FROM THE FACTORY TO THE USER:

STREAMLINING COMPUTER DELIVERY PROCESSES USING 1E SHOPPING AND SCCM

By Gene Acker

SCCM Architect, Project Manager, and Administrator

We all come to rely on manufacturers. Every one of us has our preferred computer manufacturer, firewall manufacturer, VPN, and so on. In my case, I love 1E products, I have for 10 plus years. We already had Nomad (best money ever spent), and NightWatchman, and I had been looking at 1E Shopping for years.

A couple of years ago, at the environmental firm where I work in the U.S., we decided to create a few "imaging depots" to help us service our users for desktop and laptop delivery. The idea behind these depots was that local staff would build and distribute machines to users across the company.

From a user perspective, the depots were a huge success. When a user got a computer, it came with everything that user needed or requested pre-installed, thanks to a detailed setup process:

- The depot tech would use SCCM to image the computers
- They would then use a combination of SCCM and manual installations to build the computer for the user
- They would get a list of software needed for that user and ensure it was approved by the user's immediate supervisor and the person holding the purse strings for the division. It was the depot tech's responsibility to track all of those people and secure written approval
- Once the software was installed, the depot tech would manually move the user's data, often over the WAN from their old machine (if there was one), to the new machine
- The depot tech would then pack the computer and ship it and any accessories to the user
- The tech would then follow up with the user to make sure everything was ok with the computer

This process represented customer service at its best, but it wasn't sustainable at all. In fact, from a business perspective, the depots were a disaster. When you're providing that much customer service using just a few personnel, things are likely to back up, and they did. One of the problems was around storage: machines came from the manufacturer, were unboxed by the depot tech, and stored safely. Since each computer typically came along with more than one monitor, plus accessories, that meant that if 150 computers were ordered, over 300 boxes arrived. Maintaining such a large quantity of equipment at a non-warehouse location wasn't possible. The depots became time consuming and costly and we needed a way out quickly.

The solution we came up with was this: we would ship the computers directly from the manufacturer to the user, and provide the user with a self-service process to complete the build of their own computer. This process would make the user responsible for ordering their computer through 1E Shopping and setting it up on arrival. Upon connecting the computer to the domain, the user would be able to request the software they need, with all approvals automatically handled and the software is automatically installed on the user's computer. The final part of the sequence would involve the user running a program to move their data from an existing computer to their new computer.

Thanks to 1E, we were able to establish this end-to-end automated process without impacting the quality of service experienced by the end user. Here's how we did it.

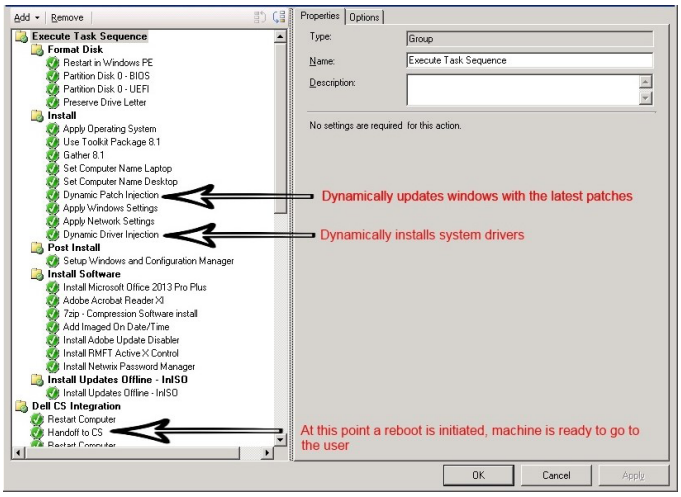
Creating the automated computer delivery task sequence

