IBM

R24
IBM ACT –
Untangling the cable spaghetti

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IBM eServer xSeries Technical Conference
August 2004   Chicago, IL

Contents

- **Introduction to IBM Interconnect Architecture**
- **ACT components- the parts**
  - ✓ **How they work**
  - ✓ **The benefits**
- **ACT or NetBAY which is right? Maybe both**
- **RSA or RCM which is right?**
- **NEW - ACT Enterprise Activation Key (LDAP)**
- **More resources and technical Q&A**

Interconnect Rack Architecture- new ideas for old problems

- **Interconnect is a design principle for rack based products**
- **Current family includes**
  - ✓ **C2T Interconnect cable chaining technology - reduced cost, cleaner rack cabling**
  - ✓ **Advanced Connectivity Technology (ACT) Interconnect - reduced cabling with increased management**
  - ✓ **And the new one. . .   Distributed Power Interconnect - scalable, rock solid investment protection, and cable consolidation**
- **Like a puzzle these products fit together seamlessly**
  - ✓ **They are all designed to speed installation...**
  - ✓ **When used correctly they can save money...**
  - ✓ **They can decrease the amount of cabling both inside and outside the rack**
- **All can help improve solution management**
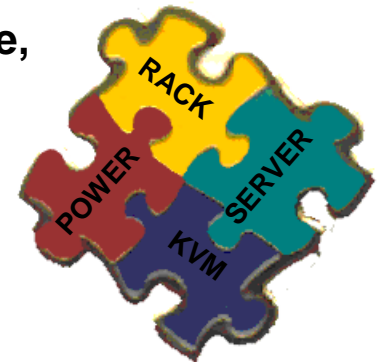
> **Set up time**
> Time to deployment is expensive
> **Use of IBM products reduce deployment cost and reduce risk substantially**
> IBM rack options were designed and tested for compatibility

IBM

What did the press say?

"The new technology, called Advanced Connectivity Technology (ACT), will streamline the deployment of large numbers of IBM's 3.5-inch eServers"

By John G. Spooner
Staff Writer, CNET News.com
July 19, 2002, 1:05 PM PT

cnet NEWS.COM
TECH NEWS FIRST

InfoWorld

"IBM helps solve cable chaos"

By Ashlee Vance

InfoWorld

July 19, 2002 1:39pm

"IBM Untangles Cable Spaghetti"
*By Brian Morrissey*
Internetnews.com
July 19, 2002

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The Local Console Manager (LCM)

KVM to Console   CAT5 inputs
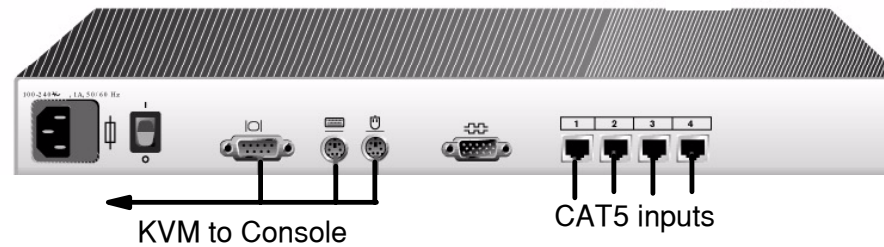
- **Function: a gathering point for all the CAT5 cables coming from the chains of connected servers. This unit is 1U high, normal rack width, about 5" deep.**
- **Details**
  - ✓ **Four CAT5 input ports allows chains of up to 16 servers/chain (64) to be attached to this single unit**
  - ✓ **Single user**
  - ✓ **Local management only**
- **Can accept legacy KVM switch feeds by fitting the existing switch with a KCO.**
- **Uses the same firmware as the existing 2X8 switches, but is IBMized-new software OSCAR for IBM**
- **It can be side panel mounted, U space mounted, or placed behind the 1U NetBAY Flat Panel Console Kit**

The Remote Console Manager (RCM)

