5nine: Virtualization Migration and Management

5nine P2V Planner

Which virtualization platform is right for your business?

The 5nine P2V Planner for Hyper-V and VMware will help your data center decide.

The hottest virtualization topic today is the battle between Microsoft and VMware. Both want you, as the IT decision maker, to choose them as your virtualization platform.

While some out there can make a quick "gut feel" decision based on their impression of one company or the other, the right way to go about this is to fully evaluate and compare both platforms to make an educated decision.

Honestly, how long is that full evaluation and comparison going to take? Too long, right? I have been in the "IT decision maker" and the limiting factor is always the time and resources required to make that educated decision.

In this whitepaper, I will start by exploring a little background on this "virtualization war", review the 12 deciding factors that you need to be aware of in order to make the best decision possible, and in the end, show you a software solution to help you save a ton of time and make this, otherwise difficult, decision quick and easy.

Why is choosing a virtualization platform so difficult?

If you search the Internet looking for case studies, comparisons, and calculators to help you decide which virtualization platform to choose I can tell you that you will find many resources.

However, as I have already done this, I will tell you that the resources you find will offer you only inconclusive results, conflicting reports, controversial opinions, or incorrect calculations related to Total Cost of Ownership (TCO) or Return on Investment (ROI). Most of the time this isn't intentional but, let's face it, this virtualization battle is an emotional one and these virtualization comparisons are written by "people" who have their own biased options. Additionally, much of the research done is based on companies that just aren't the same as your company.

What are the factors that are so debated, you might ask?

- Which solution - Microsoft or VMware – is cheaper?
- Which one has better short and long-term Return on Investment (ROI)?
- Which has a better Virtual Machines (VM) to host consolidation ratio (and how does that affect ROI)?
- Which is better from the standpoint of technology, namely with regards to security, reliability, maintenance, IT personnel training, and support of various guest operating systems?

As Burton Group Analyst Chris Wolf points out, "*vendors are unlikely to agree and there is no simple answer to these questions. In practice, P2V Migration results and the performance of VI vary for different enterprises and depend on factors such as size, types of workloads and virtualization goals.*"

So what makes choosing a virtualization platform so hard? On one hand, it wouldn't be

right to select your virtualization platform based on the biased and emotional opinions of a blogger or analyst. On the other hand, you don't have time or resources to conduct your own studies.

What you need is an unemotional, unbiased, but comprehensive tool to make this decision for you.

Fortunately, 5nine Software has just released the 5nine P2V Migration Planner – a tool specifically designed to resolve this dilemma. It performs a sophisticated analysis of existing data center servers, workloads and other resources. Based on the information collected, the product performs capacity planning and creates automated virtualization migration plans for both Hyper-V and VMware. These plans can then be compared side by side from the technology and TCO/ROI standpoints. When creating Hyper-V and VMware migration plans with the 5nine P2V Planner, the tool uses multiple criteria optimization and takes into consideration the main factors affecting the P2V migration results, its TCO and ROI (please see below).

Using the 5nine P2V Planner for Hyper-V and VMware, an enterprise can select its optimal Virtualization Technology and P2V Migration Plan by either using the default settings or by customizing them to data center-specific values.

Now let's look, in more detail, at how you will be able to find answers to these virtualization questions that are so debated.

Factors affecting ROI/TCO of P2V Migration

Even though you have a tool to help you choose your virtualization platform in an unbiased way, you still need to understand the deciding factors.

Based on my research in this area, across companies of different sizes, I have come up with my 12 factors that affect the ROI/TCO of a P2V Migration – no matter whether you use Hyper-V or VMware.

FACTOR #1

Software licensing costs, including costs of software management and Guest OS licenses when applicable

Current Hyper-V and VMware pricing can be viewed at www.Microsoft.com/virtualization and www.VMware.com . Obviously, the cost of the virtualization software, including that of the Hypervisor and Management Software, is one of the main factors – short-term and long-term - affecting the TCO and ROI of both virtualization platforms. This factor affects both out-of-pocket virtualization acquisition costs and long-term savings from data center consolidation.

FACTOR #2

Type of memory (physical memory or actual memory) used for migration calculations

Microsoft Assessment and Planning Toolkit (or MAP) recommends using physical memory instead of the actual memory used by virtual machines when determining the amount of member required for a P2V migration. This means that when making a virtualization assessment in MAP, the amount of physical memory currently installed on the machine being virtualized is deducted from the memory available on the host machine (see reference below). However, following this recommendation is not strictly necessary. Since Microsoft's System Center Virtual (SCVMM) doesn't require a VM to have more memory than the physical memory of the source machine, migration plans when memory is provisioned using actual utilization are possible in the case of both VMware and Microsoft. So if one has a physical machine, where, for example, the two weeks' average memory utilization is 1.1 GBs (out of 2GB total) – one may provision a VM with, say, 1.5GBs instead of 2GBs. This factor obviously affects the average VMs-per-host consolidation ratio, and thus the administration, provisioning and DR costs as well.

