PC Refresh and Windows Migration:
Cost Analysis and Opportunities to Economize the Process

Preface

PC Hardware refresh is a frequently overlooked aspect of IT workflow and of IT costs.

Migration costs are indeed difficult to quantify. Even when they are quantified, CIOs may feel that migration complexity is inevitable – and that so are the costs.

The purpose of this analysis is to present a clearer picture of an enterprise migration process from the costs perspective, and suggest possible ways for cost reduction.

In this paper, we will first explore the components of a typical migration process, including compatibility aspects. Then, we will examine three common migration scenarios, providing cost analysis on per-user basis.

Contents

Scope and Assumptions

This analysis relates to OpEx costs only. It does not include costs of hardware or Microsoft Windows / 3rd party licensing. We shall consider the following components of a typical migration process:

- **Preparation and Backup**
  All that is done before the migration actually begins. This includes user personalization backup, preparation of a unique images and applications, or backups of existing systems in case of an in-place upgrade.

- **Role-based Application Install**
  Once a blank or "golden" image is installed, users must be provided with the applications they use in the course of their work. In a typical enterprise, there are about 100 unique applications for each 1000 users[1], with each user requiring a subset of this application pool. With a huge amount of applications and diverse requirements, a "golden image" approach provides only the basic set of most common applications, while the bulk of applications – specific and role-based – has to be installed on a per-user basis, according to user's role in the organization.

- **Application and System Configuration**
  "Golden image" applications and role-based applications installed after the image must be configured after the installation according to user specifics and roles. Same goes for system-wide configurations, such as defining the right printer for the user.

- **User Re-Training**
  A user that has just been given a new operating environment must be trained in its use in order to become productive, especially if the new system has a new OS. If the user's applications are not configured exactly as before, additional training will be required to allow use of these applications.

- **Self Support / Informal training**
  Once IT provides the initial re-training to the user, additional time will be spent on user's self-learning and getting to know the new system. Again, if configurations and personalization are different from before, the user will have to spend time configuring the workspace to their own personal liking, until it becomes familiar and reaches optimal productivity.

- **User Downtime**
  During most of the migration, users are unable to use their workspaces – whether because the actual workstation is used by IT staff, or because the user is spending time on training and post-migration configurations. Post-migration downtime shall be counted towards the total time required for user adaptation to new environment.

- **Post Implementation Support**

  Once the migration is complete, there will be an increase in help-desk request volume and support activity, driven by "growing pains" of the users' new environments – at least during the initial post-migration period.

- **Domain Settings and Policies**

  To ensure business continuity both for IT and for end-users, it is important to preserve domain settings, permissions and security policies intact during the migration. While a large part of domain settings is stored on the server and not on the end-point, additional configurations such as printer definitions, file share definitions and user personalization should be migrated and planned for appropriately.

- **User Data and Personalization Loss**

  Despite accepted IT policies and user education, up to 61%[9] of enterprise users store valuable company data on local workstation storage – and not on company file servers. During the migration, special care must be taken not to forget this locally stored data. Same goes for user personalization, as described in the section above. Regrettably, requesting users to prepare their own backups results in a high rate of irrevocably lost files after the migration, and spending IT resources on hunting for local files is not economical. Specialized migration tools may provide a solution for this. For instance, Zinstall Migration Suite performs a complete migration, including all personal files in all local locations on a workstation, as well as User Personalization settings.

The aspects share two characteristics – they are present in any migration process, and they are cost-quantifiable. They will form the base for our cost analysis and comparison. However, they are by no means the only things to consider in a migration process, as we shall see in the next section. We shall assume an amortized hourly rate of $39[1] for most of the tasks during the migration.

Economizing the Migration Process

How can the migration process be made easier – and less costly?

One answer is tighter IT policy and closer management. When users are locked down, with fewer applications available and less (or Non-) personalization options, the migration becomes easier – simply because of smaller amount of tasks to do. Less personalization also means fewer configurations required, and less training needed to resume operations.

The drawback of inflexible IT policy is the same lack of personalization. Today, when consumerization of IT is no longer a distant concept but instead business reality, when users demand more personalization and ability to use own applications, this outdated approach has less and less place in the IT world.

Looking into the future, IT environments are adopting new desktop strategies and changing the very fundamentals of IT. New developments in desktop virtualization, cloud-based workspaces and client-centric computing (such as Zirtu) promise to change this landscape, and with it – the migration aspect, possibly removing the problem altogether.