LAN
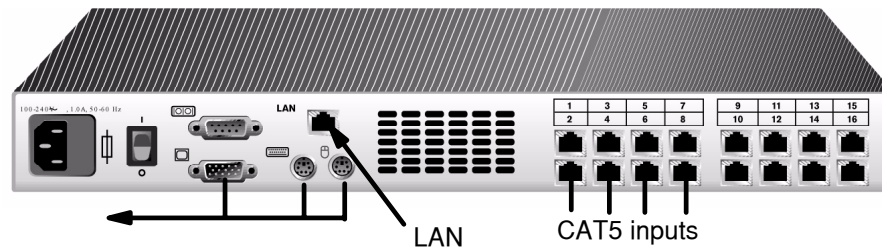
CAT5 inputs

- **Function: a powerful gathering point for all the CAT5 cables coming from the connected servers. This unit is 1U in height, normal rack width, approximately 11 inches deep.**
- **Details**
  - ✓ **16 CAT5 inputs allows 16 chains of up to 16 servers/chain (max of 256) to be attached to this single switch**
  - ✓ **Single local user, 2 digital channels for remote access (three simultaneous users)**
  - ✓ **16 ports - perfect for those who want unblocked access to single systems**
- **Can also accept legacy switches**
- **It can be side panel mounted or mounted in the EIA space**
- **The RCM takes care of security - it has built in password protection, multilevel access control, and 128-bit SSL or 3DES encryption**
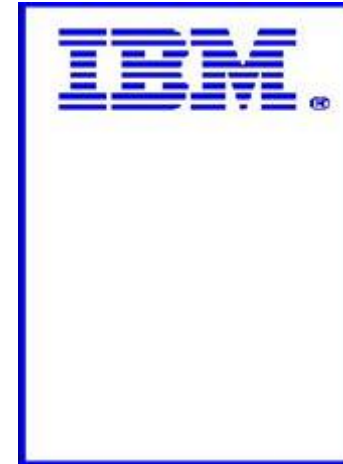
The Conversion Options

- **The KVM Conversion Option (KCO)**
- **Function: take KVM signals/cables from the server and convert to CAT5. These options utilize a "lump in the cable" design that makes them small and easy to hide inside the rack (Sold in packs of 4, a single unit is needed for each server)**
- **Versions:**
  - ✓ **Short KCO is 250mm long: used for servers like x305 that do not have a cable management arm. Velcro is supplied for sticking neatly in side of rack- out of the way.**

  - ✓ **Long KCO is 1.5M long: used for servers with cable management arms- x345, x365, x445. Comes with velco strips that allow neat attachment at the end of the cable management arm.**

  - ✓ **The C2T Conversion Option (CCO) is 110mm long: take C2T signals from the back of x335 and converts to CAT5 capable signals.**

  - ✓ **Long UCO is 1.5M: Same use as Long KCO. Use on x450 and e325.**
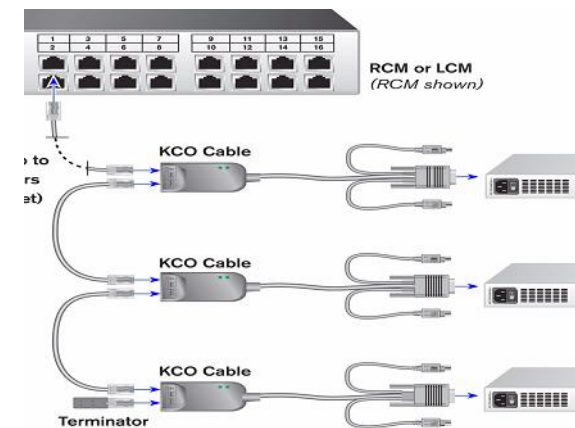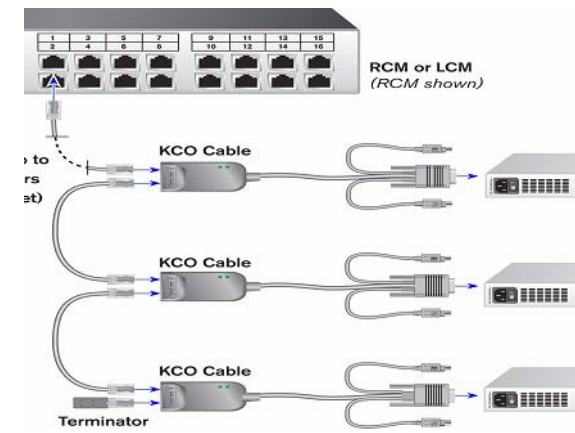
The Software

