KVM over IP
The Next Generation in Consoling

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Resource Limited Environments

Key concerns:
- complex data center environments
- increasing power & cooling
- limited resources

rack & power infrastructure challenges

- more servers
  - power requirements in the data center increasing due to increased server loads
- faster processors
  - additional cooling required to handle increased heat loads
- 24x7 availability
  - numerous remote sites
  - geographically dispersed WANs
  - around the clock monitoring, access, and management

rack and power infrastructure challenges

- heterogeneous systems
  - mix of legacy and new systems
  - mix of operating systems and device brands
- decreased staffing
  - customers have fewer resources to deploy and manage data centers

impact of a weak rack & power infrastructure

- inability to scale up or achieve higher densities
- poor power distribution infrastructure
  - cannot support desired loads
- thermal issues
  - impediments to airflow
- system downtime risks
- weak consoling implementation
  - cable management issues
  - embed and make connection access difficult
- makes deployment difficult and time consuming
- third party hardware incompatibility
  - from utilizing untested, incompatible cabinet platforms
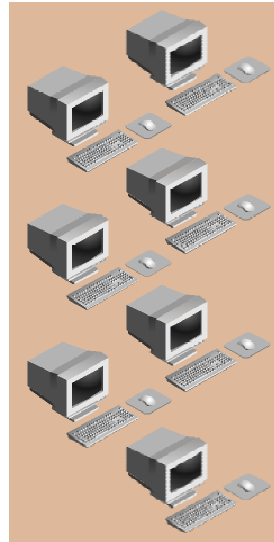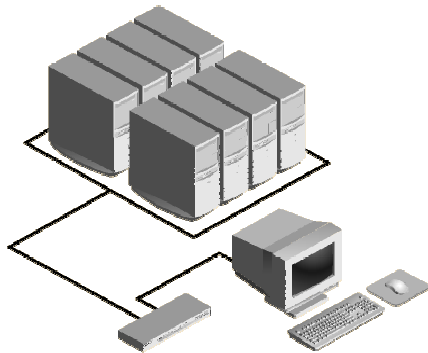
hp kvm or console switch

- analog

- kvm over IP

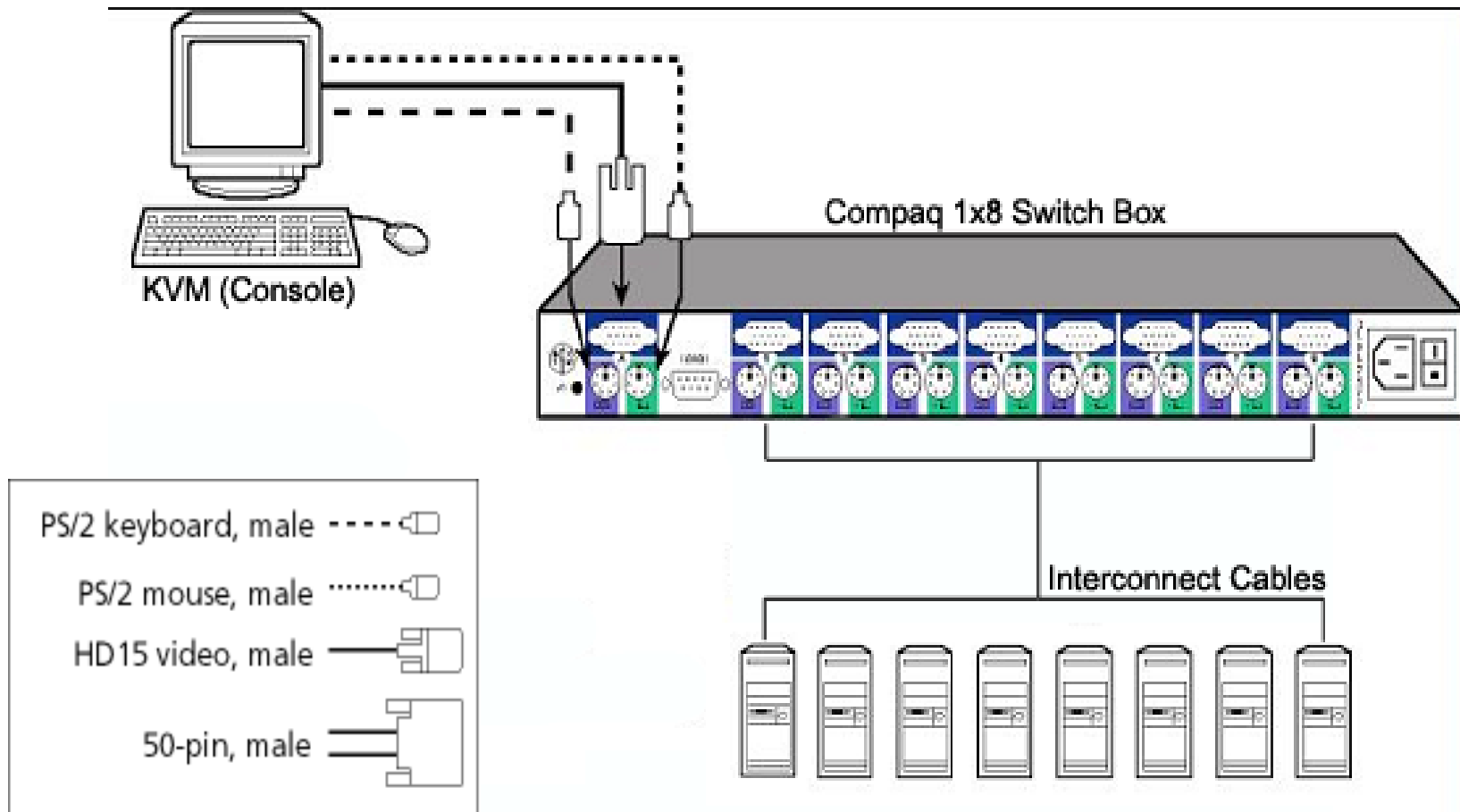# Before The Console Switch

Analog KVM product

provides KVM control of multiple computers without interfering with the network backbone

