



Matrix42

Windows 7 Migration:

optimized, automated, fast and secure

Version 1.0.0

September 03, 2009

Copyright © 2000 - 2009 Matrix42 AG

No part of this documentation may be reprinted without the prior permission of Matrix42 AG

Empirum is a trademark of Matrix42 AG. Windows, Windows 2000, Windows XP, Windows Server 2003, Windows Server 2008, Windows Vista and Windows 7 are registered trademarks of Microsoft Corporation. Apple and Mac OS X are registered trademarks of Apple Inc.

Iconv is copyrighted by 1999-2003 Free Software Foundation, Inc.

gSOAP is copyrighted by Robert A. van Engelen, Genivia, Inc. All rights reserved.

OpenSSL This product includes software developed by the *OpenSSL* Project for use in the *OpenSSL* Toolkit.

Libmsspack (C) 2003-2004 by Stuart Caie <kyzer@4u.net>

expat is copyrighted by Thai Open Source Software Center Ltd.

runcontrol The Initial Developer of the Original Code is James Clark. Portions created by James Clark are Copyright (c) 1998 James Clark. All rights reserved.

SNMP++ Copyright (c) 1996 Hewlett-Packard Company.

RSA Data Security, Inc. MD5 Message-Digest Algorithm is copyrighted by RSA Data Security Inc. Created 1991. All rights reserved.

Iperf is [copyrighted by the University of Illinois](#), except for the gnu_getopt.c, gnu_getopt_long.c, gnu_getopt.h files, and inet_aton.c, which are under the GNU General Public License.

rsync is an [open source](#) utility that provides fast incremental file transfer. rsync is freely available under the [GNU General Public License version 2](#).

cygwin is copyrighted by Red Hat Inc. 1996-2003.

PuTTY is copyrighted by Simon Tatham. Portions copyright Robert de Bath, Joris van Rantwijk, Delian Delchev, Andreas Schultz, Jeroen Massar, Wez Furlong, Nicolas Barry, Justin Bradford, Ben Harris, Malcolm Smith, Ahmad Khalifa, Markus Kuhn, and CORE SDI S.A.

Other company, trademark, or product names not explicitly mentioned here are trademarks or registered trademarks of their respective owners and are protected.

Table of contents

1	Windows 7 Migration: Optimized, automated, fast and secure	4
2	Reasons for Migration	4
3	Windows 7 Highlights	5
4	Hardware Inventory	5
4.1	System requirements for Windows 7:	6
5	Driver Analysis and Driver Provision	6
6	Windows 7 Provisioning	7
7	Preparing Software	7
8	Backup Settings	8
9	Performing the Migration	8
9.1	Flexible Migration	8
9.2	Migration as a Chance	9

Windows 7 Migration: optimized, automated, fast and secure

1 Windows 7 Migration: Optimized, automated, fast and secure

As current surveys by IDC and Morgan Stanley have revealed, many companies plan to migrate from Windows XP to the new client operating system Windows 7 in 2010. Many of these companies have decided against replacing Windows XP with Windows Vista and are now planning to migrate their client infrastructures to Windows 7.

While migration to the new client operating system provides a multitude of benefits, it also bears certain risks unless companies have thoroughly prepared for the migration progress. Corporate users need to know how to use the new features of the user interface; however, administrators must ensure that the appropriate drivers are available for all corporate devices, all corporate applications are Windows 7 compatible and that user settings and user-specific data are transferred to the new operating system. This white paper describes a strategy for a successful Windows 7 migration and helps administrators avoid certain pitfalls through careful planning.

As a vendor of systems and service management solutions, Matrix42 analyzes the Windows 7 migration issue under consideration of its own products.

2 Reasons for Migration

The main reason for early migration is the fact that Windows XP has already entered the so-called “extended” product support phase, i.e., Microsoft only provides the most essential updates for this operating system that launched in 2001. At the latest, support will be discontinued in 2014

It is not an easy task to directly migrate all programs, files and settings from Windows XP to Windows 7. While a so-called in-place upgrade from Windows Vista to Windows 7 is possible, current Windows XP users are facing a reinstallation. All programs, settings and data will be lost during this installation process since all information on the system hard disk will be deleted. To transfer Microsoft-specific files and settings, Microsoft provides the so-called “Windows Easy Transfer” tool which has been designed for single-license (consumer) PC and cannot be used to transfer third-party vendor software settings.

Based on the purchase of new PCs, many IT experts argue against a “step-by-step” migration. Although there are no technical obstacles that would prevent a mixed environment consisting of Windows XP, Vista and Windows 7, IT support is significantly more difficult if multiple client operating systems need to be supported.

Overall, the number of support calls is expected to decrease, thanks to the revised and enhanced user interface of Windows 7. The new operating system is deemed THE Microsoft client platform of the future with a very high degree of market penetration. Software developers are already beginning to write their programs primarily for Windows 7.