- **OSCAR for IBM**
- **Included with LCM and RCM**
- **Same look and feel as our current firmware on 2X8 KVM switch (Apex Outlook)**
- **Allows quick and easy switching between systems**
- **Used for local management of the rack**
- **IBMized screens, icons**

**NetBAY
Virtual Console**

This software is protected by all U.S. and International Copyright laws.

Point and Click Access and Control

OSCAR for IBM
Included with LCM and RCM
Same look and feel as our current firmware on 2X8 KVM switch (Apex Outlook)
Allows quick and easy switching between systems
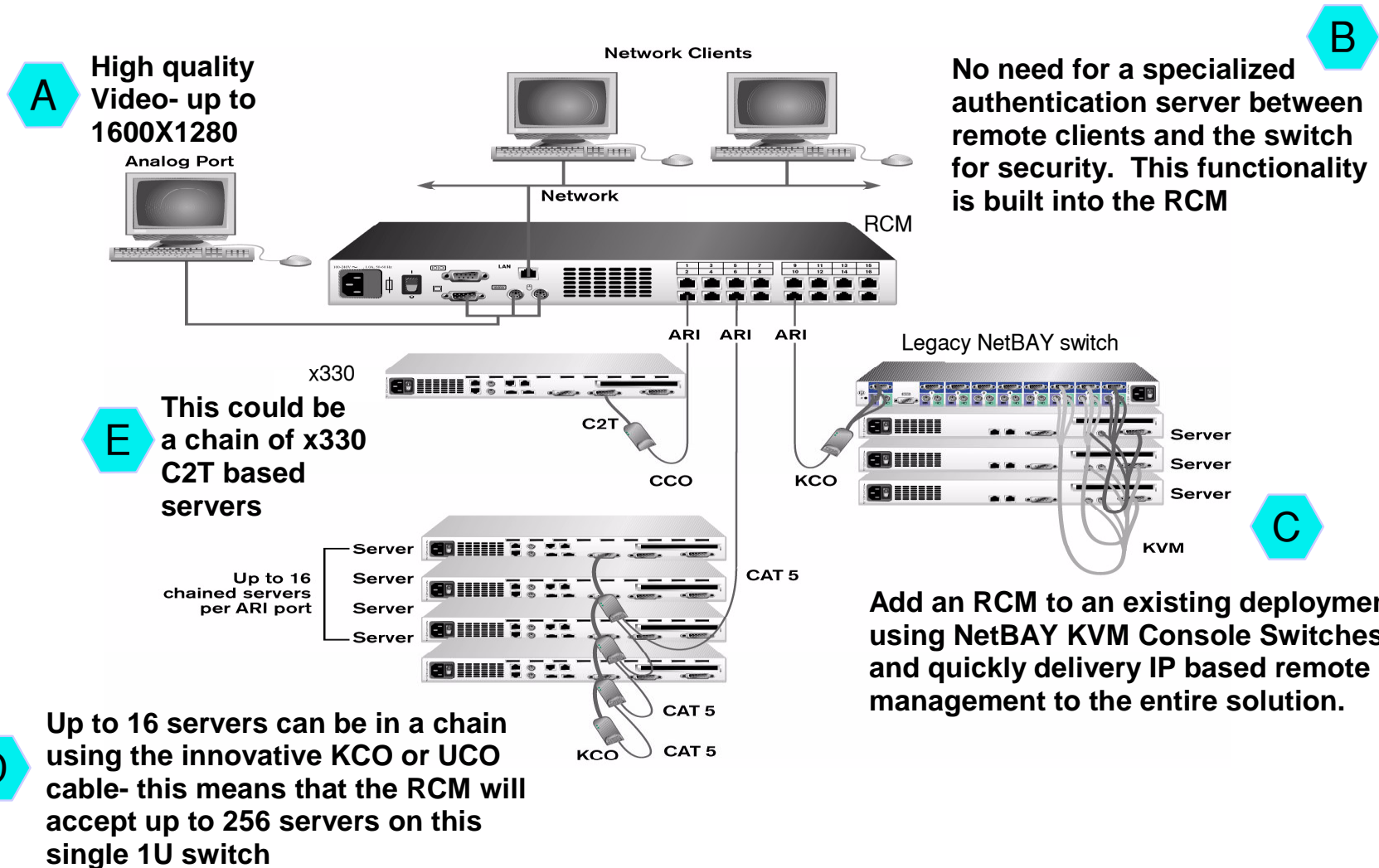Used for local management of the rack
IBMized screens, icons

