definition, and firewall policy server, but that is running a client operating system, Windows XP Professional. ULP needed a central file storage location that all the staff could access and a machine on which to install the Symantec Client Security server, so a physically secure computer was chosen for this task. First, the standard client image discussed in the previous section was put on the machine for a base to build from. Next, an extra business class hard drive was added to serve as a central file storage location for the ULP staff. Folders and shares were configured on this drive to allow all staff users full access to their data stores. At the same time, these permissions would also prevent unauthorized access to the staff data (Managing Files..., 2005).

Once the file server component was established, the Symantec Client Security server was installed (Symantec Client..., 2004). This server controls the release of new virus definitions and pushes the necessary firewall policy to all PCs in the enterprise. The firewall policy was configured using the Firewall Administrator software included with the Symantec server to only allow the traffic necessary for ULP to conduct business as normal (Client Settings..., 2006). This installation was followed by the installation of a third party firewall called ZoneAlarm since the Symantec Client Firewall can not run on the same machine that the Symantec server exists. Since the server still needed to be protected by a firewall, a third party solution was necessary. Finally, the server was

topped off with a battery backup system to enable a complete system shutdown in the case of power loss to prevent data corruption.

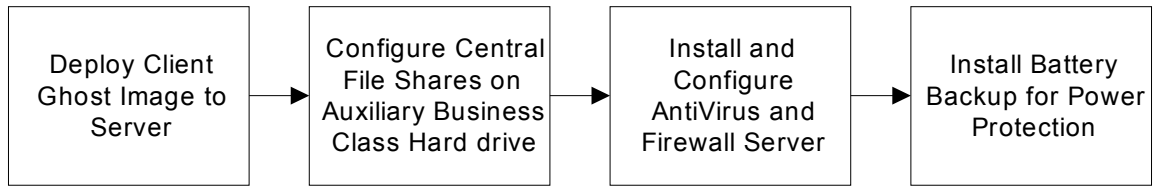


FIGURE 3 – Server Procedure Flow

## V. BACKUP PROCEDURE

A PC was designated at ULP to serve as the data backup location for all PCs. An extra 300GB business class hard drive was added to this machine for the purpose of storing backup data. To automate the backup process, batch files were written that would backup the data from each PC including the server to a folder on the backup drive named for the date of the backup. The daily incremental backup was scheduled to take place nightly while a full backup was scheduled to run every Saturday night (refer to Appendix V for Backup Batch Files). A battery backup unit was also added to this machine for added reliability and data stability in the case of a power loss.

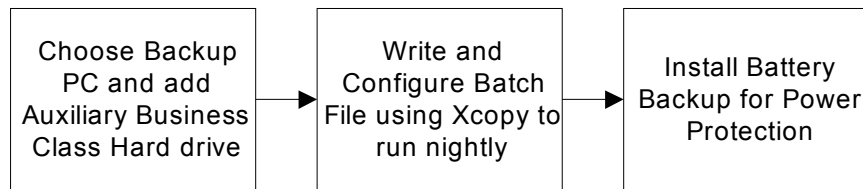


FIGURE 4 – Backup Procedure Flow

## VI. DISCUSSION OF RESULTS

The implementation of this system at ULP, which is applicable to any small or medium business, completely eliminated the problem of network ports being shut down due to unauthorized and malicious network activity due to the fact that viruses and malware were removed from the system. Viruses and malware were eliminated through the Symantec Client Security installation on the image. This enabled users to be more productive since they are never without internet or network access. Along the same lines, the users always have access to print to remote printers since they can now rely on a valid network connection between their PC and the PC connected to the desired printer. Users are also empowered with more printer choices, so they can choose the proper printer for the application at hand.

The addition of a central file server has enabled users to share data more effectively and efficiently. This efficiency is evident in the reduction in paper and floppy disk usage on the properties. Rather than printing or saving on a floppy, users can easily share data through the central file shares (Braden, 2005).

Since users do not have access to make significant changes to their system, intentionally or unintentionally, software and data errors have been reduced dramatically. Even if errors do occur, users are now confident that they won't lose data due to their data's redundancy in the backup process. In addition, they know their data is password protected from unauthorized eyes and even from other staff members if they wish.

Microsoft Sysprep functioned as configured to allow one Ghost image to be deployed across multiple hardware platforms. The overall cost of this implementation



including all software and hardware was fairly cheap for a business of this size, under \$1000. The implementation was time consuming, but future image updates will not take 10% of the time the initial design and implementation consumed.

TABLE I  
SUMMARY OF RESULTS

<b>Problem</b>	<b>Solution</b>	<b>Result</b>
Network port shutdowns	Symantec Client Security AntiVirus and Firewall	Eliminated port shutdowns
No file or printer sharing	Enabled file and print sharing along with addition of centralized file share	Reduced paper and ink usage and allowed for more efficient file management
Numerous virus and malware issues	Symantec Client Security AntiVirus and Firewall	Eliminated viruses and malware
Numerous software errors and conflicts	Forced version control and consistency through Ghost image and disallowing users install privileges	Reduced software errors and increased consistency in cost-effective manner
No data backups or redundancy	Batch file using xcopy that performs nightly backup	Provided cost-effective data redundancy and safety in case of a failure
No data or user security	Require separate users and passwords to access company data	Increased data and user security
A Ghost image for each hardware type is not cost-effective	Microsoft Sysprep	One image that covers multiple hardware types in a cost-effective manner

## VII. CONCLUSIONS

To summarize the results, because of the system implemented at ULP, automatic network port shutdowns at ULP were completely eliminated along with viruses and malware. The addition of a central file server enabled users to share data more effectively which reduced paper usage due to a decrease in printing for other users to see. In addition, user data is more secure and reliable due to password protection and backup redundancy along with restricted user install privileges. Finally, a single image was successfully distributed across multiple platforms using Ghost and Microsoft Sysprep for a relatively low cost.

## VIII. RECOMMENDATIONS

Rather than processing an image update each time some software needs to be updated, especially in a larger enterprise or 100 PCs or more, mass software distribution should be investigated. Using a remote, automated software distribution method such as Microsoft SMS or Novadigm Desktop Management can drastically reduce the number of image updates that need to occur by taking care of small software updates remotely through a central server. Implementing a domain, where allowable and where there are 5 PCs or greater, versus a workgroup, would also be advantageous since an image update wouldn't be required every time a user or password change is needed. This does, of course, depend on available budget and network permissions, since an expensive server and associated server operating system would be required.

