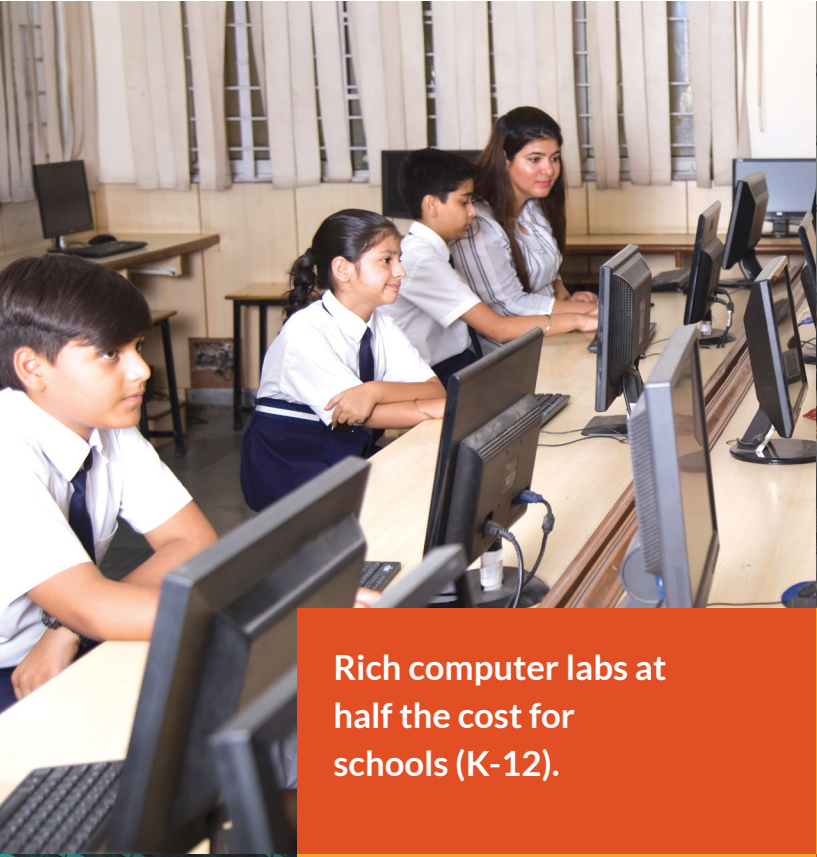




SmartTerminal

Enabling Cloud at the Edge

Innominds
Powering the Digital Next



Rich computer labs at half the cost for schools (K-12).



Secure zero network terminals for examination centers, manufacturing, call centers, banks and more.



16 times more monitors for digital signage!



Useful for digital skill learning, unique gaming experiences, and more.

About SmartTerminal

Typical computer systems support one user per computer – e.g., PC, laptop, tablet etc. are generally used by one user. Cost reduction is typically achieved using virtual desktop solutions. These are optimized for a cloud-based deployment. In some cases, a local LAN (Ethernet or Wi-Fi based) is used where the server and clients are located in the same premises.

SmartTerminal is a new type of desktop virtualization technology (patent pending) that is specifically optimised for an in-premise deployment. You are probably familiar with a KVM switch (Keyboard, Video, Mouse). KVM allows usage of a single monitor, keyboard, and mouse to operate multiple computers. SmartTerminal achieves the reverse – multiple users can access one system – each running a separate session consisting of video, audio, and interactivity.

SmartTerminal is a highly secure system that does not use any TCP/IP network for its operation. The key benefits of this system are - lower cost per user, reduced power consumption, centralized management, rich video and graphics capabilities.

Applications that require low-to-medium levels of performance are ideally suited for this system. The system is specially engineered to cater to video and smooth graphics performance – supporting applications at 60 FPS with class leading input and audio latency. Typical applications include web-based applications, all sorts of educational applications, kiosks, terminals at manufacturing facilities, digital signages and more.



SmartTerminal System

Figure 1 shows the SmartTerminal system integrated with a computer. The computer is used as a consolidation environment whose CPU, memory, graphics, storage, and network capacity are shared among the users of the system. The hub and the terminal are components specific to the SmartTerminal system. All other components – the computer, monitors, keyboard, mouse, audio headset are industry standard, off-the-shelf components.

