भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

22/8/2022

# REPORT ON SUMMER INTERNSHIP 2022

PLACE:- ARPORTS AUTHORITY OF INDIA

REGIONAL HEADQUATER (NORTHEASTERN REGION)

GUWAHATI – 15, ASSAM


**SUBMITTED BY:**

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# OVERVIEW

Airports Authority of India (AAI) was constituted by an Act of Parliament and came into being on 1st April 1995 by merging erstwhile National Airports Authority and International Airports Authority of India. The merger brought into existence a single Organization entrusted with the responsibility of creating, upgrading, maintaining and managing civil aviation infrastructure both on the ground and air space in the country.

AAI manages a total of 137 airports which include 24 International airports (3 Civil Enclaves), 10 Custom Airports (4 Civil Enclaves) and 103 Domestic airports (23 Civil Enclaves). AAI provides air navigation services over 2.8 million square nautical miles of air space. During the year 2019-20, AAI handled aircraft movement of 1314.23 Thousand [International 156.0 & Domestic 1158.23], Passengers handled 159.59 Million [International 22.26 & Domestic 137.33] and the cargo handled 909.32 thousand MT [International 452.46 & Domestic 456.85]. Further, all Indian airports taken together have handled aircraft movement of 2587.05 Thousand [International 431.85 & Domestic 2155.20], Passengers handled 341.05 Million [International 66.54& Domestic 274.51] and the cargo handled 3328.63 thousand MT [International 2003.12 & Domestic 1325.51].

## Mission

**" To BE THE FOUNDATION of an enduring Indian aviation network, providing high quality, safe and customer - oriented airport and air navigation services thereby acting as a catalyst for economic growth in the areas we serve."**

## Vision

**AAI's vision till 2026 is: Airports Authority of India commits as follows:**

- To be the pre-eminent Air Navigation Service Provider with Global Recognition
- To adopt state of art technology to drive safe navigation in the Indian airspace
- To maintain highest standards of excellence in providing sustainable, modern and robust airport infrastructure;
- Support in improving air connectivity at unserved and under-served airports;
- Have an effective organization equipped to face the emerging challenges from the exponential air traffic growth;
- Focus on profitable operations at Major airports through continuing efforts on cost reduction and enhancing non-aeronautical revenue.

# NER HEADQUATER

RED (NER) manages 22 airports in seven states of N.E Region and two in the state of West Bengal . Out of these airports 12 are operational and rest 10 are non-operational.

