



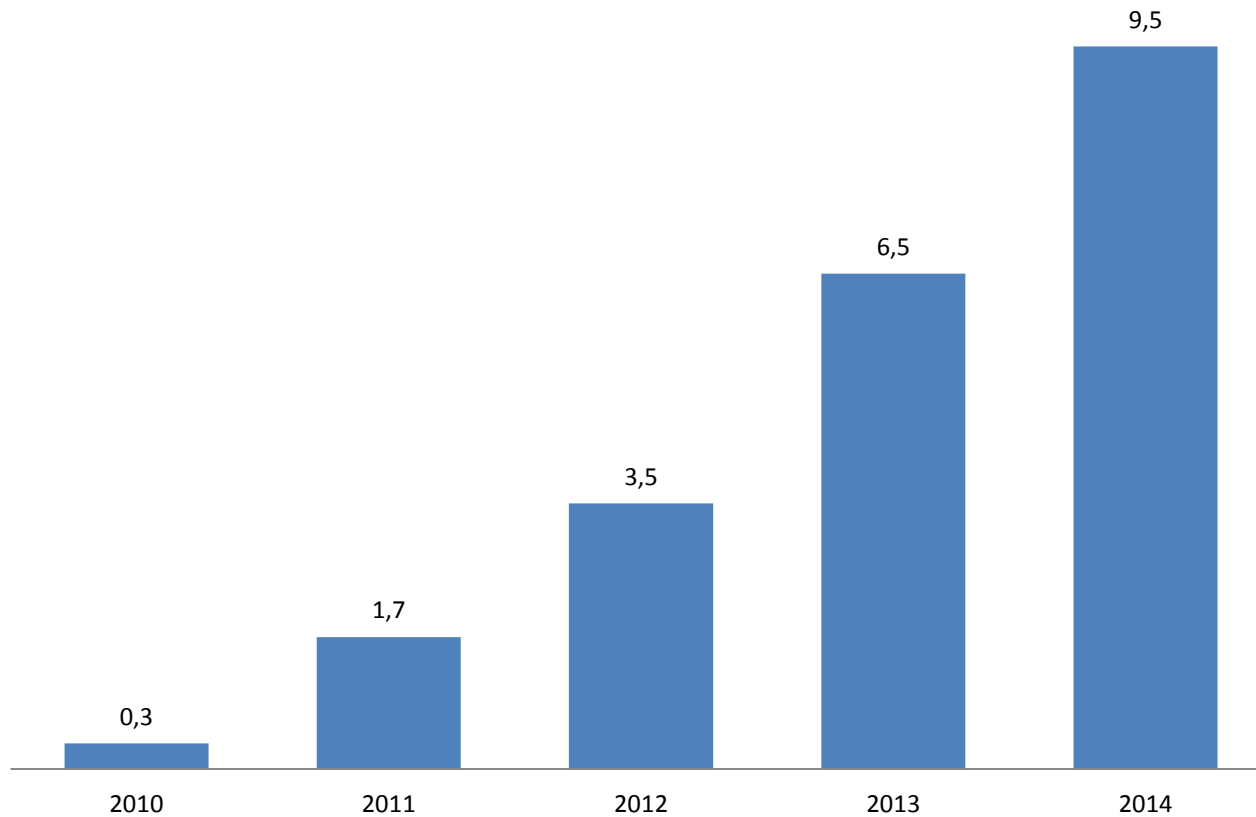
Samsung Cloud Display

*Maris Mihailovs
B2B display product manager
Samsung Electronics Baltics*

Virtual Desktop Infrastructure VDI H/W Endpoint Market

Growing very fast , Potential is tremendous

9.5M units market by 2014

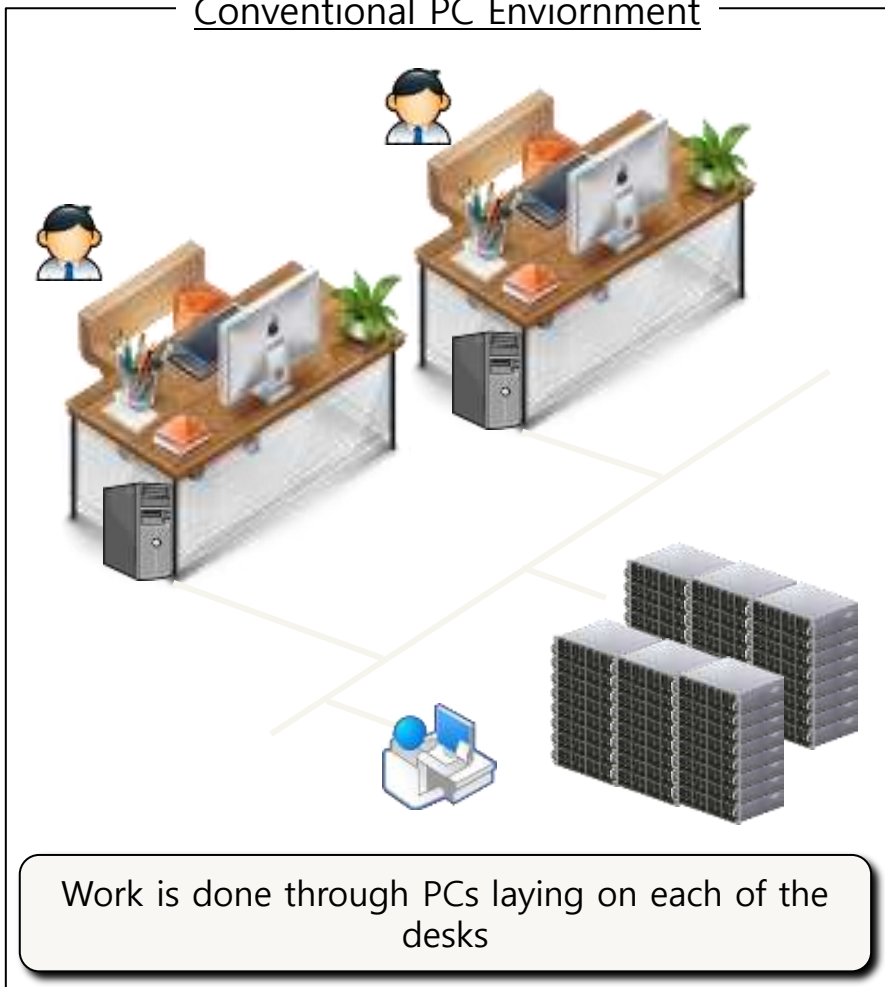


* *"Forecast: Hosted Virtual Desktops"*, Gartner, Dec 2010

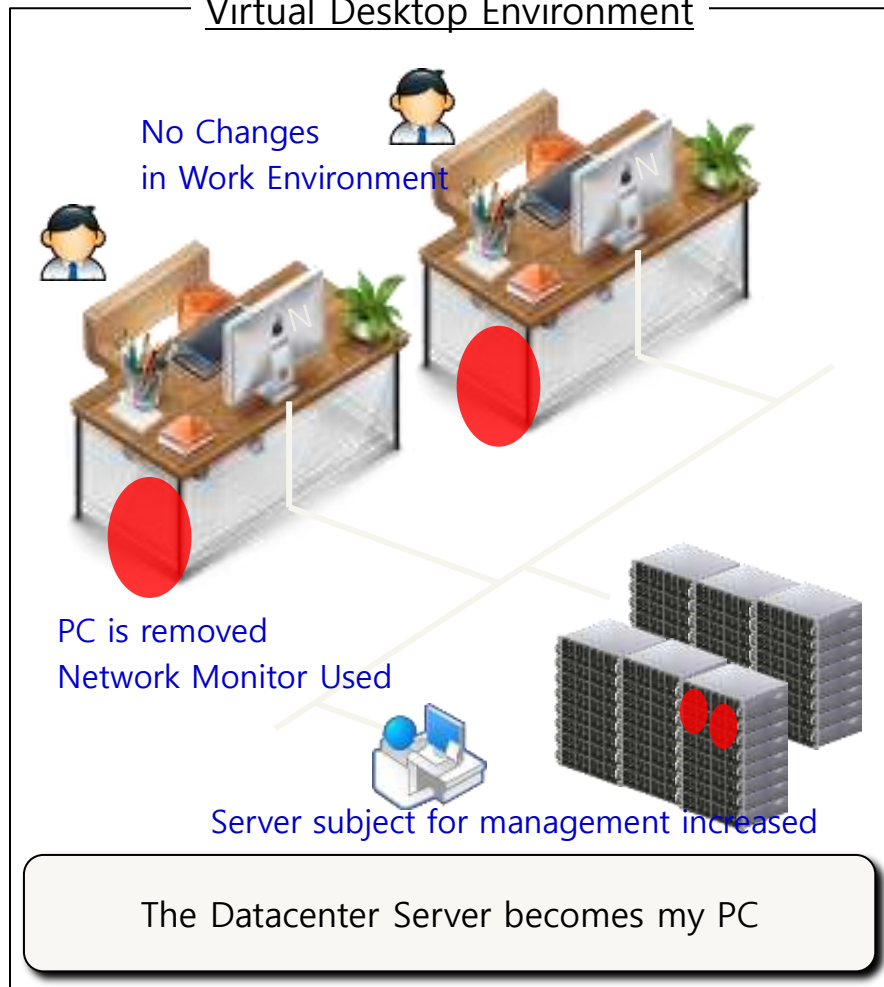
Understanding Desktop Virtualization & Benefits

- Virtual Desktop Infrastructure (VDI), or desktop virtualization, uses the data center server as my PC
- Thus, PCs on desks disappear and only monitors remain without any noticeable difference from previous work environment

Conventional PC Environment



Virtual Desktop Environment



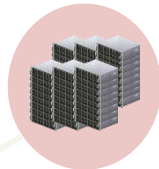
Impact on Daily Office Work > New Employee Joins

- The very basic of preparing a new employee's work environment is providing a desktop environment
- Desktop Virtualization simplifies and minimizes the entire process of setting up a new desktop environment

Conventional PC Environment



➔ New Employee joins