ACT Component part numbers

Part Number	Name	Description of part
1735L04	NetBAY Local Console Manager (LCM)	A 4 port single user CAT5 console switch. Takes CAT5 input and converts back to KVM for input to a management station (1U, 2U Flat Panel Kit). **This is sold as a single unit.**
1735R16	NetBAY Remote Console Manager (RCM)	A 16 port CAT5 console switch. Allows a single local user and two simultaneous remote users. **This is sold as a single unit.**
32P1636	250mm KVM Conversion Option (Short KCO)	Plugs into the KVM output on the back of the server and converts to signals that can travel on CAT5, these are chained together to accomplish the connectivity solution. This short version is used on servers without a cable management arm. **Sold in packs of four.**
32P1652	1.5M KVM Conversion Option (Long KCO)	Plugs into the KVM output on the back of the server and converts to signals that can travel on CAT5, these are chained together to accomplish the connectivity solution. This long version is used on servers with cable management arms. **Sold in packs of four.**
73P5832	1.5M USB Conversion Option (Long UCO)	Plugs into the USB output on the back of the server and converts to signals that can travel on CAT5. Used as are the Long KCOs. **Sold in packs of four**
32P1637	C2T Conversion Option (CCO)	Plugs into the C2T output on the back of C2T containing servers. This is a direct connection option- meaning they are not chained together. This is only used on C2T servers- x330 and follow ons. **Sold as a single unit. 1/pack**
NONE included with RCM	IBM NetBAY Virtual Console Software	This is the Java based software that is included on all RCMs. It is a highly intuitive, web based software package that is used for the remote access to connected servers
NONE included with LCM and RCM	OSCAR for IBM	This is the firmware/software that is supplied with both the LCM and the RCM. It is an IBMized version of the same OSCAR that powers our current KVM switch products. OSCAR for IBM is used when you are controlling/accessing connected servers locally.
23K4846	ACT Enteprise Activation Key (LDAP)	Software key enables RCMs at the latest firmware to be managed as a single solution rather than at the individual switch level. **Sold as a single key, one for each RCM.**

This sample topology shows an RCM at the center of this solution

B

A High quality Video- up to 1600X1280

No need for a specialized authentication server between remote clients and the switch for security. This functionality is built into the RCM

E This could be a chain of x330 C2T based servers

C

Add an RCM to an existing deployment using NetBAY KVM Console Switches and quickly delivery IP based remote management to the entire solution.