## Airports Under North Eastern Region

### Domestic Operational Airports

1. Agartala
2. Dibrugarh
3. Imphal
4. Lilabari
5. Shiliong

### International Civil Enclave

1. Daporizo
2. Lengpul
3. Zero

### Domestic Operational Civil Enclaves

1. Jorhat
2. Silchar
3. Tezpur

### Domestic Non – Operational Airports

1. Kailashahr
2. Kamalpur
3. Khowal
4. Passighat
5. Rupsi
6. Tezu

**Guwahati Lokpriya Gopinath Bordoloi**

**International Airport, Borjhar Guwahati,**

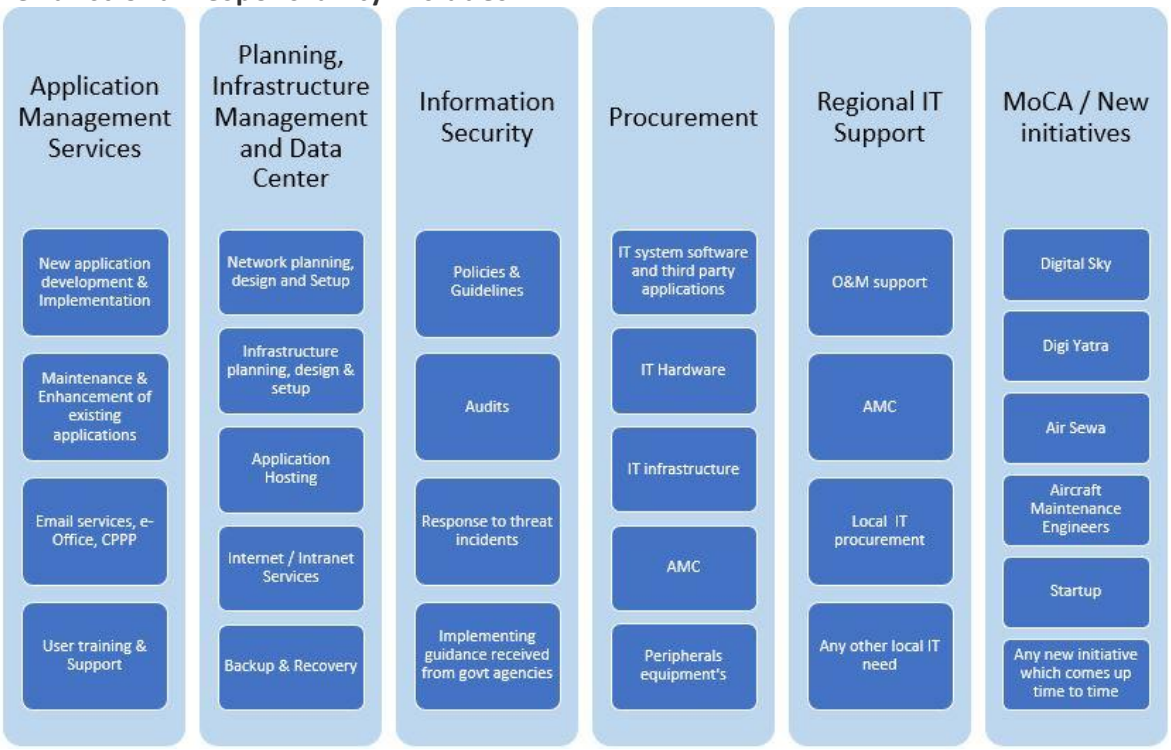
Assam 781015

Guwahati Airport, better known as **Lokpriya Gopinath Bordoloi International Airport (LGBIA)** is the largest airport in the state of Assam. Guwahati being a major hub for tourists, traders and local travelers, LGBIA serves as a doorway to the seven states in India. Pilgrims to the famous Kamakhya temple, a popular destination of Hindu devotees, and tourists from different parts of the world to visit the only abode of one horned rhinoceros, Kaziranga sanctuary descend at this airport throughout the year. Surrounded by lush green valleys, on the bank of Brahmaputra, LGBIA also serves as economic driver to the entire northeastern states.

LGBI Airport (IATA: GAU, ICAO: VGET) is a fully operational international airport and was granted the status of international airport in the year 2000. Handling 5.7 million passengers per annum before the pandemic, LGBI airport bagged the credit of the 11$^{th}$ busiest airport in the country with a high passenger growth of 23% (2018-19). With a single runway of 3110 meter long, LGBI serves both the civil and military aircrafts throughout the year. LGBIA is also the epicentre of International UDAN, the regional connectivity scheme, rolled out by the Government of India.

# INFORMATION TECHNOLOGY

**The functional responsibility includes :**




**AAI Headquarter:**

Corporate Headquarter

**AAI Department:**

Information Technology

**Department Executive:**

| | |
|---|---|
| **Name:** | **Name:** |
| Prabhakar Bajpai | V. Baburaj |
| **Designation:** | **Designation:** |
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| **Email:** | **Email:** |
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**HOD Deatils:**

**Name:**

Roshan Popli

**Designation:**

*Chief Information Officer*

**Email:**

cio@aai.aero

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# KEYWORDS AT A GLANCE

1. **Network**

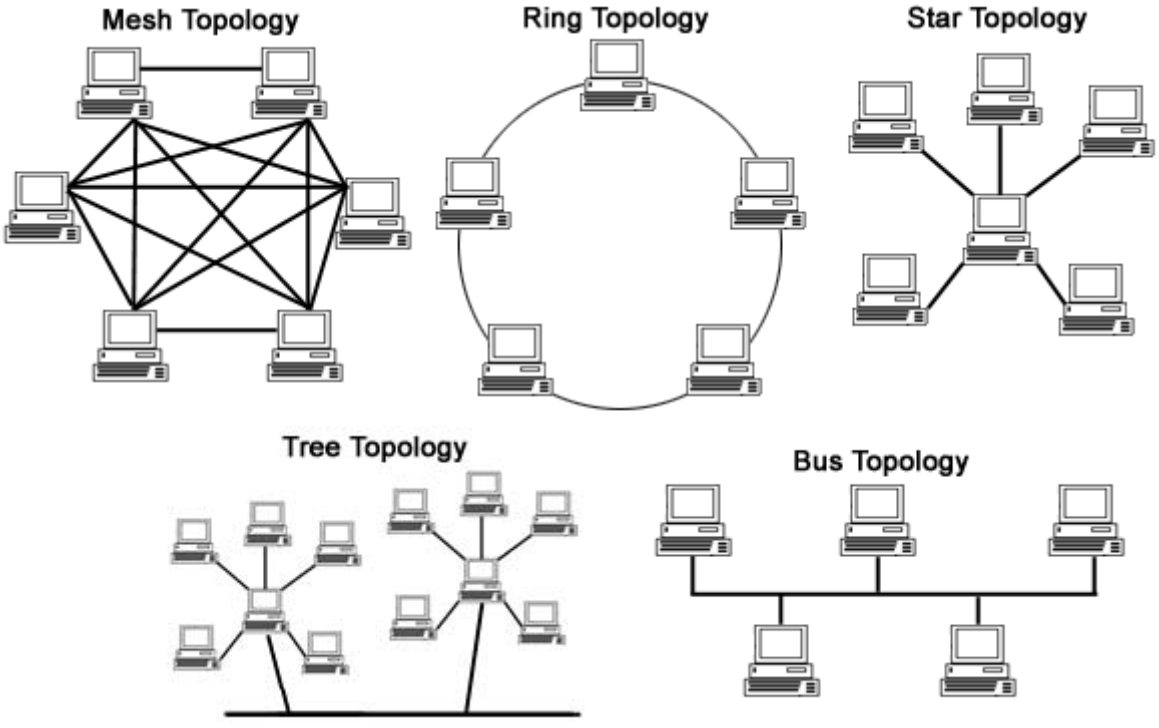
A network is a collection of computers, servers, mainframes, network devices, peripherals, or other devices connected to allow data sharing. An example of a network is the Internet, which connects millions of people all over the world.

