

# Century Communication Ltd.



**DATA CENTER – CHENNAI**



**Compton Business Solutions Ltd**

always something more...

# Century's Profile



- CCL is a multifaceted media and entertainment company with interest in television, radio, film, VFX, animation and other growing aspects of media and entertainment industry. multifaceted
- CCL provides a confluence of cutting edge creativity, state of art technology, best in class talent and professional approach in all its business interest.
- CCL enjoy a diversified growth model with its inter-linked yet distinct businesses presenting a sound mix of exposure in high growth segment along with stable revenue stream
- Nature of business: Air time sales, TV content production, broadcasting branding and design, studio complex and digital news room service, radio broadcasting etc

# New initiative- application



- To start a world class post production studio in Chennai.
- Start off shore film post production projects in India, work to come from London and New York through company's marketing wings.
- Over 50000 sq feet facility, over 500 highly skilled artists to work on large film frames.
- 3000 sq feet Tier 3 data center with high compute power and high throughput storage.
- Overcome challenges of power, cooling and real estate through technology.
- Key consideration to carbon credit calculation and invest in green IT.
- The organization comprises three major departments for post-production work.
- Restoration
- Computer graphics
- VFX

Application used for these technology are 3D Max, Photoshop, after effect, Maya, Combustion etc.

# Challenges of CCL



Pixion one of CCL's brand is heavily into visual effects and animation and uses high end IT for its core business applications. Once a movie is hot then audio and video are added to it. Now this process requires very high end graphical workstations and skilled artists to accomplish the job. Once the VFX process is complete the file goes for rendering, it further requires huge computing power from cluster of servers.

The organization certainly faced challenge in terms of high cost of real estate, requirement of speed during process so that the time wait is reduced, huge power requirement, huge cooling requirement, no wonder huge capital requirement, infrastructure and skilled artist and more important faster and reliable advanced workstations.

Last but not the least, to maintain the quality and keep highly paid artists working instead of waiting around for images to render CCL required a high performance Information technology.

# Pain areas as understood by us



- Faster and advanced infrastructure for graphics requirement
- Providing huge compute and rendering power
- Over 99% uptime guarantee required
- Requirement of very resilience network
- Narrowing down huge real estate cost
- Reducing power consumption cost
- Providing low cost effecting cooling
- Highly available storage
- Designing redundancy
- Provision against Fire, Water leakage, rodent, physical security etc
- Most logical design of the data center would be critical.
- Keep manageability cost low

# Solution



Compton's solution was based on what best the industry had to offer:

- Over 250 high-end HP Graphic workstations.
- Over 300HP blade servers.
- Complete data center design and integration.
- Intelligent cabling solution - Systimax.
- Active Networking with Enterprise switch from Force 10 – E 1200.
- Hitachi HNAS storage solution.
- Distribution layer switches from HP Procurve.
- HP DL server and IS mail for mail management.
- Domain and ADC on HP DL servers.
- HP DL server for antivirus server.
- IP based remote monitoring for temperature and humidity

# Compton's Data centre solution:



- HP Blade servers
- Hitachi storage solution
- Force 10 enterprise switch
- Electric work
- Emerson Precision air conditioning
- Systimax Intelligent cabling and Racks
- VESDA
- Fire detection and suppression
- Water leakage, Physical security, Master rodent system
- Emerson UPS

# HP Blade System c7000 Enclosures



The Blade System c7000 enclosure provided all the power, cooling, and I/O infrastructure needed to support modular server, interconnect, and storage components for the next several years. The enclosure is 10U high and holds up to 16 servers and storage blades plus optional redundant network and storage interconnect modules.

There were total 196 servers required in the facility which could have taken around twelve 42U racks. The customer was first with an impression of going with two DC rooms. We further suggested to implement HP chassis server which comprises 16 blade servers in one single chassis. Hence the rack number was reduced to 3 (4 chassis server each) and was implemented in half the area.



