Using your server capacities virtually will save money and energy

Virtualisation allows you to optimise the capacity utilisation of your servers as well as memory and network resources. This way, you minimise the number of physical servers and the amount of storage capacity required. And you also reduce the energy demand for your server infrastructure by 40% to 60%.

Action
When you next expand your server infrastructure, take advantage of the opportunities offered by virtualising your server architecture. That will save up to 60% of your energy consumption.

Requirement
You operate an in-house server room (a small data centre) or several of your own servers in your company.

What to do
– Analyse the utilisation of your servers' capacity for two to three months.
– Consolidate the data so you can define the effective storage requirement for all your servers and applications.
– Assess which server applications with their own hardware (mail, ERP and web servers, etc.) you can consolidate on one physical server.
– In connection with the virtualisation, also consider (partial) cloud outsourcing for the server infra-structure.
– Avoid storing old, unnecessary or duplicate data ("data garbage").
– Design the concept for your new virtual server, storage and network infrastructure. To do this, evaluate the necessary software and (if required) the hardware components that are missing.
– Implement the virtualisation concept.
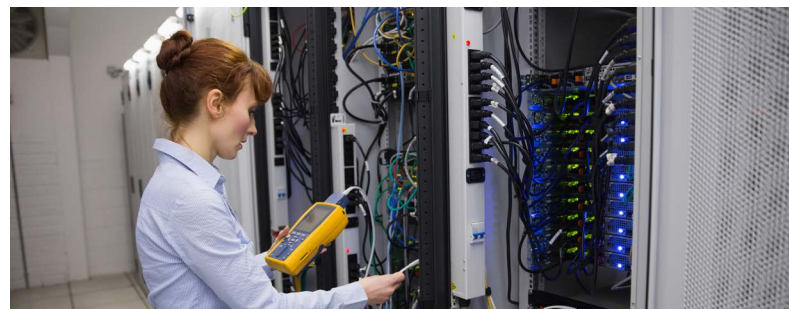
Costs – effort
– If you don't have an IT expert with experience of virtualisation projects in your company, it is worthwhile to develop and implement the virtualisation concept in collaboration with an external IT partner.
– The actual investment costs for hardware are often low. But you may also need to consider the effort expended by your IT staff for planning and implementing the virtualisation solution.
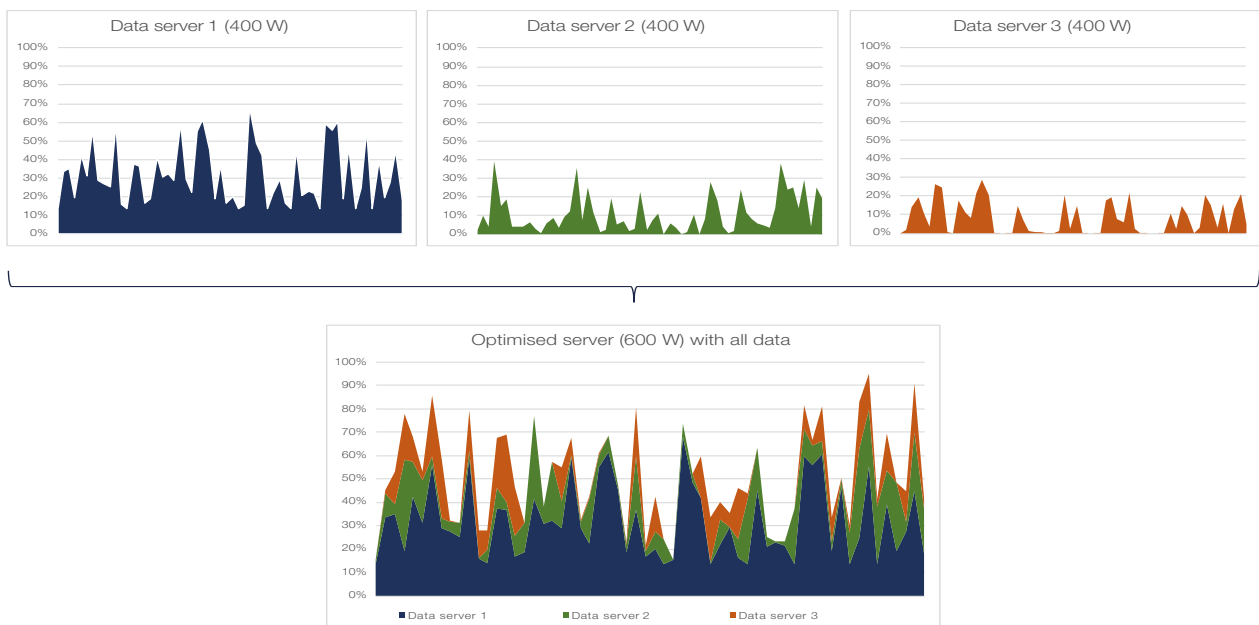
Please note!
– Secure, reliable and trouble-free operation of the IT infrastructure is essential for all companies. Always call in experts if you don't have sufficient IT experience.
– The minimum time required for a virtualisation project is between three and six months.
– The potential for savings is very promising: power consumption by the storage systems (for example), which easily accounts for one quarter of the power required by the server infrastructure, can be reduced by up to 80%.

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Additional explanations

Server capacity utilisation

A virtual server forms what are known as storage pools – for example, from the storage capacities of the individual physical servers. This enables the storage space to be used dynamically. Storage capacity can be used more efficiently, and it becomes possible to work with less physical storage space. This cuts costs (hardware) and saves energy (less connected power). Moreover, server capacity utilisation is improved – which, in turn, saves energy.

A server in idle mode (i. e. when no work is being done) still consumes 50% to 75% of the electric power it would require if its full capacity were utilised. The following example shows three servers with electrical power of 400 watts each (total: 1200 watts) and their capacity utilisation. With unchanged capacity utilisation, the data can be processed on a virtualised server with only 600 watts of connected power.

Data server 1 (400 W)　　Data server 2 (400 W)　　Data server 3 (400 W)

Optimised server (600 W) with all data

■ Data server 1　　■ Data server 2　　■ Data server 3

Capacity utilisation control

The server infrastructure is often over-dimensioned, even if it is already virtualised. This means that most servers operate at less than half their potential capacity, and the full potential of virtualisation is not exploited. So: clarify your actual requirements for physical servers, and implement targeted reductions of overcapacity. Remember that server capacity utilisation of 80% to 90% presents no problems for the hardware, given proper operation and correct cooling.

Additional information

– Less electricity and more efficiency in server rooms and data centres: Information platform for server rooms and data centres, SwissEnergy
– Promoting efficient data centres: the PUEDA+ subsidy programme
– Situation assessment for your company: The energy check for server rooms and data centres
– Efficient data centres: list of actions