- available in several models

    1x8, 2x8, 1x4, 1x2

- On-screen display in 7 languages

    English, French, Italian, German, Spanish, Dutch and Japanese

Sample Configurations

- *Typical 1x8 Rack Installation*

KVM (Console)

Compaq 1x8 Switch Box

PS/2 keyboard, male - - - -
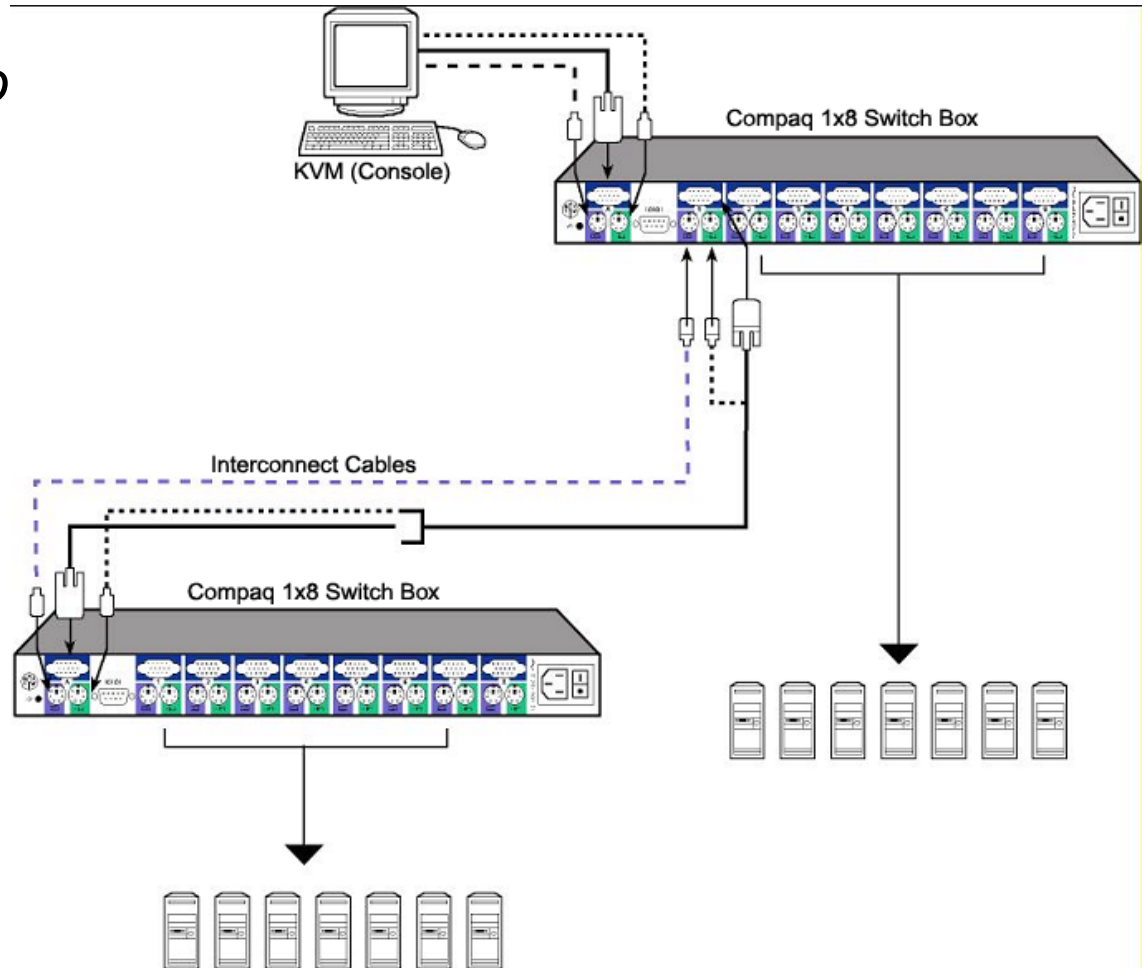PS/2 mouse, male ·······
HD15 video, male
50-pin, male

Interconnect Cables

Sample Configurations

- *Tiered 1x8 Configuratio*

  - Example Pictured:
  - up to 15 servers

  - Maximum of:
  - 64 Servers

KVM (Console)

Compaq 1x8 Switch Box

Interconnect Cables

Compaq 1x8 Switch Box
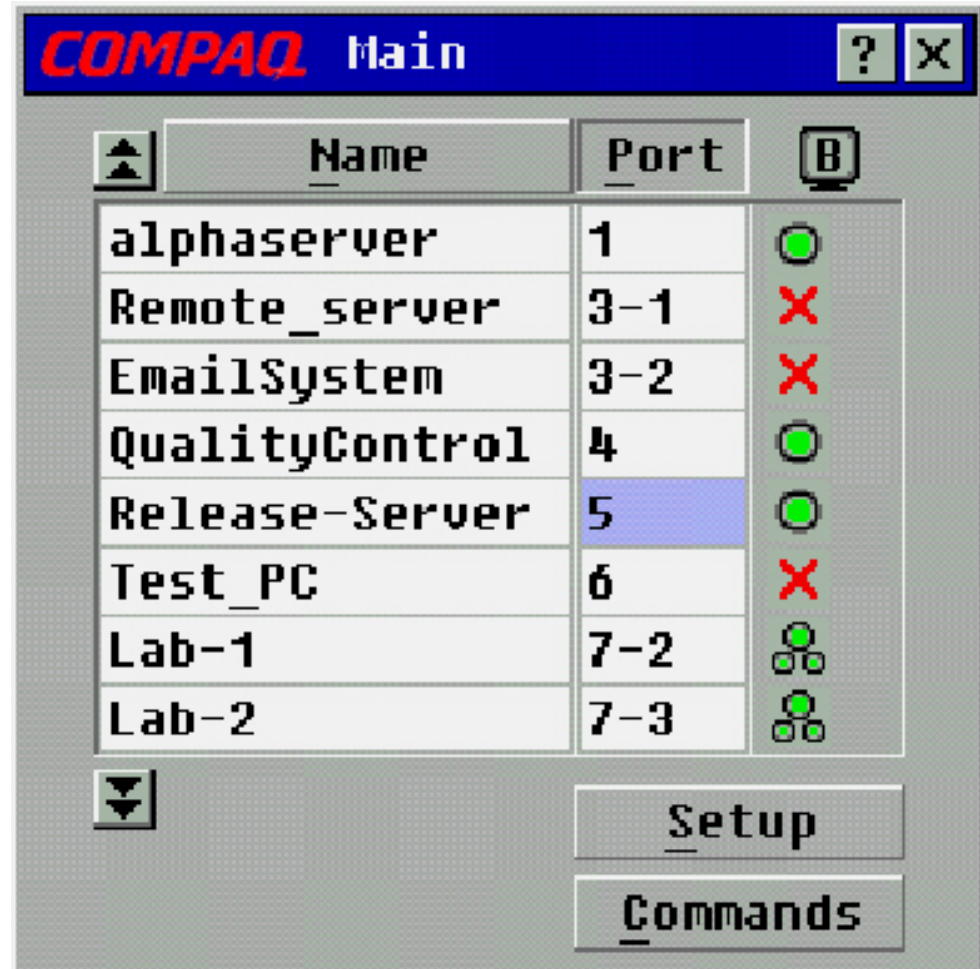
PS/2 keyboard, male