Ultimately, Windows 7 provides various enhancements, compared to its predecessors, which make it particularly attractive for corporate users.

3 Windows 7 Highlights

Many of the major modifications in Windows 7 are related to security improvements. While updates were provided over the years to improve the XP security concept, remaining security holes are deeply rooted within the XP concept itself. User account control as a revised security strategy was not available before Windows Vista. An enhanced UAC variant is a basic component of Windows 7.

Data losses are particularly risky for organizations. Under Windows 7, this risk is reduced through an enhanced "BitLocker" disk encryption. While Vista only protected inbuilt hard disks, the "BitLock To Go" variant now provides protection for removable media, including USB sticks, which can be password-encrypted to avoid unauthorized read and write access.

The "AppLocker" program, which allows or denies operations of specific software on PCs is another means to increase security. Administrators can use this software to define rules and policies that prevent the usage of undesired software. No third-party products are required for this task. Applications can be included in a white or blacklist, based on a group policy.

DirectAccess, a program steps recorder used for recording actions on the screen, and the so-called "Branch Cache" used to cache files from the server for Windows 7 will facilitate VPN provisioning on the new Windows operating system and speed up access to networks with slower WAN connections.

During installation, Windows 7 creates an inaccessible "recovery" folder on the system partition where a WinPE (Windows Preinstallation Environment) is provided for contingencies to repair the Windows installation.

4 Hardware Inventory

In a first step, existing PCs must be examined to determine their Windows 7 compatibility, a task which can be most easily performed by using a systems management solution such as Matrix42 Empirum. All corporate systems are regularly connected to an administration server to communicate their hardware and software configurations.

With a simple push of a button, predefined inventory filters in the Matrix42 Empirum solution scans all network systems and identifies those that fulfill the Windows 7 system requirements. Additional filters help the administrator to determine which PCs can be Windows 7 enabled through hardware upgrades. Graphical reports provide an even higher degree of granularity to show which systems can be equipped with which hardware components to achieve Windows 7 compatibility.

Windows 7 Migration: optimized, automated, fast and secure

4.1 System requirements for Windows 7:

	32-bit (x86) Windows 7	64-bit (x64) Windows 7
CPU	1 GHz	1 GHz
RAM	1 GB	2 GB
HDD	16 GB	20 GB
Graphics	Direct-X 9 with >=WDDM 1.0	Direct-X 9 with >=WDDM 1.0

Thanks to the high scalability of Windows 7, system requirements are moderate and can even be met by older PCs that have been in use for a couple of years. The ability to work fast with computers that only meet the most basic requirements is strongly dependent on the applications in use and the individual user's requirements. We recommend that you migrate selected computers prior to the actual migration project and test these systems to get a feeling for the potential performance that can be achieved.

5 Driver Analysis and Driver Provision

Drivers must be provided for all system components and peripheral devices in use. While Vista drivers may be used under Windows 7, XP drivers generally do not work under the new operating system! An explicit test is required, also for Vista drivers, since some vendor installation routines check for "fixed" version numbers. If such installer detects a version number that is higher than that of Windows Vista, that installer will block the whole process.

While you can use the Windows 7 "troubleshoot compatibility" feature to explicitly "fool" this mechanism, it cannot be used permanently. This option is more a means to run software in a compatibility mode rather than integrate drivers with the system.

When searching suitable drivers for system components and external devices such as scanners or printers, the inventory database of a systems management solution is again the basis for appropriate planning. With Matrix42 Empirum, only a few mouse clicks are required to generate reports that inform users on the type and quantity of components and devices in use.

Matrix42 Empirum provides a driver database that makes it easy for administrators to install systems since Matrix42 Empirum automatically detects the suitable drivers for the respective operating system, the hardware in use and also selects the correct drivers during installation with the "OS Installer" tool fully automatically. An online synchronization is performed with the Matrix42 FTP server to supply current drivers; alternatively, specific driver DVDs can be used for this purpose. For less common components, which are not included in these updates, the administrator can use a wizard to add the respective drivers. In most cases, device drivers for scanners and printers are distributed as software packages.

6 Windows 7 Provisioning

If you work with a systems management software, the Windows 7 medium is only required once. Operating system sources and the desired language packages are imported once and potential variations are preconfigured once in Matrix42 Empirum. Answers to many questions are provided in advance, including questions such as which Windows programs must be installed, which standard services are available after installation and how the Windows firewall reacts within the corporate network.

7 Preparing Software

Optimally, applications are prepared during the steps performed for the operating system. Windows as an operating system is only the basis for the programs required in the company. In a first step, it must be determined which programs are actually utilized.

It is very easy to create such an overview. Matrix42 Empirum determines which programs are used in which version and also provides an overview on which software is used how much.