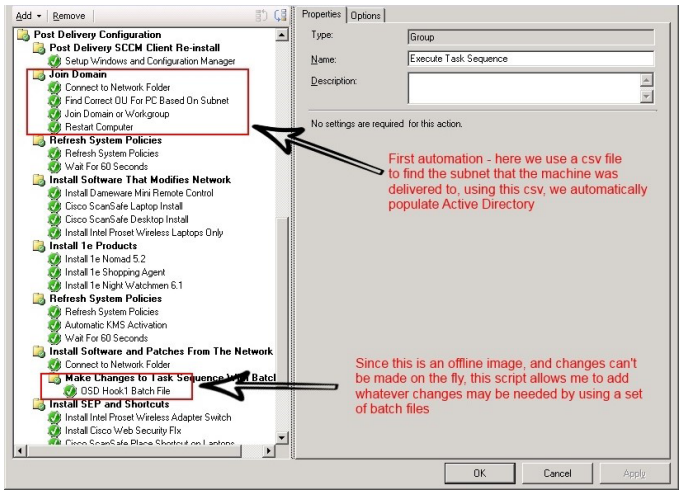
The imaging depots we'd established were costly and labor-intensive – but they also helped ensure that computers were delivered to users fully configured with all the software and accessories they required. Using 1E's Shopping we've been able to reduce the cost and manual nature of the process while ensuring that users still receive a computer that is fully loaded and ready to go.

Let's take a closer look at the task sequence we created to achieve this. The task sequence is simplified, and not very complicated, it has to work coming directly from the manufacturer. It really can't be tweaked for up to a year.

The top portion of the task sequence is what you would expect except for two items.

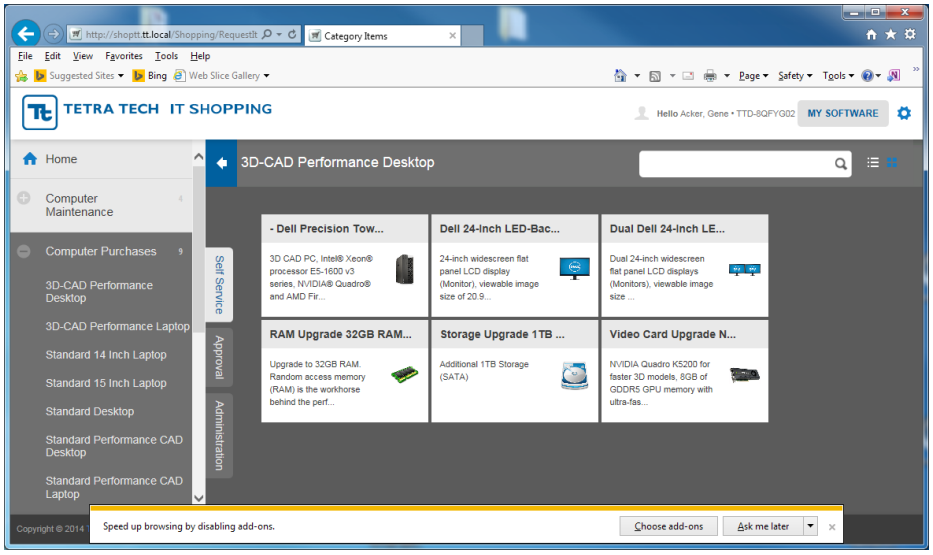
- Dynamic patch injection, which is a .vbscript, that allows the manufacturer to install the latest up to date Windows patches
- Dynamic driver injection, the task sequence doesn't contain any drivers, instead these are added to the offline key, so any model of computer can be built without problem at the factory
- The bottom of the task sequence, adds some of the automation needed so that machines can be sent directly to the users
- In the Join Domain group, we have a .vbscript created by Apurv at 1e that checks a hosted .csv file. We did it this way so that we could dynamically change the file at any time. When new offices come online, or subnets change, we have to be able to make those changes on the fly. The vbscript created by Apurv allows me to make those changes any time I want
- The batch file at the end is a batch file that I host on the network. If there are any changes that need to be made to these machines once the join the network, those changes are all in a batch file. The needed changes and software are first copied (downloaded) to the machine, and then executed locally. We've used this to remove and update software built into the static task sequence, and it works perfectly. When a user gets a new computer, that PC should be 100% ready to go with our standard software.



