Accelerated Windows 7 Deployments with 1E

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The Business Problem

There is no longer a “one solution fits all” approach for Operating Systems (OS) deployments as the provision of OS and the delivery of business applications need to be scalable and efficient as well as adapt to the changing ways in which people work.

Typical OS content includes core images, boot images, driver packages and software packages. To illustrate the nature of the problem, a base Windows XP image is around 800 MB in size after performing a system capture and including only the service pack. In comparison, a base Windows 7 Enterprise x64 image including only the service pack is around 2.6 GB in size.

Nor is it just about moving large volumes of data. Network link speeds (WAN and LAN) are growing at a much slower rate than content, which means it takes longer to deploy content in the enterprise. You can’t just push data down the network as fast as possible since you would risk congesting the network. Most business applications are in constant use and therefore require efficient network usage and data transfer, so these are prioritized over IT content. The network needs to adjust according to business needs, but conversely there are also many critical IT projects that enable the organization to function and move forward. The challenge is how to prioritize these.

An OS deployment is a high priority IT project. However, the process can be costly and time-consuming from an application compatibility perspective when trying to transfer content to remote locations, and when automating the migration process. You don’t want to have to shuffle user data across the network during the migration process or deal with network configuration and traffic when making Preboot eXecution Environment (PXE) requests for bare metal system builds.

The 1E approach is to extend and enhance Microsoft System Center Configuration Manager (ConfigMgr) and, at the same time, reduce and simplify its infrastructure and operational costs. This approach pays instant dividends, in reducing the time and business disruption created by a mass OS migration project, and also in building an optimized ongoing systems management platform to serve the business IT needs into the future.

Windows 7 migration challenges

The biggest single concern raised during any OS migration project is the elapsed time it takes and the associated impact and cost to the business. The 1E solution suite has helped some customers achieve phenomenal deployment statistics, averaging 1000 to 1500 OS migrations per day.

Our approach is to provide 100% automation on 90% of the estate which is significantly more powerful than 90% automation on an entire estate. This is because the 90% success would always involve 100% desk side visits and other mitigation, which is where time and cost creeps into the project. 100% automation means a desk-side visit is not required in the majority of cases and many more machines can be migrated at the same time.

The 1E solution suite uniquely has the ability to achieve this sort of rapid, highly-optimized migration because of the following main features:

- **Flexibility and agility:** to cope with the increasingly complex and diverse infrastructure scenarios, such as smaller satellite and serverless office locations as well as maintaining systems after hours.
- **Speed:** the deployment toolset needs the ability to deliver extremely large amounts of content and data, without disruption to business applications. This is practically impossible without the reverse QoS technology built into Nomad.
- **End-user empowerment:** Shopping allows end users to drive and control their own migration which minimizes the disruption to the working day and removes the administrative overhead from the IT team.
- **Cost optimization:** accelerating the deployment timeline reduces impact and therefore the inherent disruption and cost to the business. A streamlined infrastructure and fully automated deployment technology and process reduces direct IT costs and software waste. This is where AppClarity’s instant visibility into software usage can bring immediate value.
- **Risk mitigation:** the extended time and manual effort involved in an OS Migration inevitably introduce more risk and potential pain. The process and toolset needed to be able to mitigate these. This is where a feature such as Peer Backup in Nomad 2012 reduces the elapsed deployment time and increases the security of users’ data.

At 1E we have the knowledge, software and expertise to make rapid deployments and minimize the risks.
Optimizing Windows 7 Migrations

Given its sheer scale and complexity, a Windows 7 deployment can be one of the most painful, costly and time-intensive IT projects today. There’s an undeniable impact on the network and striking the right balance between a successful and fast migration and not disrupting the flow of business data yet ensuring that the right software applications are installed are key considerations IT departments have to take when embarking on such a project.

Combining different 1E solutions – AppClarity, WakeUp, Nomad and Shopping – provides organizations with a toolset that will optimize Windows 7 deployments in the most cost-effective way and ensure there is no disruption to the business. We look at a typical OS deployment process and what you need to consider at each stage.

Application rationalization

Many organizations struggle with the question of which applications to include on the base system they are deploying. Do we deploy what was there before? If so, do we upgrade to the latest version and how do we map each of the old versions to the new? Should we deploy every line of business application a department typically uses, but do we have the licenses to cover all of them? If not, how do we determine who is actually using which application so we don’t have to purchase additional licenses?

