Adaptive Computing Use Cases

Ways to Make Your System Landscape More Flexible

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Learning Objectives

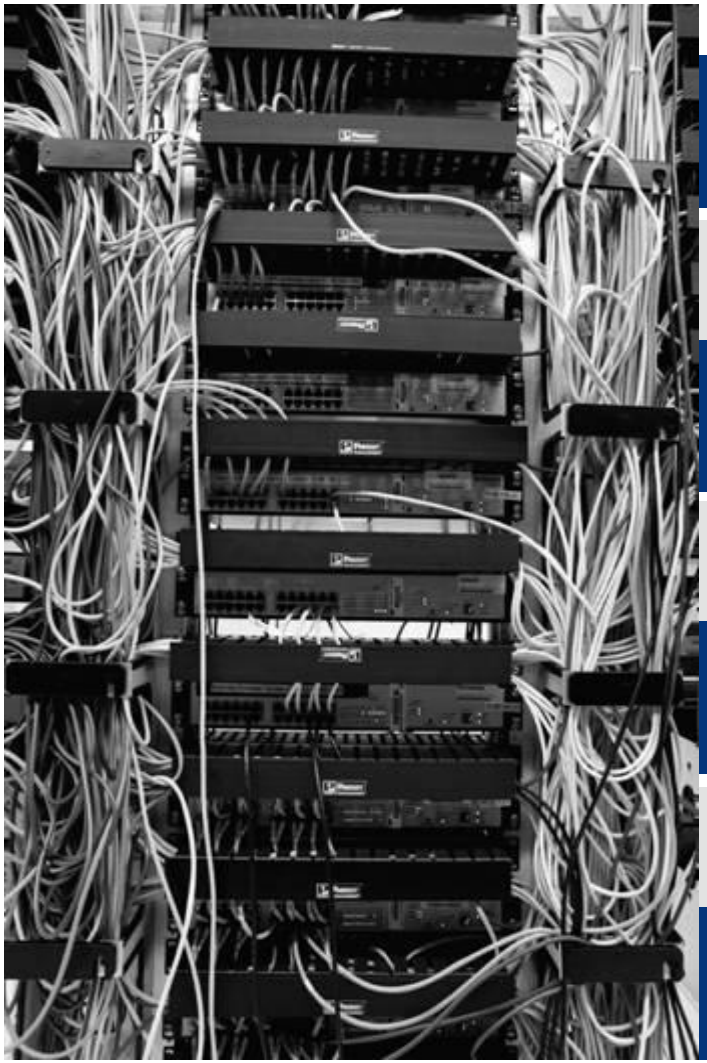
As a result of this presentation, you will be able to:

- **Understand the idea of SAP's Adaptive Computing**
- **See that there are many different situations in which Adaptive Computing can be of help to save money and make operations easier, also in your company**
- **Know what can be expected from SAP's Adaptive Computing in future**

Agenda

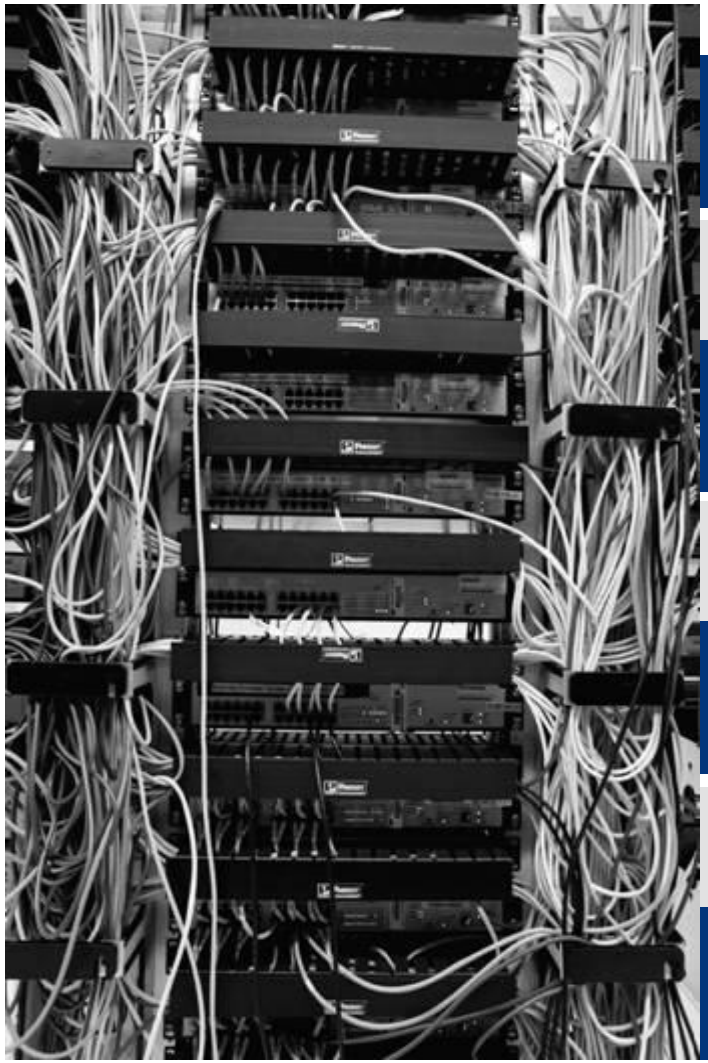
1. **Introduction: What does Adaptive Computing do?**
2. Saving Potentials with Adaptive Computing
3. Adaptive Computing Use Cases
4. Concepts to start with Adaptive Computing
5. Preview: Ramp-Up ACC 7.1

Today's Pain Points



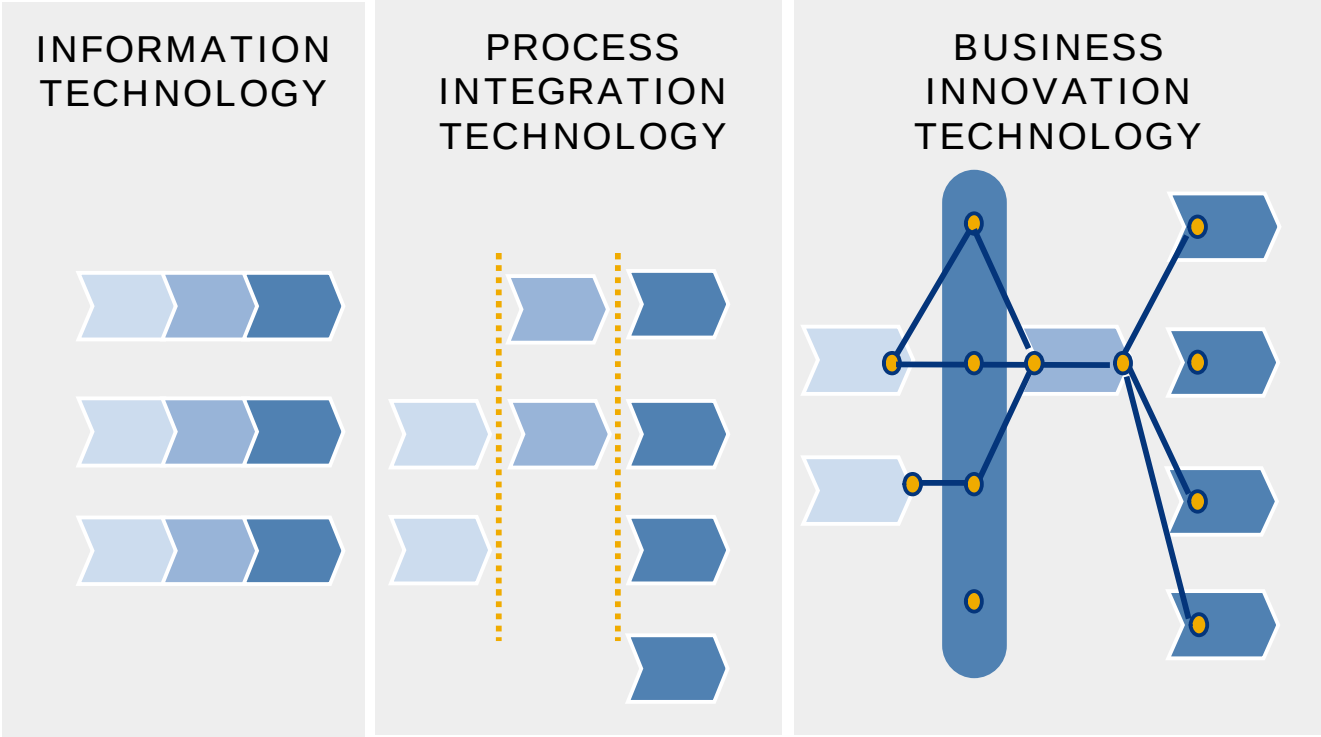
- Insufficient server utilization
- Complex IT landscapes
- Low flexibility to assign and utilize hardware resources
- High effort to setup and integrate new components into existing infrastructure

Today's Challenges



- CEO needs to reduce cost of growth
- CIO needs to Reduce Cost of Operations
- IT-Organisation needs to simplify operations
- Growing complexity has to be countered with enhanced flexibility

Changing Focus of IT



- While Enterprise SOA is increasing flexibility on the application side Adaptive Computing increases flexibility on the IT infrastructure
- To react on today's business processes, the IT infrastructure needs to react on changing requirements
- An adaptive business solution requires an adaptive computing infrastructure

IT Infrastructure - Building Blocks

COMPUTING

- Compute nodes are physical boxes or any virtualized computing instance
- Add and remove computing resources with low admin efforts

NETWORK

- Connects computing nodes to each other
- Builds up connection between building blocks ‘Computing’ and ‘Storage’
- Transport layer for virtualization

CONTROL

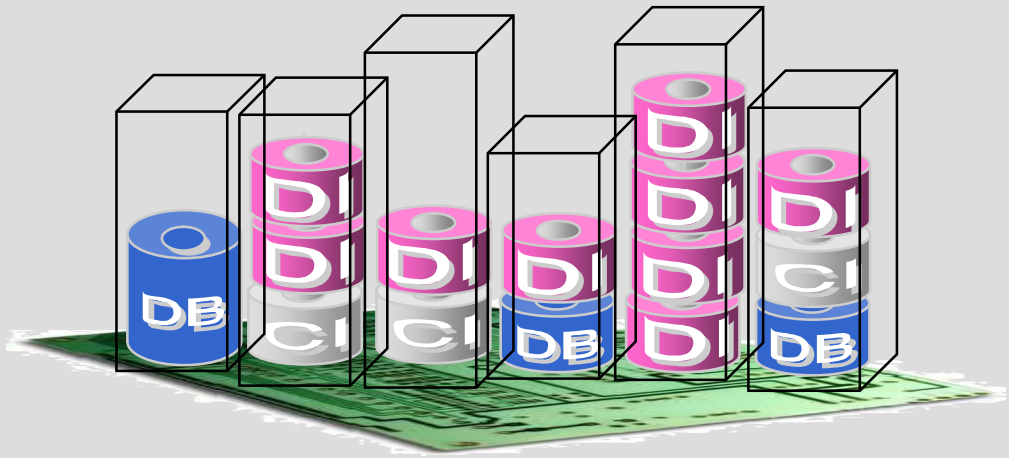
- Adaptive Computing Controller in SAP NetWeaver
- Single point of control to operate, observe and manage
- Capability of SAP NetWeaver
- Based on Standards
- Interface to third party software

STORAGE

- Application data stored on centralized storage system(s) within a network
- Any topology (IP, FC…) supported
- No local disk space required to run SAP applications

Increased Flexibility with Hardware Pooling

COMPUTING



NETWORK

CONTROL

STORAGE

ACC Feature Summary

Server Pooling:
One flexible server pool for all SAP systems means resource sharing

System relocation:
Move SAP systems to autoselected or manually selected server

System parking lot:
Stop idle SAP systems and “wake up” if needed

Easy and fast hardware replacement:
Test and auto-configurate new hardware

Mass Operation:
shutdown and startup of all SAP systems in a datacenter with one command.

