

## **Self-care portal for Backup administrators**



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# 1. Why we need a portal

The RWTH Aachen University has about 300 institutes of which 225 use the opportunity to backup their data on the TSM-Server. This process is administrated by the TSM administrators at the Center for Computing and Communication (CCC), but each institute itself has to name two people to be the responsible local contact persons. Only these two so called backup administrators are authorized to request (but not to perform) any changes concerning their backup nodes. The delegation of these tasks is implemented by our role management system. In order to increase the responsibility of the backup administrators concerning the respective institute's nodes and to allow the performance of certain changes independently from the CCC we developed a self-care portal which can be accessed via internet. This offers an overview of the associated nodes to the backup administrators and allows them to perform certain changes like adding or deleting a node and resetting the password. As a result the TSM server cannot be accessed directly through this interface, but changes made in the portal will directly be effective.

## 1.1 How the TSM is used at the RWTH Aachen University

Each institute of the RWTH Aachen University belongs to one of 9 faculties. This structure is used in the Backup system as well to make it easier for the backup administrators to backup or restore their data. We provide 10 backup server, so each faculty stores their data on one of them, the last one is for external departments for example the student residences.

Furthermore there is a domain provided for each institute or department consisting of a short form of their name and the institute's id. With the help of a second domain which differs from the first one only by the ending “\_DO“(= disk only) the TSM administrators differentiate between data that is stored on tape and storage on disk. This differentiation is not visible for the backup administrators.

## 1.2 Role Management System

To delegate tasks or roles at the RWTH Aachen University a role management system called CAMPUS is used. About every employee or student several additional information are stored there, like their institute and their role (e.g. backup administrator) within in. The delegation of this roles is confirmed by the institute's leader. With the help of this system it is ensured that there are always two backup administrators for an institute.

Furthermore employees can be authorize for certain services(e.g. The backup portal) using the knowledge of their role for the institute.

In addition to this it is to mention that the CAMPUS system provides information for certain services, for example a list of all institute id's, a list of all backup administrators and much more.

# 2. What it can do

The portal's main page provides an overlook over the respective institute's nodes.

First of all some additional information about the backup administrator who is logged in are shown, for example the institute he is working for and the other local contact persons there.

Additionally to the node's name the date of the last backup is shown and whether it was successful or not, the number of files and the size of the data belonging to the node.

At the end of the table there is the possibility to change, delete or set a new password for a specified node. Finally you can also click to get a to the form where you can add a new node.

Backup Portal - Mozilla Firefox

http://testvm11/bmtest/index.php

Übersicht Statistiken Hilfe Abmelden

## Willkommen beim Backup Portal

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Ansprechpartner	

Knotenname	Letztes Backup	Gespeicherte Datenmenge	Anzahl der Dateien
ATEST		56	4
CRCTEST		456	144
DENISETEST		30	3
DENISETEST2		15	2
DENISETEST5			
NODENAME		564	5