D Up to 16 servers can be in a chain using the innovative KCO or UCO cable- this means that the RCM will accept up to 256 servers on this single 1U switch

Why do it? ACT versus KVM quick reference

Feature	ACT	KVM	Comments
Ease of installation	✓		Quick cabling, CAT5 connectors snap on and off quickly. No worries about where to run bundles of KVM cables
Rack Space used	✓		ACT uses less switches, smaller cables, requires many less PDU outlets
Cost	✓		For system counts of 5 or more ACT wins. See chart on cost for more detail
Neatness of Cabling	✓		ACT is much cleaner due to the simplicity of its cabling and chaining architecture. Less cabling means more room in the rack for other items, better cooling, and easier problem determination when something goes wrong
Availability of cable components	✓		ACT wins hands down for customers with unusual cable length needs, CAT5 cables can be assembled at a customer site
Rack space/power outlet	✓		Even in larger installations ACT only requires one switch and one PDU outlet, KVM could easily use many more
Easiest multi rack set ups	✓		ACT makes it easy since CAT5 cables can be cut to any length for custom rack to rack configs. Place the switch in one of the racks in the back of the management station and manage the suite rather than the rack
USB and PS2 enablement on the same switch (future)	✓		ACT enables our USB servers to be managed on the same set of switches as our PS2 boxes- making the transition easier.
Scalability	✓		ACT scales with only the addition of more cables, KVM may require more switch purchases and recabling of existing solution.

ACT or traditional KVM?

IBM ACT

- ACT switches offer extreme scalability
  - ► RCM up to 256
  - ► LCM up to 64
- Best way to reduce cable complexity
- Substantial cost savings in large installations
- Legacy compatibility
- Quicker installation
- Manage PS2 and USB based servers on the same switch - big!!
- Remote and local control
  - ► RCM is secured with 128-bit SSL
  - ► Multi-layer access control with password protection
  - ► Includes NetBAY Virtual Console Software- unlimitted distribution, no license charges to contend with
- All future innovation takes place here!!

NetBAY KVM

- Proven products with industry wide acceptance
- 4 and 8 port versions to fit most installs
- OSCAR on screen disply is an easy to use management system
- Best choice for smaller installations where scalability is not critical

Competitive information

- **IBM exclusive chaining design allows excellent scalability**
- **HP and Dell offer PEMs (passive expansion module) for adding more servers**
  - ✓ **PEM needed even if only two servers are on a port - expensive and extra cabling needed**
  - ✓ **For a 32 server solution no one comes close to us for cost**
- **Better cable design**
  - ✓ **HP and Dell cables do not have LED indicators for set up and PS**
  - ✓ **Names and eIDs are stored in cable not in server so if they get mixed problem solving is very difficult**
- **IBM only source for CCO cable, Dell does not offer a USB cable yet**
- **Complete legacy support for older KVM switches**
  - ✓ **HP does not offer this**
  - ✓ **Dell not promoting this benefit**
- **LCM is an IBM innovation- best single user switch on the market**
- **Dell offers same RCM config as us, HP offers 1 and 3 remote user versions**
- **New LDAP Enterprise function is an IBM exclusive**

RCM or RSA2?

RCM benefits

	IBM ACT RCM	RSA 2	Why is this important to customers
Installation	Connection to servers are external and require very basic KVM connections	Require opening the server and connecting internal cables and wiring harnesses	The ACT solution take less time to install and does not use a PCI slot
	One power cable is required for each 16-port KVM device.	Card may require an external power supply.	Additional power supplies add to overall cost and increase installation time. Not to mention the additional space required for the cables and power outlets.
Network Configuration	One IP address for each 16 port KVM switch	One IP address for each individual card	Individual IP addresses and specific network security settings require time and effort. RCM solution will require significantly less time and energy to set up on the network. More IP addresses means more network cables and more network gear. Both of these will increase cost and time to install.
User Access	Provides remote and local rack access	Remote access only. Crash cart access is also another option but not very efficient as the primary form of rack access.	Some customers that have card solutions find that they still like to have access at the rack. Many times customers will purchase the cards for remote management and then end up buying a separate KVM switch for rack access. We can provide both types of access via an RCM
	Password protection at a switch	Each RSA2 needs a password for access	Easier to maintain a large single database versus several individual ones.
Compatibility	Works with a broad range of server types legacy and current	Vendor and model specific	By only working with certain models the customer's future choices are limited and servers purchased in the past may not be compatible. The RCM solution can give the customer the flexibility to choose exactly what they need and use what they currently have
	Not OS dependent	Some OS dependencies	Customers with mixed OS enviro might find the RCM a better solution. Linux Advanced Server, NT, and some Novell do not support RSA2 - USB dependencies can present a problem.