2. **Network Topologies And The Type of Network**

The term network topology describes the relationship of connected devices in terms of a geometric graph. Devices are represented as vertices, and their connections are represented as edges on the graph. It describes how many connections each device has, in what order, and what sort of hierarchy.

Typical network configurations include :

- Mesh Topology
- Ring Topology
- Star Topology
- Tree Topology
- Bus Topology



### 3. Public And Private Network

A *public network* is a type of network wherein anyone, namely the general public, has access and through it can connect to other networks or the Internet. This is in contrast to a *private network*, where restrictions and access rules are established in order to relegate access to a select few. Since a public network has few or no restrictions, users need to be wary of possible security risks when accessing it.

### 4. Public And Private IP Address

*Public IP address* of a system is the IP address that is used to communicate outside the network. A public IP address is basically assigned by the ISP (Internet Service Provider).

*Private IP address* of a system is the IP address that is used to communicate within the same network. Using private IP data or information can be sent or received within the same network.

### 5. IP Version 4 (IPv4)

IPv4 addresses are 32-bit numbers that are typically displayed in dotted decimal notation. A 32-bit address contains two primary parts: the network prefix and the host number.

All hosts within a single network share the same network address. Each host also has an address that uniquely identifies it. Depending on the scope of the network and the type of device, the address is either globally or locally unique. Devices that are visible to users outside the network (webservers, for example) must have a globally unique IP address. Devices that are visible only within the network must have locally unique IP addresses.

IP addresses are assigned by a central numbering authority called the Internet Assigned Numbers Authority (IANA). IANA ensures that addresses are globally unique where needed and has a large address space reserved for use by devices not visible outside their own networks.

### 6. IP Version 6 (IPv6)

The ongoing expansive growth of the Internet and the need to provide IP addresses to accommodate it—to support increasing numbers of new users, computer networks, Internet-enabled devices, and new and improved applications for collaboration and communication—is escalating the emergent use of a new IP protocol. IPv6, with its robust architecture, was designed to satisfy these current and anticipated near future requirements.

IPv6 builds upon the functionality and structure of IPv4 in the following ways:

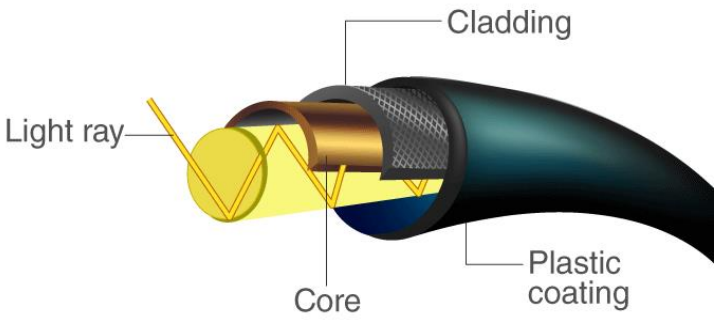
- Provides a simplified and enhanced packet header to allow for more efficient routing.
- Improves support for mobile phones and other mobile computing devices.
- Enforces increased, mandatory data security through IPsec (which was originally designed for it).
- Provides more extensive quality-of-service (QoS) support.

IPv6 addresses consist of 128 bits, instead of 32 bits, and include a scope field that identifies the type of application suitable for the address. IPv6 does not support broadcast addresses, but instead uses multicast addresses for broadcast. In addition, IPv6 defines a new type of address called anycast.

### 7. OFC (Optical Fibre Cable)

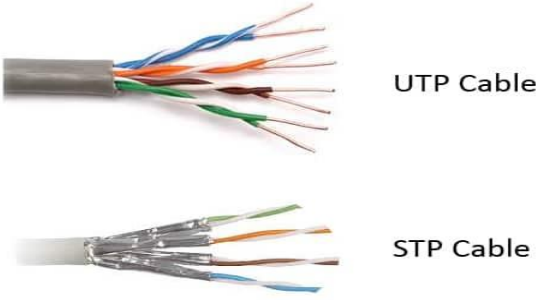
A fibre-optic cable is composed of very thin strands of glass or plastic known as optical fibres; one cable can have as few as two strands or as many as several hundreds of them. These optical fibre cables carry information in the form of data between two places using optical or light-based technology. Once the light beams travel down the optical fibre cable (OFC), they would emerge at the other end. A photoelectric cell will be required to turn the pulses of light back into electrical information the computer could understand.

While travelling down fibre optic cable, light repeatedly off the walls. The beam of light does not leak out of the edges because it hits the glass at really shallow angles. And then it reflects back again as if the glass was really a mirror. This is called total internal reflection. The other factor that keeps it in the pipe is the cable structure.




Fibre offers many advantages, the prime ones being higher bandwidth and reach.Optical fibre loses 3% of the signal over 100 meters distance while copper wires lose 94%. Additionally, optical fibres are more long-lasting as compared to copper wires, which are much fragile. Copper wire can be tapped very easily, while optical fibres do not radiate signals that can be tapped. Optical fibre offers much lower latency (the amount of time required to perform data transmission) compared to copper wires.

