

IBM Servers and Storage Demos

IBM PowerExecutive Power Capping

IBM PowerExecutive™ Power Capping Demonstration

Intro slide

intro

Excessive heat, insufficient power and poor space utilization layout and design are just some of the problems in today's data centers. The physical limits of many data centers have been – or are about to be – reached. Analysts suggest a majority of data centers will fail to meet operational and capacity requirements without some level of renovation, expansion or relocation. IBM PowerExecutive™ is designed to ease this strain by enabling customers to monitor and reallocate power resources as needed.

1a

0:06 PowerExecutive uses a combination of software, hardware and firmware to enable monitoring of power and thermal characteristics of systems with the ability to cap or limit power on supported platforms.

1b

As the result of a recent merger, the datacenter administrator has been requested to increase the capacity of a Citrix server farm. The problem is, that based on the name plate ratings of the servers, he doesn't have enough power available to add any more capacity, nor is there money to increase the current power budget. If he just knew how much power was actually being used, he could better assess alternatives.

1c

0:28 IBM's PowerExecutive is a tool that can help get that information. Let's take a look at what it can show us.

1d

0:35 Though the name plate rating on our Citrix servers are 700 watts each, we can see that the average power being used by these systems is only 318 watts, far below their name plate rating. This would indicate that there could be considerable amounts of power that are not in use.

2a

0:58 Viewing the Trend Data shows the historical power consumption for each system. PowerExecutive allows the administrator to select from several predefined data ranges or create his own custom interval. Let's look at the data collected for this server over the last week.

2b

Since all the servers are identical in both configuration and workload he can use this information to extrapolate the total power requirements. Using PowerExecutive's power capping feature, the administrator can confidently allocate this unused power to support the new system requirements.

2c

But before trying to reclaim the stranded power of any managed server he needs to understand the server's workload during peak periods so he can be protected against potential performance impact.

2d

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To further insure that insufficient power doesn't throttle the systems' cpu's and cause performance impacts, he can set a power cap with some measure of a buffer above the trend data maximum. In this case he sets a cap at 10% above.

2e 2:10

Notice that he has the option to set a cap below, equal to or above the actual trend maximums.

2f 2:24

He also sets the analysis period for 4 weeks to be sure he captures any unusual peaks.

3a 2:33

Next the administrator saves this profile so he can apply it later to multiple systems. He could reclaim additional power for higher priority uses by setting the cap even lower.

3b 2:43

Notice on the trend data chart, this example of where he has implemented this policy. Capping below peak usage periods or spikes has caused CPU throttling and thus did not allow the CPU's to achieve a full 100%. (end at 2:54)

4a 3:02

Managing a group of servers is also supported through IBM Director's grouping capabilities.

4b 3:12

Here, policies set on one server can be easily applied to other servers as he is doing for the servers in the Citrix farm.

5a By making detailed real-time power information easily available, IBM PowerExecutive helps customers accurately assess the electrical consumption of servers and control the level of utility they deliver. PowerExecutive brings over-allocated power costs back in line with the real work being done.