Executive Summary

Industry
Education

Challenges

- Low-reliability infrastructure for remote teaching.
- Requirement for centralized deployment and remote maintenance.
- Support for desktop cloud project delivery and servicing in a complex environment.

Huawei Solution

- Provided end-to-end delivery of FusionCloud desktop cloud solution.
- Deployed a reliable backup solution.
- Constructed unified data centers and deployed 5,200 virtual desktops in 65 schools.

Customer Benefits

- Centralized deployment and remote O&M.
- Anywhere, anytime access.
- High resource utilization and low power consumption.

Introduction

Ethiopia has made education a key strategy to vitalize the country and invests 5% of its GDP annually in education. Additionally, the United Nations Development Program helped establish the SchoolNet project in Ethiopia to integrate national educational resources and help ensure the availability of education all over the country.

Challenges

Despite substantial improvements in urban areas, Ethiopia needed to extend more educational resources to rural areas. The country’s SchoolNet project had made some progress by establishing VSAT-based television broadcasts covering math, English, and physics. However, the rental cost in VSAT bandwidth was expensive, and the VSAT system only provided live programs. This limitation made it difficult for rural schools to schedule their courses or do more remote interactive teaching. In addition, the satellite signal was sensitive to weather conditions.

To make further progress, the SchoolNet project owners decided to deploy a desktop system for 65 schools. The deployment and maintenance had to be centralized and simple because the Ethiopia IT team was already stretched to the limit. The plan was to construct a desktop-cloud-based system featuring HD remote interactive teaching.

Unfortunately, the infrastructure in Ethiopia was not reliable enough to support a Video on Demand (VoD) teaching system that was sensitive to bandwidth variations. Requirements for the desktop cloud system therefore included the following:

- Excellent graphical transmission and processing capabilities: the VoD service must minimize network bandwidth usage without sacrificing the audio and video teaching experience.
- System reliability: the desktop cloud system must have a mature reliability mechanism to ensure satisfactory VoD service experience and enable centralized deployment.
- Implementation experience: the contractor implementing the system must be able to deliver the desktop cloud project despite the complexities of the infrastructure.

Huawei Solution

The Ministry of Education in Ethiopia chose Huawei’s FusionCloud desktop cloud solution. This solution helps meet the VoD quality requirements with an end-to-end reliability design. The solution’s automatic desktop link detection and re-connection features ensure reliable connections on Ethiopia’s network. More broadly, the mature fault detection and processing mechanism, health check tool, and backup solution help keep the system up and running.

To minimize bandwidth requirements, a special-purpose Huawei protocol uses intelligent image identification to avoid repeated image transmission. The system automatically selects...
the optimal compression algorithm to reduce bandwidth usage and ensure video fluency.

Huawei’s extensive experience in complex desktop cloud implementations and large-scale network deployment proved ideal for project delivery in Ethiopia.

**Customer Benefits**

Huawei’s FusionCloud desktop cloud solution has now been deployed to support 5,200 virtual desks in 65 schools. In addition to excellent audio and video service, the solution provides centralized service deployment and remote O&M on a unified cloud management platform. All data and applications are stored in data centers, and Virtual Machine (VM) applications can be configured and provisioned within 3 minutes.

The desktop cloud system supports flexible access on any terminal, at any place. The system also promotes remote multimedia teaching.

Only a Thin Client (TC), display, keyboard, and mouse are needed on a desk, for a total power consumption of about 70W. The solution is therefore environmentally friendly, and the cloud-based resource utilization is extremely high.