PS/2 mouse, male

HD15 video, male

50-pin, male

OSD (On-Screen-Display)

- Setup and Commands menus always available
- Sort by Name or Port with one click
- Descriptive icons:
- 🟢 -connected or powered on

- ❌ -not connected or powered off

- ⛁ -tiered to another console switch

- B -user port on multi-user switch

benefits

- Graphically displays information and configuration menus.
- Enables programmed, sequential evaluation of server performance
- Configuration changes entered at the command line are stored in NVRAM
- Can reset keyboard and mouse communication without interrupting system power
- A password option can be used to provide security
- Updates can be directly downloaded through a connected computer
- Supports all major video modes - VGA, SVGA, and XGA
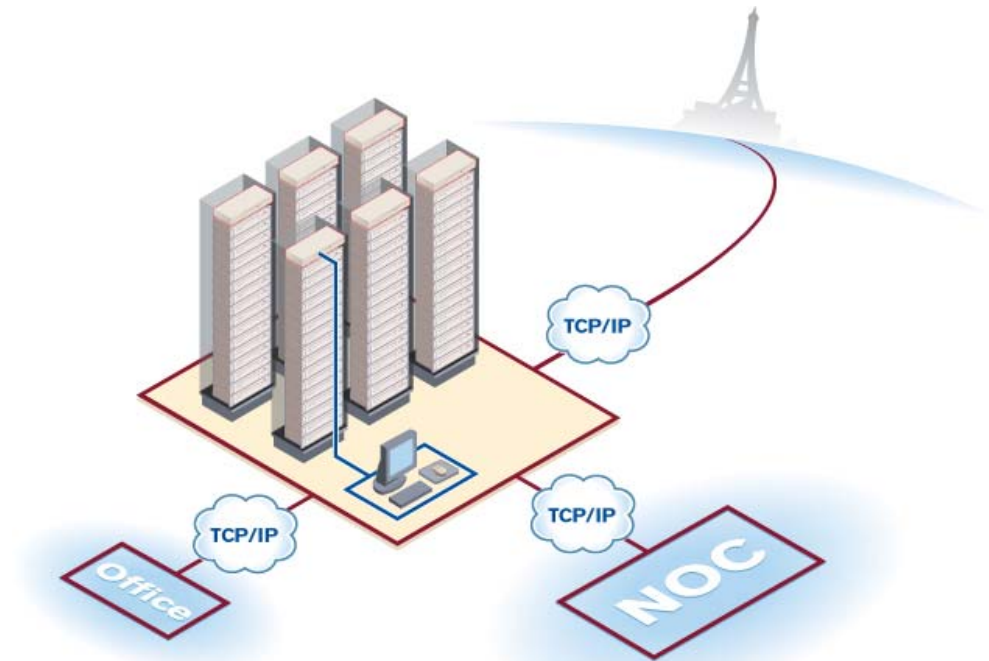
Market Trends