# HP Blade servers chassis

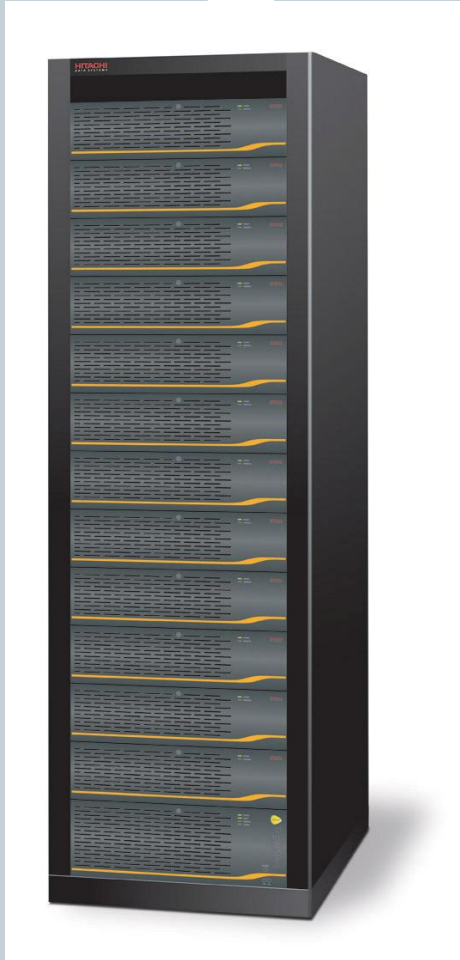


# Hitachi AMS 500

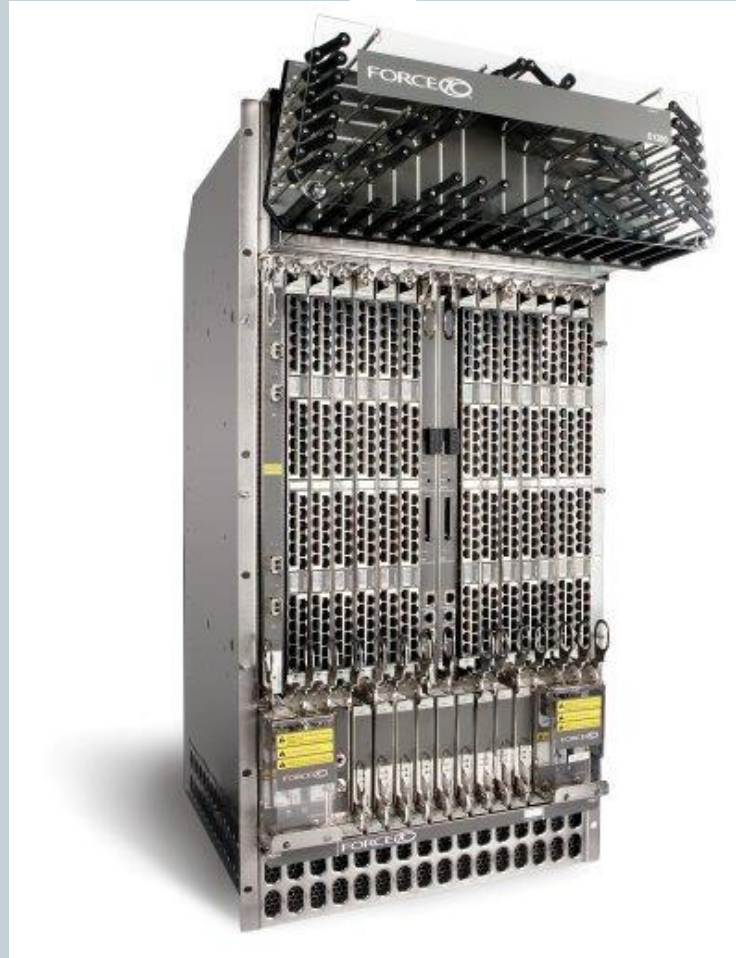


- Hitachi HNAS solution promised to deliver robust application focused storage and solution that enhances business efficiency. After comparing various other solutions HNAS solution offered best option to bridge not damaging risks like system failures, internal and external threats and scalability hazards. It offered 64 virtual servers per entity with clustering support having failover and recovery option. There were total 210 HDD with 300GB each.

# Hitachi HNAS



# Force 10 E 1200 Switch



# Electric panel



# Power consumption requirement reduced drastically



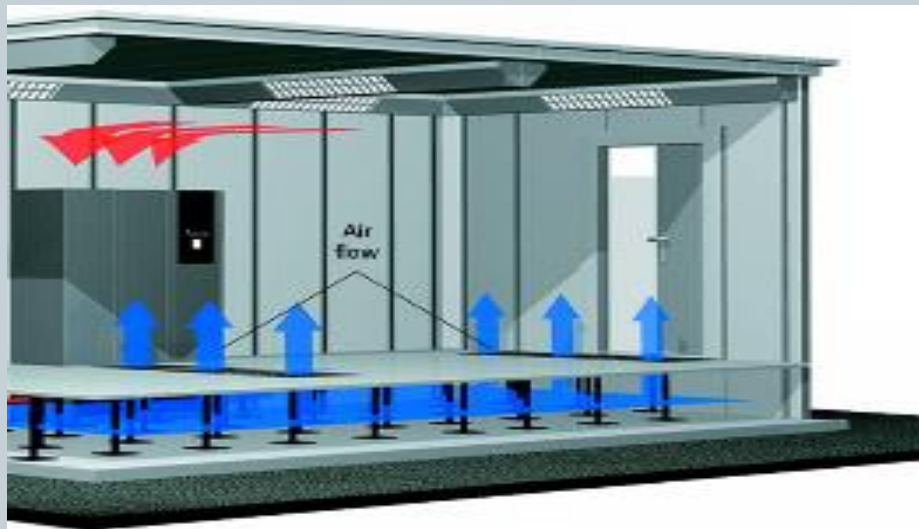
Conventional solution	Qty	KW	Total KW
Normal rack server (2U)	192	0.75	144
60+ TB of NAS storage	1	15	15
Server room cooling with 12 racks	1	10	10
			169