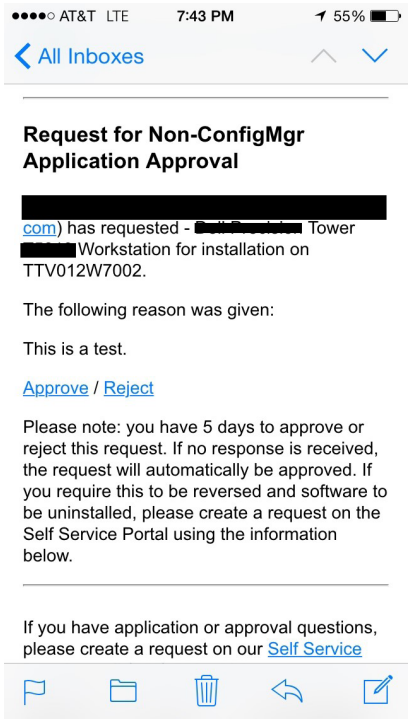


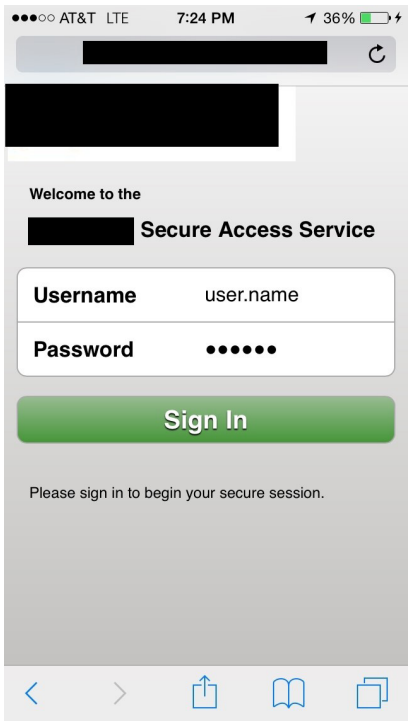
User’s placing the pc order

Rather than anyone having to track down the user’s manager, and final approver, the combination of 1E Shopping and background workflows means that the approval process all happens automatically and PCs, upgrades or monitors can be ordered directly from 1E Shopping.



Making the approval process easier for the managers and the final approver



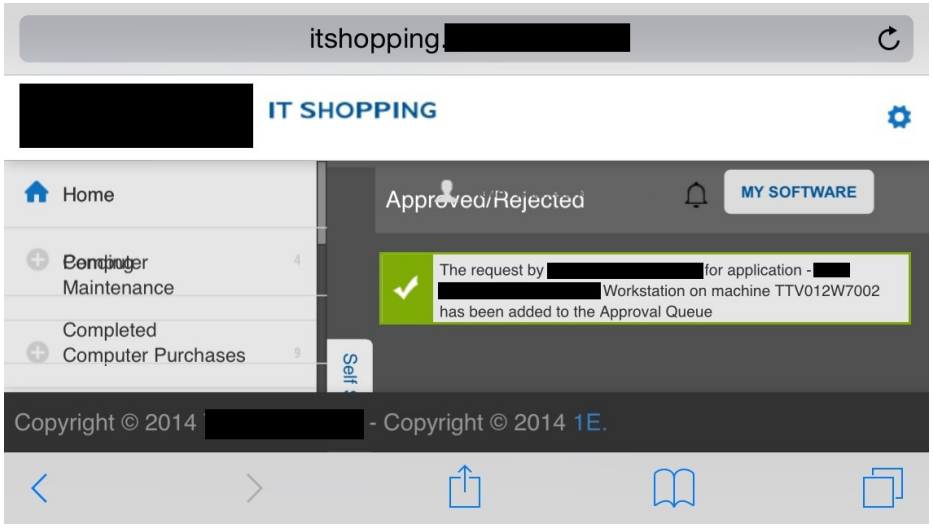


Before we automated things with 1E's Shopping, the approval process for new software could take days or even weeks and involved trying to hunt down managers and finance team members to explain to them why a user needed additional software. Approval requests would be raised using our ticketing system, but managers and financial approvers would often disregard going into those systems.