We need to:

- ➔ Order a new Monitor & PC

-

The process takes about a week on average



- ➔ Install the Monitor, PC
- ➔ Install necessary S/W

We also need to:

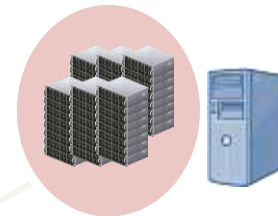
- ➔ Register the PC
- ➔ Conduct an audit of Serial Numbers for inventory

"Excuse me, can I check the S/N?"

Virtual Desktop Environment



➔ New Employee joins



We need to:

- ➔ Order a new PCoIP Monitor - Takes 1~2 days.
- ➔ Install the monitor
- ➔ Create a virtual machine for the new employee with all necessary office S/W included.
- ➔ No requirement for further PC tests
- ➔ Basic work environment ready in 3hrs.

Impact on Daily Office Work > PC Error

- Visiting the site is often required with regard to PC errors; and, it can take quite some time to resolve the problem
- With Desktop Virtualization, the IT dept can take immediate measures to resolve issues providing work continuity

Conventional PC Environment



- ⇒ PC seems wrong.
Can't run anything.

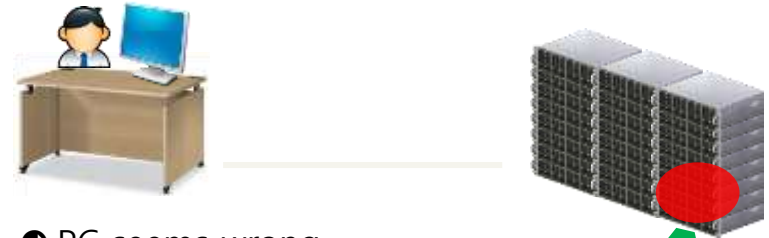


- ⇒ We're on our way.
- ⇒ You need to replace your PC memory.
- ⇒ Use this temporary PC.