Proposed solution	Qty	KW	Total KW
HP Blade System c7000	12	2.4	28.8
Hitachi AMS 500	2	5.25	10.5
Server room cooling load	1	5	5
			44.3

# Emerson Precision AC



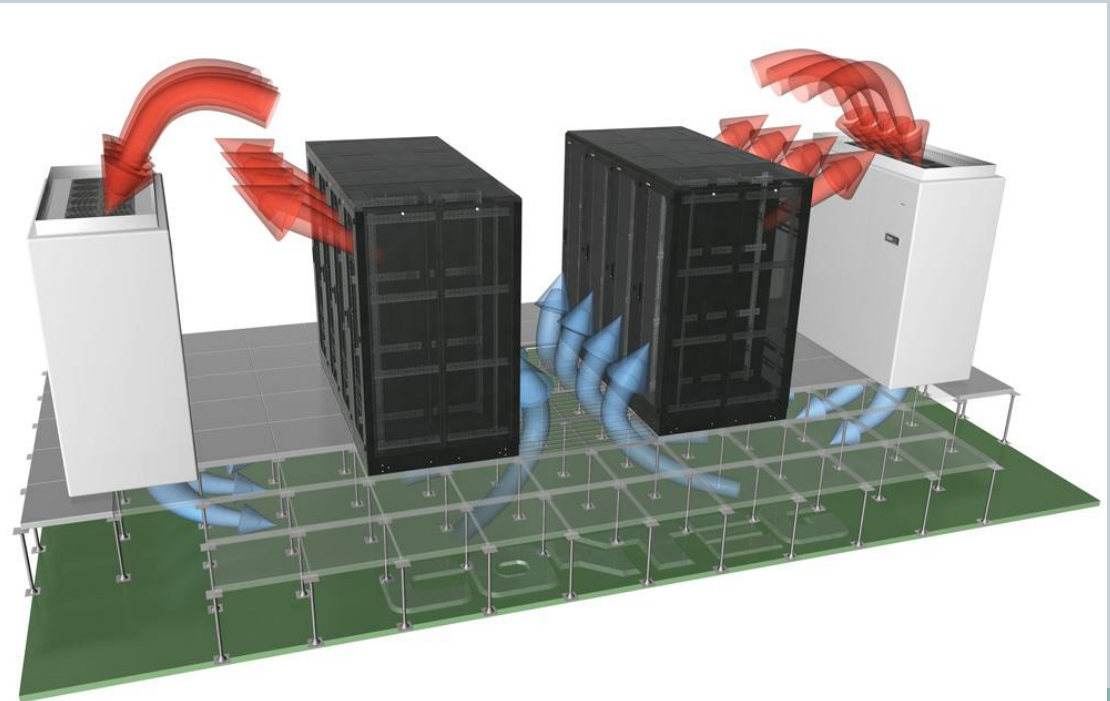
- The challenge was to give such a PAC unit where in the Closed-circuit air-conditioning system maintain the ideal room temperature and humidity conditions for CCL DC room. We gave industry best solution from Emerson where cold supply air is conveyed to the data centre via the raised floor, and the heated air returns to the A/C unit. It's a modern precision air-conditioning systems with energy-efficient hybrid technology also make use of cool outside air for air conditioning.



# Hot and cold aisle



- Our Hot aisle/cold aisle data center design involved lining up server racks in alternating rows with cold air intakes facing one way and hot air exhausts facing the other. The rows composed of rack fronts were cold aisles. Typically, cold aisles face air conditioner output ducts. The rows the heated exhausts pour into hot aisles.





# Reduction of PAC requirement



Conventional solution	Qty	KW	Total KW	PAC TR
Normal rack server (2U)	192	0.75	144	48
60+ TB of NAS storage	1	15	15	5
Server room cooling with 12 racks	1	10	10	3.33
			169	56.33

Proposed solution	Qty	KW	Total KW	PAC TR
HP Blade System c7000	12	2.4	28.8	9.6
Hitachi AMS 500	2	5.25	10.5	3.5
Server room cooling load	1	5	5	1.66
			44.3	14.76

# Real estate cost reduction



One of the best part of our solution was saving space of data centre which further decreased power consumption, cooling load etc. Below is a detailed sheet of the racks.