Using email as a way to approve or reject software and hardware requests has dropped those delays to just hours, and occasionally a few days. In order to make sure things went as quickly as they possibly could we even enabled manager to approve or reject requests from their smart phones

Here's what that looks like to a user's manager, and to the final approver

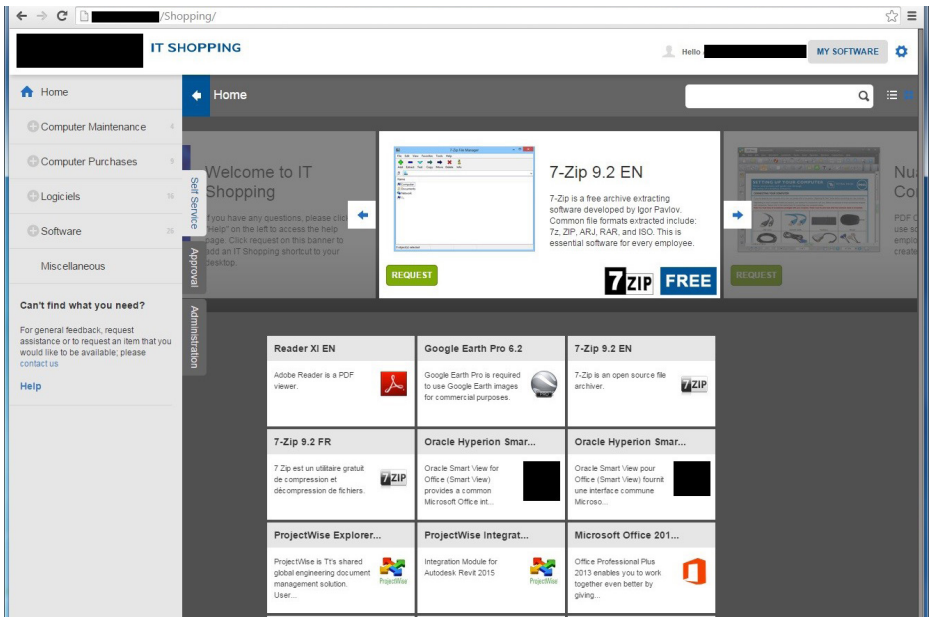
- The user has requested hardware or software through Shopping, like above. Automatic emails are generated through Shopping, first to the user's manager, and once approved to the user's final approver. The manager or final approver would get an email on their mobile device like below.
- The approving individual clicks on Approve or Reject. For the sake of our this example, we'll click on Approve
- The request is sent and a link we created using Palo Alto in browser VPN starts up. The approver keys in their username/password
- The application is accessed over the internet/VPN and the approval is made 1E Shopping has a built in function that allows you to connect to their server over the internet, but we chose to use our custom Palo Alto VPN application instead.
- The email reaches the users manager/final approver. From their mobile phone they can select "Approve" or "Reject."



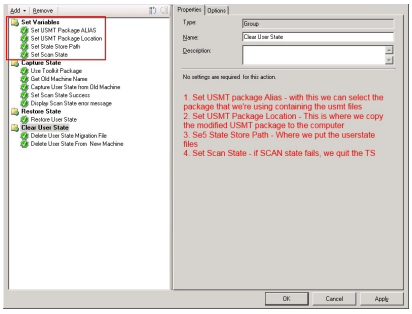
What happens when the computer arrives at the user's office

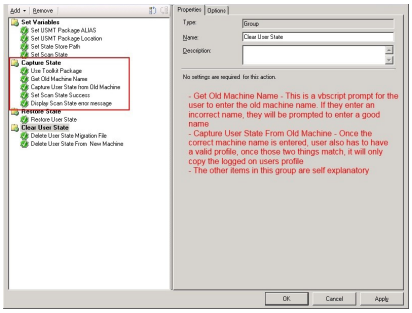
Once the approvals have gone through, the computer and accompanying software can be sent to the user. As I mentioned before, rather than spending time at an imaging depot, our computers are already imaged at the factory up to the point where the task sequence is handed off by the manufacturer. The computer is then shipped directly to the user requesting the machine.