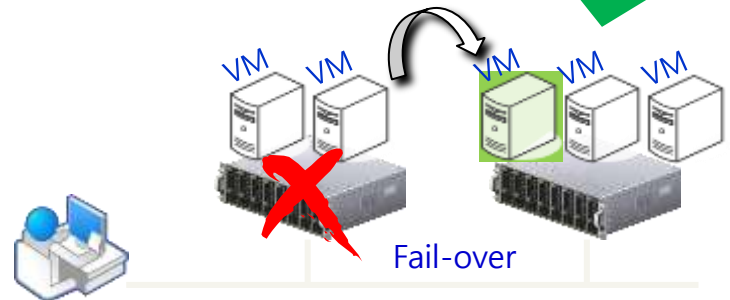


- ⇒ Set-up temporary PC environment.
- ⇒ PC Memory will be replaced (after a week).

Virtual Desktop Environment



- ⇒ PC seems wrong.
Can't execute anything.



- ⇒ Try connecting again.
Virtual Desktop automatically created on another server
- ⇒ We'll have it recovered right away on another server.
Try connecting in 10 minutes.

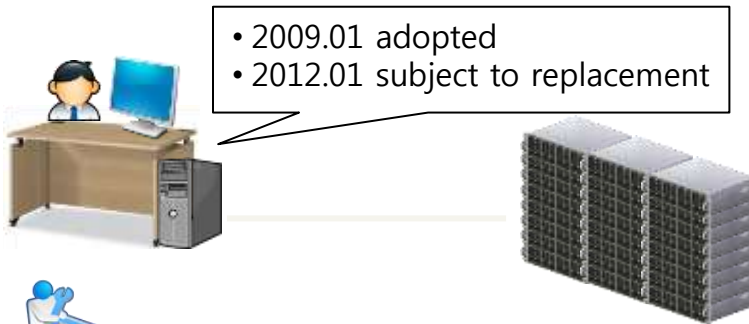
Difference in Daily Office Work > PC Performance Decline

- As users' work load increases, request for better performance PCs can be made but will have to wait until replacement season
- Desktop Virtualization can quickly cope by allocating the resources of CPU, memory, and disks

Conventional PC Environment

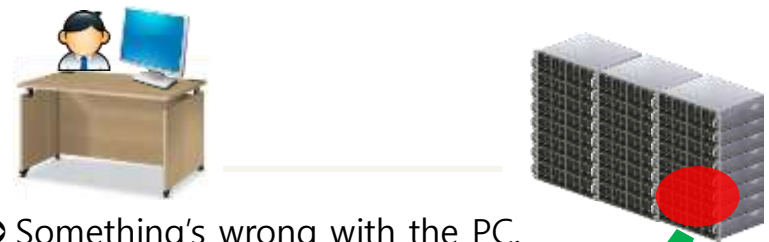


- ➔ Something's wrong with the PC.
It's too slow to get work done in time.

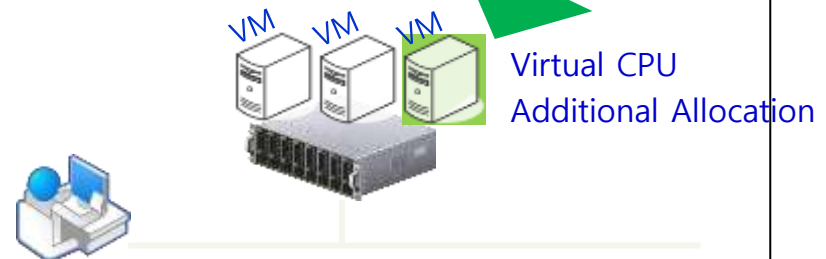


- ➔ Lacking CPU power.
But, can't get replacement until 2012.
- ➔ Have to request urgent replacement through special authorization.

Virtual Desktop Environment



- ➔ Something's wrong with the PC.
It's too slow to get work done in time.

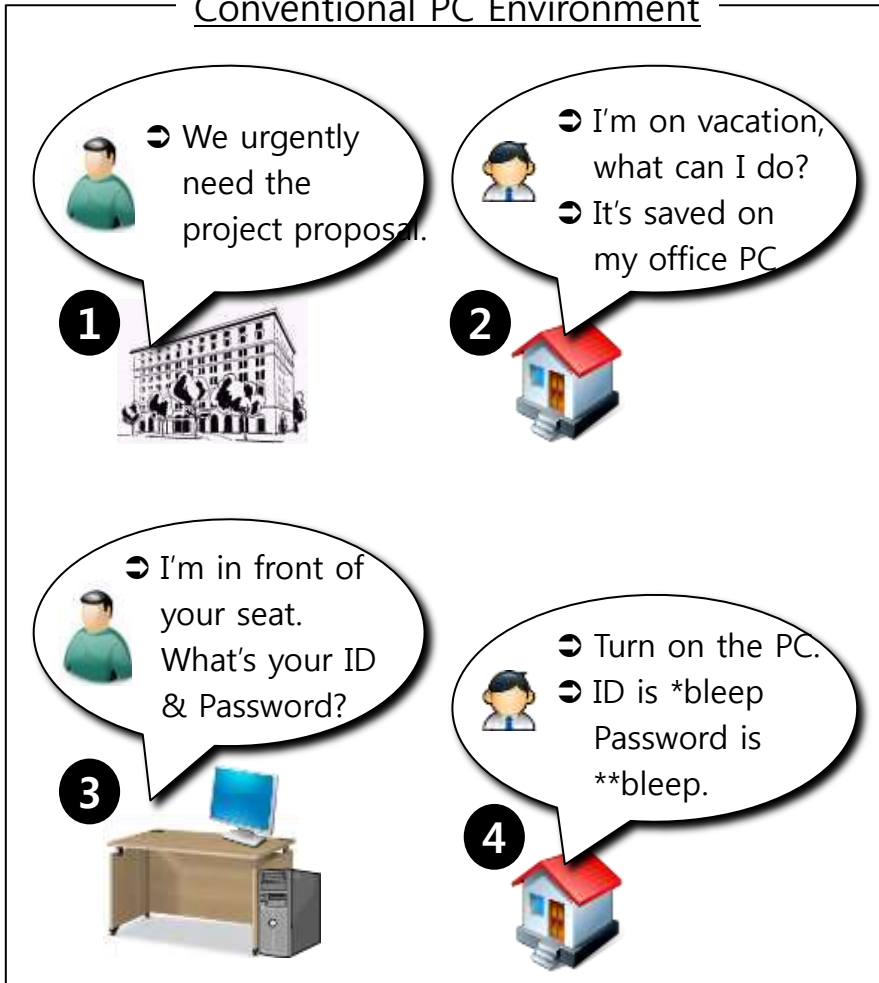


- ➔ Will take measure to allocate more server resource.
Please wait while restarting Windows.

