ThinLinc®

TECHNICAL USE CASE
Creating solutions with ThinLinc!

CeBiTec
Center for Biotechnology
Bielefeld University

Linux Remote Desktop at Bielefeld University's CeBiTec

University - Biotechnological Research

Sun Ray Replacement
XFCE Desktop, Igel Thin Terminal,
Raspberry Pi, HPC, Research Desktop

PURPOSE

To provide server-based Linux Desktops to the CeBiTec users, including access to bioinformatics software tools and databases.

PRE-CONDITIONS

Users had Sun Ray terminals. The desktops were provided through Sun Ray technology. They started looking for alternatives when Sun Ray development ended.

RESULTS

The Sun Ray terminals were replaced with Igel. ThinLinc was implemented to provide the server-based XFCE Linux Desktops to the users. Users access mainly research applications through the ThinLinc solution.

OTHER DEVICES

LAN

INTERNET

CLIENT

ThinLinc®

1 Cluster
1 Master
5 Agents

ubuntu

Research Applications

SERVER
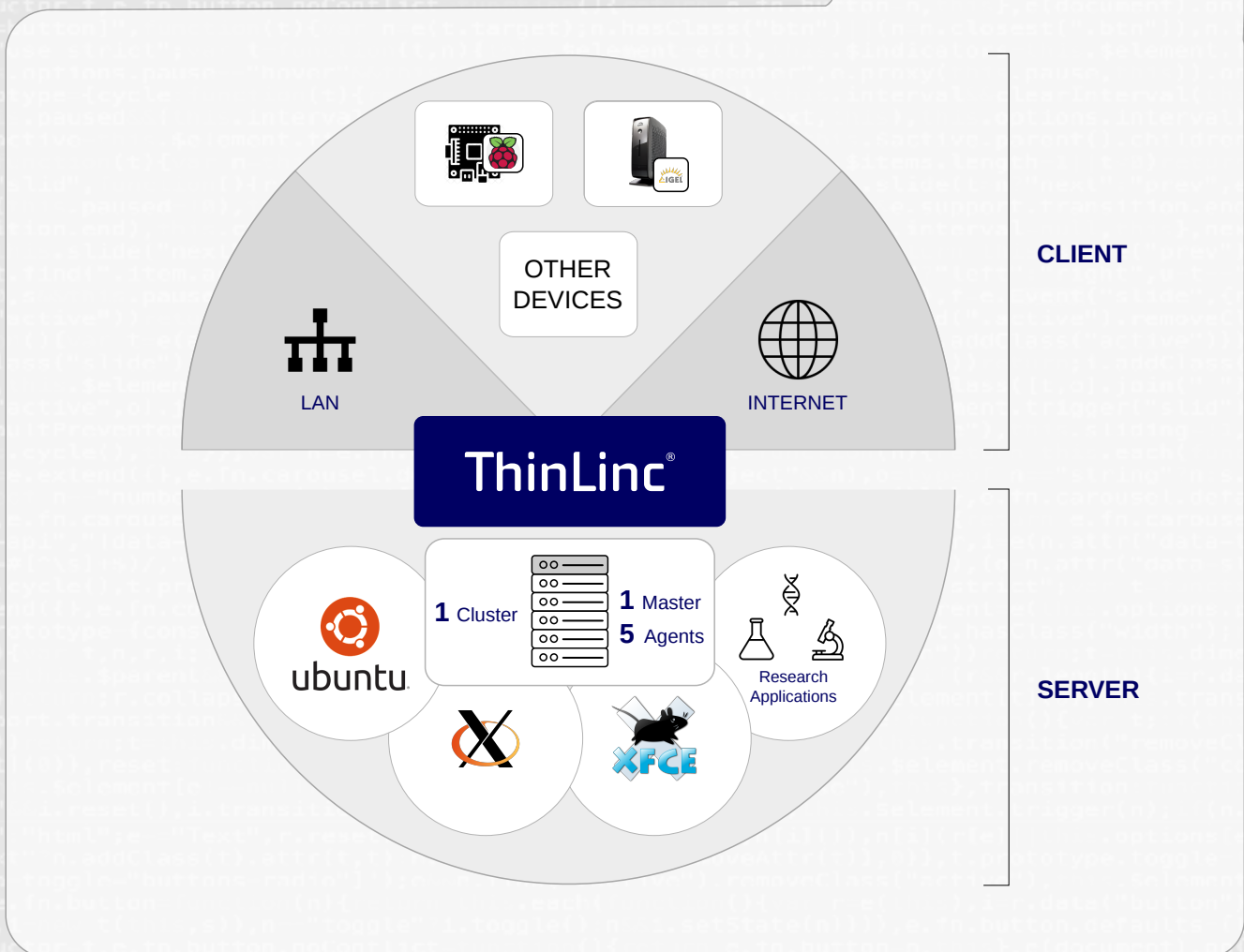
ADDITIONAL INFORMATION & OTHER POTENTIAL USES:

