

### **ETH**

Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

**Swiss Federal Institute  
of Technology Zurich**  
[www.ethz.ch](http://www.ethz.ch)

**Field**  
Education/Research  
and Teaching

#### **Benefits**

- Easy to install and implement
- No effect on existing backup environment
- Proactive management of tape media and drives
- Testing and checking of tapes and drives
- Logging of errors that have occurred
- Planning of life cycle of tape media during tape backup

## Everything is relative - The Einstein-University ETH Zurich is discovering Crossroads ReadVerify® Appliance as a method for relativising time and cost savings during tape backup

*“The ReadVerify Appliance from Crossroads supplies us proactively with all the information necessary to ensure reliable and high-performance backup.”*

*~ Dr. Tilo Steiger – Head of Storage Services Group in the System Services department of the IT services of ETH Zurich*

### **Swiss Federal Institute of Technology Zurich**

“If you sit down together with a nice girl for a couple of hours, you feel as if it were just one minute. However, if you sit down on a hot oven for just a minute, you feel as if it were two hours. That is relativity.” This is how Albert Einstein described his general theory of relativity, for which he was awarded the Nobel prize in 1921. The Swiss Federal Institute of Technology Zurich (ETH Zurich) is almost inseparable from the works and impact of the physicist of the century, Einstein. Both as student and teacher, Einstein spent many of his formative years there. It was also ETH Zurich at which Einstein laid the foundations of his work, which revolutionised the world of natural sciences. Since 1901, a total of 21 Nobel prizes have been awarded to people, who at the time they were honoured were or are associated with ETH Zurich. This fact alone demonstrates the high quality of the research and teaching with which the university, specialising in technology and the natural sciences, has undertaken in the heart of Switzerland.

ETH Zurich is currently the place of study, research and employment for over 18,000 people from 80 nations. Interdisciplinary basic research and

applied research of long-term value are the two pillars of ETH Zurich. Obviously, that research is carried out in quite a different way from when Einstein was alive. Today’s research processes involve immense quantities of electronic data; data volumes of multiple terabytes or petabytes are not uncommon. This data has to be stored long-term and its accessibility has to be ensured.

*Storage Services Group at ETH Zurich*  
The System Services department of ETH Zurich’s IT Services under Jürgen Winkelmann is responsible for operating and supporting the main high-performance computer systems, servers and storage systems. The Storage Services group with Dr. Tilo Steiger have taken on the responsibility for the concrete subject of data backup. The sphere of responsibility of this group includes the main data management of ETH Zurich. In addition to the SAN connection of the main IT infrastructures, this also covers the NAS memory, including the HSM memory and, above all, data backup. For data backup, the Storage Services group uses Netbackup 6.0, and the NAS file systems are saved via NDMP. Moreover, it is necessary to save the data of approximately 2,000 remote clients. Backup at ETH Zurich is mainly carried

out during the evening and night, while there is a full backup once a month and incremental backups on other days. The tapes of the full backup are kept for three months. In total, this results in a data volume of 2.2 petabytes, which has to be backed up on a regular basis.

#### *Proactive information thanks to ReadVerify Appliance*

If data is not only to be backed up reliably, but its accessibility is also to be necessary when data is recovered, this makes great demands on the whole backup system. All too often, the backup stops unexpectedly, is not carried out perfectly or the data can no longer be read following recovery - incidents, which must be avoided in the case of the research data of ETH Zurich, if the work and findings of our researchers are not to be lost irrevocably.

It is for this reason that ETH is searching for a possibility to optimise its backup and increase its reliability. Through Hirt Informatik AG, ETH Zurich discovered the ReadVerify Appliance (RVA) from Crossroads. RVA enables the proactive checking both of tapes and drives, which are used during backup. It thus becomes possible to detect any errors during backup at any early stage and correct them effectively. Dr. Tilo Steiger explained the reasons for purchasing RVA from Crossroads after a brief trial period: "We were primarily interested in checking our tape media and drives, logging errors and obtaining information about the utilisation level of our backup infrastructure. And it was important to us to obtain the relevant information before an error paralysed our entire backup system." The installation of RVA into the existing backup environment of ETH Zurich went perfectly and after just a couple of hours, the first soft errors in the T10000 drives of the SUN SL8500 library were visible. Moreover, thanks to the ReadVerify Appliance, the responsible administrators were able to make statements about performance early on and about the utilisation level of drives.

#### *Detecting problems or identifying solutions?*

##### *Everything is relative!*

ETH was looking for the ability to proactively detect errors in the backup system before a recovery effort was needed. As Einstein already knew: "Detecting the problem is more important than identifying the solution, because clear identification of the problem results in its solution." Thus RVA from Crossroads, by revealing problematic weak points of the tapes and drives of ETH Zurich, provides the responsible administrators with a tool that optimises backup and recovery.

In the broadest sense, this also involves the planning of the life cycle of the tape media. Dr. Tilo Steiger comments: "By gaining a precise insight into our tapes and drives, we are able to make our planning better, more reliable and longerterm, for example, which tapes have to be replaced and which can still go on being used." Unnecessary output for tape media can thus be avoided with RVA. It is already the case that the ReadVerify Appliance from Crossroads has become an indispensable tool for ETH Zurich, relativising time and costs during the entire backup and recovery process: time for troubleshooting can be reduced to a minimum, and the backup window can be exploited optimally; an exact insight into the status of the tapes and drives also contributes to faster and more reliable backup, and the life cycle of the tapes can be planned in an optimal way.

##### *So that it is no longer necessary to sit on the oven for hours ...*

In archive verification mode, RVA has an optional feature that is of great value. Periodic checking of tapes on which long-term data is saved can ensure highly reliable accessibility. A benefit for ETH Zurich that cannot be underestimated, for example, when research findings are to be stored long-term and are also to remain usable even for a long period of time. So at ETH Zurich, nobody has to "sit on a hot oven for hours," as far as long-term storage is concerned, to return to Albert Einstein, as quoted above.



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#### **ABOUT CROSSROADS**

Crossroads Systems, Inc. (NASDAQ: CRDS), is a global provider of solutions and services that ensure stored data is proactively protected and reliably recovered. Crossroads offers organizations powerful data protection, proactive data security, intelligent storage connectivity, unmatched performance, and significant cost savings. Founded in 1996 and headquartered in Austin, Texas, Crossroads holds more than 100 patents granted and pending and has been honored with numerous industry awards for innovation in data protection and storage. Visit [www.crossroads.com](http://www.crossroads.com).

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