Cendio® ThinLinc®

TECHNICAL USE CASE
Creating solutions with ThinLinc!

ThinLinc implemented to access Magnetic Resonance HPC in Denmark

Health Care - Research & Development
Magnetic Resonance

Ubuntu Server, Xfce desktop,
macOS and Windows device,
Matlab

PURPOSE

To provide access to Matlab and Linux
Remote Desktops at the HPC cluster.

PRE-CONDITIONS

Users had individual Linux workstations
which was complex to maintain.

RESULTS

ThinLinc was implemented to provide the
server-based Xfce Linux Desktop to the users.
The users access Matlab and the stored
images required for analysis in the HPC
cluster.

CLIENT

LAN

INTERNET

ThinLinc®

ubuntu

1 Cluster
2 Masters
3 Agents

MATLAB

XFCE
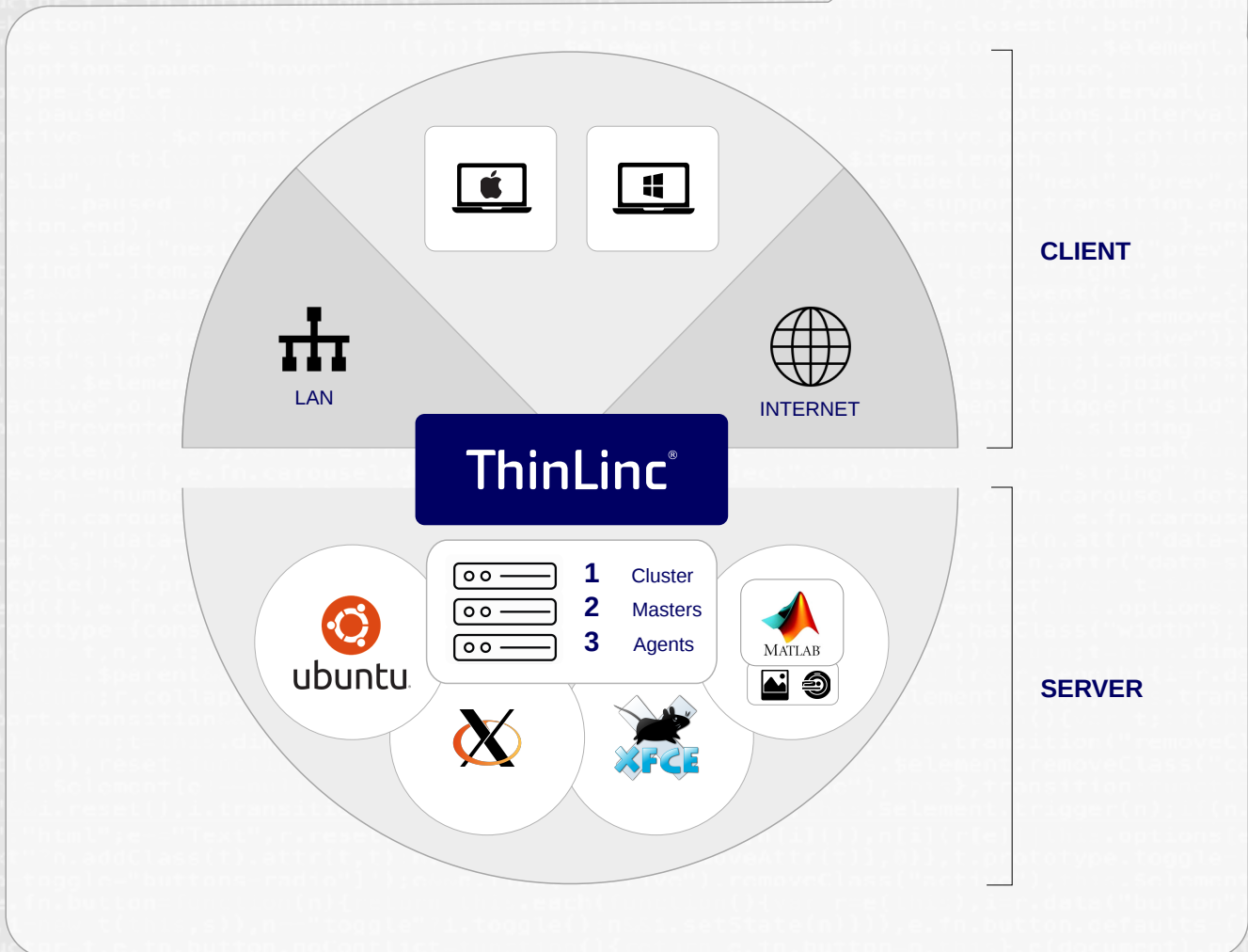
SERVER

ADDITIONAL INFORMATION & OTHER POTENTIAL USES:

Other health care organizations dealing with high-resolution patient images may implement ThinLinc as a
solution for server-based computing, allowing the secure storage and processing of information
in the HPC cluster.

CASE DESCRIPTION / STORY

ThinLinc implemented to access Magnetic Resonance HPC in Denmark

The healthcare industry is embedded in a moment of digital transformation. Within this context, data security and privacy are important aspects to be considered when implementing IT solutions, mainly due to the sensitivity of the patient data which the healthcare operators deal with. Magnetic resonance scanners are essential tools used to investigate the human body, generating high-resolution images that are further analyzed according to the intended investigation goals. ThinLinc, the Linux Remote Desktop Server developed by Cendio in Sweden, was the choice of the Danish Research Centre for Magnetic Resonance (DRCMR) to provide access to the HPC (high-performance computer) cluster used to perform processing of the data from the scanners.

Before the implementation of ThinLinc, the users had individual Linux workstations, which was complex to maintain. As a benefit, ThinLinc also provides a way to keep the scanned data secure, since it is stored on the server-side and only accessed by the clients. Beyond working in the local premises, ThinLinc is also able to allow the secure use of the systems for the researchers who decide to access it from home, or even from other locations around the globe.

The installation consists of a single cluster, with two masters and three agents. Other simple machine clusters are employed for special setups, such as a particular server with VirtualGL to run 3D applications. The server is running Ubuntu, while the desktop environment is Xfce. Matlab is the main application used by the researchers, via X11 forwarding. The clients are mixed, macOS laptops being the most typical clients; however, there are also some Windows ones. The ThinLinc Linux Remote Desktops are accessed through the native ThinLinc client. The ThinLinc Web Administration is used by the team mainly to monitor usage numbers.

"The Danish Research Centre for Magnetic Resonance is placed at Copenhagen University Hospital Hvidovre and is one of the leading research centers in Europe within the field of biomedical MRI (Magnetic Resonance Imaging). A highly profiled international research team translates the latest advances in MRI to examine the brain's function, metabolism, and structure." (http://www.drcmr.dk)

Cendio is one of the oldest Linux-centric companies in the world since it was founded in 1992 by students from Linköping University. ThinLinc, which is developed by the company, has been widely used in healthcare, research & development, education, financial, creative, and defense industries around the world. ThinLinc had also been the choice of several IT developers looking for solutions to provide reliable access to HPC clusters since it is recognized as easy to use, stable, and simple. Cendio aims, through ThinLinc, "To provide the best Linux Remote Desktop Server," making Linux available to any device and any location.

DANISH RESEARCH
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