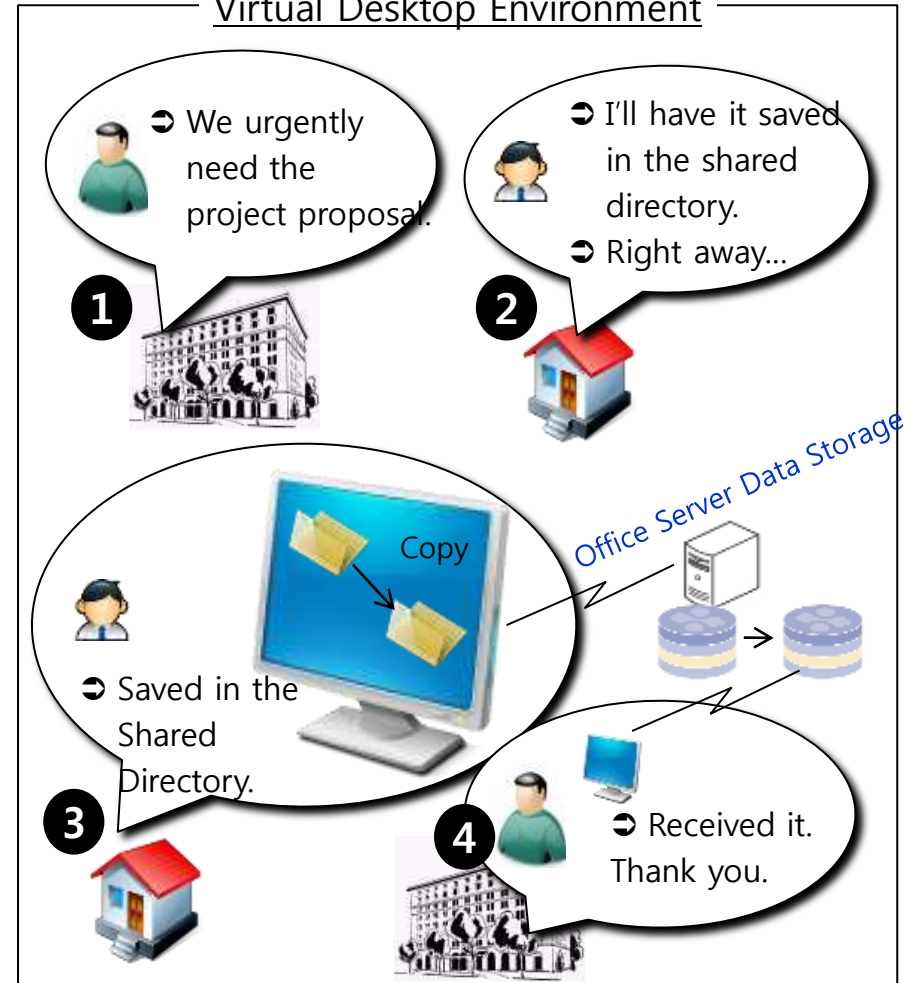
Impact on Daily Office Work > Working From Out of Office

- Difficulties accessing data stored on office pc while working remotely
- With desktop virtualization, it is possible to access, copy, and transfer data remotely