FACTOR #3

Memory over-commitment and memory ballooning features

Memory over-commitment is a feature in VMware that allows VMs to use more total memory than the host has. Memory ballooning is where the unused memory on a virtual machine can be put back into the memory pool and used by another VM. Ballooning is what makes memory over commitment make sense. Both of these features are widely used by VMware customers and they offer a boost to the average consolidation ratio.

FACTOR #4
CPU, Memory, and Storage Overhead needed by the Virtualization Hypervisor

Let's face it, even the most advanced enterprise virtualization platforms today are going to have some overhead. Both VMware and Hyper-V require CPU, memory and storage overhead on the host for the virtual infrastructure to function. The above three factors also obviously affect the average consolidation ratio.

FACTOR #5
Live Migration requirement

Most system administrators prefer to have the option of live migration; If the host is consistently under-utilized, or on the contrary – becomes overloaded – VMs may need to be migrated from one host to another. Besides to balance load, VMs may need to be migrated from one host to another to upgrade the host's software or maintain the host's hardware.

FACTOR #6
High Availability / Clustering requirements

High availability and clustering is a common requirement for a SMB and Enterprise. Keep in mind that different levels of the available virtualization solutions will offer different levels of high availability (ie: the guest VMs may or may not need to rebooted if a host server fails).

FACTOR #7
Assumption of the number of VMs and physical computers per FTE administrator

FACTOR #8
Virtualization Software average training costs per FTE administrator

FACTOR #9
Load balancing and its impact on the VMs' and Host's performance

FACTOR #10
TCO/ROI Report duration (1 year, 3 years, etc.) and depreciation ratios

Hyper-V and VMware may have different savings ratios depending on the measurement period after purchase. While upfront spending on virtualization technology and required software is a very important factor, one must also look into long- term savings.

Of course, additional business or technology requirements – for example, compliance-related business partitioning, the type of OSs in the data center, specific application workloads, etc - will influence the P2V Migration results and subsequent performance of the VI. As such, the virtual infrastructure needs to be monitored from a workload/utilization standpoint as an ongoing practice.

While it is important to understand the factors affecting your decision, fortunately we have an unbiased software solution available to make that decision quick and easy for us.

The 5nine Planner uses all of the 12 factors above (and more), as well as the integrated Technology assessment and TCO / ROI Reports, when creating its automated P2V Migration plans.

How does the 5nine P2V Planner make your decision quick and easy?

I like to think of the 5nine Planner as your "robot" that will automate this complex decision. Still, you don't want it to function like a "magic 8 ball" and give you a random decision.

The 5nine P2V Planner has to get its decision making criteria from somewhere, right?

So that you have full faith in the decisions made by the 5nine P2V Planner, they provide full disclosure of the source of all the variables used in making the decision and, if you don't agree with the variable, you can even tweak those variables to match your company's environment.

The 5nine P2V Planner pulls the default values for its decision-making variable from various VMware and Microsoft resources & guidelines. For example:

- Microsoft's Essential Tools for Planning Your Virtual Infrastructure
  and
- VMware's ROI Calculator

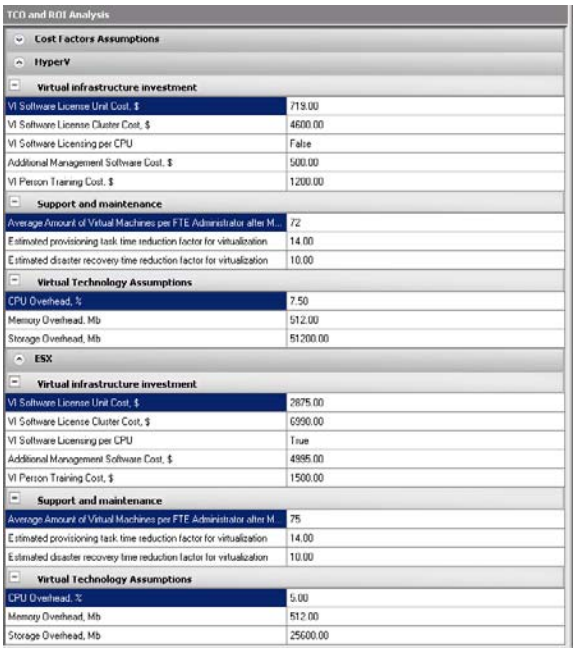
Here are some of the default variables used in the P2V Planner calculations:

Microsoft Hyper-V:

- Host Memory overhead: 512MB
- Host Storage Overhead 51.2 GBs
- VI CPU overhead: 7.5 - 10.00%
- Average number of VMs per FTE administrator: 72
- VI Per Admin Training costs: $1,200.00

VMware VI/vSphere:

- Host Memory overhead: 512MB
- Host Storage Overhead 25.6 GBs
- VI CPU overhead: 5%
- Average number of VMs / FTE administrator: 75
- VI Per Admin Training costs: $1,500.00



TCO and ROI Analysis	
Cost Factors Assumptions	
HyperV	
Virtual infrastructure investment	
VI Software License Unit Cost, $	719.00
VI Software License Cluster Cost, $	4600.00
VI Software Licensing per CPU	False
Additional Management Software Cost, $	500.00
VI Person Training Cost, $	1200.00
Support and maintenance	
Average Amount of Virtual Machines per FTE Administrator after M...	72
Estimated provisioning task time reduction factor for virtualization	14.00
Estimated disaster recovery time reduction factor for virtualization	10.00
Virtual Technology Assumptions	
CPU Overhead, %	7.50
Memory Overhead, Mb	512.00
Storage Overhead, Mb	51200.00
ESX	
Virtual infrastructure investment	
VI Software License Unit Cost, $	2875.00
VI Software License Cluster Cost, $	6990.00
VI Software Licensing per CPU	True
Additional Management Software Cost, $	4995.00
VI Person Training Cost, $	1500.00
Support and maintenance	
Average Amount of Virtual Machines per FTE Administrator after M...	75
Estimated provisioning task time reduction factor for virtualization	14.00
Estimated disaster recovery time reduction factor for virtualization	10.00
Virtual Technology Assumptions	
CPU Overhead, %	5.00
Memory Overhead, Mb	512.00
Storage Overhead, Mb	25600.00

To obtain the amounts that would be used to calculate the cost of the virtualization software, 5nine, they took a common SMB server configuration (based on CMDB data from 30 physical servers) and called both Microsoft and VMware Presales to find out the licensing costs for the data center consolidation. Most of the servers were Windows 2003 and several were Windows 2000 and Vista Ultimate. Out of these, several were IIS servers, a few were file or application servers, and one - an Exchange server with attached storage.

Microsoft Presales recommended virtualizing on several Server 2008 R2 Enterprise boxes (at $ 2,300.00 per license), with Hyper-V enabled. Alternatively, we could choose the Server 2008 standard ($719.00) which can be used on the hosts with up to 4 CPUs. After Microsoft confirmed that 2008 R2 supports VM live migration, we decided to use the cheapest license configuration. They also confirmed that we could use the SCVMM Workgroup edition ($499.00) for VI management.

Meanwhile, VMware recommend the use of vSphere Enterprise ($ 2,875.00 per host CPU), and the vCenter server Standard ($ 4,995.00) for VI Management. While they have omitted the support plans costs from the analysis assumptions, they could be easily factored in.

Once 5nine had values, like these, needed to calculate the best virtualization option, they used the P2V Planner on the infrastructure of real companies to determine its validity and applicability.

For example, at one company the P2V Planner was used to compare Hyper-V vs. Microsoft. Based on the compatibility criteria lists published by both companies, 5nine P2V Planner discovered that five existing servers could be used as either Hyper-V or VMware hosts. Two of the machines could be used as ESX hosts, and three - as Hyper-V. They have also included three models from DELL and HP commonly used for virtualization:

Dell PowerEdge 1950 III	Xeon L5420 2500 MHz	2	8192 Mb
Dell PowerEdge 2950 III	Xeon X5260 3330 MHz	2	8192 Mb
HP-DL580-G5-1	Intel Xeon processor 5110 1600 MHz	2	16384 Mb

When creating the two migration plans, they first chose to use as much existing hardware as possible. They have also decided to use the physical memory method in the Microsoft plan, and the actual memory utilization for the VMware plan.

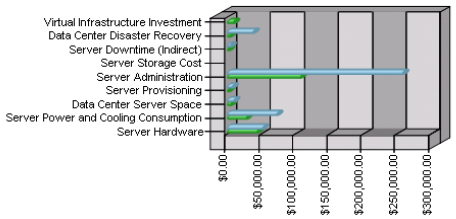
Based on the performance data was collected from their data center for 2 consecutive weeks using the 5nine P2V Planner, here are the results:

Microsoft Hyper-V:

Plan has shown consolidation of 25 servers into 8 servers, with total year TCO savings/ROI of $68,435.00 , and 3 years with a total of- $242,226.00.