The racks were of President make (42U) which are best in industry

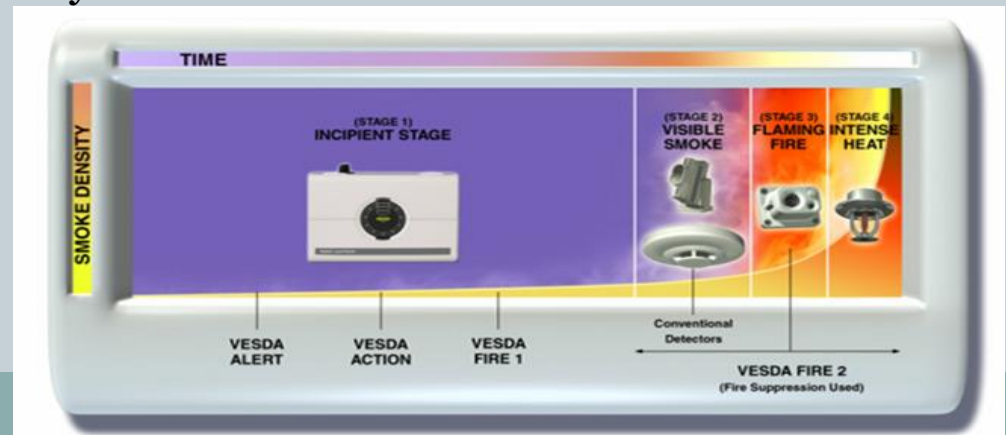
<b>Conventional Solution</b>		<b>Racks required (42U)</b>
Rack Servers	192	12
NAS and Networking Devices	60 TB	4
		16

<b>Proposed solution</b>		<b>Racks Fixed (42U)</b>
HP Blade System c7000	12	3
Hitachi AMS 500	1	2
		5

# VESDA solution



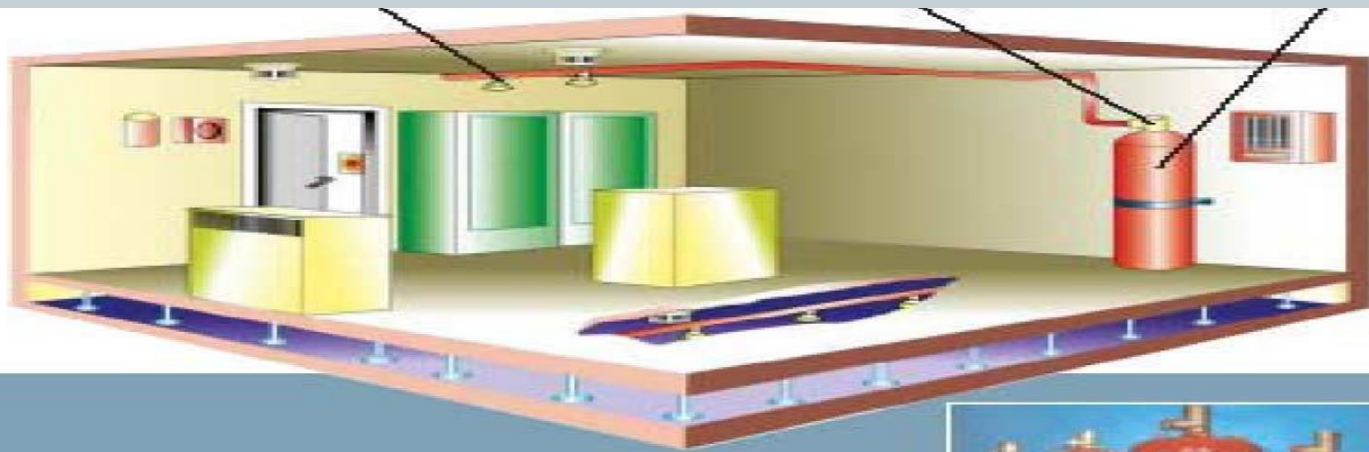
- Very Early Warning Aspirating Smoke Detection solutions with continuous air sampling was installed which provided the earliest possible warning of an impending fire hazard. It is to investigate an alarm and initiate an appropriate response to prevent injury, property damage or business disruption. VESDA detectors have multi-level warnings and a wide range of sensitivity that does not degrade or change over time, so even minute levels of smoke can be detected before a fire has time to escalate. The objective was complete cover against fire.
- Key features of our VESDA solution:
  - Inbuilt Vesda Laser Plus
  - Exceptional Sensitivity
  - Air Sampling and Fire Suppression Systems



# Aerosol based Fire Suppression System



- In order to reduce the residual risk of a fire inside the room caused by the server and Networking components an effective Aerosol based fire extinguishing system was fitted. The system is to be provided with tanks for agent, dispensing unit controlled by the fire detection system. This solution is completely **eco friendly** and comes up with a special feature of chain reaction to cease the fire. This solution is approved by **US environmental protection academy**.