### 8. UTP and STP Cable




*UTP* stands for Unshielded Twisted Pair cable. UTP cable is a 100 ohm copper cable that consists of 2 to 1800 unshielded twisted pairs surrounded by an outer jacket. They have no

metallic shield. This makes the cable small in diameter but unprotected against electrical interference. The twist helps to improve its immunity to electrical noise and EMI.

*STP* stands for Shielded twisted pair cable. It acts as a conducting shield by covering the four pairs of signal-carrying wires as a means to reduce electromagnetic interference. There are a variety of different types of STP cables, such as a foil twisted pair (FTP) and a shielded foil twisted pair (S/FTP).

**9. Category 6 Cable (CAT6)**

A Cat 6 patch cable, terminated with 8P8C modular connectors

*Category 6 cable (Cat 6)* is a standardized twisted pair cable for Ethernet and other network physical layers that is backward compatible with the Category 5/5e and Category 3 cable

Cat 6 must meet more stringent specifications for crosstalk and system noise than Cat 5 and Cat 5e. The cable standard specifies performance of up to 250 MHz, compared to 100 MHz for Cat 5 and Cat 5e.

Whereas Category 6 cable has a reduced maximum length of 55 meters (180 ft) when used for 10GBASE-T, Category 6A cable is characterized to 500 MHz and has improved alien crosstalk characteristics, allowing 10GBASE-T to be run for the same 100-metre (330 ft) maximum distance as previous Ethernet variants.

**10. MPLS**

Multiprotocol Label Switching, or MPLS, is a networking technology that routes traffic using the shortest path based on “labels,” rather than network addresses, to handle forwarding over private wide area networks. As a scalable and protocol-independent solution, MPLS assigns labels to each data packet, controlling the path the packet follows. MPLS greatly improves the speed of traffic, so users don’t experience downtime when connected to the network.

**11. Router**

A router is a device that connects two or more packet-switched networks or subnetworks. It serves two primary functions: managing traffic between these networks by forwarding data

packets to their intended IP addresses and allowing multiple devices to use the same Internet connection.

### 12. Network Switch

*Avaya ERS 2550T-PWR, a 50-port Ethernet switch*

A network switch (also called switching hub, bridging hub, and, by the IEEE, MAC bridge[1]) is networking hardware that connects devices on a computer network by using packet switching to receive and forward data to the destination device.

A network switch is a multiport network bridge that uses MAC addresses to forward data at the data link layer (layer 2) of the OSI model. Some switches can also forward data at the network layer (layer 3) by additionally incorporating routing functionality. Such switches are commonly known as layer-3 switches or multilayer switches.

### 13. Core Switch

A core switch is a high-capacity switch generally positioned within the backbone or physical core of a network. Core switches serve as the gateway to a wide area network (WAN) or the Internet - they provide the final aggregation point for the network and allow multiple aggregation modules to work together.

A core switch is also known as a tandem switch or a backbone switch.

In a local area network (LAN), this switch interconnects work group switches, which are relatively low-capacity switches that are usually positioned in geographic clusters.

As the name implies, a core switch is central to the network and needs to have significant capacity to handle the load sent to it. There isn't a precise definition as to how powerful this is, but clearly it is much bigger than an average desktop switch.

### 14. Managed Switch Verses Unmanaged Switch

When selecting the right type of switch to meet our needs, one consideration is whether to use a managed or an unmanaged switch. The key difference is in the amount of control we have over the settings of the switch.

*Unmanaged switches* are designed to just plug in and run, with no settings to configure. These are fine to use in small networks with only basic needs. *Managed switches,* however, are fully configurable, are customizable, and provide a range of data on performance. Those attributes make them more suitable for larger networks and networks supporting critical activities.

Managed switches and unmanaged switches differ in three areas: capabilities, security, and cost.

- **Capabilities:** Unmanaged switches immediately start forwarding traffic once users have plugged them in. They have no features besides what they need to negotiate transfer speeds and to determine each link's duplexing type. Managed switches can offer a huge number of features that can be configured by IT professionals, thus permitting a diverse array of deployment possibilities. These capabilities allow for optimization of network performance and availability.

- **Security:** Network security includes protection from and detection of threats to data and operability. Managed switches provide security settings that can be configured to protect the network and to help identify threats. Unmanaged switches do not offer security capabilities.

- **Cost:** For some users, cost is a significant choice driver. Unmanaged switches are cheap, as well as very simple to run. Managed switches, with all their additional capabilities, cost more than unmanaged switches. They also require more expertise to provision and manage, meaning added costs for staff with the skills to maintain the network

A pair of managed Gigabit Ethernet rack-mount switches, connected to the Ethernet ports on a few Panduit patch panels using Category 6 patch cables. (All equipment is installed in a standard 19-inch rack.

### 15. Patch Panel

A patch panel is a device or unit featuring a number of jacks, usually of the same or similar type, for the use of connecting and routing circuits for monitoring, interconnecting, and testing circuits in a convenient, flexible manner. Patch panels are commonly used in computer networking, recording studios, and radio and television.

The term *patch* came from early use in telephony and radio studios, where extra equipment kept on standby could be temporarily substituted for failed devices. This reconnection was done via patch cords and patch panels, like the jack fields of cord-type telephone switchboards.