Each of these questions can require extensive research and gathering of data so an accurate assessment can be made. The amount of time to gather and analyze this data can be extensive. Often organizations are faced with having to spend far more than what was planned on additional software licenses to avoid the risk of lost user productivity or license violations because they don’t have an effective way of determining what software they need to deploy to each system.

AppClarity detects unused software

To help you rationalize which applications are most commonly used, 1E provides AppClarity. ConfigMgr has very rich data collection in relation to software, including software inventory (files), Add/Remove Programs, asset intelligence, software metering, and similar data. However, you have probably already found that this data is very inconsistent and voluminous. Manually trying to reconcile it to actionable information for even a small subset of software is very labor intensive.

AppClarity has automatic algorithms and an extensive manually produced and maintained software catalog to normalize ConfigMgr’s data into actionable information for all your software. With AppClarity you cannot only see specifically what software is installed, but as it is also appropriately categorized you can see how much it is used.

Because AppClarity uses ConfigMgr data, the setup and use of AppClarity is very fast. The AppClarity workload in itself is relatively light and so it can often be installed on your ConfigMgr site server itself. AppClarity is then configured to synchronize with the ConfigMgr database, which usually takes only five to 20 minutes. You can then open the AppClarity console and see the details of your organization’s software footprint.
Application mapping

Our application mapping solution combines AppClarity’s application inventory and normalization capabilities with Shopping’s OS deployment features. With 1E’s approach, applications are identified in AppClarity’s inventory by their ID and mapped to software titles available in Shopping’s software catalog. How applications are mapped is controlled via an administrator-defined rule set.

The default mapping rule is to reinstall the same version of an application. Items in Shopping’s software catalog that have been linked to items in AppClarity do not require mapping rules to have the application automatically reinstalled. Creating and maintaining custom mapping rules is also more precise, simpler and less prone to oversight. Instead of matching products by name, they are matched to AppClarity ID number.

Furthermore, products are linked to normalized data in AppClarity; meaning that a single ID number represents any subtle variants in the products’ display name to a single release. For example, where the traditional application mapping solution required five table entries for Adobe Acrobat 8 (one for each of the variants in its display name), the 1E solution only required one.

The ability to reinstall an application, or not, based on its usage is what really sets the 1E solution apart. Adding usage to the mapping criteria affords the organization an opportunity to reclaim or clean up licenses that may not be in use.

Preparation – where do we stand with our current client base?

Many organizations have desktop management systems in place, but do we know if those systems are reporting accurately? Are we actually seeing all of the workstations in our inventory? How do we know if a workstation isn’t reporting properly? Are all of my systems capable of supporting Windows 7?

Not having accurate information about your environment could mean that a number of systems are being overlooked or having problems accepting the upgrade. This could lead to a workstation not being upgraded with the others in a department on schedule. As a result of even just a few systems being overlooked, a department or office could experience a loss in productivity until the situation is rectified.

Wakeup Client Health ensures deployment success

Microsoft’s System Center Configuration Manager (ConfigMgr) is the most powerful solution available to deploy operating systems, especially when used with 1E’s products. However, ConfigMgr itself must be fully functional (healthy) on both the server side and the client side in order to provide its services, including OS deployments.

Managing server health is generally well understood, primarily focusing on System Center Operations Manager. NightWatchman Enterprise is a power management (including shutdown) and Wake-on-LAN solution. NightWatchman Enterprise can be used to enhance your OS migration project in several ways, one of which is to maximize the health of your ConfigMgr clients.

This can be done even if you choose to not use NightWatchman Enterprise for its shutdown and WakeUp capabilities. It is a professionally developed lightweight service that runs on the client computers themselves to regularly check the ConfigMgr client. Therefore there are no issues with finding the ConfigMgr client in terms of timing, name resolution, privileges or similar issues.

The NightWatchman Enterprise server is always up with a constant address, so the clients have no problem finding the server in order to report results or occasionally update policies.
Content distribution – do we have the infrastructure to support an OS upgrade?

With the increase in data connectivity options, many organizations have opted not to place servers in remote offices since users can access resources in the data center with little to no latency or delay. However, when it comes to upgrading the operating system and applications on multiple remote workstations, the volume of data that needs to be transferred could easily saturate an otherwise robust WAN link for many hours or days. The result is limited connectivity to the datacenter which could impact the overall productivity at the remote office.