Costs Before and After Migration

	Before migration	After migration	Saving %
Server Hardware	$51,698.92	$43,677.07	15.52 %
Server Power and Cooling Consumption	$72,458.94	$27,635.91	61.86 %
Data Center Server Space	$9,165.67	$4,582.83	50.00 %
Server Provisioning	$6,833.38	$488.10	92.86 %
Server Administration	$257,937.20	$107,473.83	58.33 %
Server Storage Cost	$0.00	$0.00	0.00 %
Server Downtime (Indirect)	$3,750.00	$937.50	75.00 %
Data Center Disaster Recovery	$37,548.00	$3,480.51	90.73 %
Virtual Infrastructure Investment	$0.00	$8,890.00	0.00 %
Summary	$439,392.10	$197,165.76	55.13 %



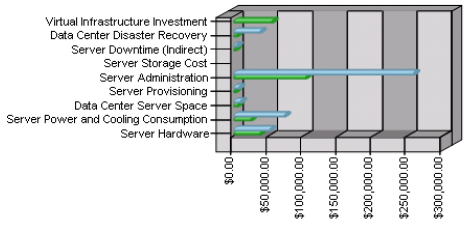
Total cost of VI investment for the first year was $7,452.00.

VMware Virtual Infrastructure

Plan has shown consolidation of 25 servers into 7 servers, with total TCO savings/ROI for the first year of $36,293.00, and $210,580.00 for three years.

Costs Before and After Migration

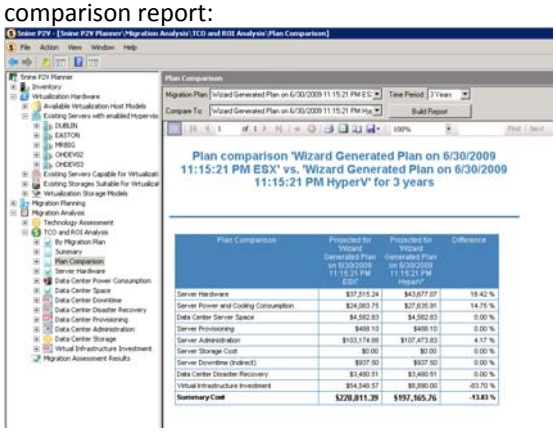
	Before migration	After migration	Saving %
Server Hardware	$51,698.92	$37,515.24	27.44 %
Server Power and Cooling Consumption	$72,458.94	$24,083.75	66.76 %
Data Center Server Space	$9,165.67	$4,582.83	50.00 %
Server Provisioning	$6,833.38	$488.10	92.86 %
Server Administration	$257,937.20	$103,174.88	60.00 %
Server Storage Cost	$0.00	$0.00	0.00 %
Server Downtime (Indirect)	$3,750.00	$937.50	75.00 %
Data Center Disaster Recovery	$37,548.00	$3,480.51	90.73 %
Virtual Infrastructure Investment	$0.00	$54,548.57	0.00 %
Summary	$439,392.10	$228,811.39	47.93 %



Total cost of VI investment for the first year was $43,870.00 .

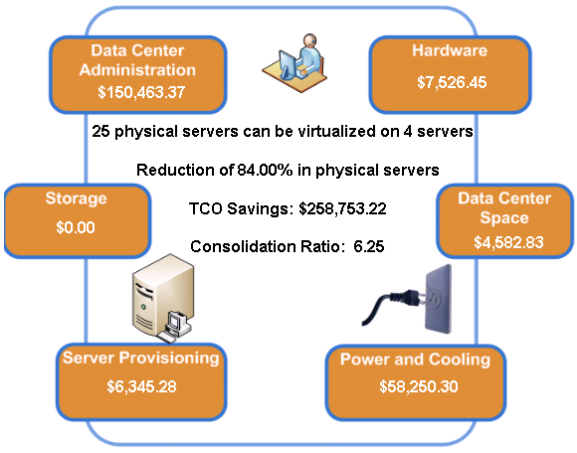
For the configuration given, the Hyper-V Migration Plan turned out to have a better ROI than the VMware plan.