Between image updates, documentation should be kept of changes that need to take place in the next update so that necessary modifications aren't looked over. In addition, the revisions to the image need to be documented as a sort of version/revision list (refer to Appendix II for dated revision list).

Next, do not attempt to use Microsoft's "roaming profiles" in a workgroup environment. This will only lead to headache and profile corruption. This feature works best in a domain environment. Also, rather than backup batch files, many backup management software packages exist to simplify the backup process, however, they are much more expensive and achieve the same goal as the batch files in Appendix V. Finally, consistency, standardization, and documentation are the most important concepts

in the design and implementation of a system like this. These aspects enhance the reliability, security, and stability of the system overall.

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## APPENDIX I. ASSET INVENTORY

Location	Current Computer Name	New Computer Name	Printer	IP Address
Melissa's PC	BJHALL3	BJACCT		136.165.83.72
LaMont's Office	BJHALL4	BJAGM	HP DeskJet 960c	136.165.86.56
BJH Front Desk	BJHALL2	BJFRONT		136.165.83.143
BJH Lab 1		BJLAB1	HP LaserJet 2100	
BJH Lab 2		BJLAB2		
BJH Lab 3	HD Failure	BJLAB3	HP LaserJet 2100tn	needs new HD
BJH Lab 4		BJLAB4		
BJH Lab 5	Doesn't work	BJLAB5		needs format
BJH Office	BJHALL1	BJRD	HP LaserJet 2300	136.165.85.108
BMH Lab 1	BMH1	BMLAB1	HP LaserJet 2300d	136.165.253.10
BMH Lab 2	BMLAB1	BMLAB2		136.165.81.193
BMH Lab 3	BMLAB3	BMLAB3	HP LaserJet 2300d	Disconnected
BMH Lab 4	Doesn't work	BMLAB4		needs format
KH Office 2	PHASEII5	KHRD		136.165.85.12
BMH Office	MINARDI	BMRD	Brother MFC-8500	136.165.81.246
Aimee's Office	AIMMEHESS	KHAGM	HP LaserJet 1300n	136.165.81.130
KH Front Desk	ELIZABETH	KHFRONT		136.165.80.205
David's Office	PHASEII1	KHGM	HP PSC 2110	136.165.85.58
KH Lab 1	LAB01	KHLAB1	HP LaserJet 1300n	136.165.85.99
KH Lab 2	LAB2	KHLAB2		136.165.85.147
KH Lab 3	LAB3	KHLAB3		136.165.84.189
KH Lab 4	LAB4	KHLAB4		136.165.83.180
KH Lab 5	LAB05	KHLAB5		136.165.86.194
Fred's Office	PHASEII4	KHMAINT		
Shannan's Office	SHANNAN	KHMKT	HP DeskJet 6122	136.165.85.213
KH Passpoint	KEYSYSTEM	KHPASS		Unplugged
KH Office 1	PHASEII5	KHACCT		136.165.253.10

New Computer Name	Machine Type	BIOS Type	BIOS version	Processor	HD Type
BJACCT	Evo D310m/845G	686O2	1.08	P4 1.8	WD400EB
BJAGM	Dell Optiplex GX270	Dell	A03	P4 2.6	6E040L0
BJFRONT	Evo D310m/845G	686O2	1.08	P4 1.8	4D040H2
BJLAB1	Dell Optiplex GX270	Dell	A03	P4 2.6	6E040L0
BJLAB2	Dell Optiplex GX270	Dell	A03	P4 2.6	6E040L0
BJLAB3	Dell Optiplex GX270	Dell	A03	P4 2.6	6E040L0
BJLAB4	Dell Optiplex GX270	Dell	A03	P4 2.6	6E040L0
BJLAB5	Evo D310m/845G	686O2	1.08	P4 1.8	4D040H2
BJRD	Evo D310m/845G	686O2	1.08	P4 1.8	4D040H2
BMLAB1	Dell Optiplex GX260	Dell	A06	P4 2.0	IC35L030AW207
BMLAB2	Dell Optiplex GX260	Dell	A06	P4 2.0	IC35L030AW207
BMLAB3	Dell Optiplex GX260	Dell	A06	P4 2.0	WDXL80SD-2
BMLAB4	Dell Optiplex GX260	Dell	A06	P4 2.0	IC35L030AW207
KHRD	Dell Optiplex GX260	Dell	A06	P4 2.0	IC35L030AW207
BMRD	Dell Optiplex GX260	Dell	A06	P4 2.0	IC35L030AW207
KHAGM	Evo D510C/845G	686O2	2.14	P4 1.9	6E020L0
KHFRONT	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	ST340015A
KHGM	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB
KHLAB1	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB
KHLAB2	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB
KHLAB3	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB
KHLAB4	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB
KHLAB5	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB
KHMAINT	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB
KHMKT	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB
KHPASS	Evo D310m/845G	686O2	1.08	P4 1.8	4D040H2
KHACCT	HP d330 uT Base Model ALL	786B2	1.1	P4 2.4	WD400EB



New Computer Name	HD Size	Memory Size	Video Card	Sound Card
BJACCT	37.27GB	256	Intel 82845G	SoundMAX
BJAGM	38.29GB	512	Intel 82865G	SoundMAX
BJFRONT	37.27GB	256	Intel 82845G	SoundMAX
BJLAB1	38.29GB	512	Intel 82865G	SoundMAX
BJLAB2	38.29GB	512	Intel 82865G	SoundMAX
BJLAB3	38.29GB	512	Intel 82865G	SoundMAX
BJLAB4	38.29GB	512	Intel 82865G	SoundMAX
BJLAB5	37.27GB	256	Intel 82845G	SoundMAX
BJRD	37.27GB	256	Intel 82845G	SoundMAX
BMLAB1	18.65GB	256	Intel 82845G	SoundMAX
BMLAB2	18.65GB	256	Intel 82845G	SoundMAX
BMLAB3	40.00GB	256	Intel 82845G	SoundMAX
BMLAB4	18.65GB	256	Intel 82845G	SoundMAX
KHRD	18.65GB	256	Intel 82845G	SoundMAX
BMRD	18.65GB	256	Intel 82845G	SoundMAX
KHAGM	18.64GB	256	Intel 82845G	SoundMAX
KHFRONT	37.27GB	256	Intel 82865G	SoundMAX
KHGM	37.27GB	512	Intel 82865G	SoundMAX
KHLAB1	37.27GB	256	Intel 82865G	SoundMAX
KHLAB2	37.27GB	256	Intel 82865G	SoundMAX
KHLAB3	37.27GB	256	Intel 82865G	SoundMAX
KHLAB4	37.27GB	256	Intel 82865G	SoundMAX
KHLAB5	37.27GB	256	Intel 82865G	SoundMAX
KHMAINT	37.27GB	256	Intel 82865G	SoundMAX
KHMKT	37.27GB	256	Intel 82865G	SoundMAX
KHPASS	37.27GB	256	Intel 82845G	SoundMAX
KHACCT	37.27GB	256	Intel 82865G	SoundMAX