# Infrastructure Work



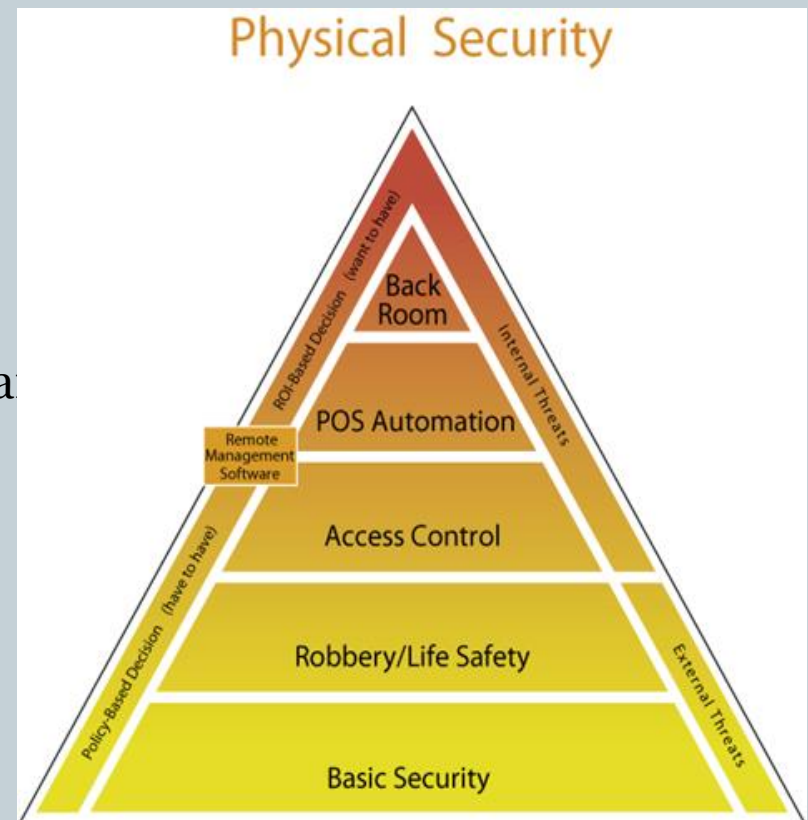
- The data center was to be provided with raised false floor with vents for conditioned air. The floor was properly mounted on a suitable structure so as to withstand the load of racks, equipments and operating personnel. The raised false floor to provide space for the installation of cables and also ensured the equal distribution of the conditioned air. The height of the false floor was around 1 ft to specific and was adjusted to accommodate 42U rack inside the Data Center. The false floor was mounted with **electrostatic protection coating material**.



# Physical Security



- The entire infrastructure was housed in a very secure environment. The building is manned by armed guards 24x7 and has a five-layer security system including:
  - Manned access
  - Card reader
  - Man-trap
  - Biometric scanning
  - Smart cards
  - Caged area
  - Premise monitoring using IP video surveillance



# Rodent Repellent System



- It's a bare basic solution but a small rodent could hamper the data centre in a big way. Maser Ultrasonic Pest repellent are electronic transmitters of high frequency sound (well above the 20 KHz frequency which is the upper limit of the hearing range of the human ear). They emit intensive sound at high decibel levels (sound pressure) that is audible and painful to pests but is inaudible and harmless to humans. The pests will usually leave the area being protected by the ultrasound. They do not get killed.

# Reduced Power requirement



Product	Qty	KVA	Total
HP Blade System c7000	12	6	72
Hitachi AMS 500	2	8	16
Force 10 switch (480 ports)	2	8	16
			104 KVA