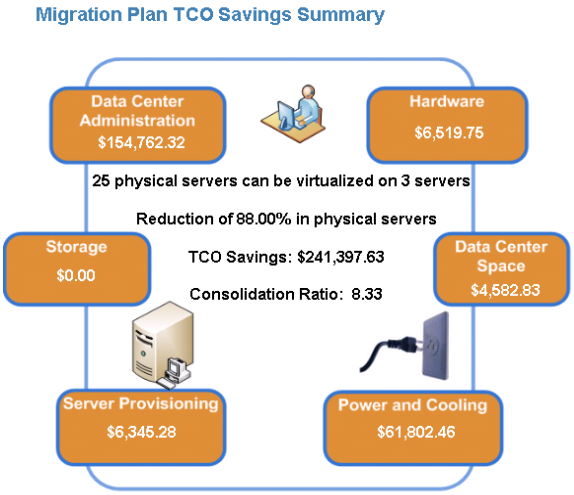
Here is a look at the MS Hyper-V vs. VMware VI comparison report:



Next, you can create migration plans assuming the provisioning of new virtualization hardware instead of using existing machines capable of Hyper-V or vSphere installations.

Using the same data center and the same licensing costs assumptions – first-year TCO savings for the Hyper-V plan were $75,294.00; VMware - $58,193.00 ; and for three years - $258,753.00 and $241,397.00 respectively. The consolidation ratio for Hyper-V was 6.25; for VMware - 8.33. These numbers were based on using physical memory for Hyper-V and actual memory utilization for VMware:





The tool selected the following hardware to use for virtualization (amongst the list of models selected) */Assuming HA requirement – amount of servers to be multiplied by at least 2 (amount of cluster nodes):

For Hyper-V:

Additional hardware required for migration

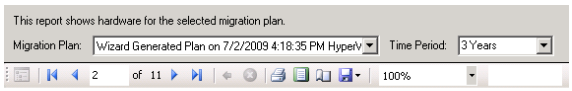
Hardware Model	CPU	CPU Count	Memory	Disk	Network bandwidth	Price	Quantity
HP-DL160-G5-2	Intel Xeon 7130M 3200 MHz	2	8192 Mb	3072000 Mb	2000 Mbit/sec	7331 $	1
HP-DL580-G5-1	Intel Xeon processor 5110 1600 MHz	2	16384 Mb	2048000 Mb	2000 Mbit/sec	8963 $	1
Dell PowerEdge 1950 III	Xeon L5420 2500 MHz	2	8192 Mb	921600 Mb	2000 Mbit/sec	5402 $	1
HP-DL580-G5-2	Intel Xeon X5355 2660 MHz	2	16384 Mb	4096000 Mb	2000 Mbit/sec	17180 $	1

For VMware VI:

Additional hardware required for migration

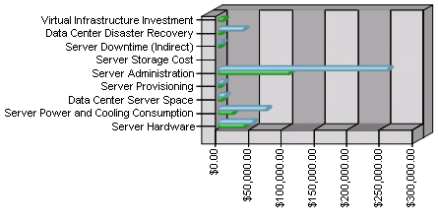
Hardware Model	CPU	CPU Count	Memory	Disk	Network bandwidth	Price	Quantity
HP-DL580-G5-2	Intel Xeon X5355 2660 MHz	2	16384 Mb	4096000 Mb	2000 Mbit/sec	17180 $	2
Dell PowerEdge 1950 III	Xeon L5420 2500 MHz	2	8192 Mb	921600 Mb	2000 Mbit/sec	5402 $	1

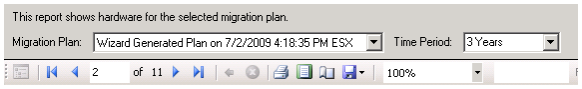
If you select just 3 DELL commonly used models, then the numbers come out to be as follows: $255,617.00 of three-years' savings and a consolidation ratio of 4.14 for Hyper-V, and for VMware: $235,343.00 and a consolidation ratio of 5 respectively:



Costs Before and After Migration

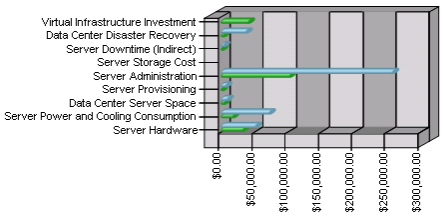
	Before migration	After migration	Saving %
Server Hardware	$51,698.92	$38,767.37	25.01 %
Server Power and Cooling Consumption	$72,458.94	$21,312.95	70.59 %
Data Center Server Space	$9,165.67	$4,582.83	50.00 %
Server Provisioning	$6,833.38	$488.10	92.86 %
Server Administration	$257,937.20	$107,473.83	58.33 %
Server Storage Cost	$0.00	$0.00	0.00 %
Server Downtime (Indirect)	$3,750.00	$937.50	75.00 %
Data Center Disaster Recovery	$37,548.00	$3,480.51	90.73 %
Virtual Infrastructure Investment	$0.00	$6,733.00	0.00 %
Summary	$439,392.10	$183,776.11	58.17 %