New Computer Name	NIC	USB	Modem
BJACCT	Intel PRO/100	82801DB	None
BJAGM	Intel PRO/1000 MT	82801EB	None
BJFRONT	Intel PRO/100	82801DB	None
BJLAB1	Intel PRO/1000 MT	82801EB	None
BJLAB2	Intel PRO/1000 MT	82801EB	None
BJLAB3	Intel PRO/1000 MT	82801EB	None
BJLAB4	Intel PRO/1000 MT	82801EB	None
BJLAB5	Intel PRO/100	82801DB	None
BJRD	Intel PRO/100	82801DB	None
BMLAB1	Intel PRO/1000 MT	N/A	None
BMLAB2	Intel PRO/1000 MT	N/A	None
BMLAB3	Intel PRO/1000 MT	N/A	None
BMLAB4	Intel PRO/1000 MT	N/A	None
KHRD	Intel PRO/1000 MT	N/A	None
BMRD	Intel PRO/1000 MT	N/A	None
KHAGM	Intel PRO/100	82801DB	Agere Win
KHFRONT	Broadcom NetXtreme Gigabit	82801EB	None
KHGM	Broadcom NetXtreme Gigabit	82801EB	None
KHLAB1	Broadcom NetXtreme Gigabit	82801EB	None
KHLAB2	Broadcom NetXtreme Gigabit	82801EB	None
KHLAB3	Broadcom NetXtreme Gigabit	82801EB	None
KHLAB4	Broadcom NetXtreme Gigabit	82801EB	None
KHLAB5	Broadcom NetXtreme Gigabit	82801EB	None
KHMAINT	Broadcom NetXtreme Gigabit	82801EB	None
KHMKT	Broadcom NetXtreme Gigabit	82801EB	None
KHPASS	Intel PRO/100	82801DB	None
KHACCT	Broadcom NetXtreme Gigabit	82801EB	None

## APPENDIX II. CONFIGURATION AND SETTINGS

### Windows XP SP1 Installation

- 1) Format drive with NTFS file system
- 2) Set Name to "University of Louisville Properties" and leave Organization blank
- 3) Set Computer Name to "BASEIMAGE"
- 4) Set Administrator password
- 5) Set Time Zone

### Windows XP Setup

- For the user names, I added one user that I knew would be part of the system
- Open Control Panel and change to Classic View
- Control Panel, User Accounts, Change the way users log in: Disable the Welcome Screen
- Change Folder Options settings in Control Panel
  - Disable Simple Folder View
  - Enable Display Contents of System Folders
  - Show Hidden Files and Folders
  - Disable Hide extensions for known file types
  - Disable Hide protected OS files
  - Enable Show control Panel in My computer
  - Disable Use Simple File Sharing
- Turn System Restore off through My Computer Properties
- Copy drivers to HD and install those necessary
- Install all Windows Updates from [windowsupdate.microsoft.com](http://windowsupdate.microsoft.com)
- Copy I386 directory to c:\windows\

### Control Panel Setup

- Administrative Tools
  - Services: Disable Terminal Services
  - Services: Disable Messenger Service
- Display
  - Desktop Tab
    - Set Desktop to Company Background, center picture (saved copy of file as c:\windows\web\wallpaper\ULPLogo.gif)
    - Set Background Color to Hue:0 Sat:240 Lum:73 Red:155 Green:0 Blue:0
  - Customize Desktop
    - Check My Documents, My Computer, and Internet Explorer
    - Disable Desktop Cleanup Wizard
- Screen Saver Tab
  - Check On resume, password protect
- Folder Options
  - Offline Files Tab
    - Uncheck Enable Offline Files
- Internet Options
  - General Tab
    - Set Homepage to [www.google.com](http://www.google.com)

- Content
    - AutoComplete
      - Uncheck all and clear both
  - Network Connections
    - Local Area Connection Properties
      - Enable Show icon in notification area when connected
  - Phone and Modem Options
    - Enter Location Information
  - Power Options
    - Power Schemes Tab
      - Turn off hard disks after 2 hours
  - System
    - Computer Name Tab
      - Change
        - Change Workgroup to ULP (will require reboot)
    - Advanced Tab
      - Startup and Recovery Settings
        - Uncheck Automatically Restart
      - Error Reporting
        - Disable error report, but notify me when critical errors occur
    - Automatic Updates Tab
      - Change to Automatically download the updates, and install them on the default schedule (Every day at 3:00am)
    - Remote Tab
      - Uncheck Allow Remote Assistance
  - Taskbar and Start Menu
    - Taskbar Tab
      - Check Show Quick Launch
      - Uncheck Hide inactive icons
    - Start Menu Tab
      - Change to Classic Start Menu
      - Customize Classic Start Menu
        - Check Display Favorites
        - Check Display Log Off
        - Check Expand Control Panel
        - Check Expand Network Connections
        - Check Expand Printers
        - Uncheck Use Personalized Menus
- Other Windows XP Setup
- Delete Set Program Access and Defaults and Windows Catalog from Start Menu
  - Delete Remote Assistance, MSN Explorer, and PrintMe Internet Printing from Start Menu/Programs Menu
  - Start Menu
    - Search
      - For Files or Folders
        - Turn off Animated Character

- Change Preferences
  - With Indexing Service
    - Yes, enable Indexing Service
- Change files and folders search behavior
  - Advanced
    - Don't show balloon tips
- More advanced Options
  - Check Search hidden files and folders, then perform a search to lock your options
- Right click desktop and choose Arrange Icons By
  - Click Auto Arrange
- Type c: in the Run line and press Enter
- View menu
  - click Details
  - click Status Bar
- Click the up arrow beside System Tasks
- Click the up arrow beside Other Places
- Click the down arrow beside Details
- Tools Menu
  - Folder Options
    - View Tab
      - Apply to All Folders

#### Cleanup Before BareOS Image

- clean harddrive removing temp installation files and defragging
- create image of the master disk using Symantec Ghost and call it baseOS.gho