Simplicity:
Operator enabled” instead of “expert required”

Task Planner:
Schedule planned SAP system start/stop, move systems

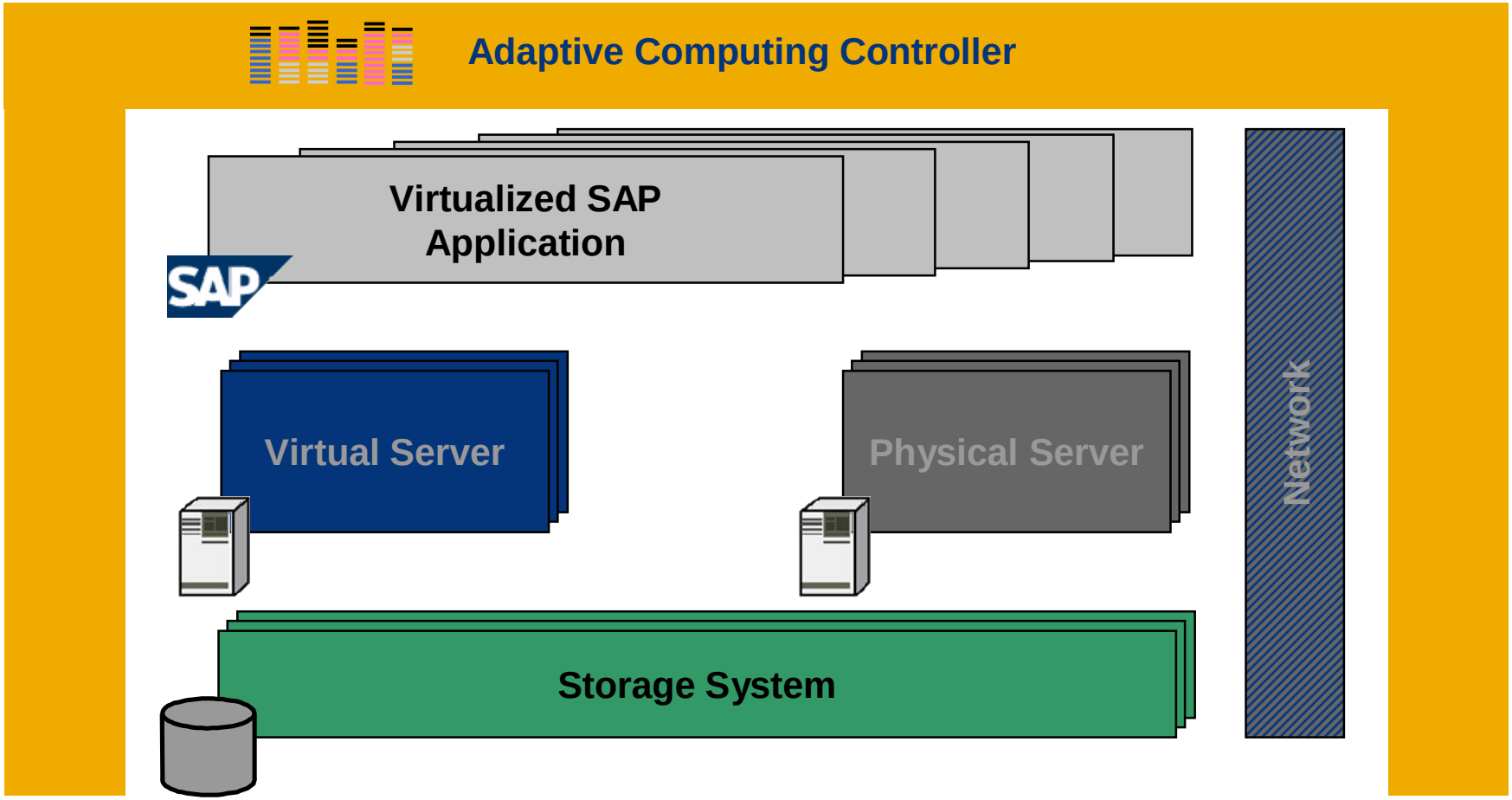
What does Adaptive Computing do?

Adaptive Computing (AC) offers an approach for the dynamic assignment of hardware resources. In an Adaptive Computing Infrastructure, you can, for example, very quickly move systems for which a server is no longer providing the required performance to a more powerful server. Dialog instances can be flexibly started on free servers to absorb spikes in workload. Another situation in the computer center could be development and training systems that are stopped at night to support the background operation of productive systems with their free servers.

The objective of Adaptive Computing is to operate

“any service – any time – on any server”.

Adaptive Computing in a Virtualized IT World



Adaptive Computing

- Operate virtual and physical IT- resources in an Adaptive Computing landscape
- Hide complex landscapes with the help of the Adaptive Computing Controller

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2. **Saving Potentials with Adaptive Computing**
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Saving Potentials

SAP Adaptive Computing

Key Saving Areas	Saving Potential
Lower Hardware Costs	
Harmonization of IT landscape by using computing power and storage as shared resources for dynamic business needs	**20%** landscape cost reductions have been seen through better resource utilization, smaller spare-part inventories and increased power negotiation
Reduced Cost of Operations	
Simpler, less complex operations. Easy setup and integration of new components into common infrastructure	**5-10%** of cost reductions in operations identified to be possible
Ease of Operations	
Satisfied Customers / Users by high service levels ensure high availability and reliability	Increased productivity through quicker response times and zero planed downtimes (due integrated high availability and flexibility)