Costs Before and After Migration

	Before migration	After migration	Saving %
Server Hardware	$51,698.92	$32,629.40	36.89 %
Server Power and Cooling Consumption	$72,458.94	$17,760.79	75.49 %
Data Center Server Space	$9,165.67	$4,582.83	50.00 %
Server Provisioning	$6,833.38	$488.10	92.86 %
Server Administration	$257,937.20	$103,174.88	60.00 %
Server Storage Cost	$0.00	$0.00	0.00 %
Server Downtime (Indirect)	$3,750.00	$937.50	75.00 %
Data Center Disaster Recovery	$37,548.00	$3,480.51	90.73 %
Virtual Infrastructure Investment	$0.00	$40,995.00	0.00 %
Summary	$439,392.10	$204,049.03	53.56 %



Additional hardware required for migration

Hardware Model	CPU	CPU Count	Memory	Disk	Network bandwidth	Price	Quantity
Dell PowerEdge 1950 III	Xeon L5420 2500 MHz	2	8192 Mb	921600 Mb	2000 Mbit/sec	5402 $	3
Dell PowerEdge 2950 III	Xeon X5260 3330 MHz	2	8192 Mb	2396160 Mb	2000 Mbit/sec	5971 $	3

Additional hardware required for migration

Hardware Model	CPU	CPU Count	Memory	Disk	Network bandwidth	Price	Quantity
Dell PowerEdge 2950 III	Xeon X5260 3330 MHz	2	8192 Mb	2396160 Mb	2000 Mbit/sec	5971 $	3
Dell PowerEdge 1950 III	Xeon L5420 2500 MHz	2	8192 Mb	921600 Mb	2000 Mbit/sec	5402 $	2

If a more powerful model (like in the example above) could be used, the consolidation ratio increases. Thus the proportion of administration costs to the cost of hardware decreases.

If you were to change the assumptions to use System Center Virtual Machine Manager (SCVMM) Enterprise for the Hyper-V plan and vSphere Enterprise for the VMware plan, the TCO/ROI numbers do not come out very different from the above.

For comparison, this was run based on the infrastructure of a customer who has over 130 servers, and intends to virtualize 19 of them (5 application and 14 IIS and Lab servers). Initially we have created a migration plan without any partitioning requirements. In this way, VMs of different categories can be migrated to one host.

We used DELL PowerEdge R900-2 and 2950 III for the Hyper-V plan and DELL PowerEdge 2950III-1 and 2900 III - I for the VMware plan. This time, it is the VMware plan that had a slightly better ROI (assuming a standard edition of Server 2008 for Hyper-V, and vSphere Enterprise, with recommended Management suites): $247,718.00 of TCO savings for three years vs. $221,857.00 for Hyper-V. All hosts were assumed clustered, with 2 nodes, for the HA scenario. The consolidation ratio (not considering the extra cluster nodes) for VMware came out to be 9.5 (2 cluster servers); for Microsoft - 6.33 (3 cluster servers).

However, the first-year TCO savings were better and the cost of VI Software investment was lower for Hyper-V.

Subsequently, the customer informed us that application servers and IIS/LAB servers have to be on different hosts. Thus, we created another set of plans with this partitioning requirement.

The Hyper-V plan recommended DELL 2950 III, dual processor x 4 cores, clustered, with 2 nodes. Consolidation ratio was 5, and total TCO savings for three years were about $38,100.00

The VMware plan had the same consolidation ratio, same hardware for the host, and total TCO three-years' savings of $35,250.00

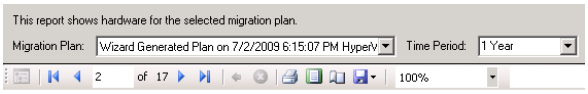
For 14 IIS/LAB servers - DELL 2950III and HP - DL580-G5-2 were used as the host hardware. As above, HA/clustering was a requirement. The ESX plan came out with a higher consolidation ratio than the Hyper-V; however, total TCO savings for VMware were lower: $174,387.00 vs. $189,748.94 for Hyper-V. The total first-year VI software investment cost was $18,420.00 for VMware and $12,396.00 for the Microsoft solution. We have used the minimal software configuration requirements recommended by VMware and Microsoft for this number of servers, the requirement of Live Migration and HA.

We again used the physical memory method for Hyper-V migration and the actual utilization for VMware.