We are experiencing a significant shift to dense server environments

The tools we offer to manage the servers must fit this environment

Budgets available for staffing resources are shrinking

We must offer solutions that allow the flexibility our customers demand
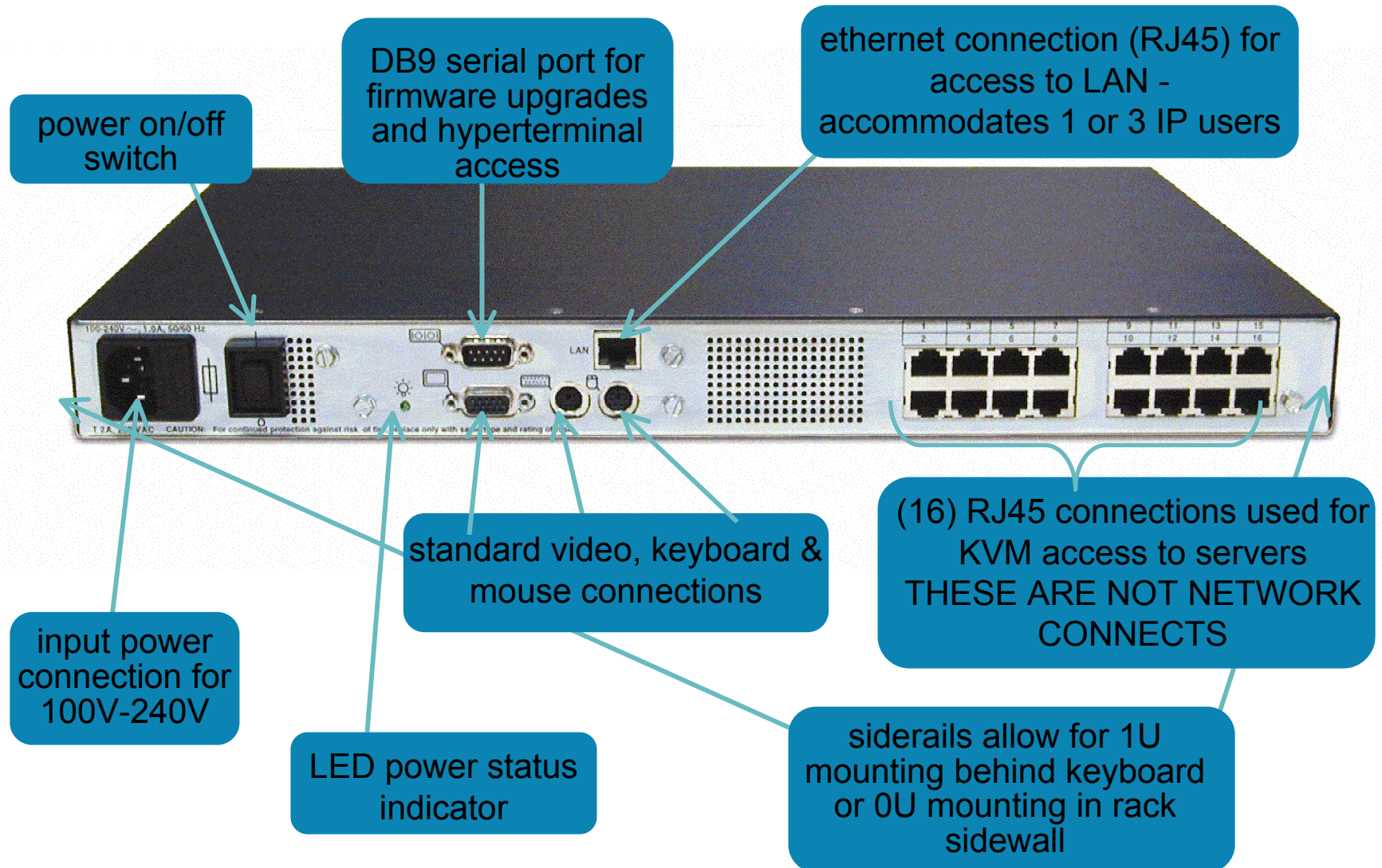
TCP/IP

TCP/IP

TCP/IP

Office

NOC

KVM over IP switch

access servers through both a local console and your IP network

• Reduces KVM cabling volume from standard KVM cables to field terminable CAT5

• Backward compatible with current switchbox providing ability to mix console switching solutions

• IP consolidation - provides IP connectivity using only 1 IP address per IP Console Switch (up to 128 servers per fully labored IP console switch)

• Support for heterogeneous datacenters with mixed device brands and operating systems

• English available now – other languages currently in final test for late C4Q02 availability (French, Italian, German, Spanish and Dutch)

switch view

DB9 serial port for firmware upgrades and hyperterminal access

ethernet connection (RJ45) for access to LAN - accommodates 1 or 3 IP users

power on/off switch

input power connection for 100V-240V

standard video, keyboard & mouse connections

(16) RJ45 connections used for KVM access to servers THESE ARE NOT NETWORK CONNECTS

LED power status indicator

siderails allow for 1U mounting behind keyboard or 0U mounting in rack sidewall

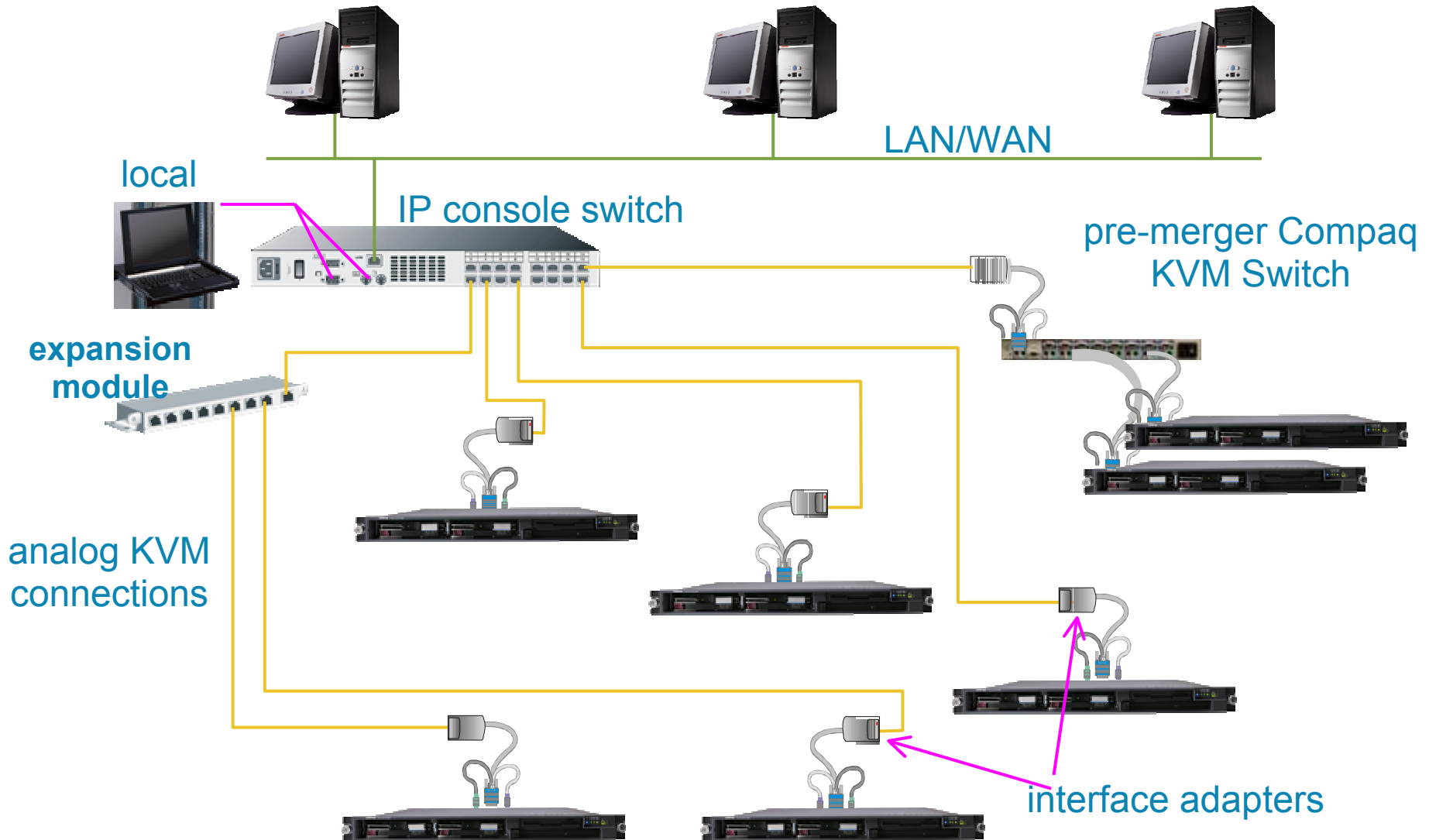# Product Positioning – Enterprise Solutions