Nomad 2012: reliable content distribution

An OSD process itself can be very costly and time consuming not only from an application compatibility perspective but also when trying to transfer the content to remote locations and automate the migration process. This includes not having to shuffle user data across the network during the migration process but also not having to deal with network configuration or traffic when doing PXE requests for bare metal system builds.

Nomad 2012 reduces the network impact by automatically prioritizing business applications and backing off through its unique Reverse QoS™ networking technology which ensures that IT traffic automatically backs off content distributions – for instance in an OSD scenario – when business applications need network resources.

It does this by looking at how packets of data traverse the WAN and regulates the bandwidth to remote branch locations via an autonomic throttling system. It eliminates the need for servers as client systems can automatically hold local elections to determine a single representative to pull this data across the WAN and has dynamic failback methods built in to ensure successful deployments.

Combined with eliminating the need for more network bandwidth or traditional QoS configurations Nomad 2012 lessens the overall administration for ConfigMgr tasks.

In addition to the network throttling that Nomad 2012 controls it also has automation tools integrated into the Task Sequence engine of the OSD process to allow for less administration and more success around keeping data local to branches so that the network isn’t impacted when user data needs to be backed up during the migration process.

Nomad 2012 contains a Peer Backup Assistant which seamlessly offloads user data locally and securely without crossing the WAN link so that OS migrations complete faster and don’t take down the network.

Finally the PXE Everywhere component of Nomad 2012 allows any client system to boot from another without any network configuration, traffic or impact as it allows peer PXE-booting locally on client subnets without servers and without external network communication.

Initiating a Windows 7 migration – what is the best approach to scheduling and initiating a Windows 7 migration at an office or to a department?

An OS deployment can take some time to complete. Trying to schedule a deployment to a department or office while minimizing the impact to end user productivity can be a challenge. Desktop systems are typically migrated after hours, but this can present another challenge. How can we ensure that end users leave the workstations on so we don’t miss anyone? How do we handle laptops that may not be in the office overnight? Can we give our users more control so they can initiate the upgrade when it fits their schedule?

Self-service with Shopping

The vast majority of companies will have some staff that may want to initiate their own OSDs, many organizations, of course will have their OSDs scheduled by the IT department.

For the self-service option we recommend Shopping™ which takes users through a simple wizard that explains each step of the migration process as they move to their new OS. For multi-regional organizations users can choose to select their language or version preference.

Users are presented with the applications that will come with the OS. These are the core applications delivered with the OS image. They can also select (or unselect) applications to replicate those they currently have and wish to have automatically reinstalled with the new OS.
Scheduling the time and date of the migration is extremely flexible. Available slots are set by an administrator who sets the start and end dates of the OS Deployment project and the time blocks users can choose. This enables the administrator to control the migration and allows users to select when it is convenient for them to upgrade.

How do we deploy our standard Windows 7 image to new systems?

Many organizations will have new systems shipped to a depot location, unpack them, apply the new OS image, then repackage and ship them out to a remote office. This requires additional time, resources and shipping expense. The ability to ship systems directly to remote offices and deploy them with minimal IT staff and skillsets on site could provide significant savings.

However, the infrastructure to support booting “bare metal” out-of-the-box systems is not normally available in remote offices and requires a PXE server infrastructure to be in place on site. Other methods include shipping stand-alone bootable media out to remote serverless offices, but this can quickly turn into a management headache – tracking and keeping the media up to date.

PXE Everywhere

PXE capabilities allow peer systems to bare metal boot to each other and install an operating system with no network configuration and no administrative effort.

This can be done by enabling PXE on specific systems or Nomad’s “PXE Everywhere” feature which allows dynamic elections to take place at local sites and peer systems will determine the best system to host the PXE process. Nomad’s Peer Backup capabilities (as explained above) allow for instance backup and restore of USMT data.

This means that when doing bare metal builds, the user data that was on the previous system can be safely backed up and restored to the new one seamlessly and returned to the user without needing to transmit the data over the WAN.

Additionally Nomad has full WinPE support which means that all the dynamic capabilities of Nomad for content location are part of your build process. With the WinPE support Nomad can multicast in WinPE allowing for fast and/or large scale migrations to take place. All of these OSD features, including the prestaging of content at branch locations, are completed inside the native ConfigMgr console as Nomad leverages the existing infrastructure completely.