# Emerson Liebert UPS

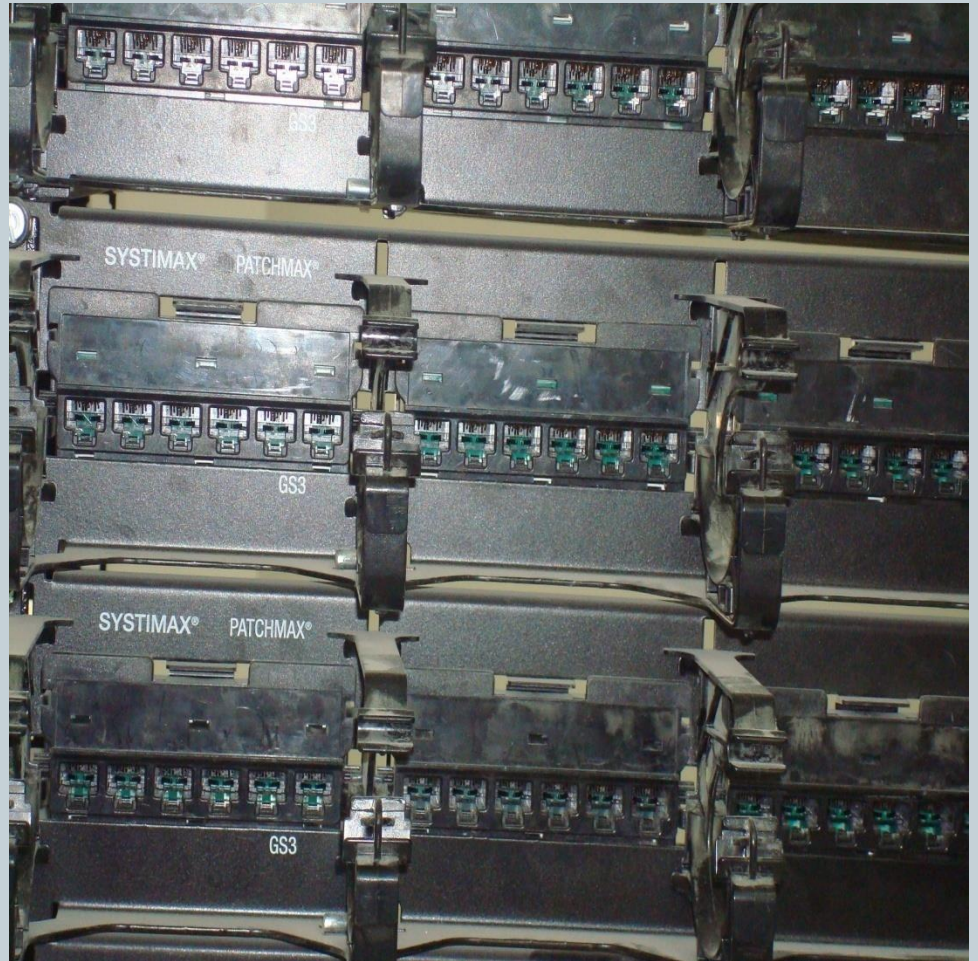
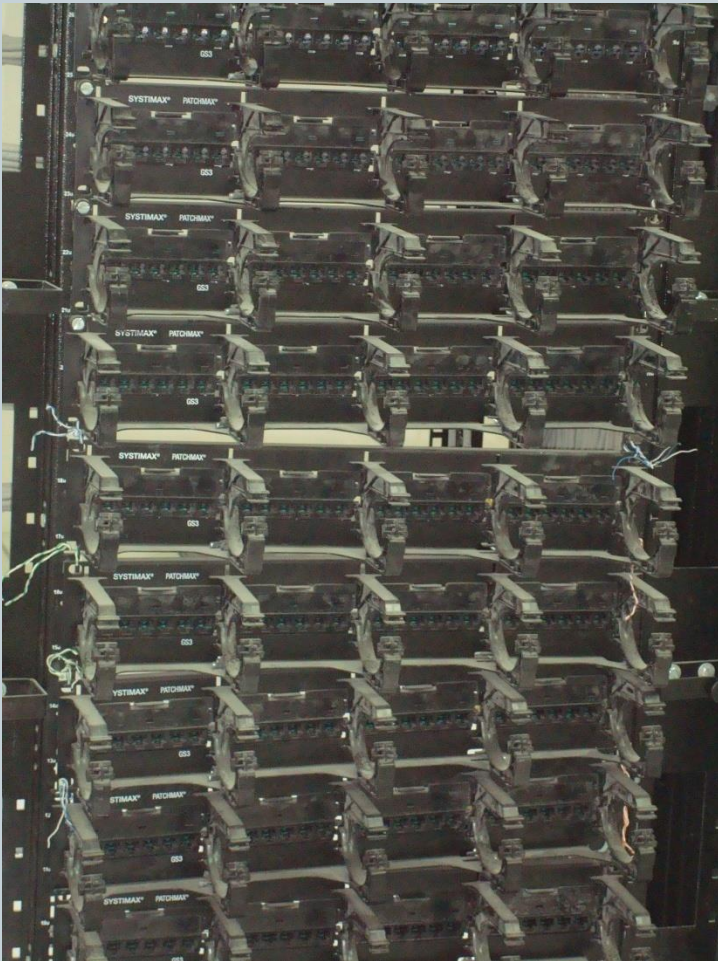


- Since the equipment quantity became nearly half, thereafter the requirement of UPS was also reduced. We proposed 4 x 60 KVA UPS in a parallel mode. Some key deliverables of Emerson UPS were :
- High Efficiency rating of up to 96% on double conversion mode.
- High power density saving floor space
- Unity Power factor for mission critical application.
- Intelligent battery management
- Total harmonic distortion – keeping input current distortion within acceptable limits
- Power factor – managing shifts between voltage aligned and current drawn by circuits.