#### Install after Base Image

- Install and configure AntiVirus and Firewall Software
- Install Easy CD Creator and DirectCD
- Registered Easy CD Creator 5 Basic at Roxio's website to obtain updates
- Login: ulproperties
- Password: aoinc
- Email address: rsmile01@louisville.edu
- Updated Roxio version to 5.3.5.10 from Roxio.com
- Installed Adobe Photoshop 2.0
- Installed Adobe Acrobat Reader and updated to 6.0.2
- Updated MDAC to 2.8
- Installed Java VM (JRE 1.4.2\_05)
  - Java Plug-In Settings in Control Panel
    - Uncheck Show Java in System Tray
- Installed Microsoft Office 2003 including Word, Excel, Access, PowerPoint, Publisher, and Infopath
- Updated Office installation from officeupdate website
- Installed Office Converter Pack from officeupdate website
- Installed Passpoint
- Installed Citrix ICA Client
  - setup Application Sets KURZHALL and BJHALL
- Installed Macromedia Flash Player 7

- Installed Macromedia Shockwave 10.0.1.4
- Don't install Yahoo Toolbar
- Enable Automatic Update
- Group Policy Settings (gpedit.msc in the Run line)
- Computer Configuration
- Windows Settings
- Security Settings
- Local Policies
- Security Options
  - Interactive logon: Do not display last user name Enabled on CD-ROM drives
  - Interactive logon: Do not require CTRL+ALT+DEL Disabled
- Administrative Templates
- System
  - Turn off Autoplay Enabled
- Open everything to make sure the firewall catches it including ping and ipconfig-
- Create simdefault user with Administrator password to copy to default user (copy instructions above for configuring Administrator)
- copy desktop to default user
- clear ExcludeProfileDirs key in  
HKEY\_CURRENT\_USER\Software\Microsoft\Windows NT\CurrentVersion\Winlogon
- copy contents of c:\documents and settings\default user to c:\documents and settings\default user backup
- Open My Computer Properties, Advanced Tab, User Profiles and copy the simdefault profile to c:\documents and settings\default user
- Make sure My Documents folder in default user and simdefault user is correct
- Installed Windows XP SP2 and turned off Windows Firewall and configured Security Center not to monitor
- Installed Ad-Aware SE Personal 1.03
- Cleanup Before FullApps Image
- reduce size of page file and delete pagefile.sys
- clean harddrive removing temp installation files
- Empty recycle bin, defrag, then release ip and flushdns
- create image of the master disk using Symantec Ghost and call it FullApps.gho
- current image takes up 3 GBs of HD space (the image is 2 GB after compression)

#### Create Roaming User Profiles

- create user on client and server setting profile path to \\server\profileshare\profilename
- make sure permissions to profile share and e: are set to let user have full control on profile creation
- once the folder appears, cut profile share permissions back to read/change and e: back to read
- then, set the actual profile folder permissions to full control for that user
  - go to advanced settings and change the owner to the Administrators group
  - click ok, then go back into the security settings
  - delete the weird user (S-...), then add Administrators, System, and the user with full control

-Also, set Citrix folder to only have access by authorized users

After image:

- if necessary, adjust display settings to 32-bit, 1024x768
- Network Connections
  - Local Area Connection Properties
    - Enable Show icon in notification area when connected
- System
  - Advanced Tab
    - Startup and Recovery Settings
      - Uncheck Automatically Restart
- if printer directly connected to computer, setup printer and printer share (Administrators, Users, and SYSTEM should be in security settings)

ULP002.gho image changes 9/27/04:

- windows update
- roll back to Windows XP SP1 due to software incompatibility issues
- added lj1300, lj2300, and hp6122 print drivers to sysprep
- automatic updates turned off
- turned IE passwords on
- show settings tab in display
- updated SCS to build 1007
- updated Office 2003 to SP1
- added Crystal ActiveX Viewer Plugin
- added CViewer directory to root
- registered all \*.dll and \*.ocx files in directory with regsvr32

Cleanup before image:

- make sure firewall is in restricted mode
- clean harddrive deleting temp files, etc
- delete contents of c:\windows\System32\Dllcache
- perform disk cleanup
- perform a chkdsk /f
- perform virus and spyware scans
- set page file to 0
- Empty recycle bin, defrag, then release ip and flushdns
- update sysprep if necessary
- sysprep (don't generate new SIDs, detect non plug-and-play hardware, use mini-setup)

ULP003.gho image changes 3/6/05:

- windows and office update (upgrade to SP2)
- installed Microsoft AntiSpyware Beta
- installed Microsoft Baseline Security Analyzer
- uninstalled Roxio
- updated firewall to 7.1.3.1039 and Antivirus to 9.0.3.1000

- installed MathXL plugins
- updated Adobe Acrobat Reader to 6.0.3
- updated Java VM to 1.4.2\_06
- updated video drivers
- updated Macromedia Shockwave and Flash
- uninstalled Ad-Aware
- updated user list and passwords
- setup Citrix BJH and KH connections on each prostaff login
- updated sysprep and sysprep.inf to SP2 versions
- changed sysprep to not generate a new SID
- updated file security so Passpoint would work for all staff users:
- c:\windows\system32\config\software.log
- c:\windows\iltwain.ini
- c:\program files\common files\borland shared\bde\idapi32.cfg
- c:\program files\ademco
- c:\pdoxusr.net
- c:\windows\system32\wbem\repository
- HKLM\Software\Borland
- updated printers
- added z: drive mapped to prostaff resources for prostaff logins
- updated desktop background to corporate standard
- turned off Office customer service surveys
- made recycle bin work for users
- updated firewall to include Office products

ULP004.gho 12/13/05

changes for image starting 5/19/05

- set Terminal Services service to Manual
- check allow Remote Desktop checkbox
- change the way security center alerts me
- update esite trusted sites and other esite changes documented by email
- give Users full control of these registry keys for Citrix
- Software\Microsoft\Tracing
- Software\Microsoft\MSLicensing
- System\CurrentControlSet\Control\MediaProperties
- setup RSA login
- update printers
- homepage update and change to where it can't be changed
- update Citrix IP
- fix Access problem
- remove z: drive
- update [sysprepmassstorage] section of sysprep.inf
- update drivers and add drivers for D410
- windows and office update
- update Adobe Acrobat Reader to 7.0



- update Java VM
- update Macromedia Shockwave and Flash
- update video drivers
- update Microsoft Baseline Security Analyzer
- update firewall and antivirus
- update user list and passwords