3x1x16 IP Console Switch
Rack Mount Switch

1x1x16 IP Console Switch
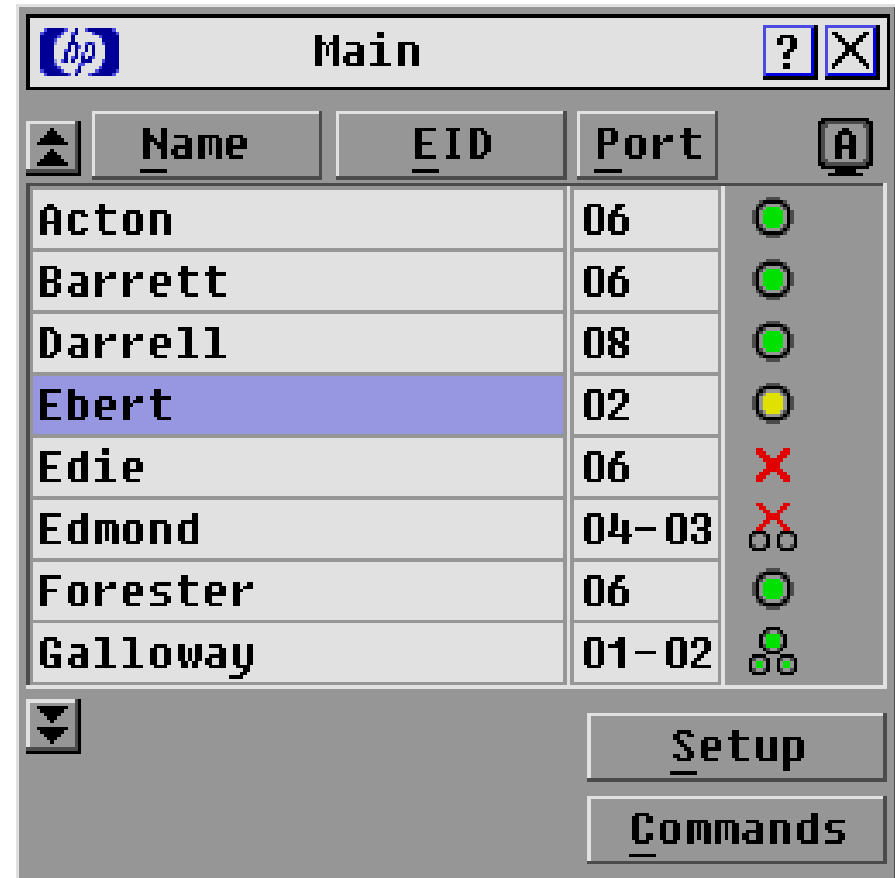Rack Mount Switch

262589-B21
Expansion Module
Accessory

Interface Adapter Cable

network attached using IP console viewer

LAN/WAN

local

IP console switch

pre-merger Compaq KVM Switch

expansion module

analog KVM connections

interface adapters

Local OSD

- local console display

- setup and commands menus always available

- sort by server name, interface adapter ID or port with one click

- descriptive icons:
  - –connected or powered on

  - –not connected or powered off

  - –tiered to a legacy console switch

Main

Name	EID	Port	
Acton		06	●
Barrett		06	●
Darrell		08	●
Ebert		02	●
Edie		06	✗
Edmond		04-03	✗
Forester		06	●
Galloway		01-02	☐