Customer Successes

COLGATE-PALMOLIVE COMPANY

Colgate reports immense reduced costs for SAP devoted hardware

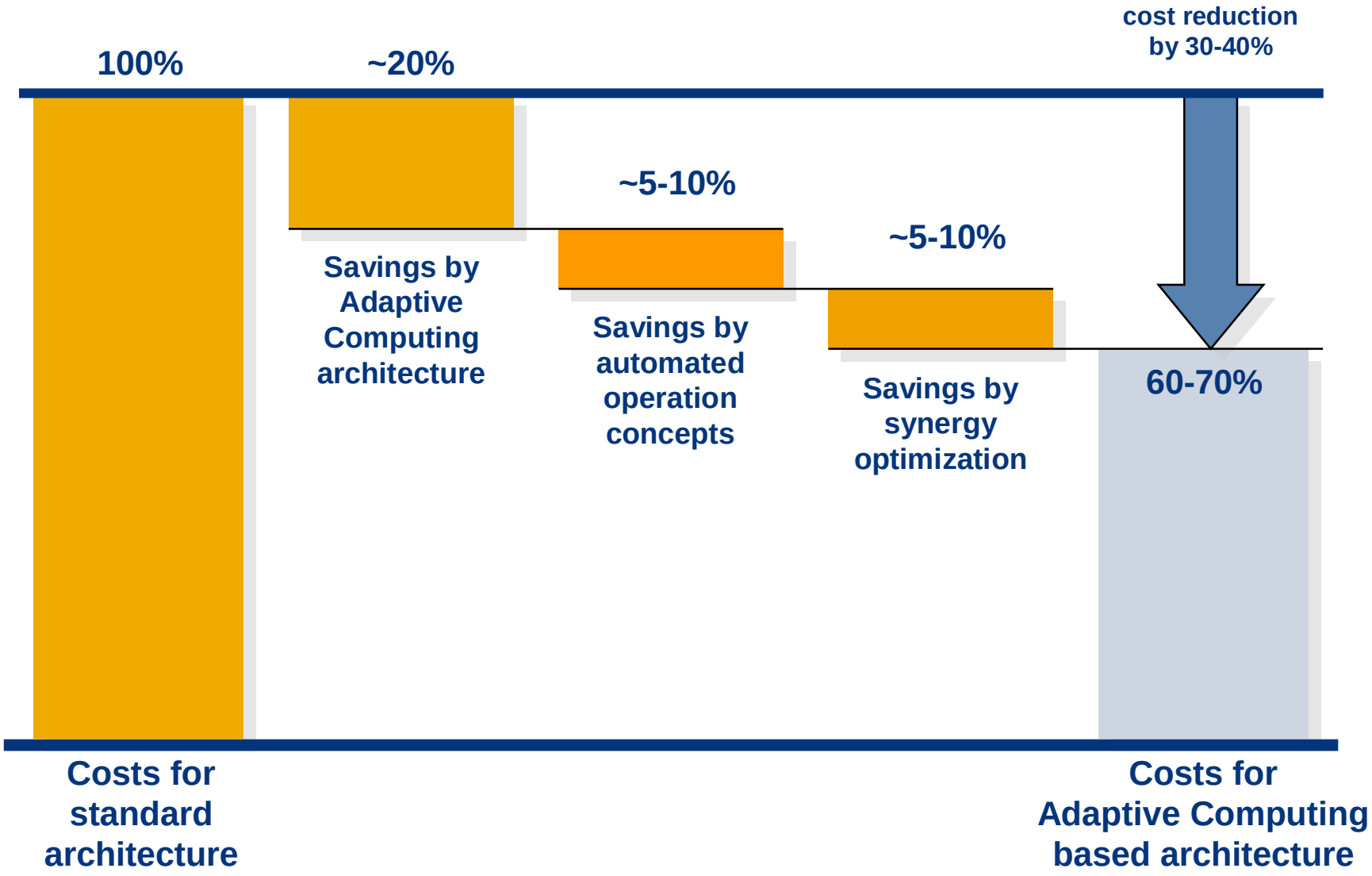
HELLA

SAP Hosting

T-Systems

T-Systems reports TCO savings by around 25%

Adaptive Computing – TCO Examination

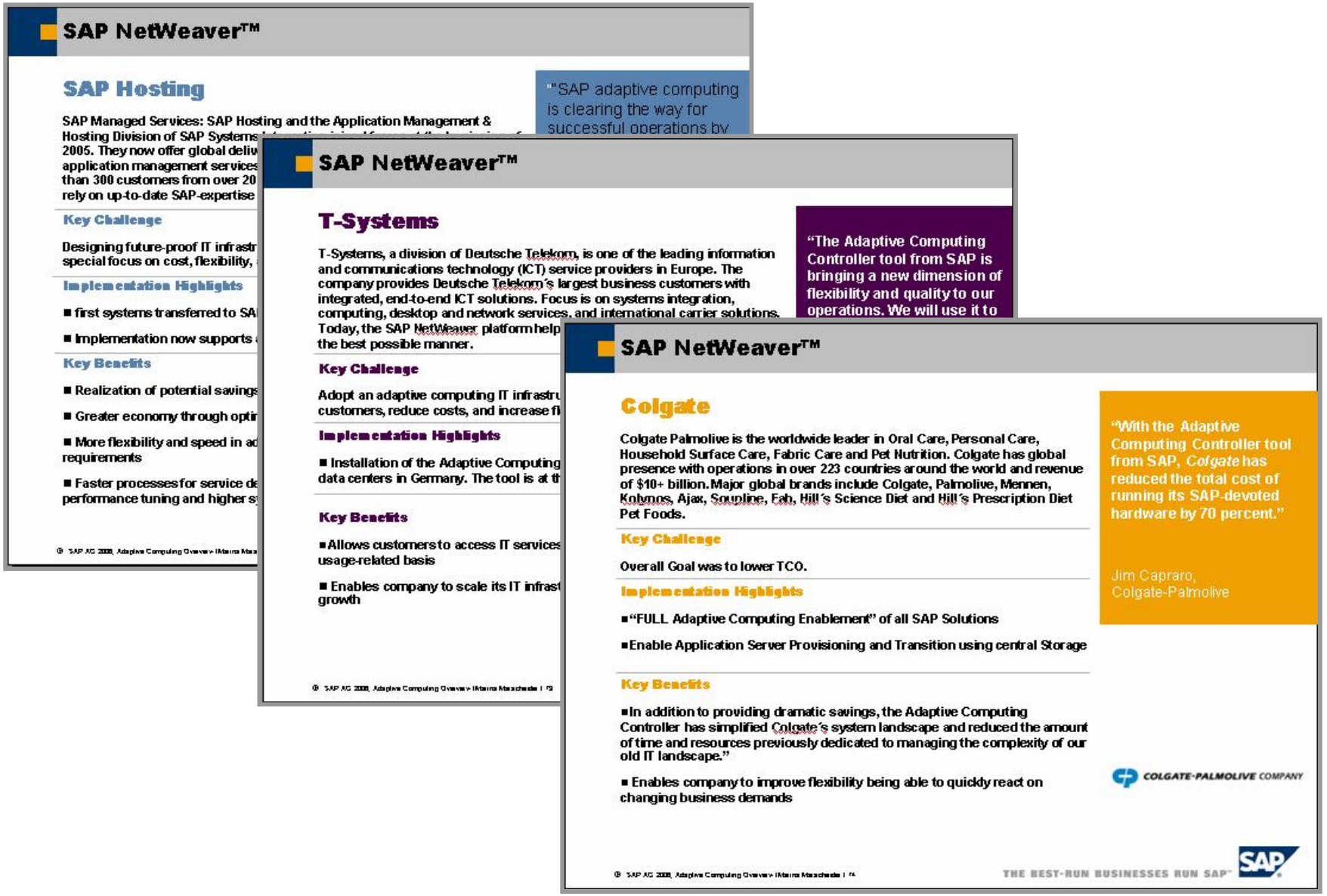


ACC Survey: Examples

Type of Task	Frequency (monthly/weekly/daily)	Duration of Task (hh:mm:ss)	Estimated Duration without AC	Frequency (monthly/weekly/daily)	Duration of Task (hh:mm:ss)	Estimated Duration without AC
	Customer 1			**Customer 2**		
Start/Stop of Dialog Instances	3.6 x faster	00:00.50	00:03.00	Monthly	00:05.00	00:05:00 (skript)
Start/Stop of SAP Systems	n/a			Monthly	00:10.00	00:10:00 (skript)
Relocation of SAP Systems	n/a			12 x faster	00:10.00	02:00.00
Relocation of Dialog Instances	6 x faster	00:01.40	00:10.00	12 x faster	00:10.00	02:00.00
Relocation of Databases	n/a			12 x faster	00:20.00	04:00.00
Hardware Maintenance (Server replacement, end of lease etc.)	n/a			12 x faster	00:20.00	04:00.00
Software Maintenance (OS, patching etc.)	monthly	ref. to relocation	ref. to relocation	6 x faster	00:20.00	02:00.00
Alternating System operation day/night shift	n/a			-		
Task planning for peak system use (month end, year end, campaigns etc.)	n/a			-		
Start/Stop of Test Systems	n/a			Daily	00:10.00	00:10.00
Use of Test Data Migration Server (TDMS)	n/a			-		

Spaces for additional savings with Adaptive Computing?

The Most Valuable Ecosystem to Customers



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Use Case „Hardware Maintenance“/Mass Start-Stop

Customer Situation

To start and stop all/a high number of SAP systems e.g. for hardware maintenance the admin has to logon to each system and perform the command steps. This is time consuming and shows a lack of efficiency.

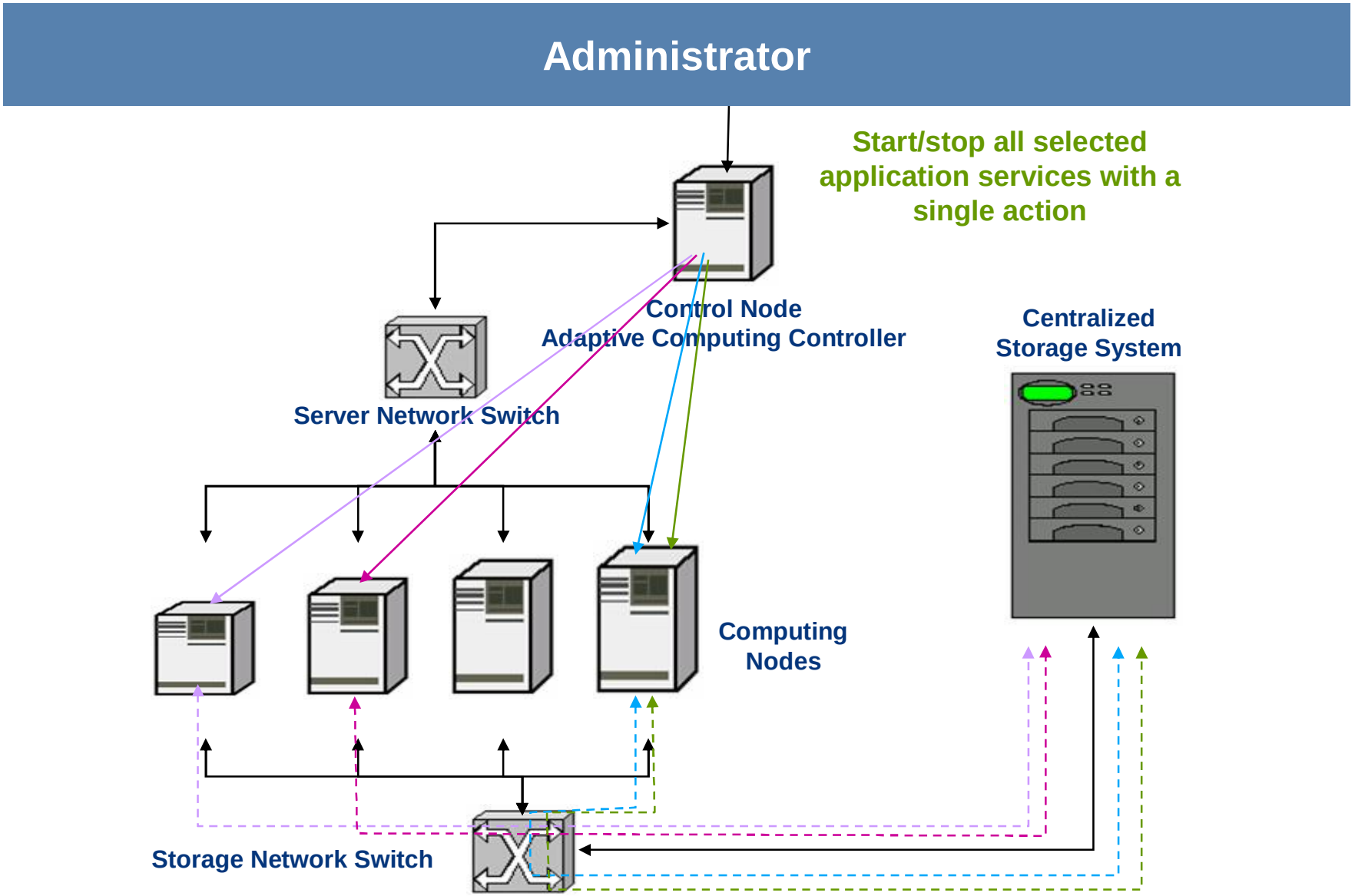
The New Approach

Mass Operation

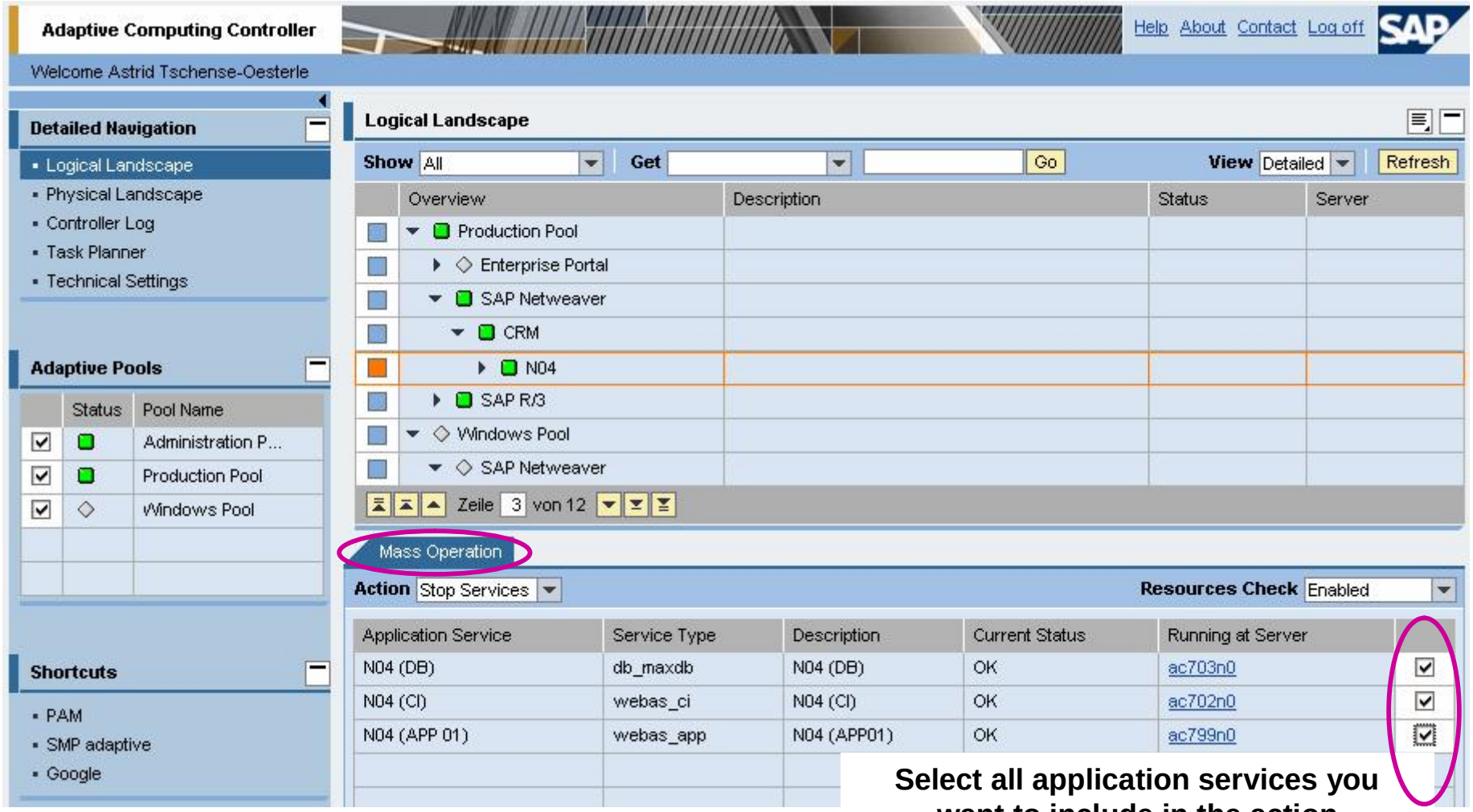
Adaptive Computing offers mass start/stop actions from one central Controller GUI.