RSA Benefits

	IBM ACT RCM	RSA 2	Why is this important to customers
Enviromental control and alerting	RCM does not provide this funtionality	RSA2 can provide this function whether installed in a each server or in a chain of servers via S485	Customers in a complete lights out data center may prefer the functionality of the RSA2 since it delivers more control and awareness of systems in the dc.
Virtual presence	RCM provides only remote KVM	RSA2 provides remote KVM, media, and monitoring functionality if installed in each server	RSA2 provides a fuller "virtual presence" than does the RCM
Access	RCM allows 2 remote users per switch simulataneously	Any user can access any server unblocked at anytime if they have password	Many customers want unblocked access to all servers in the data center. RSA allows this since each server has it's own IP address
Small solution set-ups	RCM initial cost is fixed at the cost of the first switch - $4695US	RSA2 single unit cost is the same as multiple unit cost - $599	For small branch offices the RSA2 provides the best choice. The larger the installation the less this arguement holds true. 10 servers is the current crossover point.
Integration	RCM while SNMP and CIM compliant is not integrated into Director	RSA2 fully integrated into Director	Customers value the single console control that RSA2 and Director can allow.
Wed based management	RCM requires the loading of NetBAY Virtual Console Software	RSA is web based, no requirement for client software	Some customers prefer the web based application over the client peice. For these customers RSA2 might provide the better solution.

What are the benefits of a combined solution?

- **Lower IP address costs along with many of the same benefits of the RSA2**
- **Consolidated management via the RCM- remote and local access**
- **Multiple methods into the server- if RCM can't access a server RSA2 can still report potential issues**
- **Cost benefits over HP who can not chain server management as IBM can**
- **Space and power advantages with speedier installations**
- **High quality virtual presence on systems not currently supported with RSA2- x360, x440, legacy, ect**

- **What are the trade offs?**
  - **Greater degree of blocked access than with RSA alone**
  - **Chained servers loose virtual media**

There is no one product to cover all our customer requirements
IBM provides customer choice for the best fit- HP and Dell can't

IBM ACT LCM - Economics make sense

8 servers

ACT- 2 packs KCO @ $559 + 1
LCM @ $759 = **$1877**

OR

KVM - 8 KVM cables @ $65 + 1
NetBAY 2X8 @ $1359 = **$1876**

12 servers

ACT- 3 packs KCO @ $559 + 1
LCM @ $759 = **$2436**

OR

KVM - 13 KVM cables @ $65 + 2
NetBAY 2X8 @ $1359 = **$3563**

24 servers

ACT- 6 packs KCO @ $559 + 1
LCM @ $759 = **$4113**

OR

KVM - 27 KVM cables @ $65 + 4
NetBAY 2X8 @ $1359 = **$7191**

32 servers

ACT- 8 packs KCO @ $559 + 1
LCM @ $759 = **$5231**

OR

KVM - 36 KVM cables @ $65 + 5
NetBAY 2X8 @ $1359 = **$9135**

IBM ACT RCM - Economics make sense

Customer below is trying to decide between RCM and traditional KVM

✓RCM is close to traditional pricing in these moderate configurations
✓The benefits for choosing ACT
✓Remote management
✓Faster set up and increased scalability
✓Less cabling in the rack
✓Less side pocket room burned with switches
✓Less outlets needed to power the switches