Core components of the Migration Process

However, companies that have a typical IT policy and need to migrate their users to new machines/new OS require a solution that is available now – not in the past and not in the future. Thus, three core aspects of a migration process become of crucial importance:

1. **Planning:** In the heart of every successful migration is a plan of the entire process, from start to end. It is important to do the research before the process even starts. This way, IT staff can research, time, effort and cost requirements – in advance. Special attention must be paid to aspects such as application incompatibility, mission-critical applications and user personalization.
2. **User Support:** User rejection and "migration shock" (especially when migrating to a new end-point environment such as Windows 7) may be intangible factors – however their importance is not to be underestimated. IT staff is advised to gather extensive requirement lists from users, preferably from different departments and in different roles. A good way to start is a controlled migration pilot project – upgrading a small group of users, and this way finding out the pain points and potential issues that could have been overlooked in planning.
3. **Migration tools:** As we shall see below, manual migration, or migration with built-in system management tools only does not provide a fully unattended and complete transfer. Tools such as the **Zinstall Migration Suite** have been developed specifically to facilitate and automate the process and reduce its cost. Zinstall Migration Suite does not just make the upgrade process unattended and automatic – its fundamental benefits stem from a complete, comprehensive and fully accurate transfer of user personalization. This means that user rejection risk is minimized, along with training times, re-configuration and support requirements. For each migration scenario below, we will evaluate that impact of using the Zinstall Migration Suite on different migration tasks – and the total savings in time and cost.

Application compatibility

When the migration process involves a change in the OS, application compatibility becomes an inevitable issue[5] – one that has to be planned for in advance, perhaps more than anything else during the migration. According to Dell analysis[6], in a typical enterprise IT environment running XP, 35% of applications need remediation or repackaging, when 15% not working at all under Window 7.

Since Windows 7 was first released, most software vendors have produced Windows 7 versions of their software. Even in this case, the new version must be tested for internal usage scenarios, and appropriate re-training provided to users.

Worse yet, custom-developed software, or legacy packages used in the enterprise, may not have Windows 7 compatible versions at all. This leaves three options:

- Initiate a project to develop a Windows 7 version of the applications:
  This is typically the more costly option, and even more so in terms of time required. Such a project may take 12 to 18 months to complete, and will require extensive testing of the new package, its adaptation to the existing environment and transitioning from existing datasets.
- Initiate a project to switch to similar software by a different vendor, which is compatible with Windows 7:
  Typically preferable to the previous option, this saves time required to develop the software, however still retains the need for a full QA cycle of the package, including applicability to business specifics, and full re-training of users.
- Perform a virtualized migration of incompatible software:
  This approach allows to perform the migration without delay, since it will transfer existing software packages to new machines. In case of Zinstall Migration Suite, legacy software will be transferred fully configured and ready to use out of the box – without re-training and re-configuration. This nevertheless should be viewed as a transition solution, and organizations are advised to gradually adopt software packages which can run natively on Windows 7. Using virtualized migration simply allows to do that without business process interruption and at the organization's own pace. This in turn allows for additional cost reduction, since the project is no longer time-constrained and more vendor options can be evaluated.

The cost analysis below relates to applications-related costs. This includes costs incurred by time spent by IT staff. It does not include actual cost of licenses.

According to [1], for these tasks an amortized hourly rate of $55 is assumed. When analyzing the effect of Zinstall Migration Suite, which in additional to native migration allow for virtualized migration as well, we assume that the Suite will allow seamless transfer of 25% of Windows 7-incompatible applications – half of the projection in [6]. Hours assumptions made on the basis of [1] and additional surveys quoted in Sources, amortized per-user.

	Traditional migration		Zinstall-assisted migration	
	Hours	Cost	Hours	Cost
Packaged applications replacement	0.48	26.40	0.36	19.80
New application development	0.60	33.00	0.45	24.75
Systems integration and prototyping	0.25	13.75	0.13	6.88
Application Repackaging	0.15	8.25	0.11	6.19
Application Testing (pre- and post-migration	0.65	35.97	0.39	21.58
Helpdesk and IT support training	0.18	9.63	0.13	7.22
Total	2.31	127.00	1.57	86.41
Total Savings			0.74	**40.5**

Hardware compatibility

This section applies only to in-place upgrades to Windows 7. In this type of migration, IT staff must verify that existing workstations are actually able to run Windows 7, and provide a reasonable performance level as required by the user.

According to Softchoice Research[7], 65% of corporate PCs are able to meet optimal system requirements of Windows 7. Moreover, workstations that have been purchased in 2010 or later should be rated for optimal Windows 7 performance as well.

Today, when corporate budgets are especially tough, an upgrade, not just replacement, becomes an option for workstations that are unsuitable for Windows 7. Most frequent is a RAM upgrade requirement (35% of cases, up to the 2GB recommended). Second most common upgrade is HDD – which improves overall performance and is recommended as data loss prevention as well.