Setup

Commands

Java IP console viewer

- IP console viewer

  - java applet
    - support for Windows® and Linux® consoles
    - increased scalability over browser-based viewers
  - multiple security levels
  - operates across firewalls and VPNs
  - no software to install on attached servers
  - secure SSL data transfer across network
  - customize server information (location, site, names)
  - view by switch, servers or sites
  - sort on multiple fields
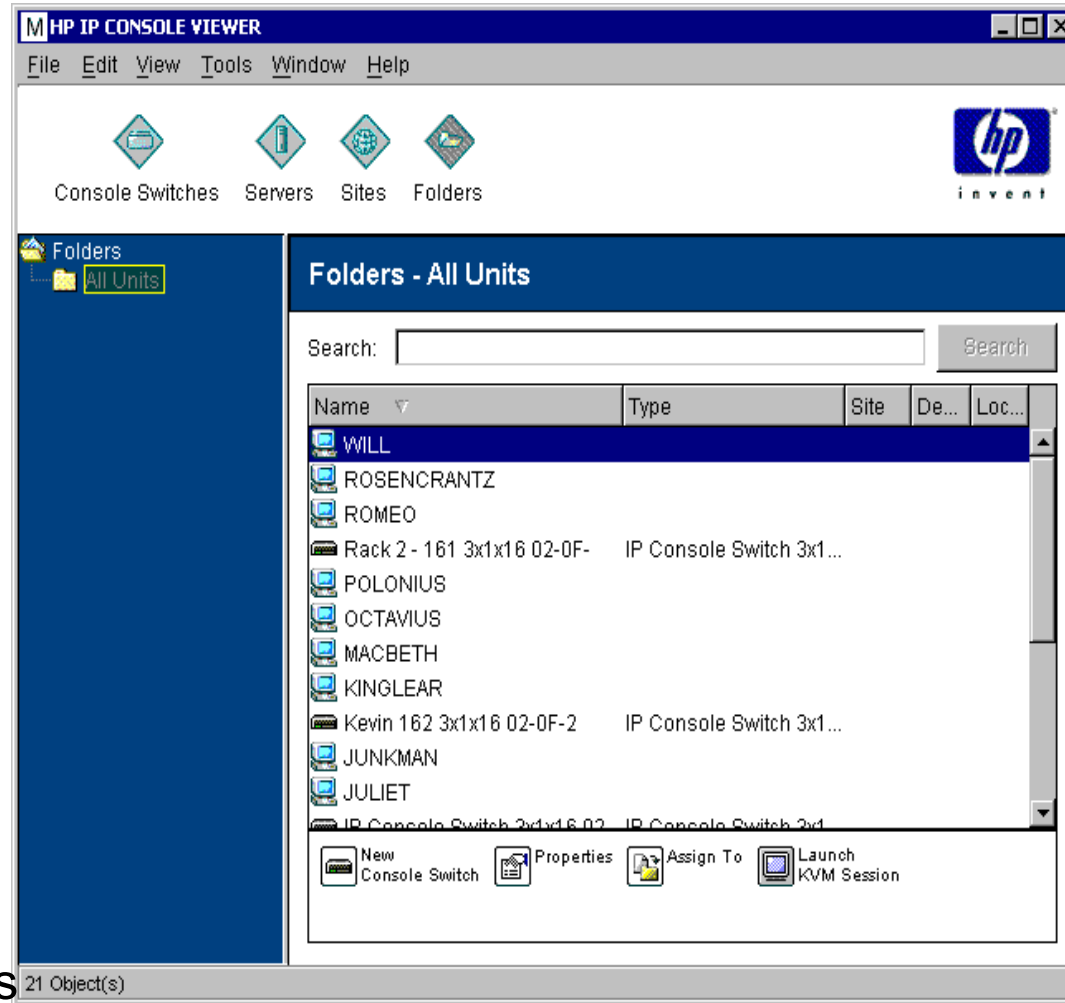
new HP KVM switches

hub cable design using an expansion module and interface adapters

Expansion Module (approx 2"x8") mounts anywhere on the rack rail and connects to 8 servers using CAT5.

IP Console Switch

Expansion Module

CPU

CAT5

Interface Adapter

Video Connector

Keyboard Connector

Mouse Connector
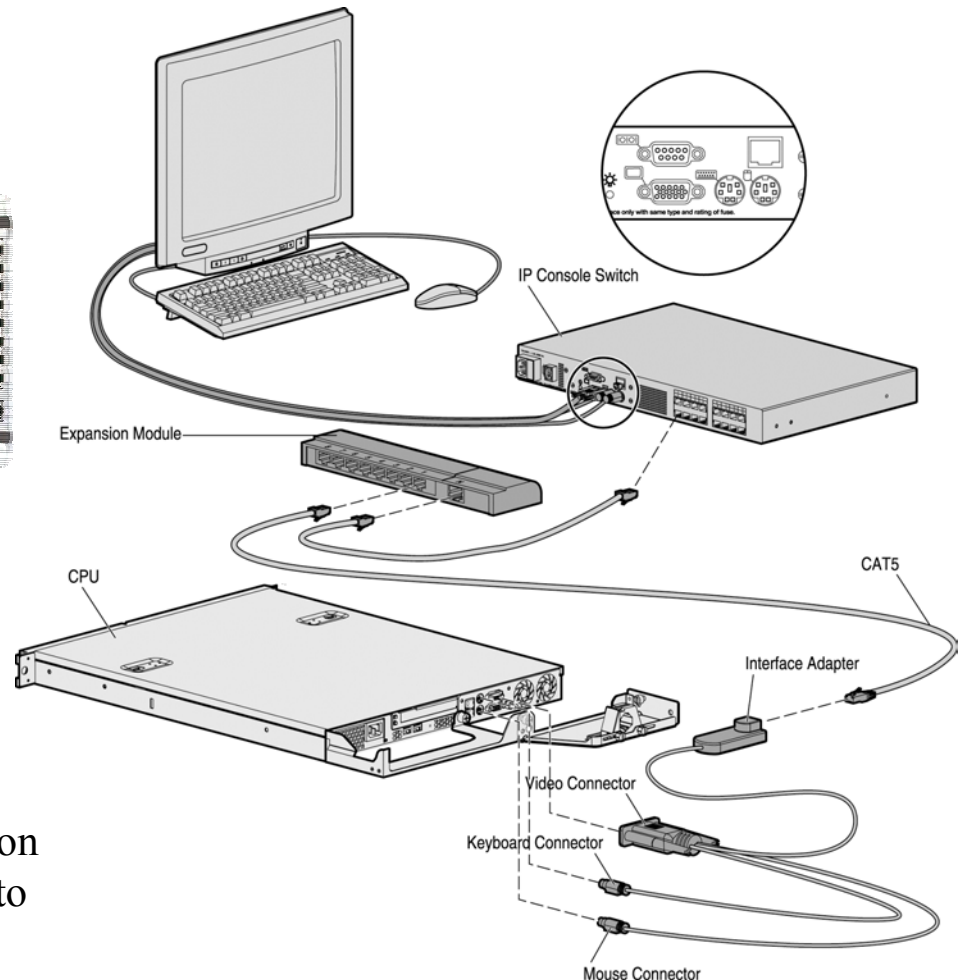
Each server requires one interface adapter to transition the standard PS2 connects to CAT5.