⇨ ***Gain efficiency: work fast and comfortably from one central place***

Mass Start/Stop with ACC



Mass Operation with ACC



Select all application services you want to include in the action

Use Case „Expansion of Server Landscape“

Customer Situation

Changing the hardware resources for a system is a manual effort that can be time consuming and error prone. Hardware has to be tested before it is included in the productive environment.

The New Approach

(Partly) Automated Server Integration

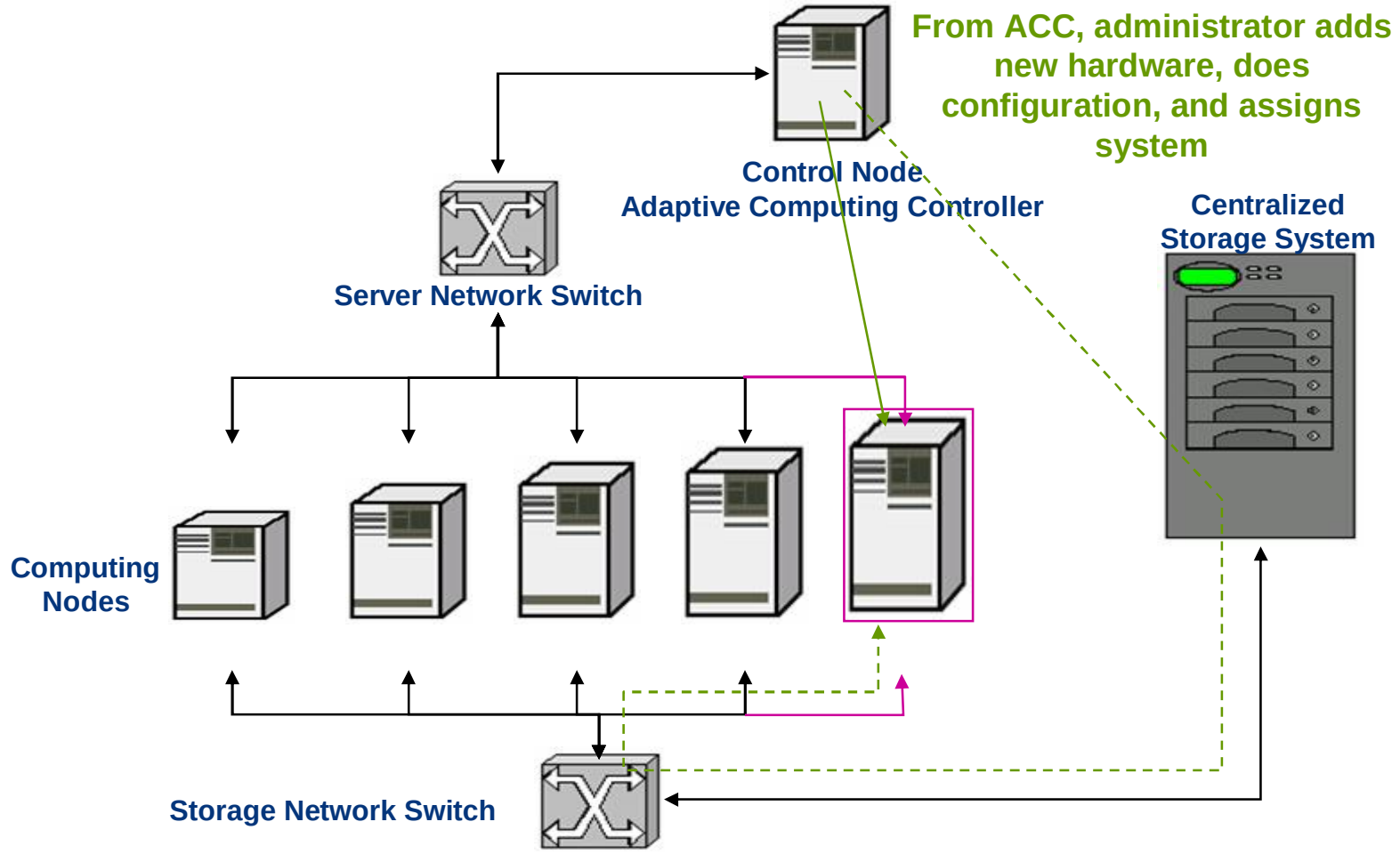
With Adaptive, easy server integration allows customers to purchase only the hardware as needed (even on demand). Customers benefit through reduced operation and costs.

The new hardware can be scrutinized with a test system before the productive system is assigned.

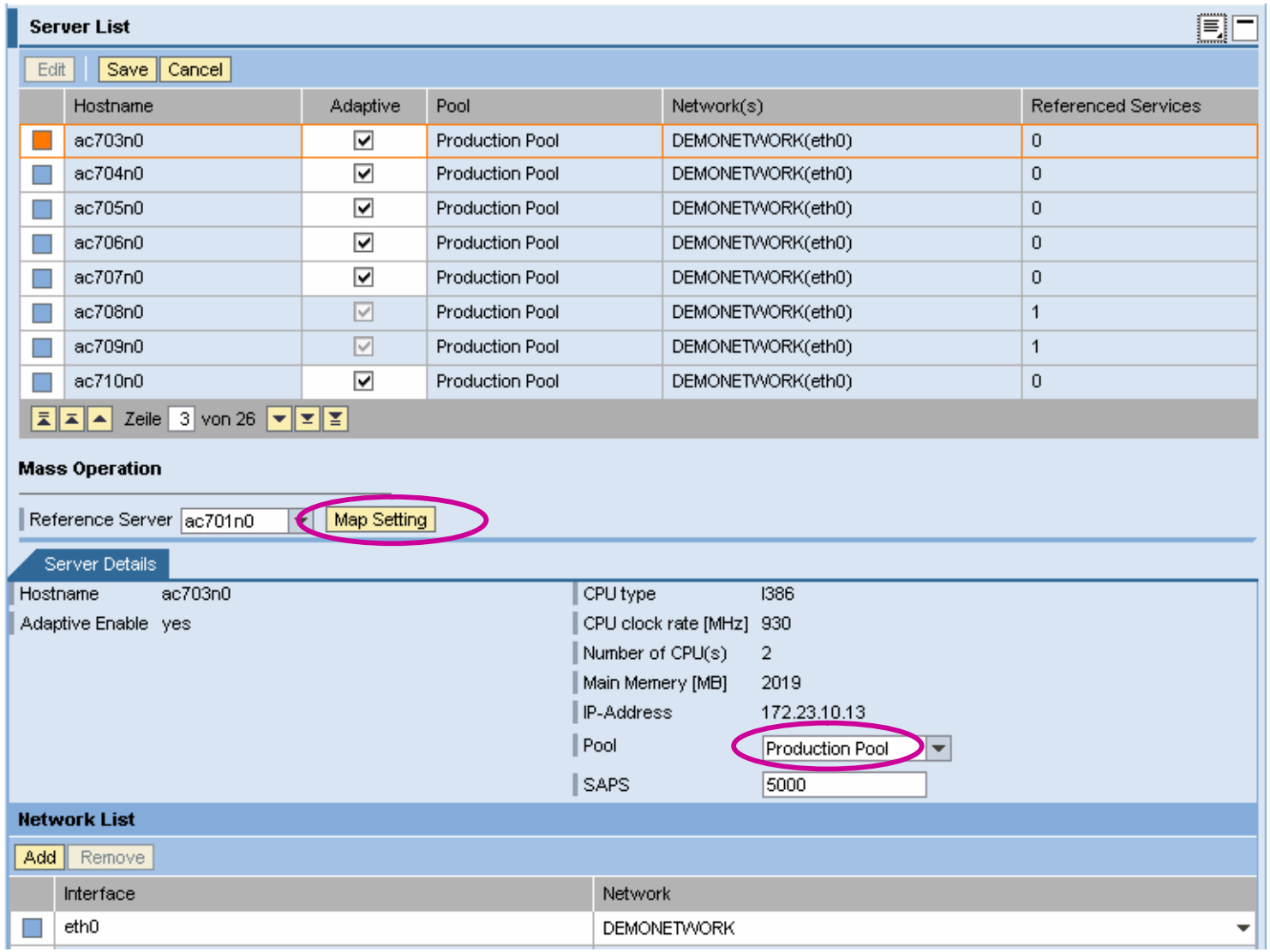
Fast, easy and secure hardware integration

Integrate Hardware with ACC

Administrator



Display of the Physical Landscape in ACC



Use Case „System Capacity Planning“

Customer Situation

High startup costs for new SAP systems because of hardware max-sizing to fit for increasing load (‚plan a buffer for growth‘).

The New Approach

System Relocation

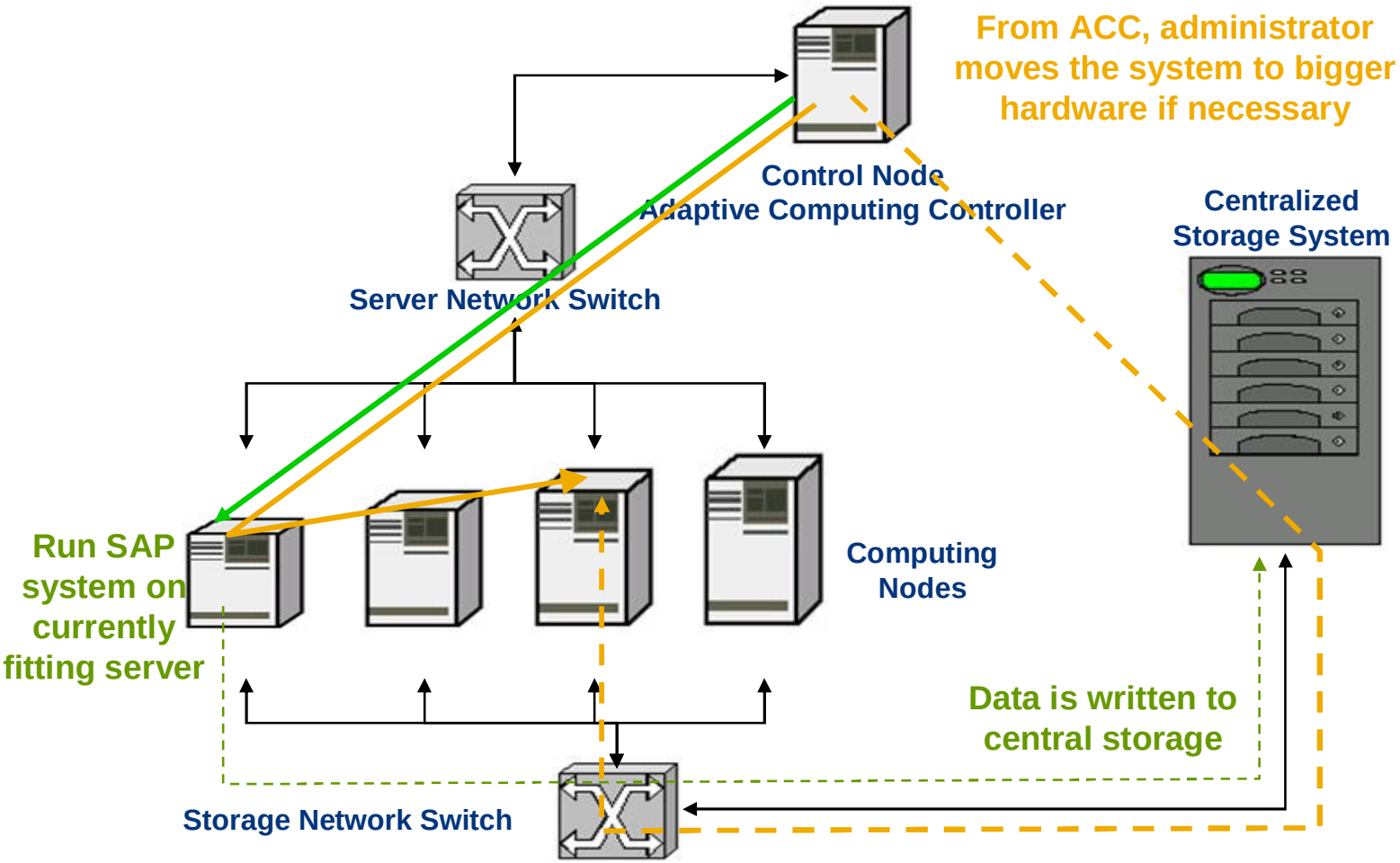
Adaptive Computing reduces startup costs due to flexible reaction on system growth: installation of new systems on sufficient but not oversized server