Subsequently we analyzed the data for over 300 physical computers, one of which already had Server 2008 installed. We have selected to use it for possible virtualization, and picked 3 DELL models (PowerEdge 1950 III, 2900III and 2950 III); 1950 and 2950 each with 2 dual core processors; 2900 - single CPU, as well as picked a model for external storage for clustering.

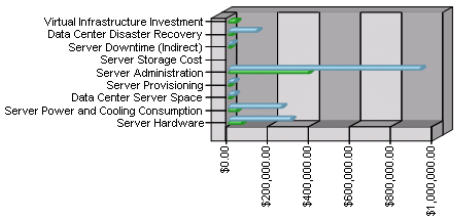
Hyper-V one-year TCO savings turned out to be $1,144,569.64, with a consolidation ratio of 8.16.

Three-year savings for the Hyper-V plan are $3,842,803.00 and slightly higher for VMware - $3,922,018.00. In this case, since the consolidation ratio for VMware is higher, the overall administrative costs savings over a three-year period prevail.



Costs Before and After Migration

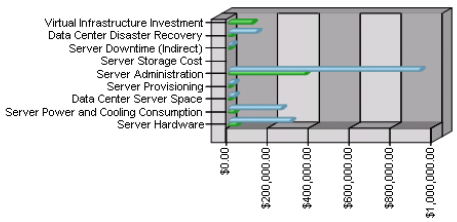
	Before migration	After migration	Saving %
Server Hardware	$299,950.00	$62,666.45	79.11 %
Server Power and Cooling Consumption	$255,936.84	$38,077.95	85.12 %
Data Center Server Space	$26,821.67	$4,235.00	84.21 %
Server Provisioning	$25,000.00	$1,785.71	92.86 %
Server Administration	$930,160.00	$387,566.67	58.33 %
Server Storage Cost	$0.00	$0.00	0.00 %
Server Downtime (Indirect)	$15,100.00	$3,775.00	75.00 %
Data Center Disaster Recovery	$135,428.00	$12,617.09	90.68 %
Virtual Infrastructure Investment	$0.00	$33,103.00	0.00 %
Summary	$1,688,396.51	$543,826.87	67.79 %



For the VMware plan, the first-year TCO savings are $1,116,904.00 - lower than for Hyper-V, while the consolidation ratio is 10.41 (higher).

Costs Before and After Migration

	Before migration	After migration	Saving %
Server Hardware	$299,950.00	$39,140.50	86.95 %
Server Power and Cooling Consumption	$255,936.84	$26,195.57	89.76 %
Data Center Server Space	$26,821.67	$2,823.33	89.47 %
Server Provisioning	$25,000.00	$1,785.71	92.86 %
Server Administration	$930,160.00	$372,064.00	60.00 %
Server Storage Cost	$0.00	$0.00	0.00 %
Server Downtime (Indirect)	$15,100.00	$3,775.00	75.00 %
Data Center Disaster Recovery	$135,428.00	$12,588.51	90.70 %
Virtual Infrastructure Investment	$0.00	$113,120.00	0.00 %
Summary	$1,688,396.51	$571,492.63	66.15 %



-Hyper-V Virtualization Hosts:

Existing Hardware with enabled Hypervizor used for migration

Computer name	Cpu	CPU count	Memory	Disk	Network Cards
OHDEV02	Intel(R) Xeon(R) CPU E5320 @1.86GHz 1861 MHz	1	4090 Mb	476937 Mb	0 Mbit/sec

Additional hardware required for migration

Hardware Model	CPU	CPU Count	Memory	Disk	Network bandwidth	Price	Quantity
Dell PowerEdge 1950 III	Xeon L5420 2500 MHz	2	8192 Mb	921600 Mb	2000 Mbit/sec	5402 $	24
Dell PowerEdge 2900 III	Xeon E5205 1860 MHz	1	4096 Mb	1536000 Mb	2000 Mbit/sec	3354 $	9
Dell PowerEdge 2950 III	Xeon X5260 3330 MHz	2	8192 Mb	2396160 Mb	2000 Mbit/sec	5971 $	3

For the Hyper-V Migration plan, one of the existing computers with a Hyper-V role was used in the plan.

-VMware virtualization hosts:

Additional hardware required for migration

Hardware Model	CPU	CPU Count	Memory	Disk	Network bandwidth	Price	Quantity
Dell PowerEdge 2900 III	Xeon E5205 1860 MHz	1	4096 Mb	1536000 Mb	2000 Mbit/sec	3354 $	23
Dell PowerEdge 1950 III	Xeon L5420 2500 MHz	2	8192 Mb	921600 Mb	2000 Mbit/sec	5402 $	2
Dell PowerEdge 2950 III	Xeon X5260 3330 MHz	2	8192 Mb	2396160 Mb	2000 Mbit/sec	5971 $	4

These plans illustrate that in the case of larger data centers, in spite of higher software licensing costs, consolidation ratio plays a significant role in reduction of administrative, disaster recovery and hardware costs. We need to note, however, that for Hyper-V, first-year out-of-pocket spending on VI is significantly lower than that for VMware.