# Passive cabling specialization



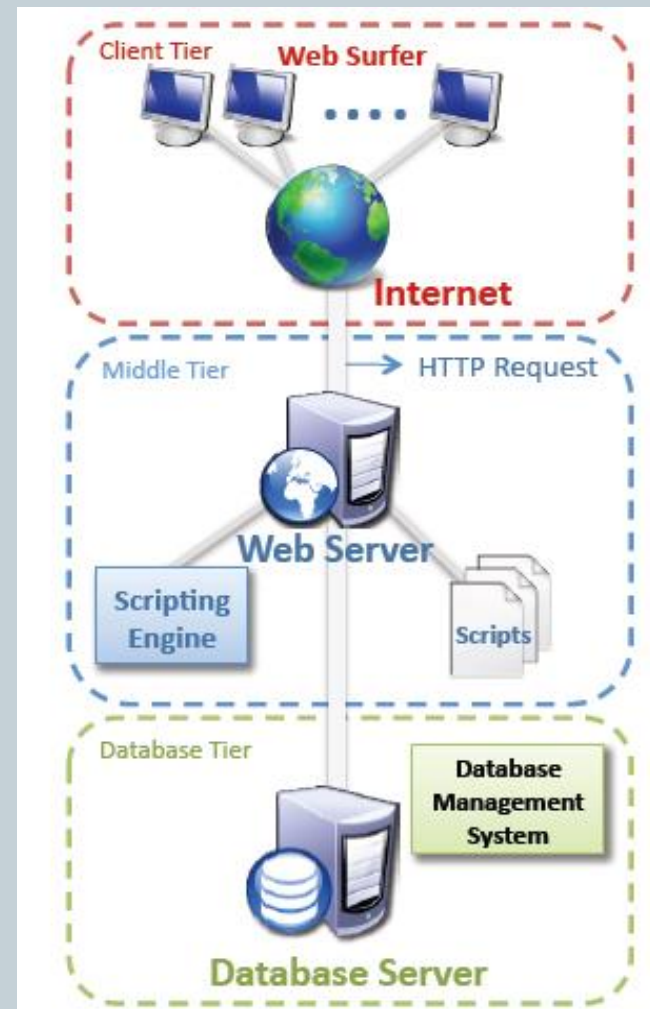
# Patch panels



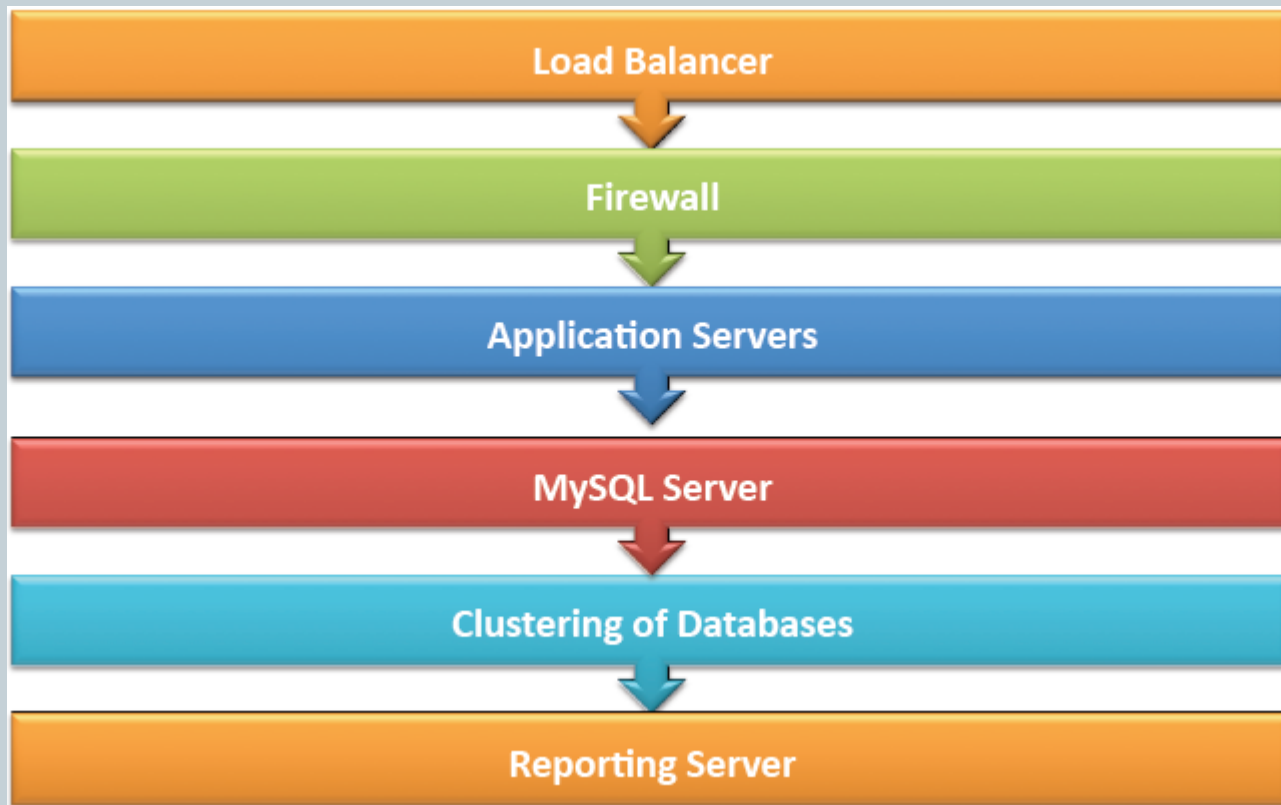
# Solution Architecture for main application server

The main application gateway is a database driven application built around a three-tier architecture model:

- **Client Tier**, usually web browser software that interacts with the application.
- **Middle Tier**, built on top of the database tier is the complex middle tier which contains most of the application logic and communicates data between the other tiers.
- **Database Tier**, consisting of the database management system that manages the database containing the data users create, delete, modify, and query.