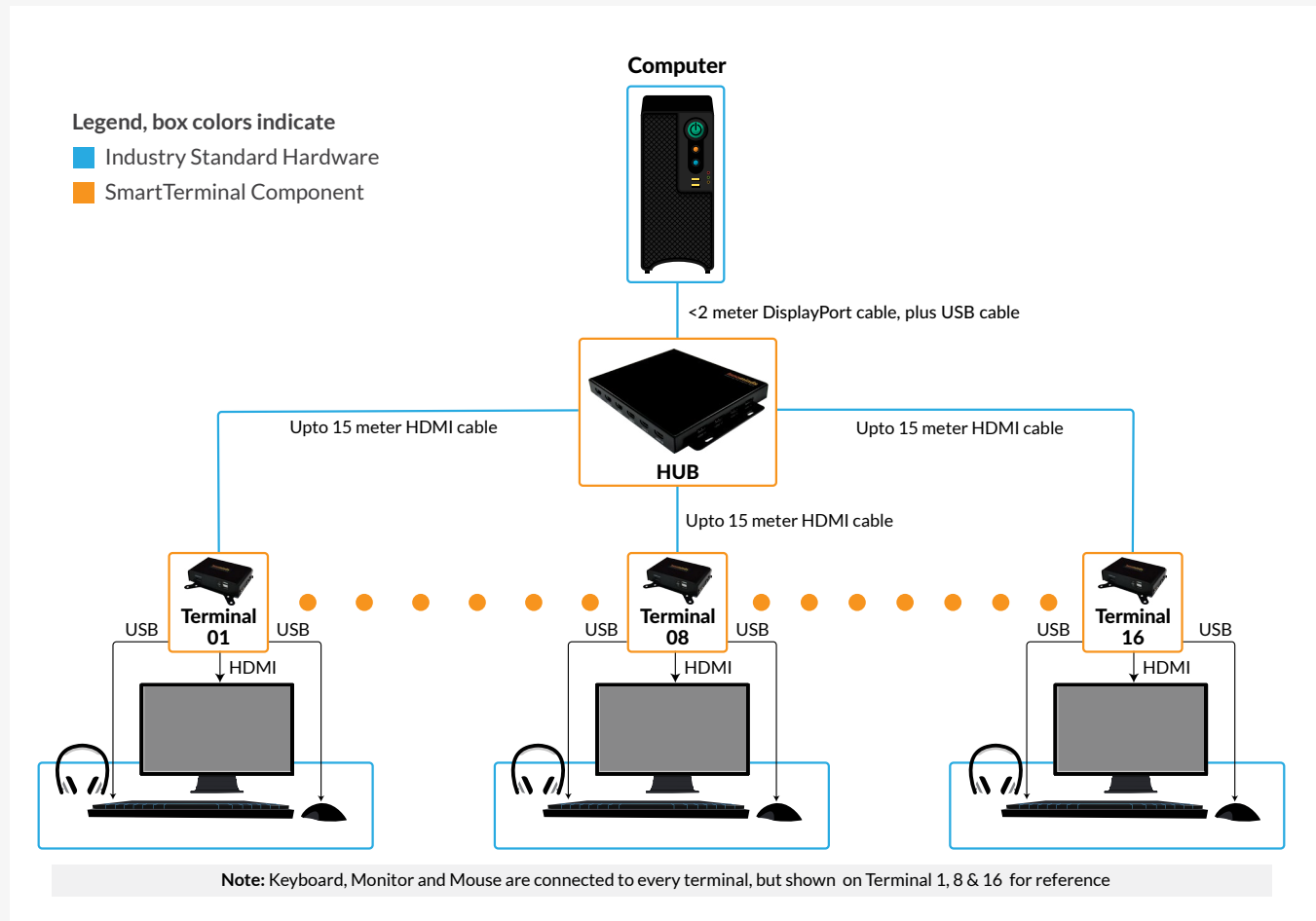


Figure 1 SmartTerminal system integrated with a computer

The hub connects to the computer. Multiple terminals (as many as 16) connect to the hub. Each user sits near the terminal and can interact with their individual session. If more users are required, multiple hubs may be connected to a single PC. Usage of a graphics card is recommended for a rich experience.

The system works on high-speed video interfaces. It doesn't use a standard TCP/IP network (e.g., Wi-Fi/Ethernet) for its operation. The hub and terminal components do not run an OS. They don't store any data either. The result is a highly secure system that is immune to network threats.