### 16. Virtual LAN(VLAN)

*Virtual LAN (VLAN)* is a concept in which we can divide the devices logically on layer 2 (data link layer). Generally, layer 3 devices divide broadcast domain but broadcast domain can be divided by switches using the concept of VLAN.
A broadcast domain is a network segment in which if a device broadcast a packet then all the devices in the same broadcast domain will receive it. The devices in the same broadcast

domain will receive all the broadcast packets but it is limited to switches only as routers don't forward out the broadcast packet. To forward out the packets to different VLAN (from one VLAN to another) or broadcast domain, inter VLAN routing is needed. Through VLAN, different small-size sub-networks are created which are comparatively easy to handle.

VLAN ranges –

- VLAN 0, 4095: These are reserved VLAN which cannot be seen or used.
- VLAN 1: It is the default VLAN of switches. By default, all switch ports are in VLAN. This VLAN can't be deleted or edit but can be used.
- VLAN 2-1001: This is a normal VLAN range. We can create, edit and delete these VLAN.
- VLAN 1002-1005: These are CISCO defaults for fddi and token rings. These VLAN can't be deleted.
- Vlan 1006-4094: This is the extended range of Vlan.

### 17. Dynamic Host Configuration Protocol (DHCP)

The Dynamic Host Configuration Protocol (DHCP) is a network management protocol used on Internet Protocol (IP) networks for automatically assigning IP addresses and other communication parameters to devices connected to the network using a client–server architecture.

The technology eliminates the need for individually configuring network devices manually, and consists of two network components, a centrally installed network DHCP server and client instances of the protocol stack on each computer or device. When connected to the network, and periodically thereafter, a client requests a set of parameters from the DHCP server using the DHCP protocol.

DHCP can be implemented on networks ranging in size from residential networks to large campus networks and regional ISP networks. Many routers and residential gateways have DHCP server capability. Most residential network routers receive a unique IP address within the ISP network. Within a local network, a DHCP server assigns a local IP address to each device.

DHCP services exist for networks running Internet Protocol version 4 (IPv4), as well as version 6 (IPv6). The IPv6 version of the DHCP protocol is commonly called DHCPv6.

### 18. User Datagram Protocol (UDP)

In computer networking, the User Datagram Protocol (UDP) is one of the core members of the Internet protocol suite. With UDP, computer applications can send messages, in this case referred to as *datagrams*, to other hosts on an Internet Protocol (IP) network. Prior communications are not required in order to set up communication channels or data paths.

UDP uses a simple connectionless communication model with a minimum of protocol mechanisms. UDP provides checksums for data integrity, and port numbers for addressing different functions at the source and destination of the datagram. It has no handshaking dialogues, and thus exposes the user's program to any unreliability of the underlying network; there is no guarantee of delivery, ordering, or duplicate protection. If error-correction facilities are needed at the network interface level, an application may instead use Transmission Control Protocol (TCP) or Stream Control Transmission Protocol (SCTP) which are designed for this purpose.

UDP is suitable for purposes where error checking and correction are either not necessary or are performed in the application; UDP avoids the overhead of such processing in the protocol stack. Time-sensitive applications often use UDP because dropping packets is preferable to waiting for packets delayed due to retransmission, which may not be an option in a real-time system.

## 19. DATA CENTER

A data center is a centralized physical facility where corporate computers, network, storage, and other IT equipment that support business operations live. The computers in a data center contain or facilitate business-critical applications, services, and data.

Data centers come in all sizes—they may fill a closet, a dedicated room, or a warehouse.

A data center might extend outside of a physical facility by using a private or public cloud to augment its operations or storage. A virtualized data center can use servers in remote locations when needed to run larger workloads.

### a. Data Center Operation

Data center operations comprise the systems and workflows within a data center that keep the data center running. Data center operations include installing and maintaining network resources, ensuring data center security and monitoring systems that take care of power and cooling. The IT requirements of companies that own data centers define many different types of data centers, varying in size, reliability, and redundancy. The growth of cloud computing is pushing data centers to modernize, including updated operations that take advantage of virtualization and automation.

### b. Data Center Components

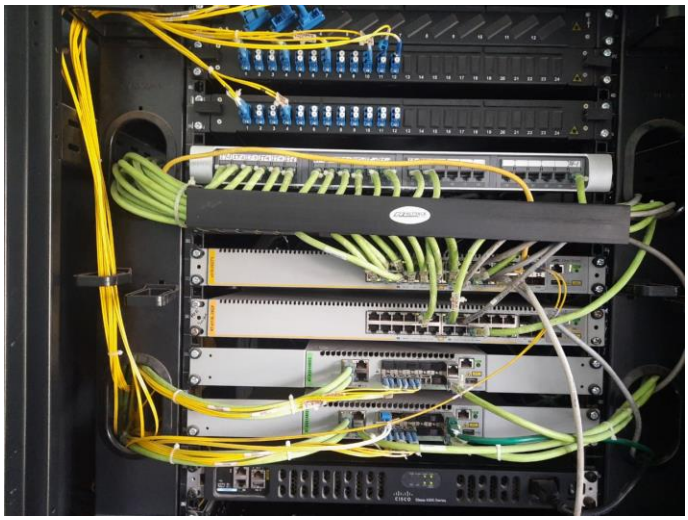
Data center components include computing hardware, network equipment like routers, a security system, storage, management systems including software and applications and power management equipment, including uninterruptible power supply.