Generally speaking, VMware plans for larger data centers have a higher consolidation ratio due to the possibility of memory over-commitment and to the assumption that Hyper-V migration plans are based on physical memory, not actual memory utilization.

However, we need to note that Microsoft SCVMM does not prevent the migration of physical machines onto VMs with lower memory, so plans that use the average memory utilization method are also valid for Hyper-V. When the latter is the case, the consolidation ratio for Hyper-V plans increases. If used in the migration plan we have discussed above, for example - the ROI of Hyper-V migration will be better for 3 and 5 years than that of VMware.

Additionally, if there is a HA requirement for the migration plan, the results with respect to ROI will vary depending on the percent of servers clustered. As for TCO, it is actually a nonlinear function of percent of servers clustered. When 30–40% of the servers are clustered, the Hyper-V plan has a better ROI because required software costs (for Enterprise or Data center version of Server 2008 and management software) are lower than costs of vSphere Enterprise Plus and vCenter and because the VMware license is tied to a single CPU.

Conclusion

In this whitepaper, we started off by talking about the "virtualization war" between Microsoft and VMware. While this can be an emotional topic for those who get involved in it, as Admins, Managers, Directors, and CIOs of SMB and Enterprise companies, this isn't a productive battle to be a part of.

What you need is a reliable, full-featured, scalable, and cost-effective virtualization platform with a positive short and long term ROI to serve your company's needs.

You can't believe everything you read about which virtualization platform to choose and, very likely, you don't have the time or resources it would take to do a multi-month complete evaluation of these two solutions.

Because of this, you need an unbiased, cut and dry, software application to guide you in that decision. From what I have seen, the 5nine P2V planner is that solution.

Not only has 5nine allowed to every factor that you need to consider in your decision but they have also provided recommended and best practice values so you don't have to try to fill in those numbers yourself. If you disagree with their numbers, the P2V Planner is customizable and you can use your own numbers in the calculations.

5nine: Virtualization Migration and Management

Considering a P2V consolidation and don't know which virtualization platform to choose? To save you lots of time and headaches in making those critical decisions, I recommend that you use the 5nine P2V Planner!

Download the free community edition at
http://www.5nine.com
or email info@5nine.com

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References

- http://www.virtualization.info/2008/07/vmware-esxi-vs-microsoft-hyper-v-which.html
- http://roidude.typepad.com/my_weblog/2009/06/dont-believe-any-numbers-you-dont-make-up-yourself.html
- http://dcsblog.burtongroup.com/data_center_strategies/2008/08/apples-oranges.html
- http://www.gartner.com/DisplayDocument?id=984312
- http://www.evolvetech.com/mambo/index.php?option=com_myblog&show=Is-VMWare-cheaper-than-Microsoft-.html&Itemid=87
- http://www.tanejagroup.com/
- http://www.gartner.com/DisplayDocument?id=992219
- http://www.microsoft.com/virtualization/compare/vmware-cost-comparisons.mspx
- http://roidude.typepad.com/my_weblog/2009/06/dont-believe-any-numbers-you-dont-make-up-yourself.html
- http://www.microsoft.com/virtualization/compare/vmware-cost-comparisons.mspx
- http://tompiselloroiguy.blogspot.com/2009/06/response-to-steve-kaplan-blog-on.html
- http://technet.microsoft.com/en-us/magazine/cc895647.aspx

Costs are based on a comparison of Windows Server® 2008 with Hyper-V™and Microsoft® System Center Server Management Suite Enterprise with VMware's VMware Infrastructure Enterprise with VMware vCenter Server. Based on Microsoft estimated retail prices and published VMware prices available at www.vmware.com. Actual reseller prices may vary. The information contained in this document represents the current view of 5nine Software on the issues discussed as of the date of publication. Because 5nine Software must respond to changing market conditions, it should not be interpreted to be a commitment on the part of 5nine and 5nine cannot guarantee the accuracy of any information presented after the date of publication. This white paper is for informational purposes only. 5NINE SOFTWARE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS DOCUMENT. Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in, or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of 5nine Softare. 5nine may have patents, patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from 5nine Software, the furnishing of this document does not give the reader any license to these patents, trademarks, copyrights, or other intellectual property.