All mandatory programs must be available in a Windows 7 compatible version before a migration can be initiated. With Windows 7 being an enhanced development of the Vista predecessor, most programs should not pose major difficulties.

It is, however, advisable to intensively test each program to ensure smooth and correct operations under Windows 7. Matrix42 Empirum Inventory, with its integrated "application usage tracking" (AUT) feature, makes it easy to create a priority list. Rather than struggle for hours with the software compatibility of a program that may be hardly used at all, AUT information shows you what really matters. Thus, the migration project can also be used to directly leverage cost savings potentials and remove expensive or hardly used software.

While no incompatibilities should occur with programs such as Microsoft Office or SAP GUI, this may be an issue with smaller industry-specific solutions. Microsoft provides its free "Application Compatibility Toolkit 5.5" to allow users to check the Windows Vista / Windows 7 compatibility of their applications.

Existing software packages in Matrix42 Empirum are divided in three categories, based on this information: "No modification required" – the software package can be used under Windows 7 without modifications. "Repackaging required" – a new version will be provided as software package, and third, "virtualization of software required".

If software required in a company is not available for Windows 7, it can be run in the "XP mode" in a virtual environment. The XP mode is available in three of the six versions of the operating system (Professional, Enterprise and Ultimate) and requires a compatible CPU. If a specific program shall be used simultaneously in two different versions on a Windows installation, ThinApp by VMware may be the suitable choice.

Depending on the application, software packaging must fulfill various requirements. The Matrix42 Package Robot and VMware ThinApp provide all variants of software packaging.

8 Backup Settings

All administrators want to provide a highly homogeneous and standardized working environment to ensure that all applications are aligned with each other and to also ensure a high degree of robustness and supportability. However, users modify applications to adapt their workstations in a way that suits their needs. This can range from background images for their desktops to printer settings and auto-text modifications, but also sorting criteria and many other options.

To achieve a high degree of user acceptance, migration efforts must ensure that all of these individual settings are available on the newly installed PC. However, folder structures vary significantly between XP and Vista, Windows Server 2003 and Windows Server 2008. For instance, the “C:\Documents and Settings\” directory under XP has been renamed into “C:\Users” under Vista. Such and similar details must be accounted for when restoring data. This alone complicates manual migrations considerably. The “Personal Backup” module of Matrix42 Empirum makes such restores much easier. All user-specific data and settings are automatically collected beforehand and restored in the new operating system. This avoids productivity losses since users do not have to manually restore their environments.

9 Performing the Migration

Compared to the preparatory steps, the actual migration to Windows 7 is an easy and straightforward task. Personal Backup secures all data, the OS Installer deletes the old operating system and installs Windows 7 automatically with the appropriate drivers. In the next step, software required by users is installed and user-specific data and settings are restored. Finally, the PC sends the new inventory data to the administration server for unlimited reporting options.

Time needed for reinstallation depends on various factors: speed and the number of PCs that need to be reinstalled simultaneously, file server and network specifications and the number of programs to be configured. If migration shall be performed across a whole department or the whole company, we recommend that you migrate during the night. With the Wake-on-LAN function, activated systems are scheduled for automatic installation and reinstalled with a specific PXE image.

Reports supplied by Matrix42 Empirum allow for the detailed monitoring of the migration process. It is possible to determine by the minute how many PCs are currently being migrated, have already been migrated to Windows 7 or are still waiting for migration.

9.1 Flexible Migration

The Matrix42 systems and service management solution offers innovative migration approaches. The Matrix42 Service Catalog, or Empirum’s self-provisioning function, allow the user to determine the time and date of migration to the new Windows operating system. After all, the user knows best when he can do without his PC for about two hours.

The Matrix42 Service Catalog provides full control and transparency of costs incurred for a specific IT service such as a Windows 7 migration. This helps to counteract an attitude of rejection among users and increase user acceptance since it is the user who can determine the basic conditions of migration.

Windows 7 Migration: optimized, automated, fast and secure

9.2 Migration as a Chance

Migration to the new operating system is an ideal opportunity for eliminating legacy software and rejuvenating the corporate software landscape. Organizations have the chance to reshape their IT environments with vim and vigor rather than under pressure to get ready for the changing requirements of the future.

The Matrix42 solution provides all components required for an easy, reliable and successful migration of corporate networks to Windows 7.

Our experts are happy to provide advice and help you with your migration projects.

Additional information and a ready-for-use test version of Matrix42 Inventory for a Windows 7 compatibility check of your systems can be found under www.matrix42.com/windows7

Matrix42 USA, Inc | 400 Perimeter Center Terrace

Suite 250

Atlanta, Georgia 30346

phone1: +1 888-mx42-USA | phone2: +1 404 923 8380

info@matrix42.com | www.matrix42.com