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new IBM KVM switches

daisy chain cable design using C2T dongles
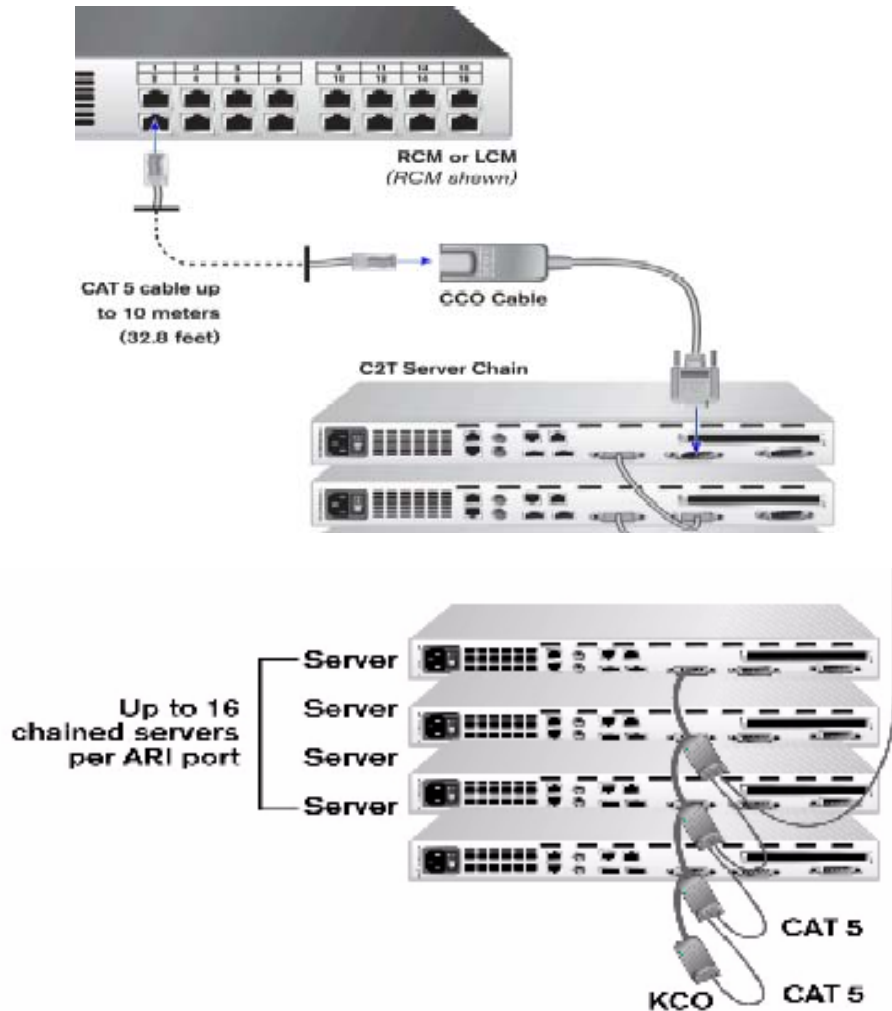
Using CCO to access legacy daisy chain or single servers. Equivalent to **HP Interface Adapter**.

Using new C2T to daisy chain (similar to CCO with an input and output CAT5 connect). Disconnecting CAT5 (marked in red) will break the daisychain; disconnecting C2T from server (marked in green) will not break the daisy chain.
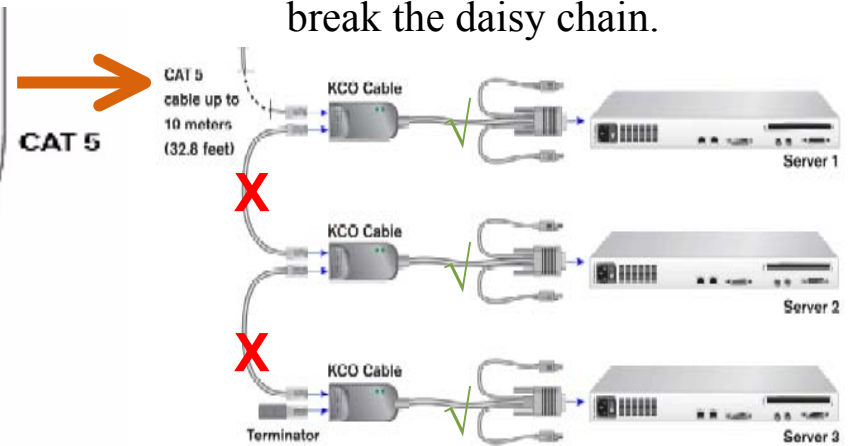
comparison of HP and IBM KVM switches

Both switch solutions experience user blocking when tiering or daisy-chaining to more than 16 direct attached servers. Only 1 user at a time may access either a daisy-chain or expansion module – this logically limits the number of total servers based on level of access required.

- **HP IP Console Switch**
  - Can access up to 128 servers
  - 2 models (1 or 3 IP sessions)
  - Servers can be located up to 50ft from switch

  Most cost effective solution with better level of access ($10,100)
    - Interface adapters for 40 servers ($4,445)
    - 3x1x16 switch (3 IP sessions) ($4.695) (3IP and 1 local users at a time)
    - 4 expansion modules ($960)

- **NetBAY Remote Console Manager**
  - Can access up to 256 servers
  - 1 model (2 IP sessions)
  - Servers can be located up to   32ft from switch

  Similar daisy chain solution ($11,855)
    - C2T dongles for 40 servers ($7,160) (2IP and 1 local users at a time)
    - 1735R16 switch (2 IP sessions) ($4,695)

Competitive Landscape – HP Offering

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
1x1x16	1	16	1	YES	3318	207
3x1x16	1	16	3	YES	4341	271

Competitive Landscape – KVM Manufacturers

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
AVR1000	1	16	1	YES	2960	185
AVR2000	1	16	2	YES	3886	242

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
1x1x16	1	16	1	YES	3318	207
3x1x16	1	16	3	YES	4341	271

Competitive Landscape – KVM Manufacturers

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
IP Reach M	1	1	1	No	2775	2775
UMT 2161	2	16	0	YES	2036	127
Combined	1	16	1	Yes	4881	305

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
1x1x16	1	16	1	YES	3318	207
3x1x16	1	16	3	YES	4341	271

Competitive Landscape – Server Manufacturers

DELL

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
2161DS	1	16	2	YES	3500	218

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
1x1x16	1	16	1	YES	3318	207
3x1x16	1	16	3	YES	4341	271

Competitive Landscape – Server Manufacturers

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
RCM	1	16	2	YES	4800	300

Product Name	Local Users	Servers	IP Users	CAT5	Price	Cost / Port
1x1x16	1	16	1	YES	3318	207
3x1x16	1	16	3	YES	4341	271

configuration of hardware

- Each switch has ports for 16 direct attach servers (no user blocking) and each server will require 1 interface adapter.