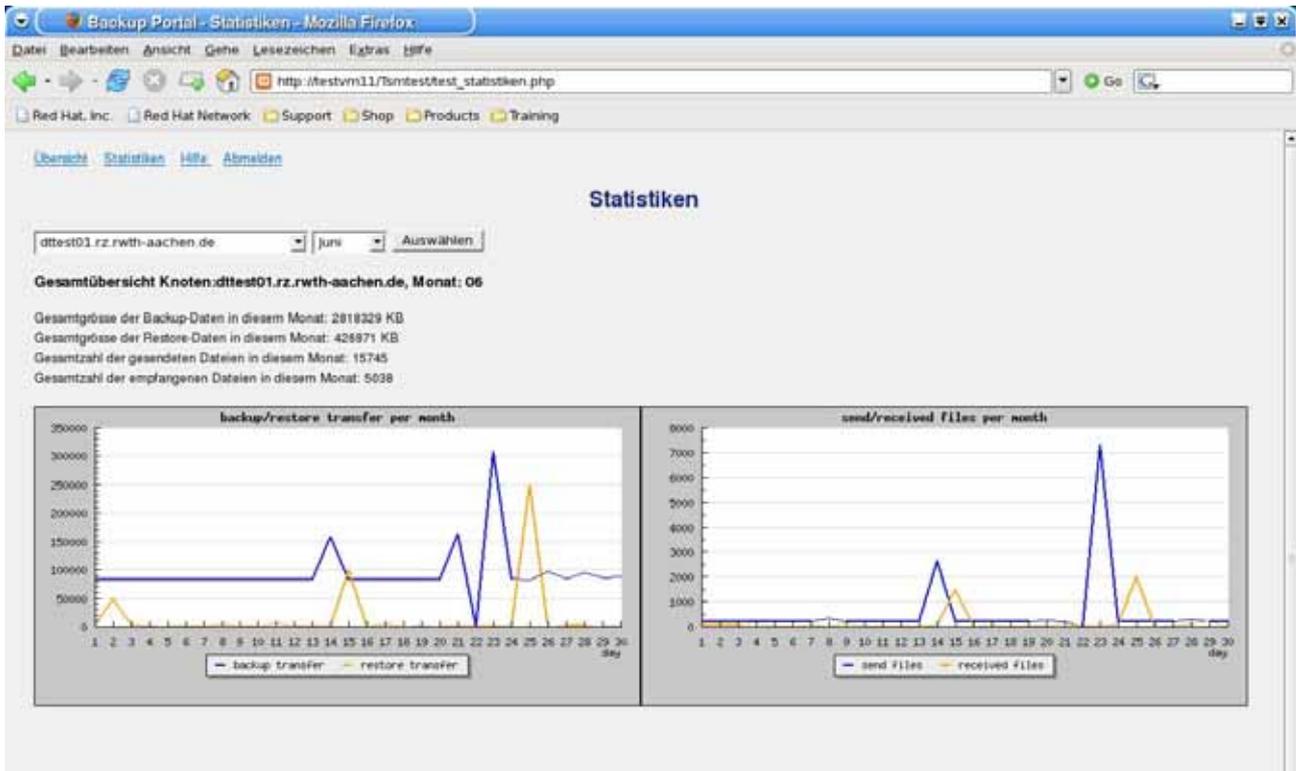
DENISETEST5 · [Ändern](#) [Löschen](#) [Passwort Ändern](#)

[Neuen Knoten erstellen](#)