| *24 servers*	*32 servers*
ACT- 6 packs KCO @ $559 + 1 RCM @ $4695 = **$8049**	ACT- 8 packs KCO @ $559 + 1 RCM @ $4695 = **$9167**
OR	OR
KVM- 27 KVM cables @ $65 + 4 NetBAY 2X8 @ $1359 = **$7191**	KVM- 36 KVM cables @ $65 + 5 NetBAY 2X8 @ $1359 = **$9135**

Enterprise Activation Key- LDAP

IBM will deliver a software key that will allow the RCM to communicate via LDAP to a Windows Active Directory over the network

✓Will work with the RCM to make it a true enterprise solution

✓Makes the ACT family even more scalable than previous

✓Start small with only a few RCMs, as numbers grow this allows user to manage all RCMs as a single unit

IBM is expected to be the only vendor of this functionality at release

✓Allows customers to take advantage of existing Windows Active directory assets.

✓Manage all RCM access control via a single locations
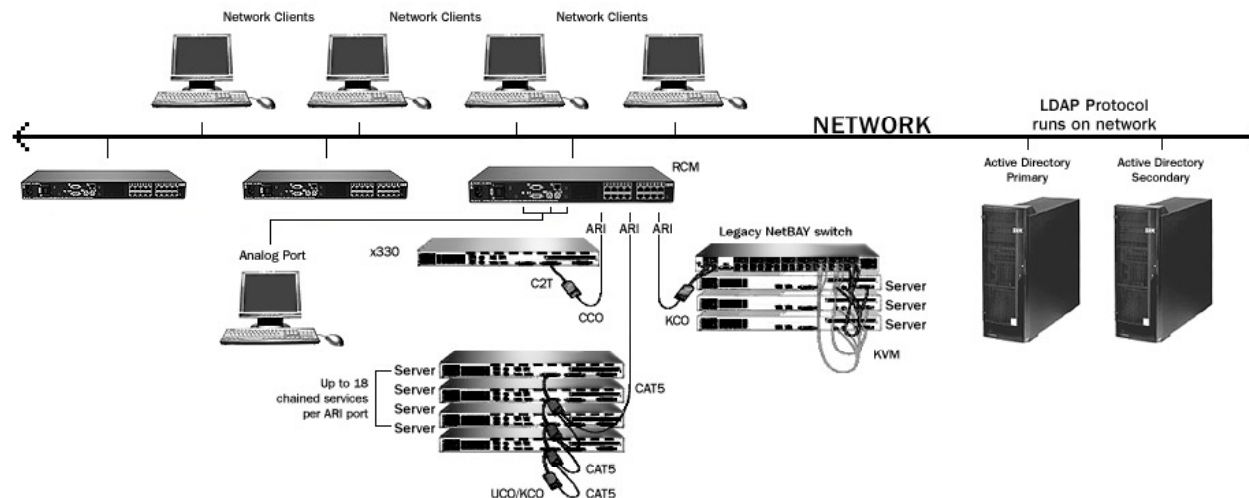
More information page

Available on ibm.com
Decision Makers Guides
- IBM NetBAY Rack product overview
- **IBM KVM and ACT products**
- IBM UPS Guides- low voltage and high voltage products
- IBM PDUs options
- Flat Panel products

Spec sheets
- **IBM Remote Console Manager**
- **IBM Local Console Manager**
- IBM UPS3000X family
- IBM DP Interconnect PDU- - translated into several languages (Japanese, Chinese, Korean, French, German, Spanish, Italian)

Internal documents
- **Problem solving guide to ACT - frequently asked question guide version 2.0**

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Maximum internal hard disk and memory capacities may require the replacement of any standard hard drives and/or memory and the population of all hard disk bays and memory slots with the largest currently supported drives available.

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