Save money with flexibility: only occupy really needed resources

„The results of the Quick Sizer provide you as a customer with estimated overall hardware requirements needed to fulfill peak throughput and volume business demands. One of the benefits of Adaptive Computing is that it provides flexibility in possibly unforeseen peak situations, helps to avoid over-sizing and assures the best possible capacity utilization.“

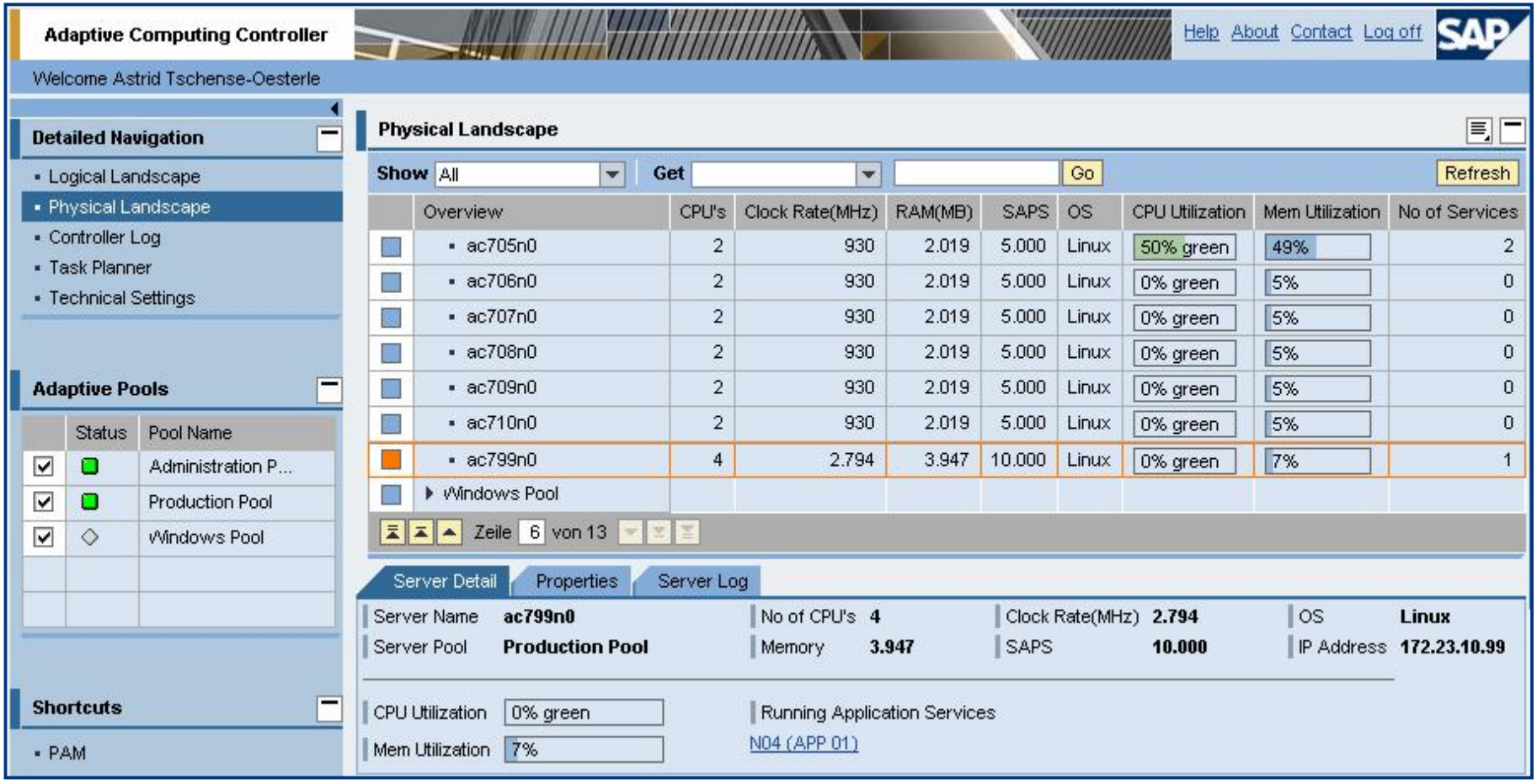
System Move to Bigger Hardware with ACC

Administrator



Physical Landscape in ACC

The displayed information helps to select the appropriate hardware for the installed system. In the logical landscape the system can be assigned to the selected hardware.



Use Case „Temporarily needed Test Systems“

Customer Situation

Too few and inflexible test systems, highly constrained systems resources on which to run tests:
Needs ability to easily set up or recreate and manage test system configurations

The New Approach

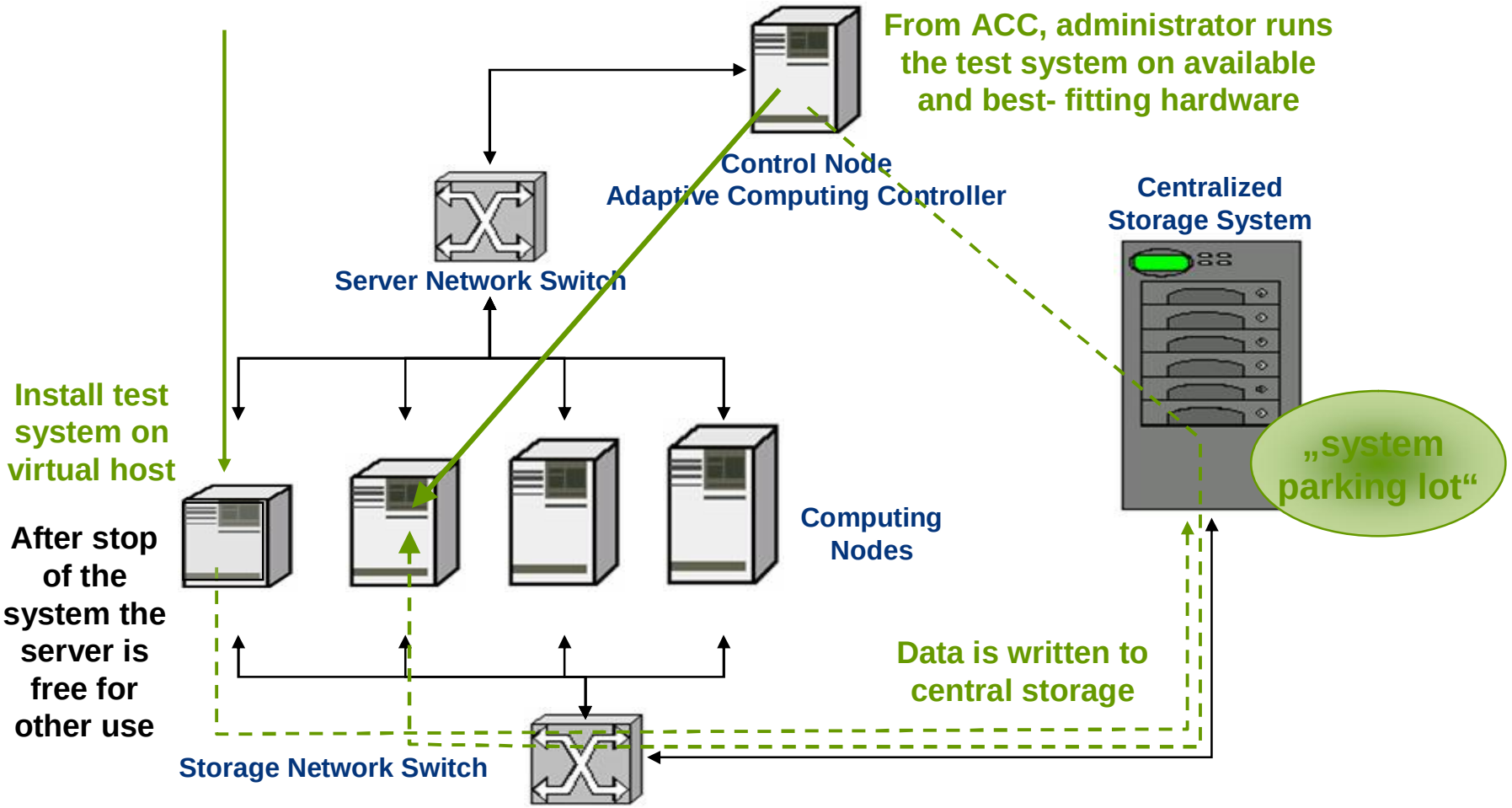
System Parking

Adaptive Computing means resource sharing. It increases your flexibility and helps you to choose from a pool of test systems.