How are one-off software installations handled after a system is migrated to Windows 7?

Often there are several software packages that end users use day to day that are not business critical but improve productivity. Many times these products were installed over the course of time through individual service desk requests and are not typically included in a Win7 migration. However, they do play a role in end user productivity. How do we allow users to request these one-off software packages without overwhelming the service desk after a department or office is migrated to Windows 7?

Shopping

Shopping empowers users to install software, operating systems and services at a time when it suits them without disrupting their daily workload. The self-service automation of the request, approval and delivery process means users can download the software and services from the enterprise app store within minutes. This dramatically reduces the number of software requests that go through the helpdesk.

Optimization and reducing costs: Where 1E fits in

All of the 1E product components reduce deployment time as well as direct costs. Nomad content distribution reduces the number of servers and desk side visits, whilst Shopping accelerates the deployment schedule and helps reduce the burden on the IT help desk. WakeUp ensures client health and optimizes your ConfigMgr to be in the best possible shape to handle an OS migration project. AppClarity immediately identifies and accurately quantifies software waste. As part of an OS Migration, AppClarity provides the accurate information to allow you to retire, replace or upgrade additional software applications, streamlining the environment and reducing software waste and costs.
How can 1E help?

An overview of how we can help (of what we do and don’t do)

1E Professional Services provides strategic, targeted and end-to-end consulting services through its highly experienced, industry recognized and committed team of 1E consultants. 1E Professional Services consulting services and offerings target all stages of a typical project and help accelerate development and deployment of Windows 7, that leverage 1E products & solutions.

Using best practices developed on several Windows 7 Migration projects, 1E Consultants, in a collaborative manner, provide the architectural assistance, guidance and recommendations to help accelerate our customers’ Windows 7 deployments.

The 1E Methodology for Windows 7 migration follows a 4-phase process that follows best practices and accomplishes the migration with minimal to no impact to the end-users.

The 4-phases comprise:

Assessment Phase:
The assessment phase builds an initial project plan, reviewing the processes involved in application compatibility testing, your current applications and desktop hardware and your likely training requirements. This phase also includes identifying the key technical and business requirements and concludes with a Design document highlighting everything that is required for a successful Windows 7 deployment, including timescales and key recommendations.

Preparation Phase:
The preparation phase includes the creation of a paper-based design and testing and validating the design in a lab for all the necessary desktop and laptop models. This includes the image/build engineering portion of the project and the development of the Windows 7 image along with the deployment method(s) that will be used in the production environment. A technical documentation library is created so that there will be a full record of all technical configurations for future reference.

Pilot Phase:
After the Preparation Phase, user acceptance testing and final sign-off, the production pilot phase begins. The new Windows 7 image is deployed in phases to an agreed number (usually 20%) of systems during a specified timeframe. Following the pilot a review is done and any necessary modifications are completed.

Deployment Phase:
This is the final phase of the Windows 7 deployment project and includes a phased deployment to the rest of the agreed number of systems in the environment. The purpose of this phase is to ensure that the deployment goes as smoothly as possible and to transition the project over to the support staff and complete the technical skills transfer. A final project review is also performed to ensure the project has met the technical and business requirements that were identified during the Assessment Phase.

Summary and next steps

The 1E solution suite is proven to accelerate, automate and reduce risks for large scale Windows 7 migrations. Our approach is to extend and enhance Microsoft System Center Configuration Manager (ConfigMgr), as well as reduce and simplify its infrastructure and operational costs.

Success is achieved by the high level of automation and optimization of the software delivery process. This means Windows 7 migration project can be considered as business as usual as it will not impact the business.

With the right preparation, companies can approach an OS migration project with confidence: from rationalizing and mapping applications, and ensuring client health, to optimizing content distribution and empowering users to reinstall applications and initiating their own deployments.

This approach pays instant dividends both in reducing the time and business disruption created by a mass operating system migration project, but also in building an optimized, on-going systems management platform to serve the business IT needs into the future. It’s also proven, we have helped a number of customers achieve impressive numbers – averaging 1000-1500 deployments in a single day.

If you would like to learn more or request a Windows 7 consultation, 1E consultants are available to discuss any issues around Windows 7 migration and help you overcome any challenges you may come across.

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