Conventional PC Environment

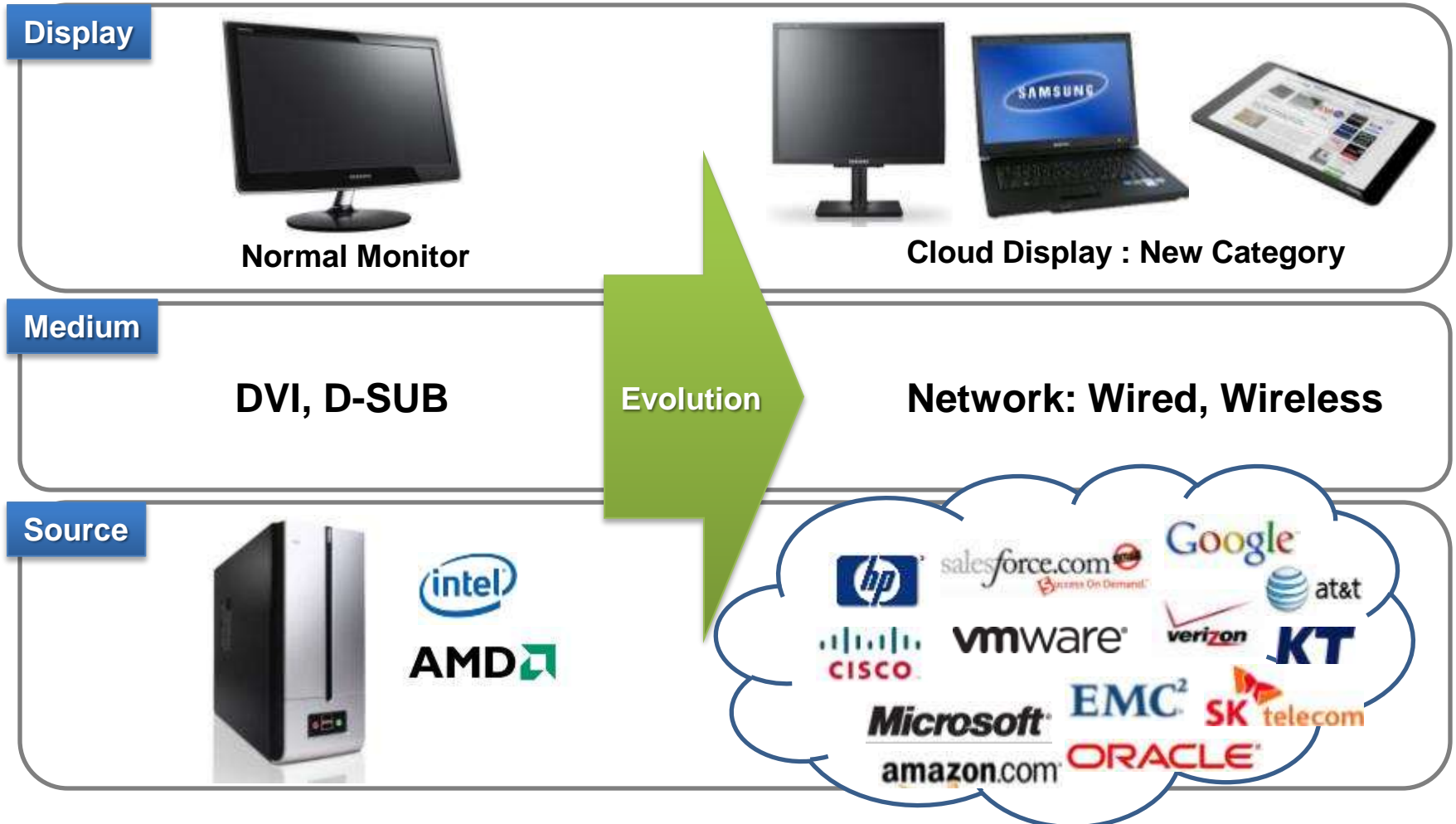


Virtual Desktop Environment



Clouding Computing & Display – New Trend

- Display Source: Local CPU → Cloud Computer
- Cloud Computing Display: New emerging category aligned with Computing paradigm shifting



Overcome Challenge & Improved Workspace

More energy savings & Better management – Real Case (IBK)

Challenge

Low power required



Simple Desktop environment

Integrated “All-in-One” type preferred



X
No cabling



Easy Install/Maintenance/Mgmt

Just SIMPLE “All-in-One” type preferred

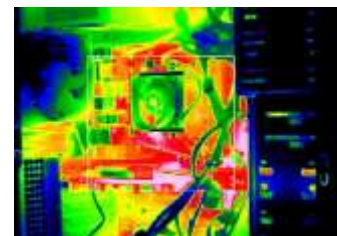


Benefit

67% Energy Savings & Better Space

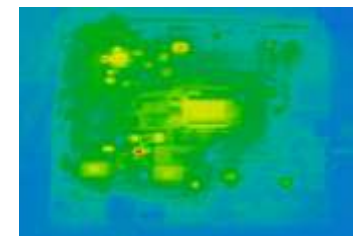
- Reduced heat, noise, and energy Better & Spacious Working Environment
- Easy installation & management

Before

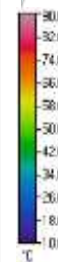


< Normal PC >

After: Simply Better!



< Samsung Cloud Display >



SAMSUNG Cloud Display

More line-ups coming out FY11



PCoIP NC190/240



[System]

- PCoIP Processor : Teradici
- **NO OS, CPU**
- HD Audio : ALC883

[Connectivity]

- VGA in (for PC monitor)
- VGA out (for Dual Video)
- Additional DVI out (24", for triple Video)
- Gigabit Switching Hub
- Headphone out port
- Microphone & Line in port
- USB1.1X4 (2XRear, 2XSide)

VMware View4 Certified

Thin Client TC190/240
















- CPU : AMD 210U (1.5G Hz)
- OS : WES / Linux
- Extra video memory(64MB)
- DDR2 1G/2G
- Flash 1G/2G/4G/8G

[Connectivity]

- VGA in (for PC monitor)
- VGA out (for Dual Video)
- Headphone out port
- Microphone & Line in port
- USB2.0 * 4 (2XRear, 2XSide)
- Gigabit Ethernet

**VMware View4 &
Citrix HDX Certified**

Samsung pursuing Cloud Display Ecosystem

| | Phase 1 | Phase 2 | |
|------------------|---|---|---|
| Network |  #1 Network Market [In Progress] |  New  DMR | Dell relationship: With Dell S&P Dell S&P acting as Direct Marketing Reseller |
| Server HW | |   | |
| Storage server |  #1 Market Leader [In Progress: EMC Select] |  NetApp | |
| Server SW |  #1 Market Leader (MS 80%) [Completed via TAP] | New   | |
| Terminal |  #1 HW high-tech | | |
| Chip/Tech vendor |  PCoIP Inventor |  | |

Classification – Samsung Cloud Display

Nomenclature of Samsung Cloud Display can be confusing at a first glance.