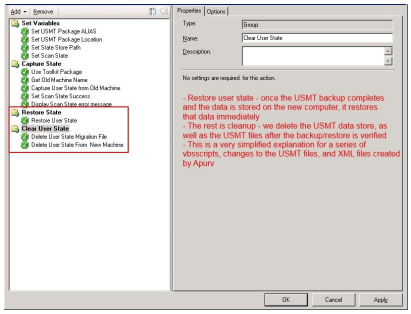
- An email is generated to the person requesting the computer, in the email contains step-by-step and illustrated instructions on how to setup their new computer, if this is a refresh computer, it also contains instructions about how to backup/restore and install additional software needed by the user
- The user unpacks the computer, and plugs in the Ethernet cord before making any other connections
- When they start the machine, the task sequence continues at the point where the remaining software is installed and the machine joins the domain
- The user then logs onto their new machine and they go into shopping and request all the software they need on their new computer
- At this point we could automate installing the same software that's on their old PC, but over the years I've come to realize that user's request software they don't need. So I let them make the request a second time, and those applications again have to go through the approval process. Any software not needed by the user will be vetted at this point. Below is a look at our shopping implementation
- We have the user request and install their needed software before we do the backup and restore so that any applications captured by USMT from their old pc, those setting can be transferred to the applications on their new pc



Automating system backup/restore in a computer refresh scenario







The biggest problem in this self-service scenario is the process of automating the backup and restore of user data, when a computer is being refreshed.

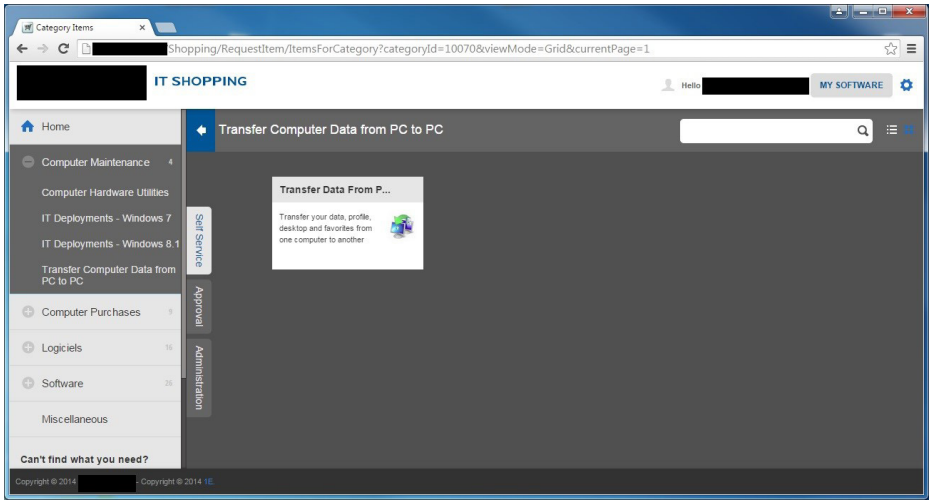
I thought about this problem for a while, and there were many ways I could have tackled it. I could have, for example, created an association in SCCM and tried to use that to automate backup and restore, but kicking the process off was still complicated. We also created a process using 1E Nomad that used the users name to create the association. The user would kick off the process from the old PC (backup), then go to their new PC, and kick off the restore. Using Nomad Peer Backup Assistant, we didn't need to have a USMT Data Store because Nomad would select two machines on the network as a backup store. The problem with this was it was a little cumbersome, and in a few instances, a user had so much data, none of the other machines on the same subnet had enough space to handle a backup, resulting in failures.

We decided to use the new PC as the data store and set up a single task sequence to both backup and restore the user's data. It's like using Windows Easy Transfer, without having to be an administrator, or even choose any of the settings. The only catch is the user had to name the hostname of their old PC, which we provide to them in so many ways.