Gain flexibility: resource sharing with on-demand system start

Run Test Systems with ACC

Administrator



Use Case „Sandbox or Project Systems“

Customer Situation

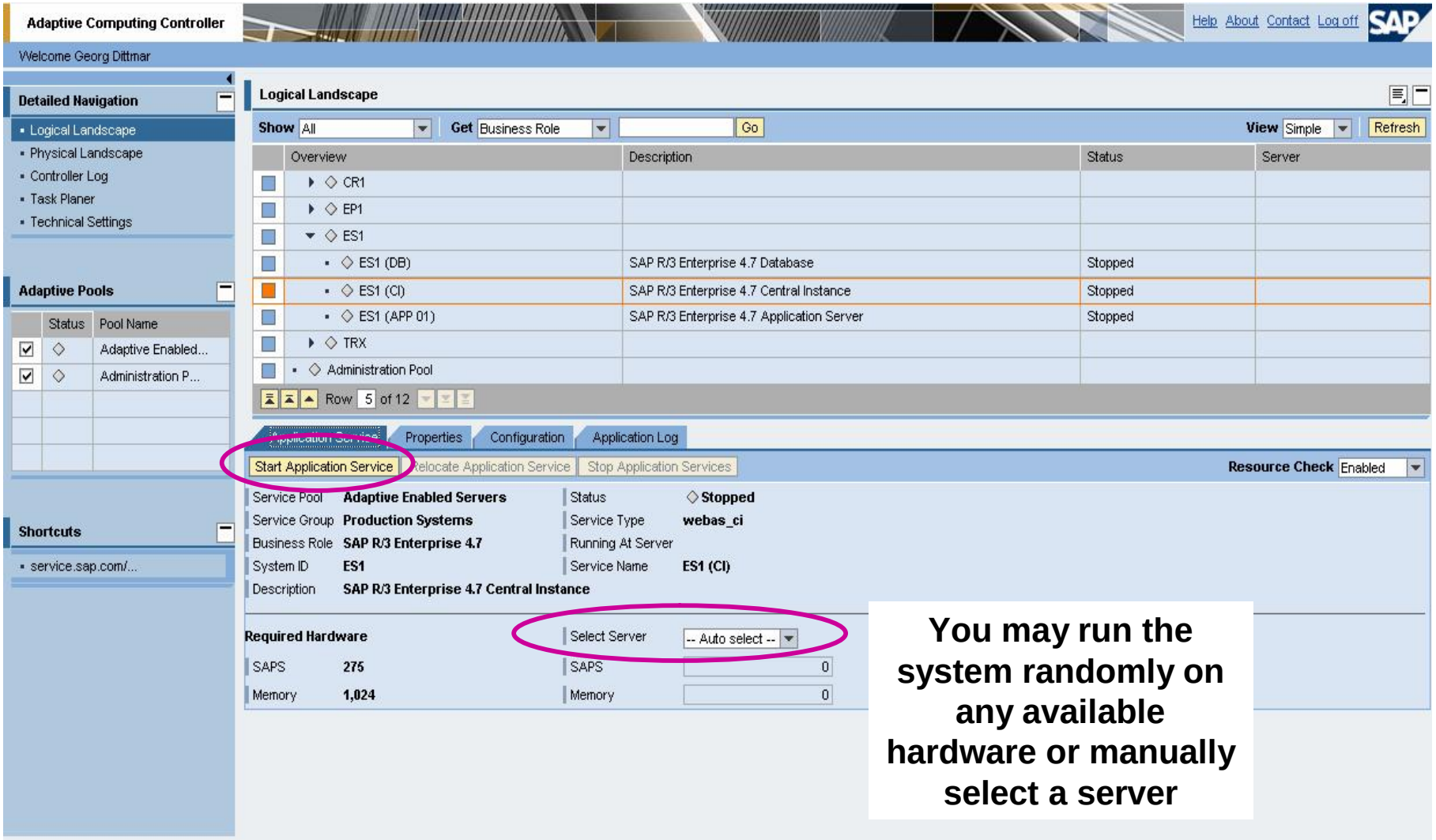
Often, customers wish to pursue a Proof of Concept (POC) project or install a sandbox system to explore different/additional functionality. By definition these systems are usually temporary in nature and, in many cases, the hardware is rented or hosted.

The New Approach

Customers may implement POC and sandbox systems on any available hardware. If necessary, they may be easily moved to more appropriate hardware at a later point in time. Customers can get savings since they don’t have to purchase additional resources through renting or hosting providers.

Save money, only pay for the time when resources are really used

Start Project Systems on Free Server



You may run the system randomly on any available hardware or manually select a server

Use Case „Training Systems“

Customer Situation

Traditionally, SAP systems are installed on a single server. In the case of training and demo systems, this can cause an under-utilization of hardware resources since not all systems may be in use at the same time and those that are in use may not utilize the full capacity of the hardware.

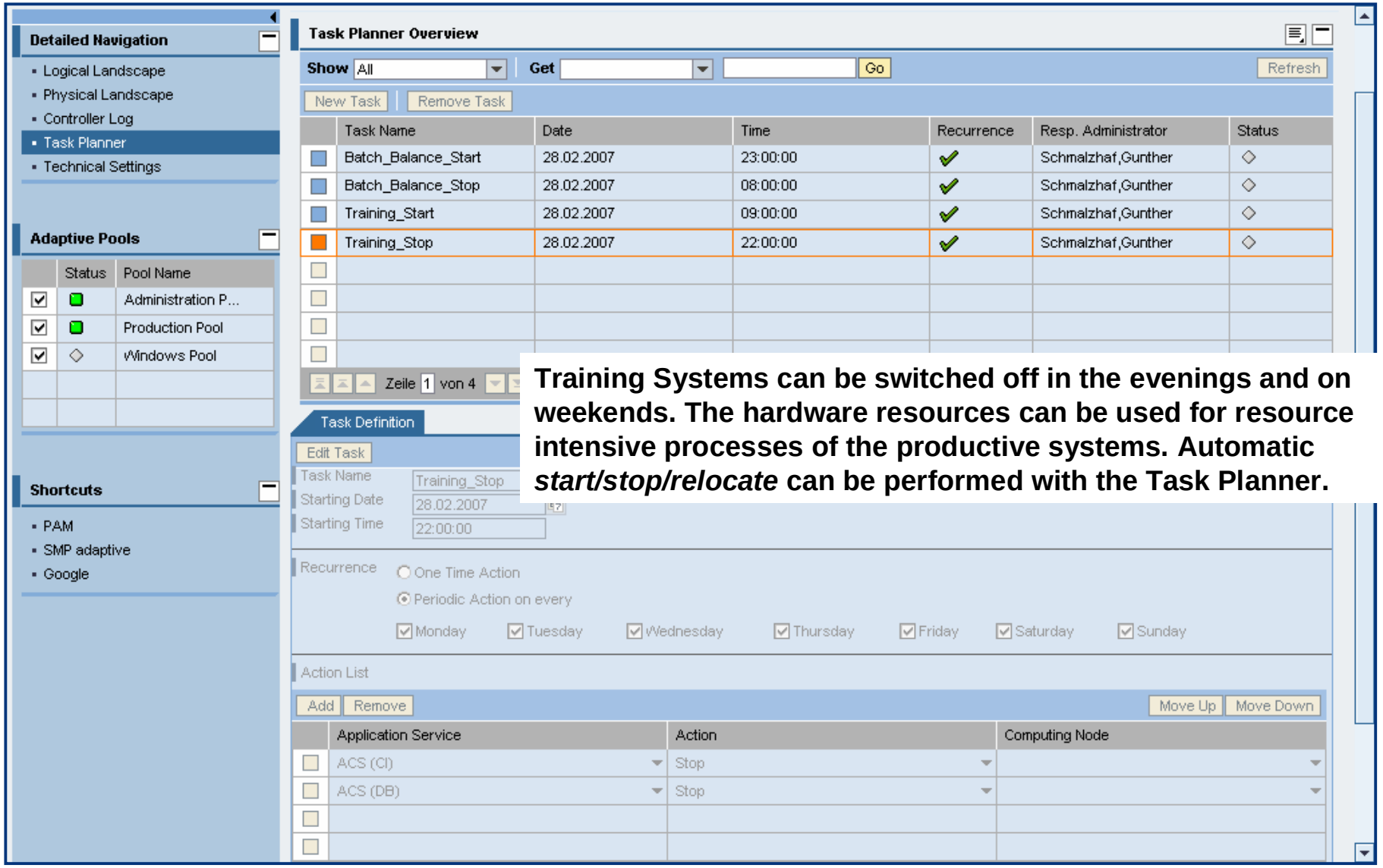
The New Approach

Server utilization e.g. with Dialog Instances

With Adaptive, customers may gain through server consolidation through a pool of resources that are available for *all* systems, instead of systems dedicated to individual applications. Free resources may be used, e.g. start dialog instance for performance intensive jobs.

Consolidate your server landscape and make best use of your hardware capacity

Task Planner in the ACC



Training Systems can be switched off in the evenings and on weekends. The hardware resources can be used for resource intensive processes of the productive systems. Automatic *start/stop/relocate* can be performed with the Task Planner.

Use Case „Resources for Special Campaigns and Activities“

Customer Situation

Systems may have a predictable usage pattern where peak usage consumes significantly more resources than standard usage and the peaks occur infrequently. (e.g. campaign with the Portal or year-end processing for FI). If a system is sized for these peaks, then computing resources may be under-utilized.

The New Approach

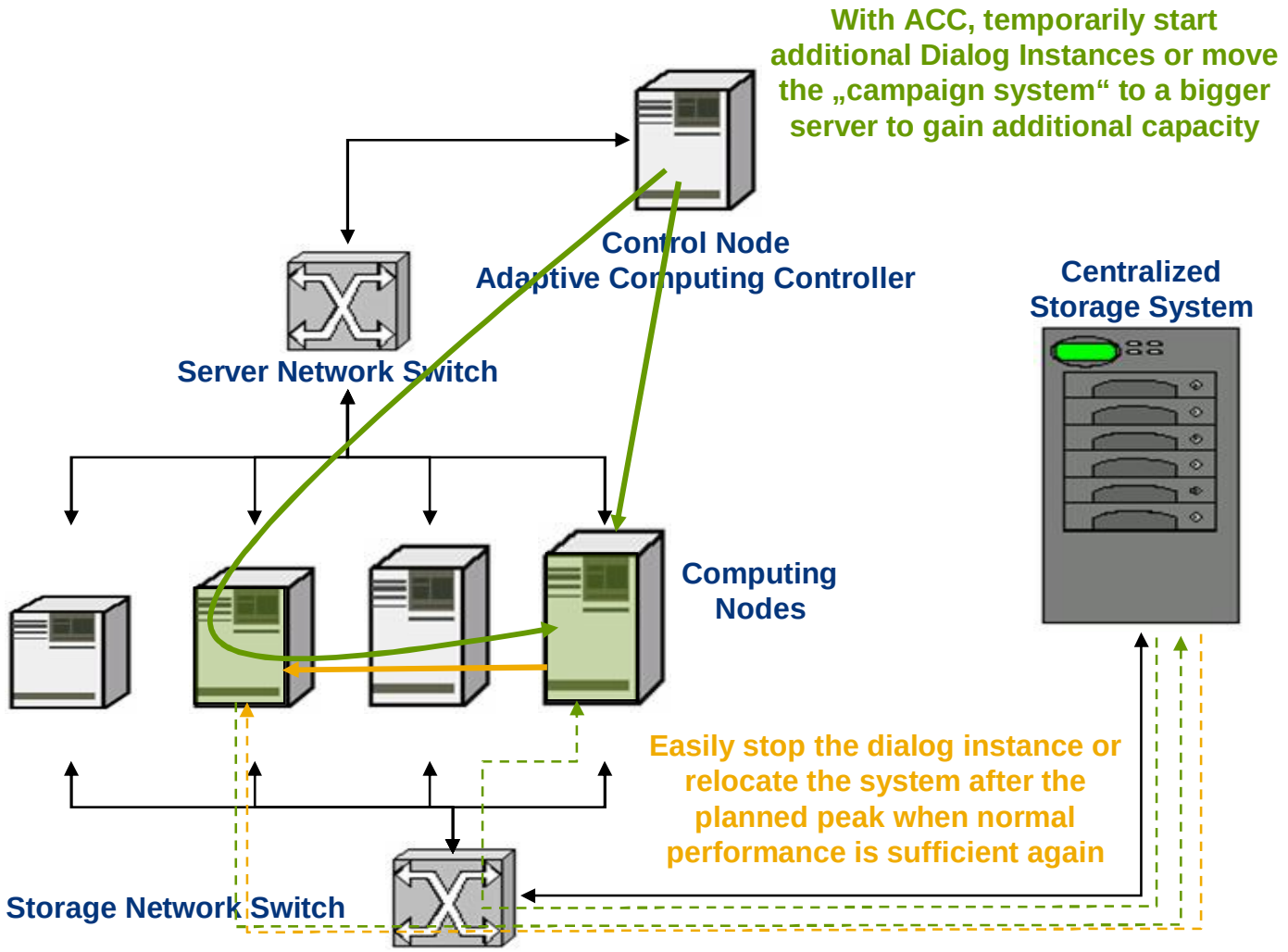
Planned Temporary Server Allocation (Scale out)

With Adaptive, customers can easily and quickly start further dialog instances, hence assign additional computing resources on a temporary basis to systems that have infrequent peak resource demands: use “shared service” computing resources.