Fertig

*Mainpage with node list*

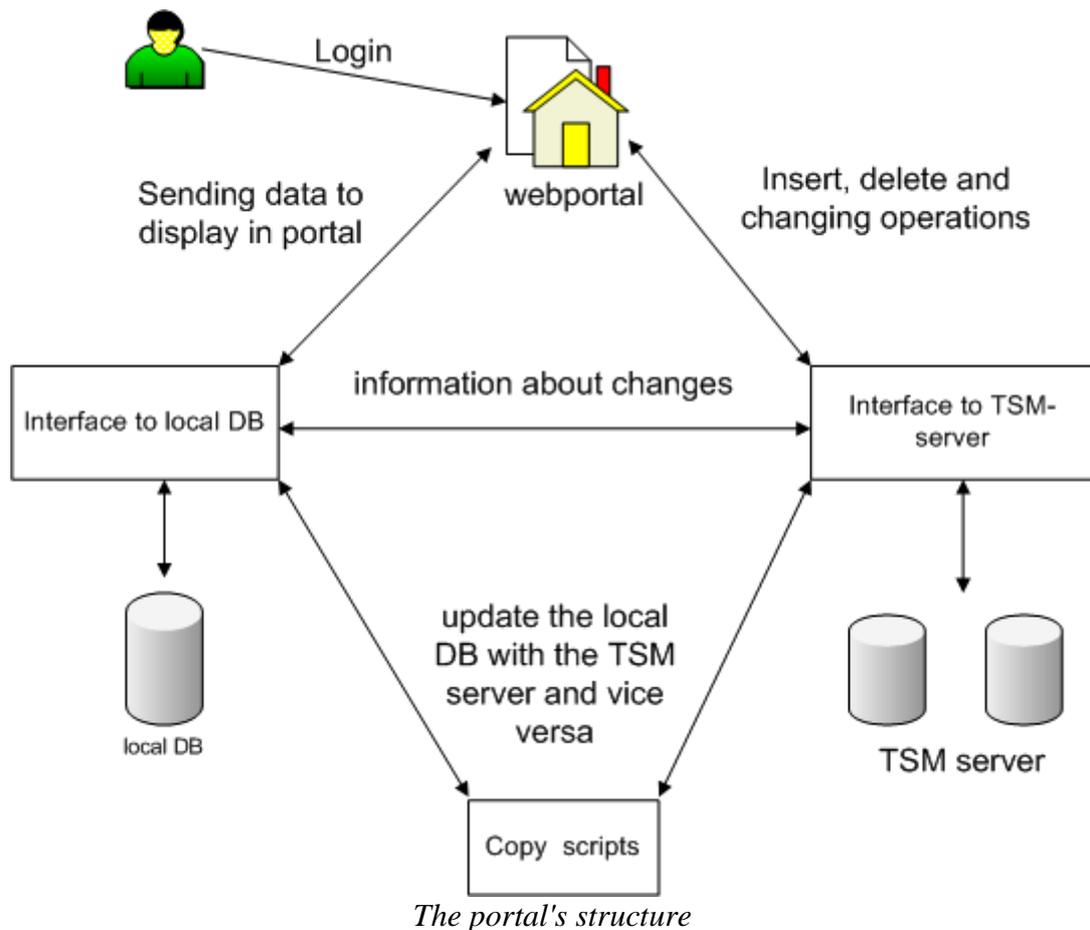
Furthermore there is the opportunity to see some statistics about the institute's backup, for every node specific information are provided like the amount of backup and restored data and the amount of send and received files. These information are shown in form of a line graph which only shows the figures of one node per month. Additionally the sum of these data information are shown above the graphs as an overview.



*statistical overview*

Additionally it is to mention that there is a page for FAQ's which offers help to the portal's users. Here are some regulations explained, for example what you need to know when creating a new node, changing a password and so on. Of course some technical questions are answered as well to help the user's understanding error messages.

### 3. How it works



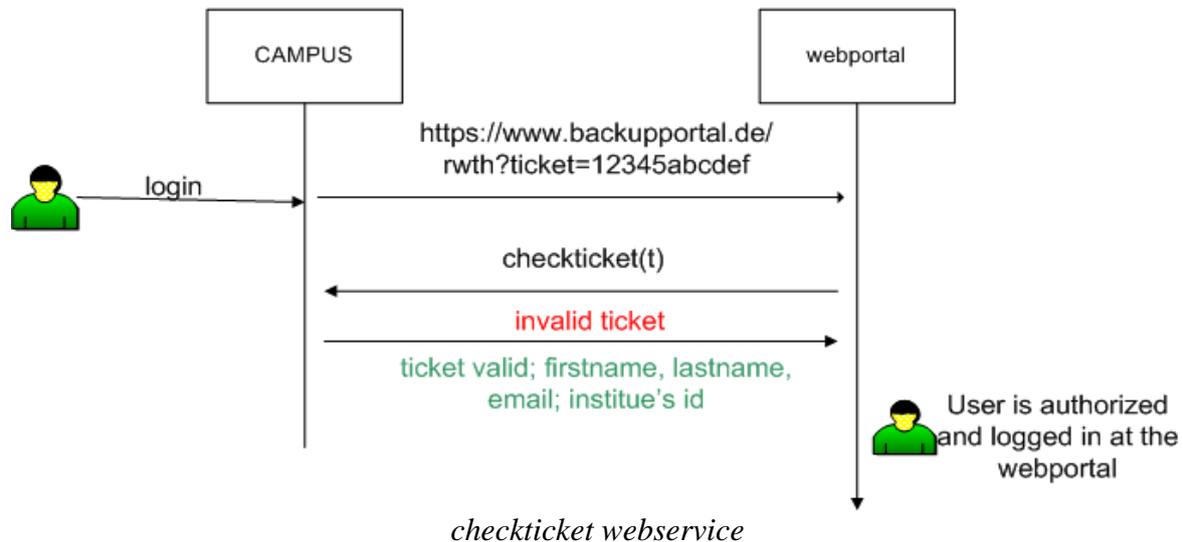
#### 3.1 Copy script

What the user sees when he logs in at the portal is only a list of the nodes and some additional information, so using the whole TSM database would be a waste of time. We decided therefore to create our own smaller database which includes only the information needed. To keep this database up to date it is necessary to compare them at least once a day so that entries are updates, inserted or deleted.