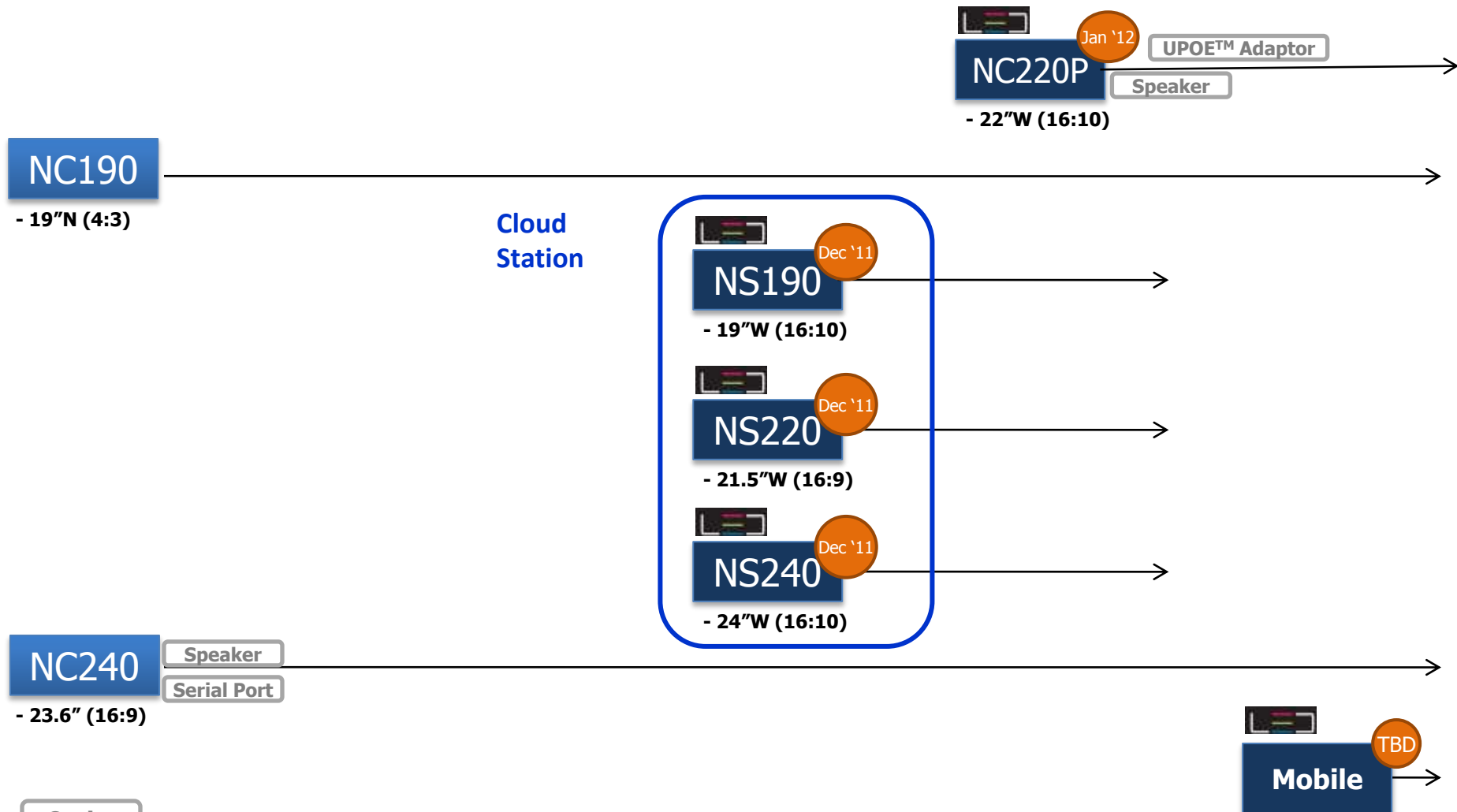
| | | Thin Client | Zero Client | |
|-------------|---------------|--|---|---------------------------------|
| | | WES* / Linux (X86 Chipset – CPU, RAM) | Citrix Zero (X86 Chipset – CPU, RAM) | PCoIP (TERA1100 – PCoIP SoC) |
| Form Factor | All-in-One | TC | TC | NC |
| | Cloud Station | TS | TS | NS |
| | Cloud Stand | ???(TBD) | ???(TBD) | ???(TBD) |

* WES: Windows Embedded Standard

Roadmap – PCoIP (NC, NS)

2010 (CCFL)

2011 (LED)



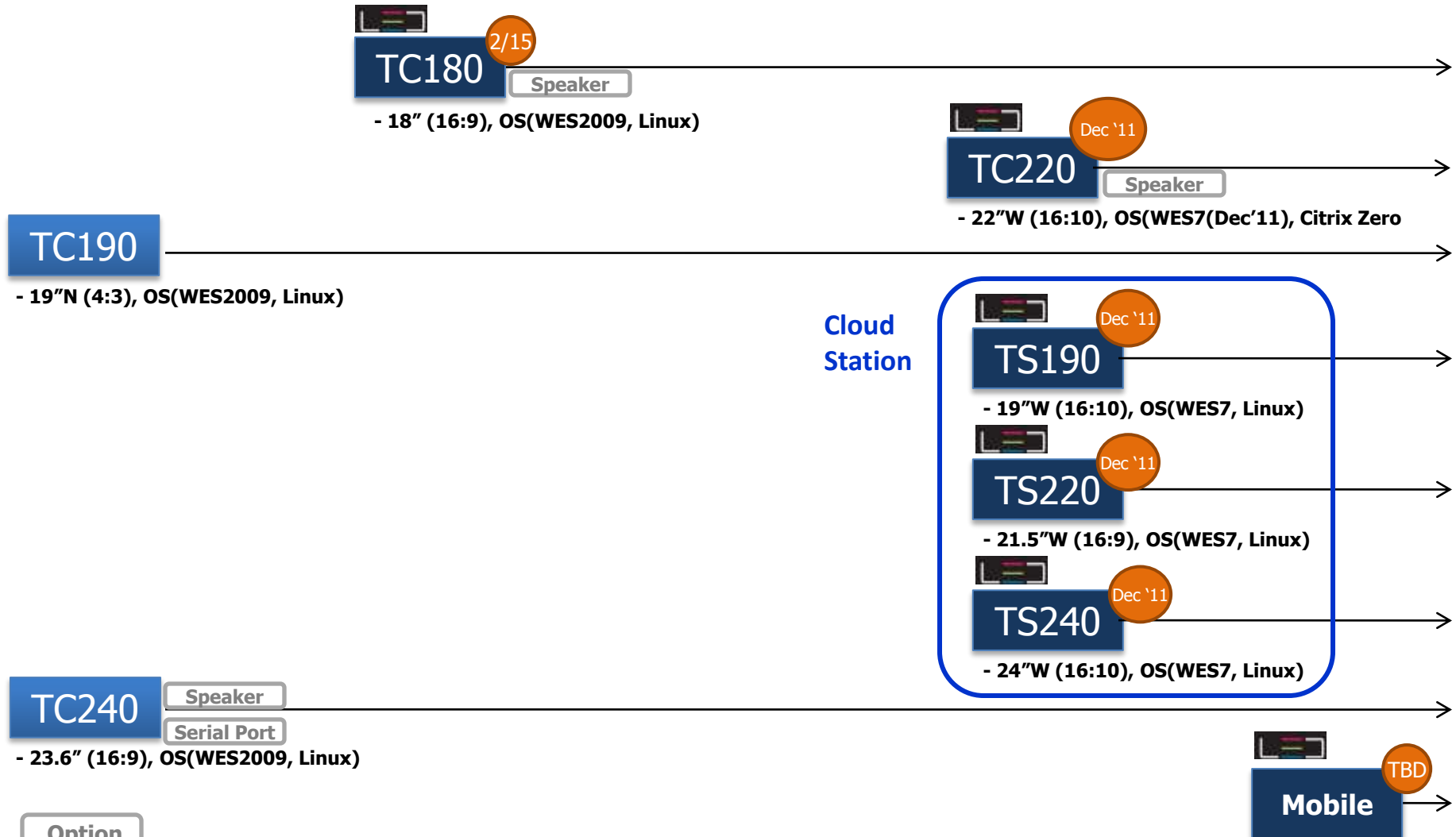
Option

[Schedule : Mass Production]