### c. Data Center Working System

Data centers contain physical or virtual servers that are connected internally and externally through networking and communication equipment to store, transfer and access digital information. Each server has a processor, storage space and memory, similar to a personal computer but with more power. Data centers use software to cluster the servers and distribute the workload among them.

# RHQ – NER DATA CENTER

- RHQ-NER Data Center consists of :
  - Patch panel
  - Managed switches
  - Core switches
  - Display Monitor (NMS)
  - Server
  - Router
  - Speaker management unit



- Green colour wires are CAT 6 cable which re connected to different rooms via switch labelled with the name of their respective rooms.
- Yellow colour wires are OFC cable.


- Server (Dell PowerEdge R240 1URack Server, Intel Xeon E2224)

# THE RHQ – NER NETWORK SYSTEM

The RHQ Network's core lies in the old's building's server room. The room hosts the main network rack6 and has 24x7 active heat-pump cooling with two specialized heat pumps designed for redundancy. The rack consists of a SDWAP Cisco Router which is connected to a pair of Jio and BSNL Modems. Those modems are then further connected to two core switches. 3 uplinks from each of the core switch go to each floor of the old building. This gives us two uplinks in each floor from the server. The new building is connected by an optical cable from an access switch in the server room via the union room.

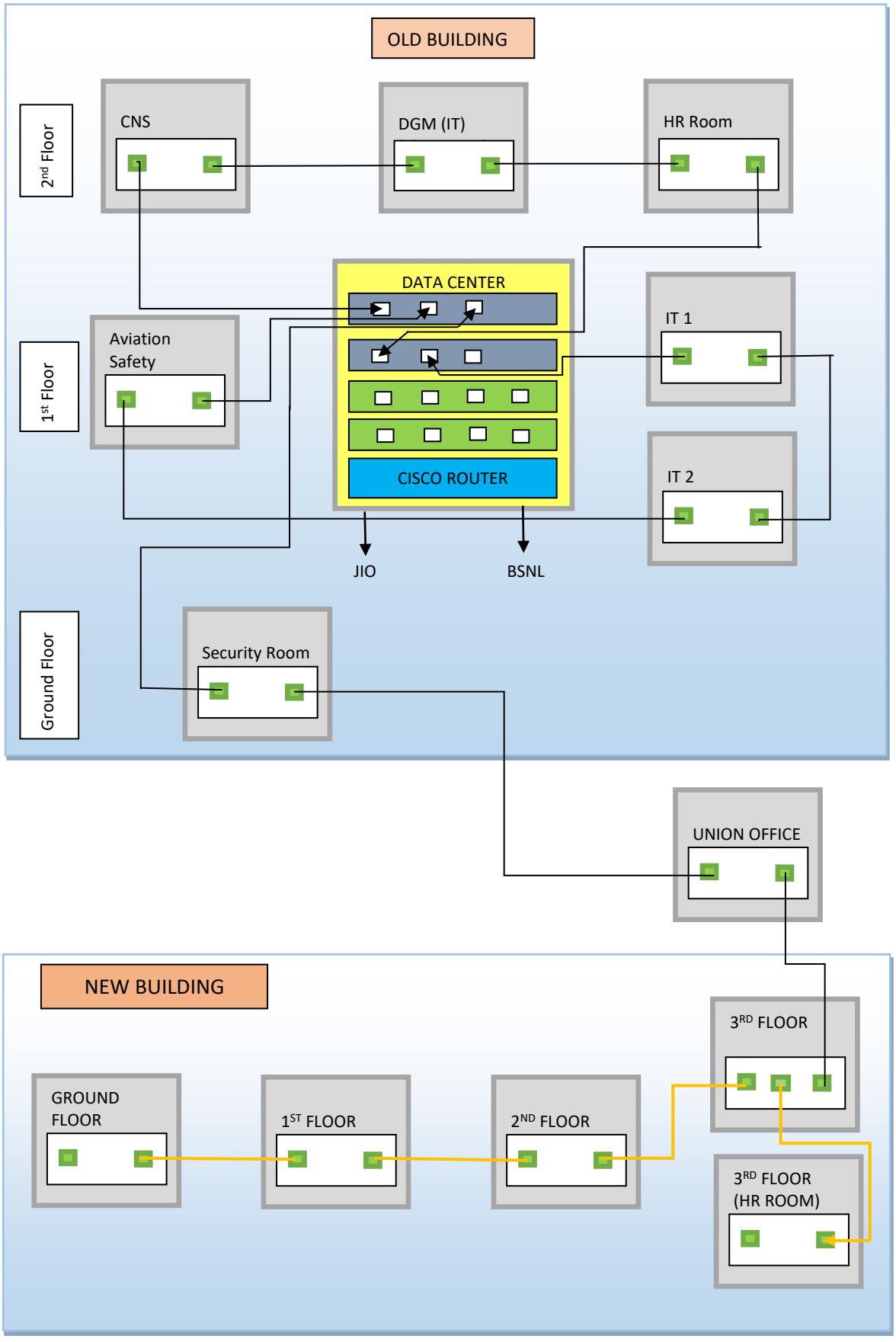
- The old building network consists of many 24-port PoE switches interconnected with optic fibre cables in a ***ring topology*** to ensure redundancy to mitigate points of failure in the network.