### APPENDIX III. SYSPREP CONFIGURATION FILE

```
;SetupMgrTag
[SystemRestore]
    CheckpointCalendarFrequency = 0
    CheckpointSessionFrequency = 0
    MaximumDataStorePercentOfDisk = 0
    RestorePointLife = 0

[Unattended]
    OemSkipEula=Yes
    InstallFilePath=C:\windows\ServicePackFiles\i386;c:\windows\i386
    UpdateInstalledDrivers=Yes
    DriverSigningPolicy=Ignore

OemPnPDriversPath=Drivers\D310M\chipset\xp1;Drivers\D310M\chipset\xp2;Drivers\
D310M\chipset\xp3;Drivers\D310M\chipset\xp4;Drivers\D310M\chipset\xp5;Drivers\D3
10M\chipset\xp6;Drivers\D310M\chipset\xp7;Drivers\D310M\network;Drivers\D310M\s
ound;Drivers\D310M\video;Drivers\D330UT\network;Drivers\D330UT\video;Drivers\G
X260\chipset\xp1;Drivers\GX260\chipset\xp2;Drivers\GX260\chipset\xp3;Drivers\GX26
0\chipset\xp4;Drivers\GX260\chipset\xp5;Drivers\GX260\network;Drivers\GX260\sound
;Drivers\GX270\chipset\xp1;Drivers\GX270\chipset\xp2;Drivers\GX270\chipset\xp3;Dri
vers\GX270\chipset\xp4;Drivers\GX270\chipset\xp5;Drivers\GX270\chipset\xp6;Drivers
\GX270\chipset\xp7;Drivers\GX270\network;Drivers\GX270\sound;Drivers\Printers\des
kjet6122;Drivers\Printers\psc2100;Drivers\Printers\deskjet960c;Drivers\Printers\mfc8500
;Drivers\Printers\deskjet6122;Drivers\Printers\lj1300;Drivers\Printers\lj2300;Drivers\Prin
ters\lj2420;Drivers\Printers\officejet7400;Drivers\D410\chipset1;Drivers\D410\chipset2;
Drivers\D410\chipset3;Drivers\D410\network;Drivers\D410\wlan;Drivers\D410\modem;
Drivers\D410\sound

[WindowsFirewall]
    Profiles = WindowsFirewall.TurnOffFirewall

[WindowsFirewall.TurnOffFirewall]
    Mode = 0

[GuiUnattended]
    OEMSkipRegional=1
    OEMDuplicatorstring=Base
    TimeZone=35
    OemSkipWelcome=1

[UserData]
    ProductKey=J3GPG-XHFKP-2XC32-6PD42-FQGHB
```

FullName="University of Louisville Properties"  
OrgName=""  
ComputerName=\*

[Display]  
BitsPerPel=32  
Vrefresh = 75  
Xresolution=1024  
YResolution=768

[TapiLocation]  
CountryCode=1  
Dialing=Tone  
AreaCode=502

:[SetupMgr]  
;DistFolder=C:\sysprep\i386  
;DistShare=windist

[GuiRunOnce]  
c:\sysprep\sysprep.exe -quiet -mini

[Identification]  
JoinWorkgroup=ULP

[Networking]  
InstallDefaultComponents=No

[SysprepMassStorage]  
pci\ven\_8086&dev\_244e=c:\windows\inf\machine.inf  
pci\ven\_8086&dev\_2448=c:\windows\inf\machine.inf

## APPENDIX IV. DRIVERS DOCUMENTATION

GX260:

sound -

Analog Devices ADI 198x Integrated Audio, v.5.12.01.3538, A08

File Date: 2/12/2003

ADI Onboard Sound Driver Multiple System.

chipset -

Intel 800 Series Integrated Chipset, v.4.01.1001, A06

File Date: 5/20/2002

BIOS -

Dell OptiPlex System BIOS, A06

File Date: 5/28/2003

Optiplex GX260 A06 FlashBIOS

IDE -

Hitachi Deskstar 180GXP Family (20,30,40,60,80,120GB) Hard Drives, v.Util, A01

File Date: 7/23/2003

This utility reduces the chance of erroneous SMART failures for the Hitachi(Previously IBM) Deskstar 180GXP Family Hard Drives (20,30,40,60,80,120GB) Dell P/N (4X469,X0308,X0375,X0769,X0770,X0775)

network -

Intel 8254x 1000 Integrated Network, v.6.2.21.19, A01

File Date: 1/10/2003

Intel PRO/1000 Network Drivers

video -

Production Version Releases

Microsoft Windows\* 2000

Microsoft Windows\* XP

Driver Revision: 6.14.10.4342

Package: 23409

Production Version 14.10.3.4342

June 29, 2005

GX270

sound -

Analog Devices ADI 198x Integrated Audio, v.5.12.01.3555, A09

Release Date: 05/16/2003

Description: ADI Onboard Sound Driver Multiple System.

chipset -

Intel Chipset Software Installation Utility, v.5.00.1012, A13

File Date: 5/16/2003

Adds software support for the newest Intel Chipsets.

BIOS -

Dell OptiPlex System BIOS, A03

File Date: 11/12/2003

Optiplex GX270 A03 System BIOS.

IDE -

Hitachi Deskstar 180GXP Family (20,30,40,60,80,120GB) Hard Drives, v.Util, A01

File Date: 7/23/2003

This utility reduces the chance of erroneous SMART failures for the Hitachi(Previously IBM) Deskstar 180GXP Family Hard Drives (20,30,40,60,80,120GB) Dell P/N (4X469,X0308,X0375,X0769,X0770,X0775)

network -

Intel Gigabit LOM, v.7.0.34.2, A01

File Date: 10/30/2003

Intel PRO/1000 Network Drivers

video -

Production Version Releases

Microsoft Windows\* 2000

Microsoft Windows\* XP

Driver Revision: 6.14.10.4396

Package: 24562

Production Version 14.17.0.4396

September 29, 2005

D310M:

BIOS -

ROMPac for Evo D310/D320/D510 and W4000 SFF DDR (686O2 ROM)  
version 3.18 (12 Jun 03)

sound -  
ADI SoundMax AC97 Integrated Digital Audio Driver  
version 5.12.01.3620 D (23 Jan 04)

chipset -  
Intel Chipset Support for Windows  
version 5.1.0.1008 A (19 Mar 04)

video -  
Production Version Releases  
Microsoft Windows\* 2000  
Microsoft Windows\* XP  
Driver Revision: 6.14.10.4342  
Package: 23409  
Production Version 14.10.3.4342  
June 29, 2005

network -  
Intel PRO/100/1000 Drivers for Windows XP  
version 6.4.16.1 A (6 Feb 04)