Roadmap – Thin Client (TC, TS)

2010 (CCFL)

2011 (LED)



[Schedule : Mass Production]

NC220P



- Full HD, LED Slim Design
- **World First POE Monitor** ※ POE : Power Over Ethernet
- Clean Desk
- Energy Saving

| | 19" CCFL | 23.6" CCFL | 22" LED |
|-------------|----------|------------|---------|
| PCoIP | 37W | 67W | 38W |
| Thin Client | 45W | 65W | 36W |

| | |
|------------|---|
| Brightness | 250cd/m ² |
| Resolution | 1680 x 1050 (16:10) |
| Feature | - PCoIP Processor : Tera1100 - Memory : XDR 128MB - POE by External Adaptor |

TC220



- Full HD, LED Slim Design
- Citrix Full Certification and VMware ready
- Clean Desk
- Energy Saving

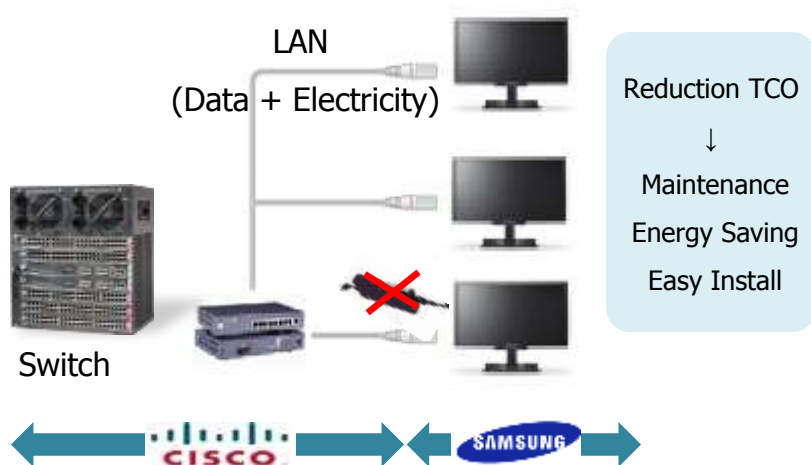
| | |
|------------|---|
| Brightness | 250 cd/m ² |
| Resolution | 1680 x 1050 (16:10) |
| Feature | - CPU : AMD Ontario 1.2GHz Dual - Memory /Flash . DDR3 2GB/4GB (WES7) . DDR3 1GB/4GB (Citrix Zero) |

Special Feature: PoE PCoIP Option (NC220P)

□ World First UPOE™ Virtual Desktop Monitor

Samsung PoE Monitor

- PoE concept diagram



- 22" Network Monitor

. External POE Adaptor
(Max 51W, PCoIP)

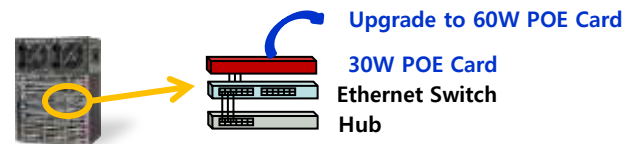


Market Trend

[Market Environment]

- # UPOE (60W) seats in 2012 : 13M Ports (expected)
- CISCO will drive 60W PoE market
→ Maintain leadership in the gigabyte switch market

Power Sourcing Equipment



- Eco-friendly energy management system is required due to increasing green regulation.

[End-Customer Needs]