Organizations demanding a solution for the Sun Ray discontinuity may find ThinLinc as a potential replacement. Besides, ThinLinc may be used for providing Research Desktops to the users, making possible the use of applications running on HPC.

CASE DESCRIPTION / STORY

ThinLinc is integrated with the Linux Remote Desktop Solution used at Bielefeld University's Center for Biotechnology (CeBiTec)

In an ideal scenario, technological changes in the IT infrastructure of organizations would happen deliberately, through prior and intense planning, aiming to achieve better outcomes. However, in some cases changes may be initiated or accelerated due to external factors, such as discontinuation of a specific technology.
After the discontinuation of the Sun Ray technology was announced, Bielefeld University's CeBiTec support team began to search for alternatives. The goal was to continue offering a secure and fast remote desktop to its scientists. This alternative was finally found with ThinLinc, the remote desktop technology for Linux, developed by the Swedish company Cendio. ThinLinc even exceeded all expectations and proved to be the better solution in many aspects such as responsiveness and user-friendliness. It was adopted in combination with IGEL thin clients, and in addition to ThinLinc's known benefits like ease of configuration, security, and local experience, the existence of a large visible user base was a decisive factor in choosing it.

ThinLinc is used by most members of the CeBiTec to access the Linux XFCE Desktop, through which users are provided access to hundreds of software tools and libraries from the fields of bioinformatics, biology, statistics, and software development. This includes tools for sequencing data evaluation such as FastQC, SPAdes, SOAPDenovo, Abyss, and Canu for sequence assembly, Quast for assembly evaluation, Bowtie for read mapping, Glimmer, Prodigal and Augustus for gene prediction, NCBI Blast and HMMer for functional annotation, and R packages such as DESeq2 for gene expression analysis. For the general work routine, standard applications like LibreOffice, Firefox, Thunderbird, Inkscape, or Scribus are provided and for software development users can access programming languages and libraries like Python, Perl or Java, and IDEs such as Eclipse or Netbeans.

For CeBiTec users the most attractive feature is the ability to access their desktops and applications remotely via a native ThinLinc client, thus eliminating the need to transfer the sometimes large data sets they need for their work. For that purpose, a ThinLinc server cluster consisting of five agents and one master server running Ubuntu Linux has been set up as the basis for the CeBiTec's desktop infrastructure. Cendio's solution has been in use at the CeBiTec since 2013.

The Bielefeld University Center for Biotechnology's purpose is to bundle the biotechnological activities and research projects at the university, to foster cross-linking of research approaches and technologies from different research fields and to develop innovative projects within its two main research areas: Large Scale Genomics and Big Data Bioinformatics; and Metabolic Engineering of Unicellular Systems and Bioproduction. The University of Bielefeld was founded in 1969 and is located in the city of Bielefeld, northwest Germany.

Cendio was founded in 1992 by students from Linköping University in Sweden and is one of the oldest Linux-centric companies in the world. The company is headquartered in Linkoping at Mjärdevi Science Park. Cendio's vision is "That Linux should be available, easy to use and fulfill the everyday desktop computing needs of all users of all kinds. Cendio Should develop products and
services that work towards this future". The company develops and commercializes the ThinLinc solution, for which the vision is "Provide the best Linux Remote Desktop Server". ThinLinc is available for download in the following link https://www.cendio.com/thinlinc/download.

Cendio's and CeBiTec's team wrote this use case in collaboration.

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