Prevent from hardware oversizing with resource sharing

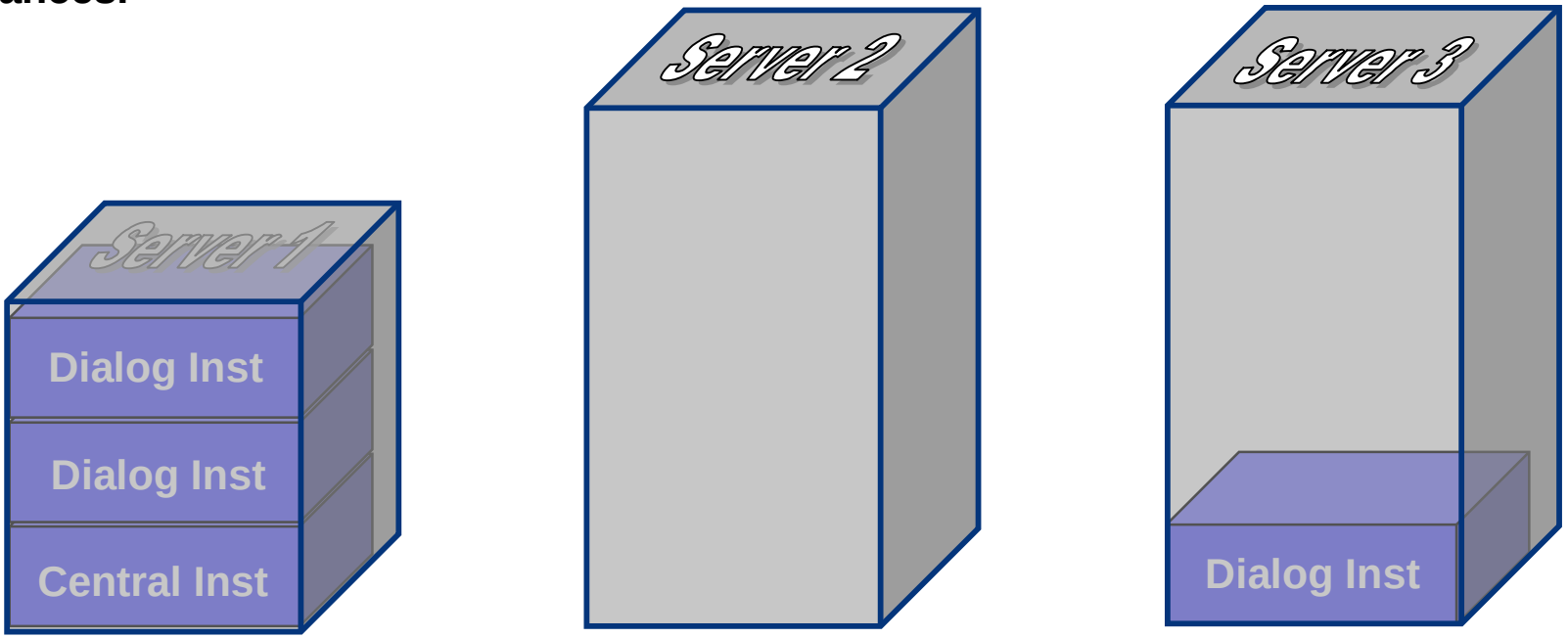
Run Campaigns with ACC: Temporary Relocation or DI Start

Administrator



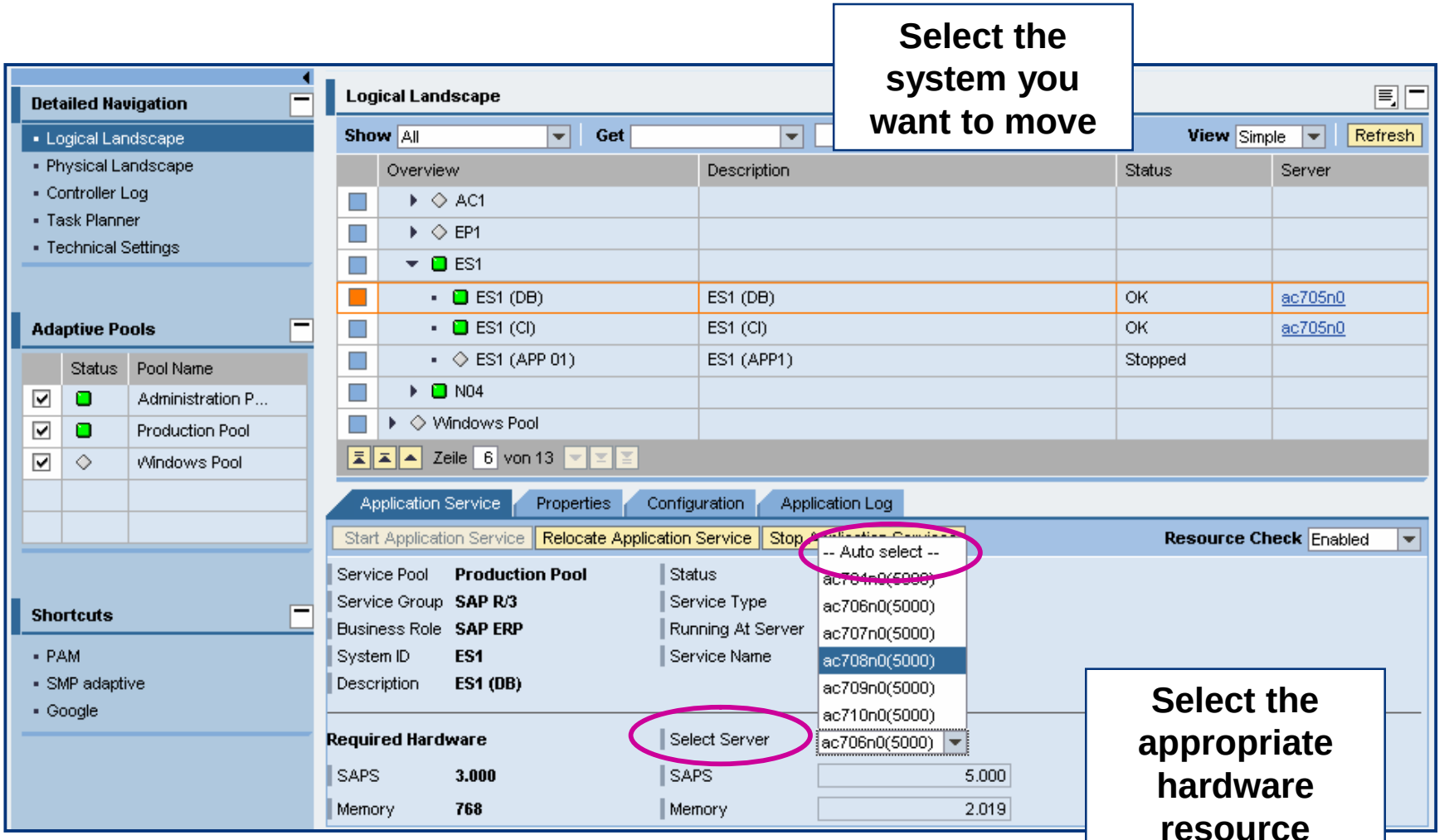
Allocation and Resizing Options

Two possibilities for increasing a system, hence resource allocation are *scale up* and *scale out*. *Scale up* means put more Dialog Instances in place (on the same server), *scale out* means move the Central Instance to a bigger server and adapt the system profile (ACC User Exit) to the server capability and/or to start Dialog instances.



Scale up **Scale out1** **Scale out2**

Relocate a System to Appropriate Hardware



Use Case „Test Landscapes“

Customer Situation

Accurate testing results are best produced on hardware that mirrors the productive system setup. For SAP landscapes with multiple productive systems, maintaining a mirrored hardware setup can be very costly. Resources may be re-assigned manually for test purposes; however this can also be a very time-consuming, mistake prone and costly effort.

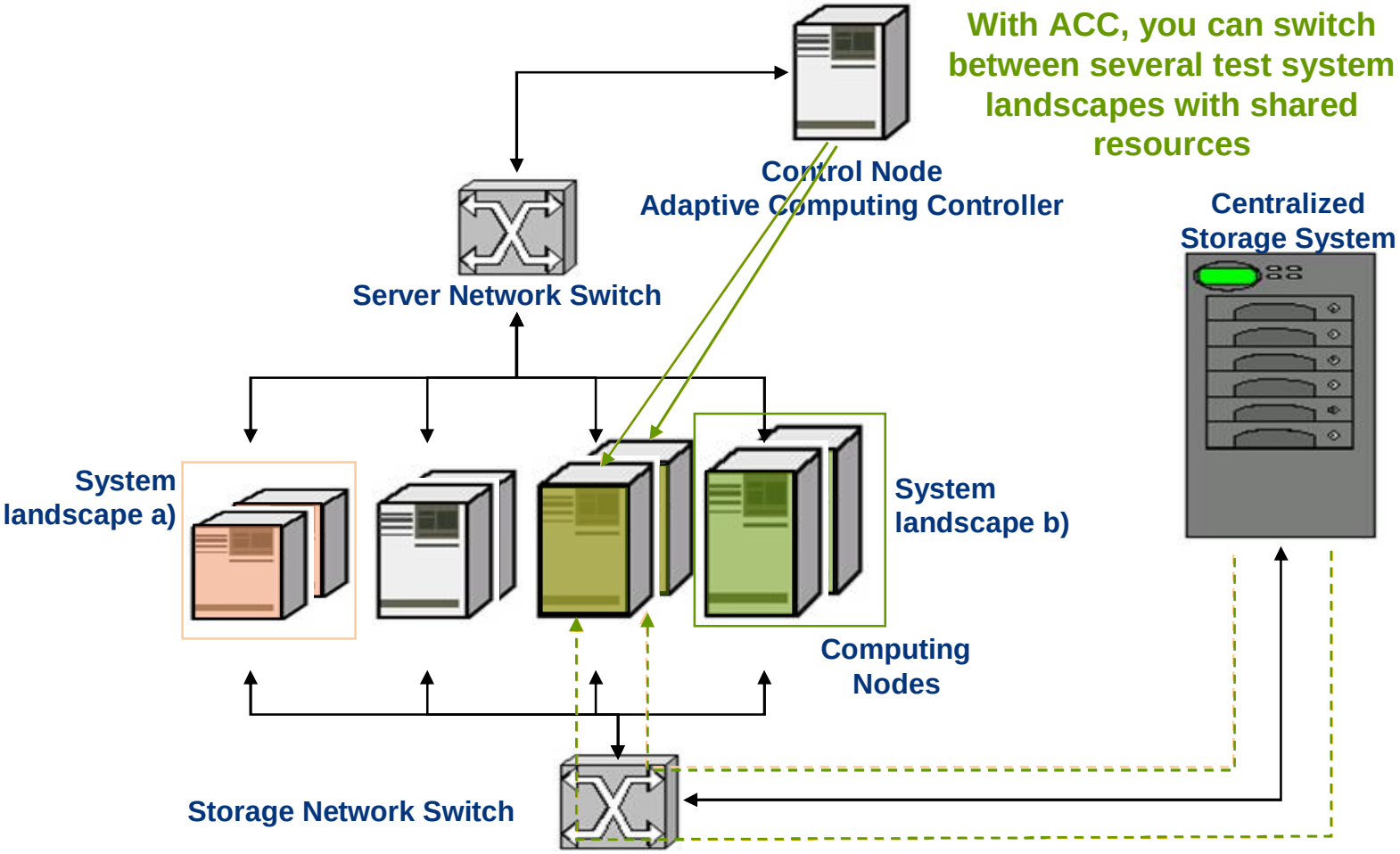
The New Approach

With Adaptive, a consolidated pool of test system resources may be maintained. This makes it very easy to have multiple different test system setups that can be quickly configured at a minimal cost.