- Up to 8 servers may be cascaded on each port using either a legacy Compaq switch (needs 1 interface adapter) or an expansion module. Tiering allows for connection of up to 128 servers.

- Users will experience blocking when attaching more than 16 servers – only one user at a time can access each switch port.

RILOE/iLo and KVM over IP
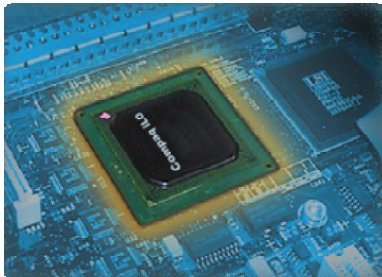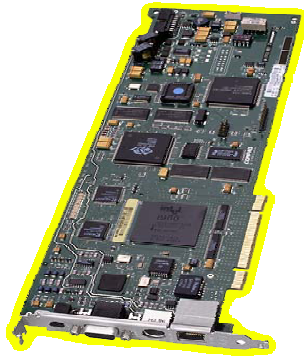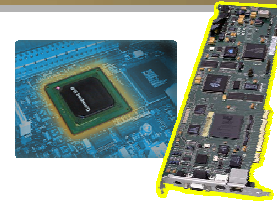
IP console switch works with RILOE and iLO.

- When servers are managed using Lights Out technology, users cannot access the server via KVM

- remote user (LO) has highest user preference and may terminate local sessions and IP console viewer sessions.

- local user at rack has precedence over IP console viewers and may terminate their sessions.
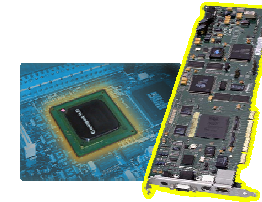
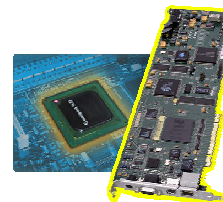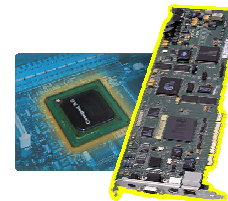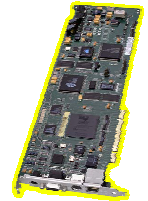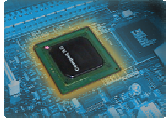|	
Remote sites with server closets, no on-site IT staff	**Ideal lights out scenario**
Space constrained data centers	**Ideal lights out scenario**
24X7 staffed data centers	**KVM over ip**
Remote data centers with local users and IT supervisors at HQ	**Can use both depending on need**
Customer has heterogeneous environment	**Can use both depending on need**

The HP IP consoling solution gives users access to local KVM functionality over their network.

These functions DO NOT include remote management, such as virtual media (CD or floppy) and remote power on. The IP console switch requires on-site staff to restart servers or to load media.

The HP IP console switch and viewer is compatible with iLO and RILOE. When a server is being accessed via Lights Out, that user takes precedence over any switch users. Lights Out disables the local keyboard and mouse functionality and flashed the UID light to alert the local user.

Only one IP address is required for KVM over IP unit

KVM over IP Switch supported OS

product requirements
operating systems and support

Microsoft®

Windows XP

Windows® 2000® Server SP2

Windows 2000 Workstation SP2

Windows NT® Server 4.0 SP6a

Windows NT Workstation 4.0 SP6a

Linux®

RedHat® 7.0, 7.1 (2.4 Kernel)

Product benefits

benefit	feature	function
Allows users to easy interact with attached servers without cursor delays	Network KVM access at near analog-speed	Cursors are easily set and aligned with quick mouse click
Reduces clutter in back of rack	Reduced KVM cable management	CAT5 cables are smaller form factor than current KVM cabling and field terminable eliminating large amounts of extra lengths
Allows for monitoring a variety of devices from one console	Support both HP and non-HP servers	Uses to standard PS2 connections

Product benefits

benefit	feature	function
Users can access all of their servers from one console using the IP console viewer	Support servers running a variety of operating systems	Java appelet running on a LAN attached Linux or Windows workstation
Remote access to servers without extra IP addresses to manage	Minimal increase in number of IP addresses	The switch has one IP address and is SNMP-manageable
Can be used in price sensitive accounts	Price competitive to current KVM switches	Although the switch is more expensive, price decreases as you add tiered servers
Adds functionality to KVM switch install base without removing old devices	Backwards compatible	Tiers with legacy CPQ KVM switches

10000 series racks give physical protection of your equipment and leave room to expand your IT infrastructure

HP KVM products provide access and management of your servers

HP UPS'S provide 24/7/365 power protection, insuring no downtime

HP CMC provides a 24/7/365 sentry to warn of problems with in the rack

HP rack based keyboard and video product provide communication and access to your information

HP PDU'S assure power to the rack, and reduce rack clutter

need help with HP Rack and power Product

- utilize these below links…….
- www.hp.com/products/ups
- www.hp.com/products/racks
- www.hp.com/products/rackoptions
- rackbuilder
- on line configurator
- www.upssizer.com
- call your infrastructure specialist…..
- Richard Brooke
- Richard.Brooke@hp.com
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