- The switches are the connected to the various office devices and also provide electrical power to those which support power over ethernet.

- The New Building network is interconnected entirely via cat6 cables

- Each room is labelled with it's own code and which links with a switch port via a patch panel

# RHQ – NER NETWORK DIAGRAM



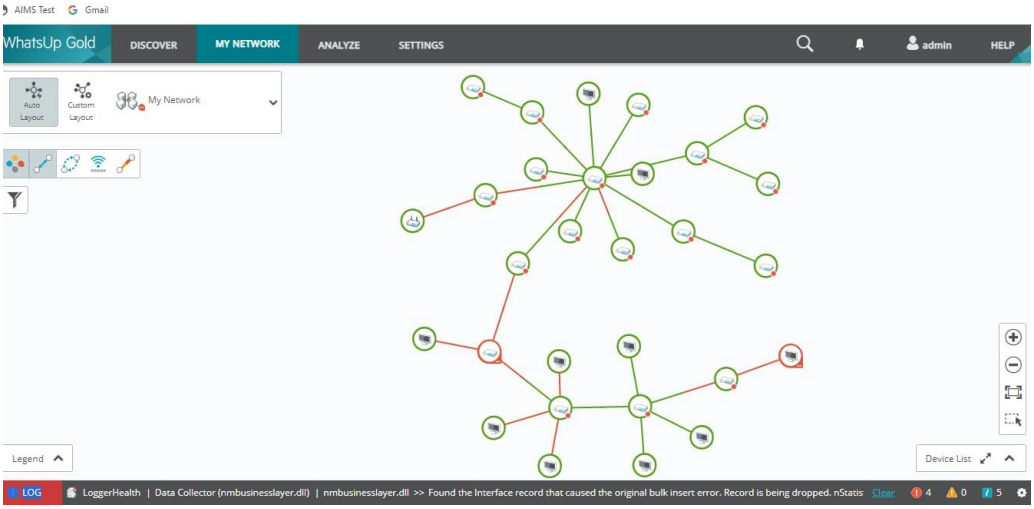

Optical Fibre Cable
CAT-6 Cable
OFC Panel
Core Switch

# NETWORK MANAGEMENT SYSTEM (NMS)

A network management system (NMS) is an application or set of applications that lets network administrators manage a network's independent components inside a bigger network management framework. NMS may be used to monitor both software and hardware components in a network. It usually records data from a network's remote points to carry out central reporting to a system administrator.

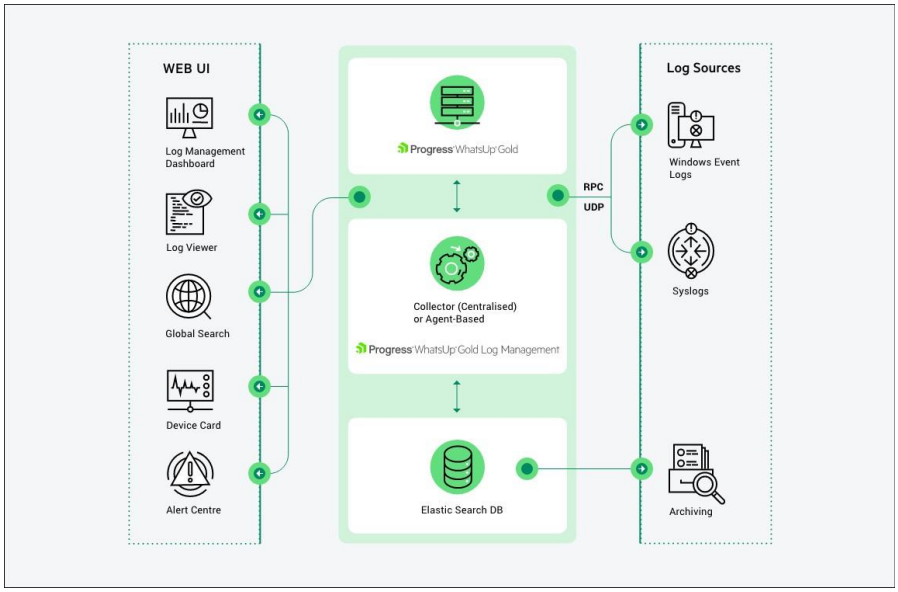
The key benefit to NMS is that it permits users to monitor or manage their entire business operations using a central computer

**WhatsUP Gold**




***WhatsUp Gold*** provides a unified view and fully encompasses heterogeneous environments and vendors so we can see everything on our network. Improve our network performance and improve up-time by monitoring and analysing everything from one actionable, unified dashboard. Understand the interconnections of our network, see and predict issues, and resolve problems faster with WhatsUp Gold's fully personalized dashboard that lets us discover and map our infrastructure and create action policies for our SLAs.