In addition, specialized tests may even be configured to run *on the production hardware itself*. Very accurate results of load and stress testing, upgrade timing, etc. may be achieved and appropriate tuning may be carried out.

ACC and Test System Landscapes

Administrator



Use Case „TDMS Server“

Customer Situation

With their growing IT infrastructure, customers face the constant challenge of creating and updating nonproduction systems for testing, quality assurance, and training. In fact, most organizations operate multiple nonproduction environments for each live system - requiring them to deal with a whole host of logistical, technical, management, and cost issues.

The New Approach

On-demand tool „wake-up“ and system relocation

SAP Test Data Migration Server software and Adaptive Computing together solve this problem. TDMS enables you to easily create nonproduction environments with relevant extracts of business data for testing developments and upgrades (~30% of productive business data).

With Adaptive, the systems can be moved to bigger hardware during data extraction and then be relocated again. The TDMS server can be stopped until next data extraction. With this technology combination you can reach the optimum result: you can maximize the effectiveness and accuracy of your nonproduction systems and minimize infrastructure and maintenance expenses.

Maximize test data accuracy and Minimize infrastructure expenses

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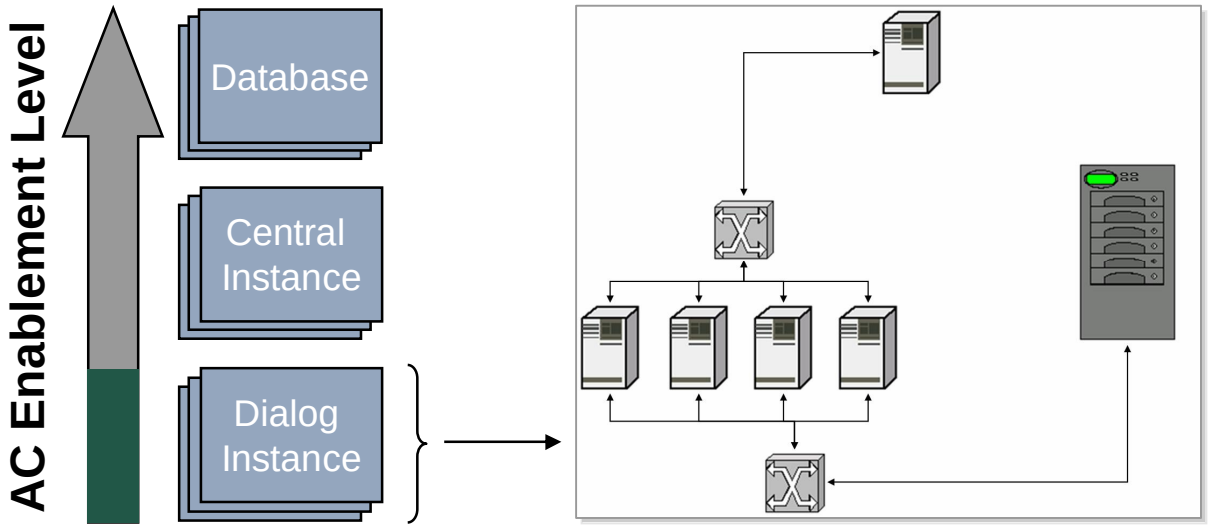
Concepts to start with Adaptive Computing (1)

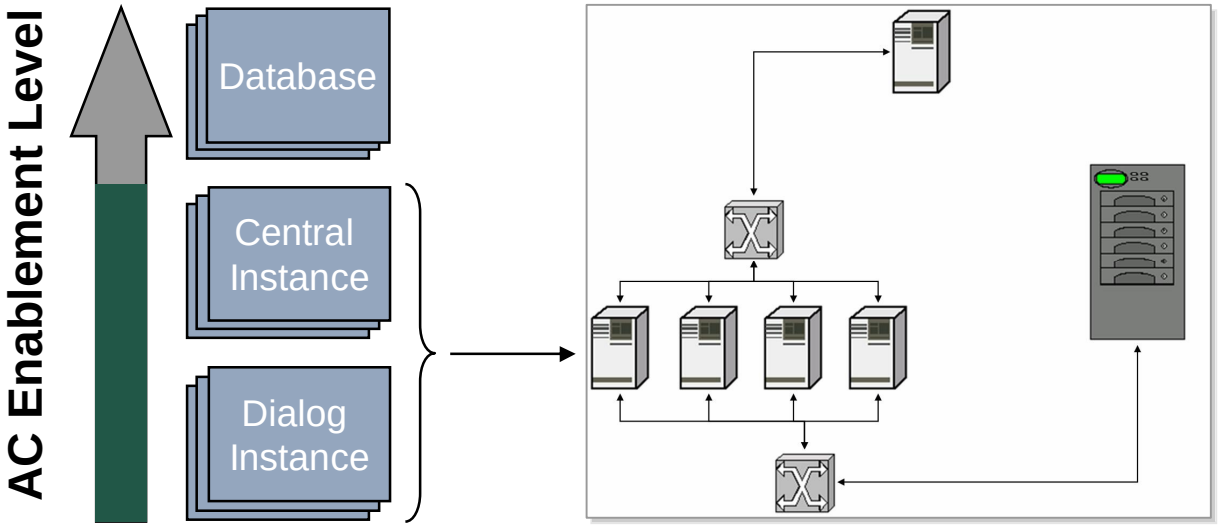
- Integrate Dialog Instances in ACC:
  (CI and DB unchanged).
  - Install new DIs on virtual hostnames for the AC landscape.
  - Integrate the new DIs into the ACC.
  - Manage with logon groups the users move to the new instances.
  - Delete the traditionally installed DIs after the users are relocated.
  - ➔ no interruption of the operation.



Adaptive Computing Landscape

Concepts to start with Adaptive Computing (2)

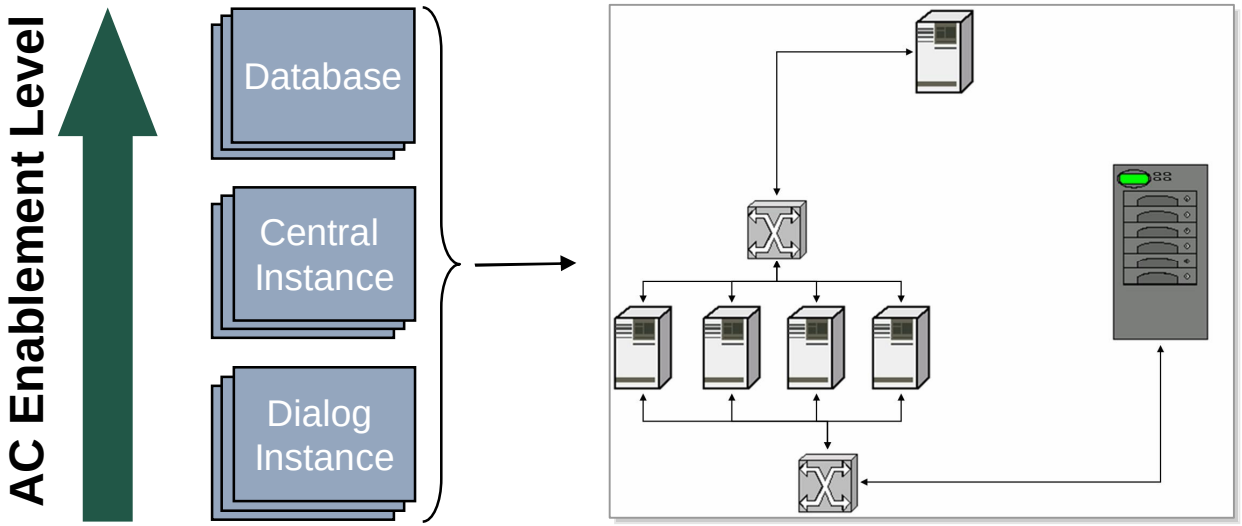
- Integrate Dialog & Central Instances in ACC:
  (DB unchanged).
  - Move CI to virtual hostname (homogeneous system copy, host renaming…).
  - Install new DIs on virtual hostnames.
  - Integrate the new DI and CI into the ACC.
  - Delete the traditionally installed DIs after the users are relocated.
  - ➔ DB is unchanged, on UNIX DI & CI components on NFS.



Adaptive Computing Landscape

Concepts to start with Adaptive Computing (3)

- Integrate Dialog, Central & DB Instances in ACC:
  - Install CI and DB to virtual hostnames.
  - Install new DIs on virtual hostnames.
  - Integrate all instances into the ACC.
  - Delete the traditionally installed entities.
  - ➔ Full benefits of the Adaptive Computing concept.



Adaptive Computing Landscape

Initial Planning Recommendations

Integrate Dialog, Central & DB Instances in ACC:

- **Move CI and DB to virtual hostnames.**
- **Install new DI's on virtual hostnames.**
- **Integrate all instances into the ACC.**
- **Delete the traditionally installed.**
- ➔ **Full usage of the Adaptive Computing concept.**

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New ACC Release: Ramp-Up Preparations Running!

ACC 1.0 Release:

- **Adaptive Computing Controller 1.0 available today**

ACC 7.1 Release:

- **Adaptive Computing Controller in SAP NetWeaver 7.1**
- **Ramp-Up start planned for January 2008**

The new version of the Adaptive Computing Controller offers:

- **Higher scalability: run hundreds of systems in your ACC landscape!**
- **Tight integration in central SAP administration system**
- **SAP system instance availability check**
- **Management of A1S systems**
- **Additional application support (TREX, LiveCache,…)**
- **New User Interface**
- **Drastically reduced Configuration effort**

ACC Future Plannings

Future Enhancements:

- **Dialog Instance Provisioning in an Adaptive Computing landscape**
  - **A Dialog Instance will be provisioned without pre-installation**
- **Management of virtual servers with the ACC**
  - **Virtual and Physical landscape map**
  - **Resize and Migrate of 3rd party virtualization technology in the datacenter**
- **SAP System Cloning**
  - **SAP System can be copied**
  - **After the cloning procedure the new SAP System is transformed into a fully-fledged new system**

Summary

- **Adaptive Computing can help consolidating SAP system landscapes and hardware resources**
- **See that there are many different situations in which Adaptive Computing can be of help to save money and make operations easier, also in your company**
- **Know what can be expected from SAP's Adaptive Computing in future**

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