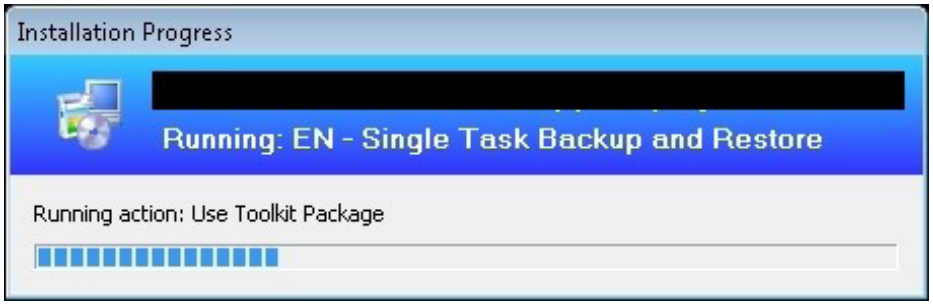
Let's take a look at that task sequence:

Now let's take a look at it from the user's perspective

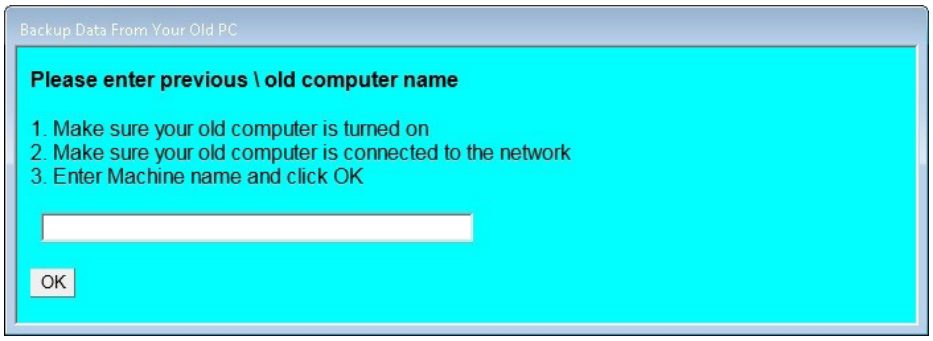
- From their new machine the user once again goes into 1E Shopping, and from there they request a backup/restore



- This step doesn't require approval, once the request is made the backup will automatically start on their new PC



- The user is then prompted to provide their old computer name
- Two things have to match up at this point. First of all, the user has to give the



  computer name that's actually ping-able on the network, and secondly, the user has to have a profile on that PC in order for this to work
- The backup begins from the new PC, using PC Exec and several vbscripts. The migration data is then actually copied over and saved on the new PC. Once the scan and backup are complete, the restore happens on the new PC, all within the same task sequence. Since this is using USMT, whatever settings you specify in the .xml documents are in effect here

At this point, with the Backup/Restore finished, the user is free to use the machine. But we do have one more task sequence that the user can run after they check their computer to make sure all of the data has been transferred. This is also run from our 1E Shopping portal. It's a WINPE boot file, containing Microsoft's SDelete DOD-Compliant secure wiping utility. This last step completely wipes the hard drive and is only used in cases where the user is worried about the data on their hard drive, or the system was leased and is being returned back to the manufacturer. Once the system is wiped and returned, or re-imaged and put back into production, the lifecycle is complete and the computer is ready for action.

Thanks to 1E we were able to establish this end-to-end automated process without impacting the quality of service experienced by the end user, replacing a system that was heavy on manual labor with something that is fast, lean and responsive to user needs. The business has saved the cost of the imaging depots, but any employee ordering a new computer through Shopping still receives a PC that is fully configured to their needs and can easily switch the data from their old machine to the new one.

Gene Acker is an SCCM Architect, Project Manager, and Administrator for a large environmental firm in the U.S. He has been working with Microsoft System Management software since early SMS 2003. Gene is also a systems administrator, and an automation specialist. Prior to working in the IT field he spent 15 years in the United States Navy in a technical related field.

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UK (HQ): +44 20 8326 3880 US: +1 866 592 4214 India: +91 120 402 4000 info@1e.com

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