- Energy Saving by UPOE (\$30 /seat/year)
- No Power Cabling
- Simple Office

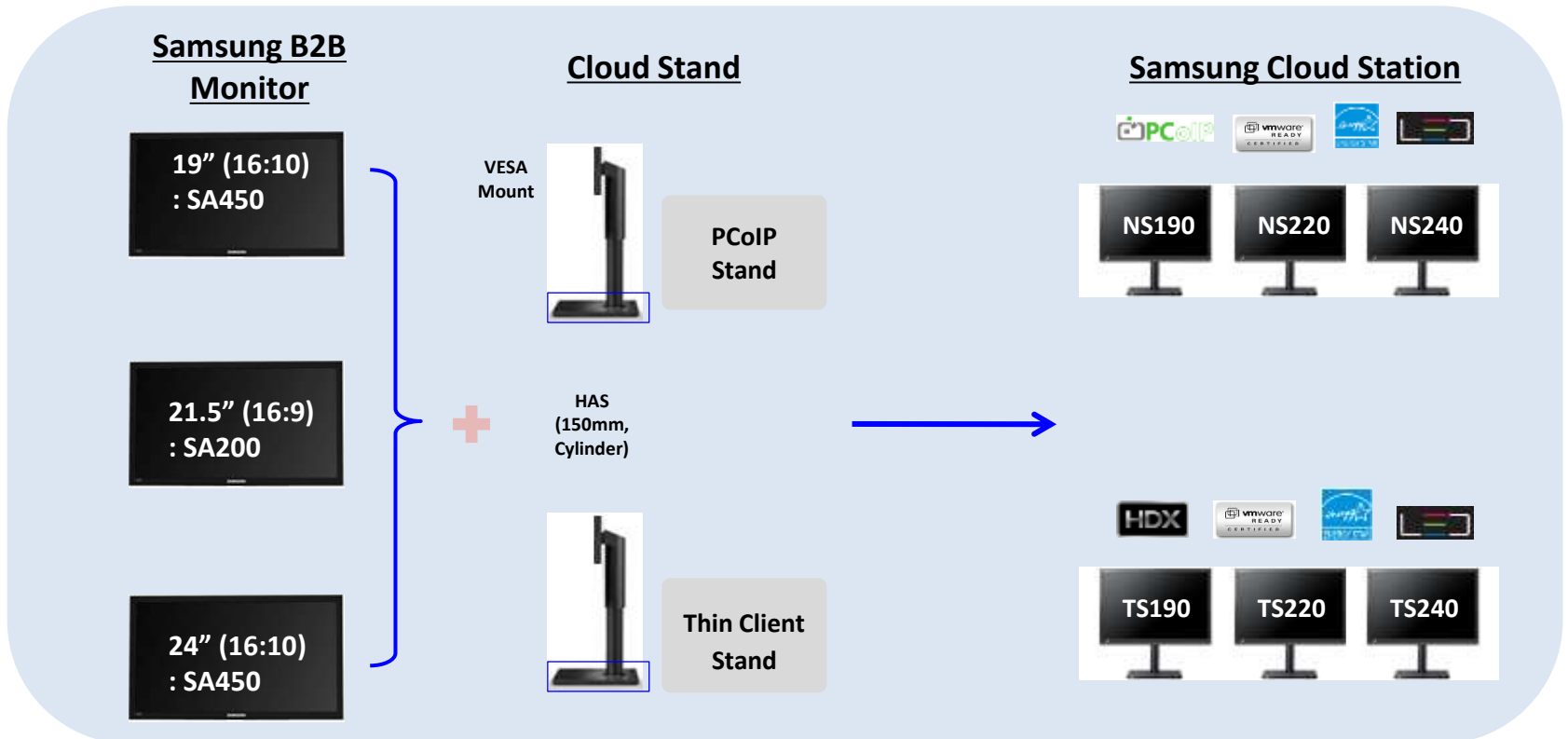
Special Feature : Various Screen Size

Customer VOC

✓ *Customers are no longer limited to a screen size when buying our integrated solution*

Cloud Station provides various screen size options

✳ Standard Line Up : 19",21.5",24"



Broad Portfolio of Quality Endpoint Devices

Samsung is the only partner that...

- ✓ provides an extensive portfolio of high-quality endpoint devices
- ✓ covers world-wide reach with its broad supply chain and service network.



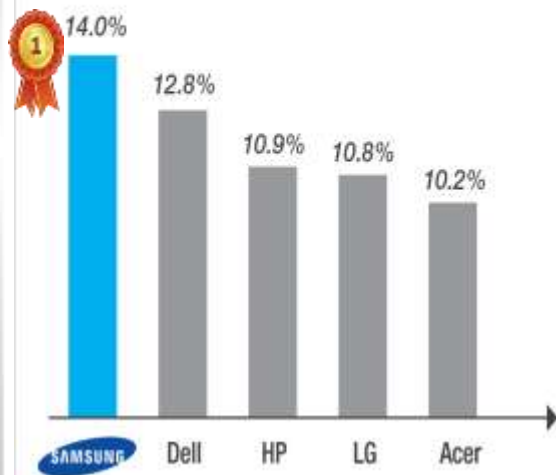
Result – Samsung as the Market Leader

Credential: Samsung as an Expert in Display

Global Monitor MS No.1

- Samsung has been **NO.1 Player in Monitor Industry for 4 years**
- Excellent technology and brand reputation support Samsung's honor

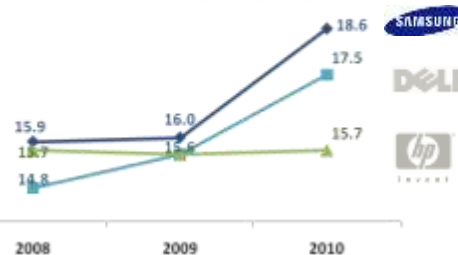
WW Monitor Market Share(2010.3Q)



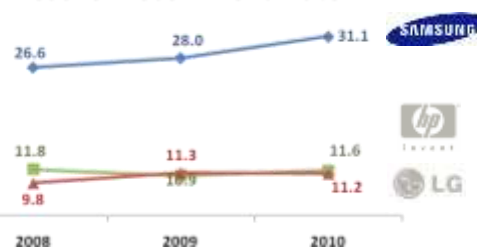
Most Preferred & Most Recommended Monitor

- Samsung maintains **the 1st place in 'ITDM Purchase Intention' & 'Reseller Recommendation Rate'** for 3 years in a row

ITDM Purchase Intention



Reseller Recommendation Rate



Specialized Display Brand

- Samsung can **integrate all the display technology** from panel, chipset to computer monitor and TV
→ Provide the best product to meet customer needs by **synergy effect**
- Samsung has diverse product portfolio in display area : TV, LFD, Monitor, etc



Why Samsung Cloud Display

Product Installation/Design Customized for Your Environment

- ✓ HAS (Height Adjustable Stand): **Ergonomic design** for office staffs working long hours
- ✓ Pivot/Swivel/Tilt: **Convenient monitor angle adjustment fit** to contents/ usage situation
- ✓ Wall Mount: **Easy and simple installation** customized for your environment

Using as a General Stand Monitor

- Customize monitor height at user's eye level
- Improve height range up to 130mm (Normal HAS height 60~100mm)



Swivel/Tilt/Auto Pivot

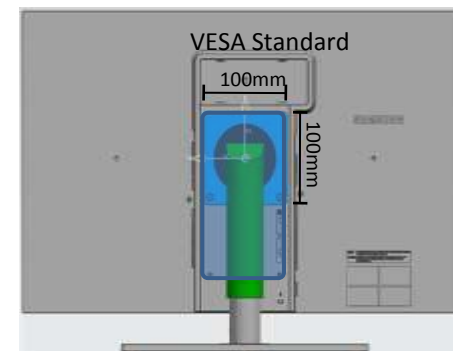
- Freely control monitor position/direction at your convenience



Standard VESA Wall Mount

- VESA external mounting
 - 100mm x 100mm: Standard 4-hole pattern

Dimension (Example)



Standard to Excellence

The Samsung Standard: 164 QA tests, 52 Safety tests

- ❑ Qualified by high temperature conditions of **60°C operational**;
- ❑ Qualified by low temperature conditions of **-30°C operational**;
- ❑ The Samsung EMI Standard is **more strict than global standard (FCC & CISPRO)**;
- ❑ Samsung's anti-dust standard requires a test in the harsh **10~30 μm** dust injection environment;
- ❑ Samsung display must be passed by 4 steps of **25~100 cm drop tests**;