Furthermore the institute's id have to be kept up to date. It is possible that an institute changes its id, so old ids can be deleted and new ids can be added. Therefore we import this information from the CAMPUS system every day and update our data with it. In addition to this there is another import made every day concerning the respective institute's backup administrators, because they can change as well. With these information not only the local DB is updated, but also the DESCRIPTION field for every domain at the TSM server.

#### 3.2 Login

The backup administrators' login is managed by the CAMPUS system. It is realised via a webservice called check-ticket.



As you can see a ticket is sent to the portal when a user logs in as a backup administrator. To prevent that somebody can just invent a ticket number it is then sent back to the CAMPUS system together with an authorization request, to check whether this ticket is still valid (there is a timeout), who the user is and which role he has. The answer contains a validation of the ticket and in case the user is authorized for the service, information about the backup administrator like his name, email address and the id of the institute he is working for.

With the help of this information you get the institute's domain out of the local database which is needed to provide the respective nodes. Furthermore the faculty is determined to find out the server on which the changes will be performed.

### **3.3 Interface to local DB**

We decided to create an own local database which provides only the information needed for the portal out of several reasons.

If you want to have a list of all nodes from a certain domain or institute our architecture of the TSM servers forces you to either know the server they are located on (because of their faculty) or search at everyone of them. In the smaller database this information is included next to the node name, so changes can easily be performed on the right server.

The servers provide a huge amount of additional information to the data, but only a small part of it is needed to run a portal. It is therefore faster to copy this small part into the local database and load data for the portal from there.

It sometimes occurs that the servers are not available, for example because of maintenance. In this case no changes can be made, but because of the information in the local database a backup administrator can still have a look at his node list or on some statistics.

This interface provides several functions to communicate with the database. There are different functions for each operation, for example delete, insert or update, but also special queries provided like selecting the domain's server. As a consequence there is no direct access to the database but through this interface. This increases security and makes changes in the database structure or additions easier to realise.

### **3.4 Interface to TSM-server**

There are 10 backup server administrated by the CCC, but because all of them have the same structure they can all be accessed by one interface. Of course this implies that calling a function without giving the server name as an additional parameter is impossible. With the provided functions it is possible to insert and delete nodes and furthermore change certain options like the contact email address and the password of the institute's nodes.

The operations are performed directly on the server via the command line tool dsmadm so we decided to include a C-program into the portal which provides this communication for us. This ensures that nobody can accidentally access a server and creates an additional layer of security between the user and the TSM server.

The program's output is directly checked so that errors are detected and messages can be forwarded to the calling routine to give the user a responds to his request.

If the operation was successful the change made will directly be forwarded to the local database, so the backup administrator can see the changed status of his node. In case of failure a error message is to be seen at the portal so the backup administrator can react to it.

### **3.5 Statistics**

The amount of data transferred from client to server and vice versa are saved in an accounting file. This contains one line of information per node per action and is available for every server. We used this file to create a statistical overview over the data transfer of backup and restore and furthermore over the send and retrieved files. We divided these file into smaller parts which are separated by node name and month and only contain the day and the the four figures we need (backup transfer, restore transfer, amount of files send, amount of files received by the client).

The user has now the possibility to select a month and a node and out of the specific file 2 graphs are created . One shows the amount of backup and restore in KB per month, the other one shows the count of send and received files.

## **4. Conclusion**

Since recently we received several requests concerning this subject per day which had to be processed only by the two TSM administrators. This work can now be handled in a digital way through the portal which gives the users more independence and guarantees a better workflow within the institutes.

Finally it is to say that this portal makes work much easier and less for the TSM administrators at the Center for Computing and Communication.