The system can cater to 16 or more users spread over a medium to large size room, running on just a single desktop. HDMI cables up to 15-meter length are supported, so a reasonably large computer lab can be supported.

For 16 users, our system consisting of the hub and terminals consumes less than 20 watts of power - similar to an LED tubelight. A single battery inverter may be used to provide the power backup for the entire classroom for a day's worth of usage.



From a software perspective, the operations of the hub and the terminals are co-ordinated by a couple of system services. As of this time, these services are available for Linux. These system services are low overhead in terms of CPU and GPU usage.

The system can run web applications, generic Linux applications (education, productivity, skill development, etc.) and Android applications. It can also run a mix of these configurations for maximum flexibility. User quotas for various system resources may be established using established Linux tools, including containers.

As multiple users share the system resources to their separate applications, it is a good idea to provision these resources appropriately keeping the usage in mind. Contact us for recommendations regarding system configuration.

This is an ideal solution for system integrators looking to gain an advantage in deploying various solutions at scale. Depending on the application you may make a choice between lots of users (16 users at 720p - suitable for education) or high resolution (8 users at 1080p).

Benefits



Cost Effective

- Reduce setup, operational and maintenance costs by 50%



Low Power Systems

- 50% or more power savings



GPU Powered Rich Experiences

- Enables rich user experience with 60 FPS interactive systems: interactive videos, computer graphics and much more



Ultra-Secure

- No network exposure
- System doesn't need a standard TCP/IP network for operation



Scalable and Reliable

- One server for 16 or more users
- Customize the computer configuration based on your needs
- Up to 5 years of maintenance for all components in the system



Centralized Maintenance

- Content, software, and system software all in one place. Apply system software updates at a single point



Product Specifications

Hub



Features

Description

Input Video	DisplayPort 1.4a @ upto 32 Gbps, HBR3
Power Adapter	12V/2A DC
USB	USB 2.0 Type B
Output Video	16 Ports, HDMI 1.4 connector
Terminals Supported	Upto 16 terminals

Terminal



Features

Description

Hub Connection	HDMI 1.4 connector, maximum cable length of 15 meter
Power	5V USB
Monitor Support	HDMI 1.4 connector
Maximum Resolution	1080p @ 60 Hz
USB	2x USB Type A for keyboard and mouse
Audio	3.5 mm audio socket

Number of Users Supported

16 Independent Users at 720p @ 60 Hz

8 Independent Users at 1080p @ 60Hz

Product Specifications (Cont...)

Special Features

Screen Mirroring

Tiling

Features

System Power Consumption	For 1 hub, 16 users @ 720p/60 Hz requires less than 20 watts
Security Level	Highest. No network exposure
Server Location	On-premises
Server, HDMI Cables and Power	Server, HDMI cable, and power
Independent	Display, keyboard, mouse, and headphones
Shared	Processor, RAM, OS, software, storage, network, and graphics
Application Compatibility	Linux, browser-based applications and Android™ applications
Ease of Usage	Single button power on/off for whole system

Minimum Computer Configuration*

Ryzen 5 5600 or equivalent

16 GB DDR4 RAM or higher

Graphics output @ 4k/60 Hz for 8 users

Graphics output @ 5k/60 Hz for 16 users

**Discrete graphics card such as NVIDIA Quadro T400 recommended for a rich experience.*

**Hub needs a DisplayPort input. If the computer does not have a DisplayPort input, then a converter needs to be used.*

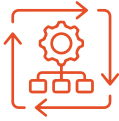
This is an ideal solution for

01



System integrators looking to deploy cost effective solution for K-12 education, and skill development centres

02



EdTech startups looking to solve grassroots challenges in education for India and beyond

03



Deploying online examination centres with 32 or more seats

04



Digital signage, and interactive digital signage systems

05



High security user terminals



**Please scan and fill the form.
We will be happy to get in touch!**

About Innominds

Innominds is an AI-first, platform-led digital transformation and full cycle product engineering services company headquartered in San Jose, CA. Innominds powers the Digital Next initiatives of global enterprises, software product companies, OEMs and ODMs with integrated expertise in devices and embedded engineering, software apps and product engineering, analytics and data engineering, quality engineering, cloud and DevOps, and security. It works with ISVs to build next-generation products, SaaSify, transform total experience, and add cognitive analytics to applications.