D330UT:  
BIOS -  
HP Compaq Business Desktop System BIOS (786B2 BIOS)  
version 2.18 (2 Feb 04)

sound -  
ADI SoundMax AC97 Integrated Digital Audio Driver  
version 5.12.01.3620 D (23 Jan 04)

chipset -  
Intel Chipset Support for Windows  
version 5.1.0.1008 A (19 Mar 04)

video -  
Production Version Releases  
Microsoft Windows\* 2000  
Microsoft Windows\* XP  
Driver Revision: 6.14.10.4396  
Package: 24562  
Production Version 14.17.0.4396

September 29, 2005

network - (from [www.broadcom.com](http://www.broadcom.com))

BCM57xx Drivers

Windows XP (32 bit) 7.43 04/30/04 67KB

Windows XP (IA64) 7.42 04/30/04 169KB

BCM4401 Drivers

Windows XP 4.23 11/26/03 30KB

D510C:

BIOS -

ROMPaq for Evo D310/D320/D510 and W4000 SFF DDR (686O2 ROM)  
version 3.18 (12 Jun 03)

sound -

ADI SoundMax AC97 Integrated Digital Audio Driver  
version 5.12.01.3620 D (23 Jan 04)

chipset -

Intel Chipset Support for Windows  
version 5.1.0.1008 A (19 Mar 04)

video -

Production Version Releases

Microsoft Windows\* 2000

Microsoft Windows\* XP

Driver Revision: 6.14.10.4342

Package: 23409

Production Version 14.10.3.4342

June 29, 2005

network -

Intel PRO/100/1000 Drivers for Windows XP  
version 6.4.16.1 A (6 Feb 04)

D410:

sound -

Audio: SIGMATEL STAC 975X AC97, Driver, Windows 2000, Windows XP, Multi  
Language, Multi System, v.5.10.0.4255, A03

Release Date: 06/20/2005

chipset -

Chip Set: Texas Instruments PCI 6515 Cardbus, Driver, Windows 2000, Windows XP, Multi Language, Multi System, v.2.0.0.1 (FLASH) 1.0.1.15 (Smartcard), A01  
Release Date: 11/04/2005

Chip Set: Intel Mobile Chipset, Driver, Windows 2000, Windows XP, Multi Language, Multi System, v.6.1.0.1008, A07

Chip Set: Broadcom Trusted Platform Module, Driver, Windows 2000, Windows XP, Multi Language, Multi System, v.1.71.0020.0, A03

video -

Production Version Releases  
Microsoft Windows\* 2000  
Microsoft Windows\* XP  
Driver Revision: 6.14.10.4396  
Package: 24562  
Production Version 14.17.0.4396  
September 29, 2005

network -

Network: Broadcom 570x Gigabit Integrated Controller, 57XX Gigabit Integrated Controller, Driver, Windows 2000, Windows XP, Multi Language, Multi System, v.Win XP v7.86/Win 2K v7.86, A01  
Release Date: 12/01/2004

wlan -

Network: Intel (R) PRO/Wireless Network Connection, (R) PRO/Wireless 2200BG Network Connection, (R) PRO/Wireless 2915ABG Network Connection, Driver, Windows 2000, Windows XP, Multi Language, Multi System, v.9.0.2.1, 9.0.2.31, A10  
09/23/2005

modem -

Communications: Conexant D110,MDC,1.5,v.92, Driver, Windows 2000, Windows XP, Multi Language, Multi System, v.7.23.01, A03  
Release Date: 07/08/2005



## APPENDIX V. BACKUP BATCH FILES

### Daily Backup Batch File

```
xcopy /d /e /c /h /k /o /x /y \\khpass\c$\progra~1\ademco\passpo~1\data
d:\backup\PASSPOINT\KH\data
xcopy /d /e /c /h /k /o /x /y \\bjagm\c$\progra~1\ademco\passpo~1\data
d:\backup\PASSPOINT\BJH\data
xcopy /d /e /c /h /k /o /x /y \\bmr\c$\progra~1\ademco\passpo~1\data
d:\backup\PASSPOINT\BMH\data
```

```
xcopy /d /EXCLUDE:c:\docume~1\administrator\desktop\backup\exclude.txt /e /c /h /k
/o /x /y \\khpass\c$\prosta~1 d:\backup\khpass\prosta~1
xcopy /d /EXCLUDE:c:\docume~1\administrator\desktop\backup\exclude.txt /e /c /h /k
/o /x /y \\khpass\c$\rareso~1 d:\backup\khpass\rareso~1
xcopy /d /e /c /h /k /o /x /y \\khpass\c$\logs d:\backup\khpass\logs
xcopy /d /e /c /h /k /o /x /y \\khpass\c$\radocu~1 d:\backup\khpass\radocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khfront\c$\docume~1\khrec\desktop
d:\backup\khfront\khrec\desktop
xcopy /d /e /c /h /k /o /x /y \\khfront\c$\docume~1\khrec\favorites
d:\backup\khfront\khrec\favorites
xcopy /d /e /c /h /k /o /x /y \\khfront\c$\docume~1\khrec\mydocu~1
d:\backup\khfront\khrec\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khacct\c$\docume~1\regdir\desktop
d:\backup\khrd\regdir\desktop
xcopy /d /e /c /h /k /o /x /y \\khacct\c$\docume~1\regdir\favorites
d:\backup\khrd\regdir\favorites
xcopy /d /e /c /h /k /o /x /y \\khacct\c$\docume~1\regdir\mydocu~1
d:\backup\khrd\regdir\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\desktop
d:\backup\khagm\khacm\desktop
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\favorites
d:\backup\khagm\khacm\favorites
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\mydocu~1
d:\backup\khagm\khacm\mydocu~1
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\Applic~1\Microsoft\Addres~1
d:\backup\khagm\khacm\Addres~1
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\Locals~1\Applic~1\Identities
d:\backup\khagm\khacm\Identities
```

```
xcopy /d /e /c /h /k /o /x /y \\khmkt\c$\docume~1\mktdir\desktop
d:\backup\khmkt\mktdir\desktop
```

```
xcopy /d /e /c /h /k /o /x /y \\khmkt\c$\docume~1\mktdir\favorites
d:\backup\khmkt\mktdir\favorites
xcopy /d /e /c /h /k /o /x /y \\khmkt\c$\docume~1\mktdir\mydocu~1
d:\backup\khmkt\mktdir\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khgm\c$\docume~1\commgr\desktop
d:\backup\khgm\commgr\desktop
xcopy /d /e /c /h /k /o /x /y \\khgm\c$\docume~1\commgr\favorites
d:\backup\khgm\commgr\favorites
xcopy /d /e /c /h /k /o /x /y \\khgm\c$\docume~1\commgr\mydocu~1
d:\backup\khgm\commgr\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khsecond\c$\docume~1\acctmgr\desktop
d:\backup\bjacct\acctmgr\desktop
xcopy /d /e /c /h /k /o /x /y \\khsecond\c$\docume~1\acctmgr\favorites
d:\backup\bjacct\acctmgr\favorites
xcopy /d /e /c /h /k /o /x /y \\khsecond\c$\docume~1\acctmgr\mydocu~1
d:\backup\bjacct\acctmgr\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\bjagm\c$\docume~1\bjacm\desktop
d:\backup\bjagm\bjacm\desktop
xcopy /d /e /c /h /k /o /x /y \\bjagm\c$\docume~1\bjacm\favorites
d:\backup\bjagm\bjacm\favorites
xcopy /d /e /c /h /k /o /x /y \\bjagm\c$\docume~1\bjacm\mydocu~1
d:\backup\bjagm\bjacm\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\bjrd\c$\docume~1\bjrd\desktop d:\backup\bjrd\bjrd\desktop
xcopy /d /e /c /h /k /o /x /y \\bjrd\c$\docume~1\bjrd\favorites
d:\backup\bjrd\bjrd\favorites
xcopy /d /e /c /h /k /o /x /y \\bjrd\c$\docume~1\bjrd\mydocu~1
d:\backup\bjrd\bjrd\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\bjfront\c$\docume~1\bjrec\desktop
d:\backup\bjfront\bjrec\desktop
xcopy /d /e /c /h /k /o /x /y \\bjfront\c$\docume~1\bjrec\favorites
d:\backup\bjfront\bjrec\favorites
xcopy /d /e /c /h /k /o /x /y \\bjfront\c$\docume~1\bjrec\mydocu~1
d:\backup\bjfront\bjrec\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khmaint\c$\docume~1\maintmgr\desktop
d:\backup\khmaint\maintmgr\desktop
xcopy /d /e /c /h /k /o /x /y \\khmaint\c$\docume~1\maintmgr\favorites
d:\backup\khmaint\maintmgr\favorites
xcopy /d /e /c /h /k /o /x /y \\khmaint\c$\docume~1\maintmgr\mydocu~1
d:\backup\khmaint\maintmgr\mydocu~1
```