When planning a migration project, it is important to consider the cost implications of HDD upgrade. Apart from the cost of parts, two main aspects become technician time spent working on the upgrade, and user downtime during the process. It is recommended to perform this upgrade immediately before starting the overall Windows 7 migration process of the workstation, thereby combining the user downtime.

Of course, an option to replace the workstation itself must be considered. If a refresh cycle is close, or maintaining low hardware diversity level is a priority, this may be the recommended option.

Detailed Cost Analysis for common Migration Scenarios

Replacing an XP machine with a new Windows 7 machine

In this scenario, an existing, personalized workstation running Windows XP is replaced with a new machine running Windows 7. In 2012, this is projected to be the most common case for enterprise IT migrations.

In this case, we assume zero or negligible cost for Preparation and Backup, since existing machines remain operational throughout the transfer.

	Traditional migration				Zinstall-assisted migration			
	Typically managed		Closely managed		Typically managed		Closely managed	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Role-based Application Install	2.2	85.8	1.2	46.8	0.8	31.2	0.5	19.5
Application and System Configuration	1.1	42.9	0.6	23.4	0.4	15.6	0.2	7.8
User Training	3	117	3	117	2.5	97.5	2.5	97.5
Self Support / Informal training	6	234	4	156	3	117	2	78
User Downtime	4	156	3	117	2	78	1.5	58.5
Post Implementation Support	0.08	3.12	0.05	1.95	0.08	3.12	0.08	3.12
Total	16.38	638.82	11.85	462.15	8.78	342.42	6.78	264.42
Total Savings					7.6	**296**	5.07	**197**

Upgrading an existing machine's OS from Windows XP to Windows 7

In this scenario, an existing, personalized workstation is upgraded, in-place, from Windows XP to Windows 7. The hardware remains the same. This scenario is only valid for machines that qualify to run Windows 7, and only when IT decides to keep some of the machines instead of doing a complete refresh. This case is becoming less common with Windows XP machines being gradually phased out and becoming more and more outdated.

Note that, in this scenario, an additional task of backup and preparation is required before existing machines may be imaged with Windows 7. Any user personalization or data that should be preserved has to be extracted before the image is deployed. Zinstall migration suite includes a built-in containerization capability that allows performing this task completely automatically.

Another difference in this case is in user downtime costs. In case of hardware refresh, the user retains the old machine until switching to the new one. Here, when the upgrade is in-place, the user stops being productive from the second IT starts working on the existing machine to perform the backup.

| | Traditional migration | | | | Zinstall-assisted migration | | | |
| | Typically managed | | Closely managed | | Typically managed | | Closely managed | |
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Backup and Preparation	1	39	0.2	7.8	0.4	15.6	0.2	7.8
Role-based Application Install	2.2	85.8	1.2	46.8	0.8	31.2	0.5	19.5
Application and System Configuration	1.1	42.9	0.6	23.4	0.4	15.6	0.2	7.8
User Training	3	117	3	117	2.5	97.5	2.5	97.5
Self Support / Informal training	6	234	4	156	3	117	2	78
User Downtime	6	234	4	156	3	117	2	78
Post Implementation Support	0.08	3.12	0.05	1.95	0.08	3.12	0.08	3.12
Total	19.38	755.82	13.05	508.95	10.18	397.02	7.48	291.72
Total Savings					9.2	**358**	5.57	**217**

Replacing an Windows 7 machine with a new Windows 7 / Windows 8 machine

In this scenario, an existing, personalized workstation running Windows 7 / Windows 8 is replaced with a new machine running Windows 7. This will become more common after the bulk of organizations complete their Windows 7 migrations and move on to their next refresh cycle.

Because of OS similarity, there are significantly fewer incompatibility issues, and less training is required for the users. Nevertheless, all tasks related to actually transferring from one machine to another, as well as to user personalization, remain as they are.

| | Traditional migration | | | | Zinstall-assisted migration | | | |
| | Typically managed | | Closely managed | | Typically managed | | Closely managed | |
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Role-based Application Install	2.2	85.8	1.2	46.8	0.8	31.2	0.5	19.5
Application and System Configuration	1.1	42.9	0.6	23.4	0.4	15.6	0.2	7.8
User Training	2	78	2	78	1.5	58.5	1.5	58.5
Self Support / Informal training	5	195	3	117	2.5	97.5	1.5	58.5
User Downtime	3.5	136.5	2.5	97.5	1.5	58.5	1	39
Post Implementation Support	0.08	3.12	0.05	1.95	0.08	3.12	0.08	3.12
Total	13.88	541.32	9.35	364.65	6.78	264.42	4.78	186.42
Total Savings					7.1	**276**	4.57	**178**

Sources and further reading

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