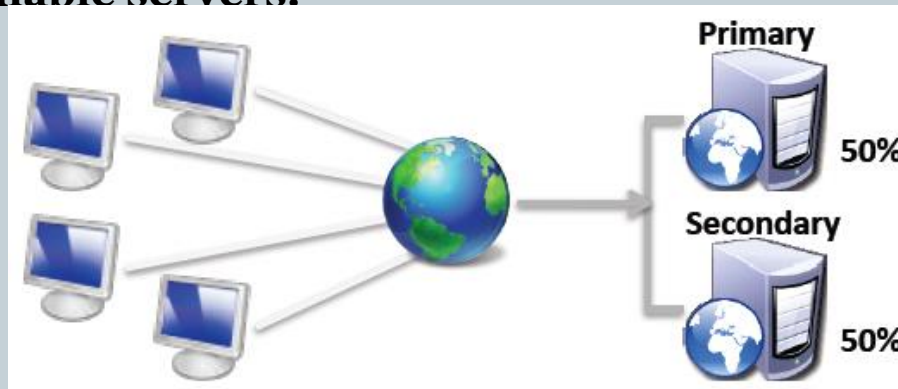
# The application Infrastructure is based on six essential Layers:



# Load Balancer



- **Allowed us to balance the load of requests across multiple application servers.**
- **Enabled us to manage the clustered network very easily and allow the clients the most efficient and quickest way to access the data.**
- **To ensure the data on the servers is synchronized, the File Synchronization feature replicated the data on all servers automatically.**
- **If any of the servers or processes fail, the Failover feature will direct all the traffic to the available servers.**



# Key Considerations



- One HP blade chassis takes one third the space as compared to normal servers, this resulted in huge saving on real estate cost.
- As HP blade server technology take very less power to run, the requirement of power was brought down drastically.
- Lot less cooling is required to run a HP blade server chassis resulting in still reduction of power requirement
- The massive computing power offered by a HP blade chassis resulted in huge saving in wait time of artist and customers.
- HP blade servers are less expensive as compared to traditional 2U server technology, hence offering huge monitory saving
- HP workstations offered compatibility with all latest graphic cards and also full optimization of these cards.

# Social Benefits



- Leap saved considerable amount of electricity in last one year.
- Leap Project saved huge amount to real estate required to run the data center.
- Leap has created major job opportunities for skillful artists in Chennai.
- Pixion is geared to pick noticeable projects from European countries creating FI opportunities.



# Green Data Center



- Key importance was given to Carbon emission.
- CCL data center is a repository for the storage, management, and dissemination of data in which the lighting, electrical and computer systems were designed for maximum energy efficiency and minimum environmental impact.
- Minimizing the DC space
- Reducing power consumption
- Reducing PAC & UPS requirements
- Cutting down the rack requirement to half
- Using certified eco-friendly fire suppression system

Another advantage is the fact that green facilities offer employees a healthy, comfortable work environment. In addition, green facilities enhance relations with local communities.

# Manageability



- A NOC was created for remote monitoring of the complete data center from temperature, cooling, integration of various control panels on a large monitor via BMS and application manageability stand point.
- Load balancing, networking monitoring and uptime manageability is a most important consideration for the NOC specially during production hours.

# Financial Benefits



No doubt CCL had a lot of benefits in the different departments of their IT infrastructure. Some of the aspects where cost was reduced drastically are below:

- Server
- Rack
- Workstations
- Switches
- Power
- Cooling
- UPS
- Real estate

# Customer testimony



- Today IT has become core for media industry, with growth of animation, VFX and computer graphics. To get the maximum utilization of resources with possible lower prices is everyone's prime motto. I am glad we are associated with Compton Computers.

*Mr. Abhishek Tiwari*

*Director-CCL*

# Summary:



- Project Name : Leap
- Project duration : Six Months
- Project Size : 13 Crs.
- Customer: Century communication Ltd, Chennai.

# Achievement



- Created recruitment for Top artists in Chennai.
- Top Chennai Film makers come to studio for post production.
- Rajni kant's " Robot" was done at Pixion.
- Projects from International film producers started pouring immediately.

Awards – Compton has won many awards for the exemplary work.