## Weekly Backup Batch File

```
xcopy /d /e /c /h /k /o /x /y \\khpass\c$\progra~1\ademco\passpo~1\data
d:\backup\PASSPOINT\KH\data
xcopy /d /e /c /h /k /o /x /y \\bjagm\c$\progra~1\ademco\passpo~1\data
d:\backup\PASSPOINT\BJH\data
xcopy /d /e /c /h /k /o /x /y \\bmr\c$\progra~1\ademco\passpo~1\data
d:\backup\PASSPOINT\BMH\data
```

```
xcopy /d /EXCLUDE:c:\docume~1\administrator\desktop\backup\exclude.txt /e /c /h /k
/o /x /y \\khpass\e$\prosta~1 d:\backup\khpass\prosta~1
xcopy /d /EXCLUDE:c:\docume~1\administrator\desktop\backup\exclude.txt /e /c /h /k
/o /x /y \\khpass\e$\rareso~1 d:\backup\khpass\rareso~1
xcopy /d /e /c /h /k /o /x /y \\khpass\e$\logs d:\backup\khpass\logs
xcopy /d /e /c /h /k /o /x /y \\khpass\e$\radocu~1 d:\backup\khpass\radocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khfront\c$\docume~1\khrec\desktop
d:\backup\khfront\khrec\desktop
xcopy /d /e /c /h /k /o /x /y \\khfront\c$\docume~1\khrec\favorites
d:\backup\khfront\khrec\favorites
xcopy /d /e /c /h /k /o /x /y \\khfront\c$\docume~1\khrec\mydocu~1
d:\backup\khfront\khrec\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khacct\c$\docume~1\regdir\desktop
d:\backup\khacct\regdir\desktop
xcopy /d /e /c /h /k /o /x /y \\khacct\c$\docume~1\regdir\favorites
d:\backup\khacct\regdir\favorites
xcopy /d /e /c /h /k /o /x /y \\khacct\c$\docume~1\regdir\mydocu~1
d:\backup\khacct\regdir\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\desktop
d:\backup\khagm\khacm\desktop
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\favorites
d:\backup\khagm\khacm\favorites
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\mydocu~1
d:\backup\khagm\khacm\mydocu~1
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\Applic~1\Microsoft\Addres~1
d:\backup\khagm\khacm\Addres~1
xcopy /d /e /c /h /k /o /x /y \\khagm\c$\docume~1\khacm\Locals~1\Applic~1\Identities
d:\backup\khagm\khacm\Identities
```

```
xcopy /d /e /c /h /k /o /x /y \\khmkt\c$\docume~1\mktdir\desktop
d:\backup\khmkt\mktdir\desktop
xcopy /d /e /c /h /k /o /x /y \\khmkt\c$\docume~1\mktdir\favorites
d:\backup\khmkt\mktdir\favorites
```

```
xcopy /d /e /c /h /k /o /x /y \\khmkt\c$\docume~1\mktdir\mydocu~1
d:\backup\khmkt\mktdir\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khgm\c$\docume~1\commgr\desktop
d:\backup\khgm\commgr\desktop
xcopy /d /e /c /h /k /o /x /y \\khgm\c$\docume~1\commgr\favorites
d:\backup\khgm\commgr\favorites
xcopy /d /e /c /h /k /o /x /y \\khgm\c$\docume~1\commgr\mydocu~1
d:\backup\khgm\commgr\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khsecond\c$\docume~1\acctmgr\desktop
d:\backup\khsecond\acctmgr\desktop
xcopy /d /e /c /h /k /o /x /y \\khsecond\c$\docume~1\acctmgr\favorites
d:\backup\khsecond\acctmgr\favorites
xcopy /d /e /c /h /k /o /x /y \\khsecond\c$\docume~1\acctmgr\mydocu~1
d:\backup\khsecond\acctmgr\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\bjagm\c$\docume~1\bjacm\desktop
d:\backup\bjagm\bjacm\desktop
xcopy /d /e /c /h /k /o /x /y \\bjagm\c$\docume~1\bjacm\favorites
d:\backup\bjagm\bjacm\favorites
xcopy /d /e /c /h /k /o /x /y \\bjagm\c$\docume~1\bjacm\mydocu~1
d:\backup\bjagm\bjacm\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\bjrd\c$\docume~1\bjrd\desktop d:\backup\bjrd\bjrd\desktop
xcopy /d /e /c /h /k /o /x /y \\bjrd\c$\docume~1\bjrd\favorites
d:\backup\bjrd\bjrd\favorites
xcopy /d /e /c /h /k /o /x /y \\bjrd\c$\docume~1\bjrd\mydocu~1
d:\backup\bjrd\bjrd\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\bjfront\c$\docume~1\bjrec\desktop
d:\backup\bjfront\bjrec\desktop
xcopy /d /e /c /h /k /o /x /y \\bjfront\c$\docume~1\bjrec\favorites
d:\backup\bjfront\bjrec\favorites
xcopy /d /e /c /h /k /o /x /y \\bjfront\c$\docume~1\bjrec\mydocu~1
d:\backup\bjfront\bjrec\mydocu~1
```

```
xcopy /d /e /c /h /k /o /x /y \\khmaint\c$\docume~1\maintmgr\desktop
d:\backup\khmaint\maintmgr\desktop
xcopy /d /e /c /h /k /o /x /y \\khmaint\c$\docume~1\maintmgr\favorites
d:\backup\khmaint\maintmgr\favorites
xcopy /d /e /c /h /k /o /x /y \\khmaint\c$\docume~1\maintmgr\mydocu~1
d:\backup\khmaint\maintmgr\mydocu~1
for /f "tokens=1-4 delims=, " %%a in ('date/t') do set dateVar=%%b%%c%%d
md d:\weekly\%dateVar%
```

```
xcopy /e /c /h /k /o /x /y d:\backup d:\weekly\%dateVar%
```

```
rd /s /q d:\backup\PASSPOINT\KH\data
md d:\backup\PASSPOINT\KH\data
rd /s /q d:\backup\PASSPOINT\BJH\data
md d:\backup\PASSPOINT\BJH\data
rd /s /q d:\backup\PASSPOINT\BMH\data
md d:\backup\PASSPOINT\BMH\data
```

```
rd /s /q d:\backup\khpas\prosta~1
md d:\backup\khpas\prostaff resources"
rd /s /q d:\backup\khpas\rareso~1
md d:\backup\khpas\ra resources"
rd /s /q d:\backup\khpas\logs
md d:\backup\khpas\logs
rd /s /q d:\backup\khpas\radocu~1
md d:\backup\khpas\ra documents"
```

```
rd /s /q d:\backup\khfront\khrec\desktop
md d:\backup\khfront\khrec\desktop
rd /s /q d:\backup\khfront\khrec\favorites
md d:\backup\khfront\khrec\favorites
rd /s /q d:\backup\khfront\khrec\mydocu~1
md d:\backup\khfront\khrec\my documents"
```

```
rd /s /q d:\backup\khacct\regdir\desktop
md d:\backup\khacct\regdir\desktop
rd /s /q d:\backup\khacct\regdir\favorites
md d:\backup\khacct\regdir\favorites
rd /s /q d:\backup\khacct\regdir\mydocu~1
md d:\backup\khacct\regdir\my documents"
```

```
rd /s /q d:\backup\khagm\khacm\desktop
md d:\backup\khagm\khacm\desktop
rd /s /q d:\backup\khagm\khacm\favorites
md d:\backup\khagm\khacm\favorites
rd /s /q d:\backup\khagm\khacm\mydocu~1
md d:\backup\khagm\khacm\my documents"
rd /s /q d:\backup\khagm\khacm\Addres~1
md d:\backup\khagm\khacm\address book"
rd /s /q d:\backup\khagm\khacm\Identities
md d:\backup\khagm\khacm\Identities
```

```
rd /s /q d:\backup\khmkt\mktdir\desktop
md d:\backup\khmkt\mktdir\desktop
rd /s /q d:\backup\khmkt\mktdir\favorites
```

```
md d:\backup\khmkt\mktdir\favorites
rd /s /q d:\backup\khmkt\mktdir\mydocu~1
md d:\backup\khmkt\mktdir\"my documents"
```

```
rd /s /q d:\backup\khgm\commgr\desktop
md d:\backup\khgm\commgr\desktop
rd /s /q d:\backup\khgm\commgr\favorites
md d:\backup\khgm\commgr\favorites
rd /s /q d:\backup\khgm\commgr\mydocu~1
md d:\backup\khgm\commgr\"my documents"
```

```
rd /s /q d:\backup\khsecond\acctmgr\desktop
md d:\backup\khsecond\acctmgr\desktop
rd /s /q d:\backup\khsecond\acctmgr\favorites
md d:\backup\khsecond\acctmgr\favorites
rd /s /q d:\backup\khsecond\acctmgr\mydocu~1
md d:\backup\khsecond\acctmgr\"my documents"
```

```
rd /s /q d:\backup\bjagm\bjacm\desktop
md d:\backup\bjagm\bjacm\desktop
rd /s /q d:\backup\bjagm\bjacm\favorites
md d:\backup\bjagm\bjacm\favorites
rd /s /q d:\backup\bjagm\bjacm\mydocu~1
md d:\backup\bjagm\bjacm\"my documents"
```

```
rd /s /q d:\backup\bjrd\bjrd\desktop
md d:\backup\bjrd\bjrd\desktop
rd /s /q d:\backup\bjrd\bjrd\favorites
md d:\backup\bjrd\bjrd\favorites
rd /s /q d:\backup\bjrd\bjrd\mydocu~1
md d:\backup\bjrd\bjrd\"my documents"
```

```
rd /s /q d:\backup\bjfront\bjrec\desktop
md d:\backup\bjfront\bjrec\desktop
rd /s /q d:\backup\bjfront\bjrec\favorites
md d:\backup\bjfront\bjrec\favorites
rd /s /q d:\backup\bjfront\bjrec\mydocu~1
md d:\backup\bjfront\bjrec\"my documents"
```

```
rd /s /q d:\backup\khmaint\maintmgr\desktop
md d:\backup\khmaint\maintmgr\desktop
rd /s /q d:\backup\khmaint\maintmgr\favorites
md d:\backup\khmaint\maintmgr\favorites
rd /s /q d:\backup\khmaint\maintmgr\mydocu~1
md d:\backup\khmaint\maintmgr\"my documents"
```

## Folder to Exclude During Backup

\photos\