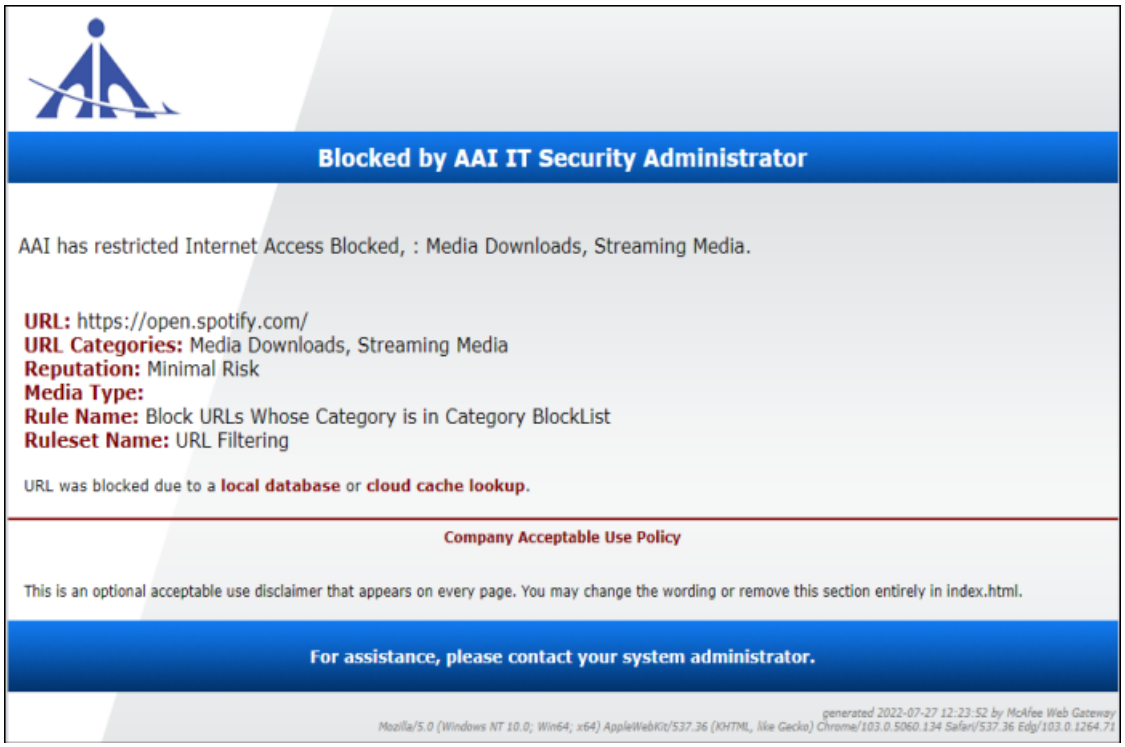
**Features:**



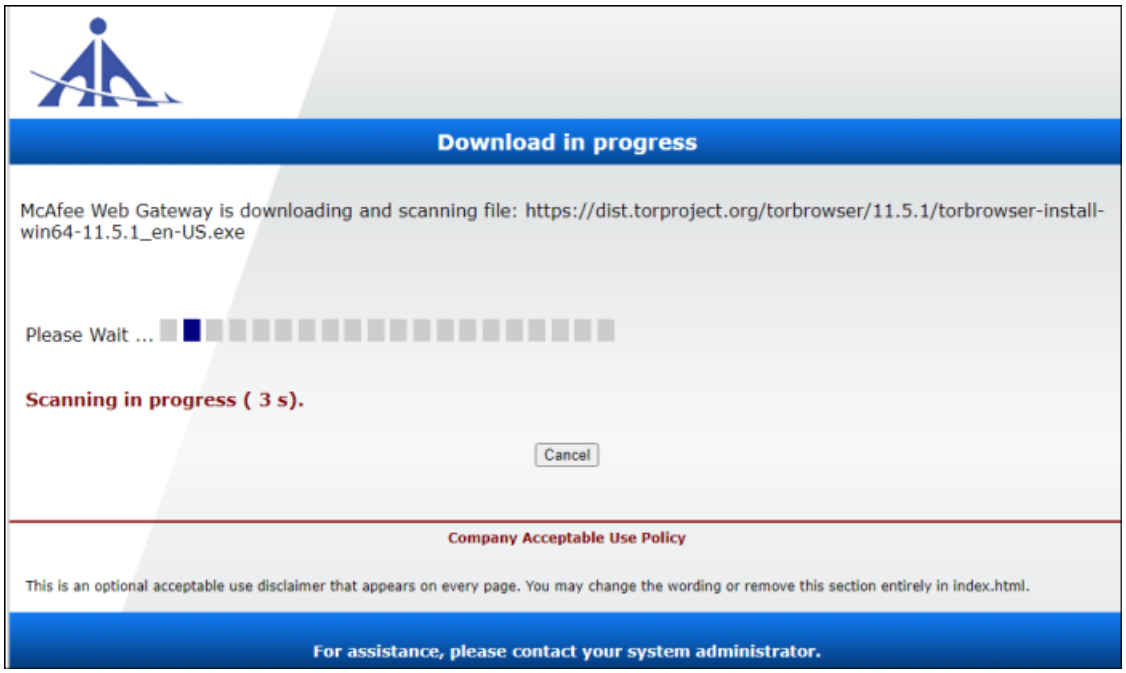
# NETWORK SECURITY

The RHQ uses its own proxy server (McAfee Gateway) to monitor all incoming and outgoing packets from the RHQ and all over the world via the world wide web . The proxy server handles :

- The blocking of any machine connected to the RHQ network from connecting to various dangerous or unrelated sites .



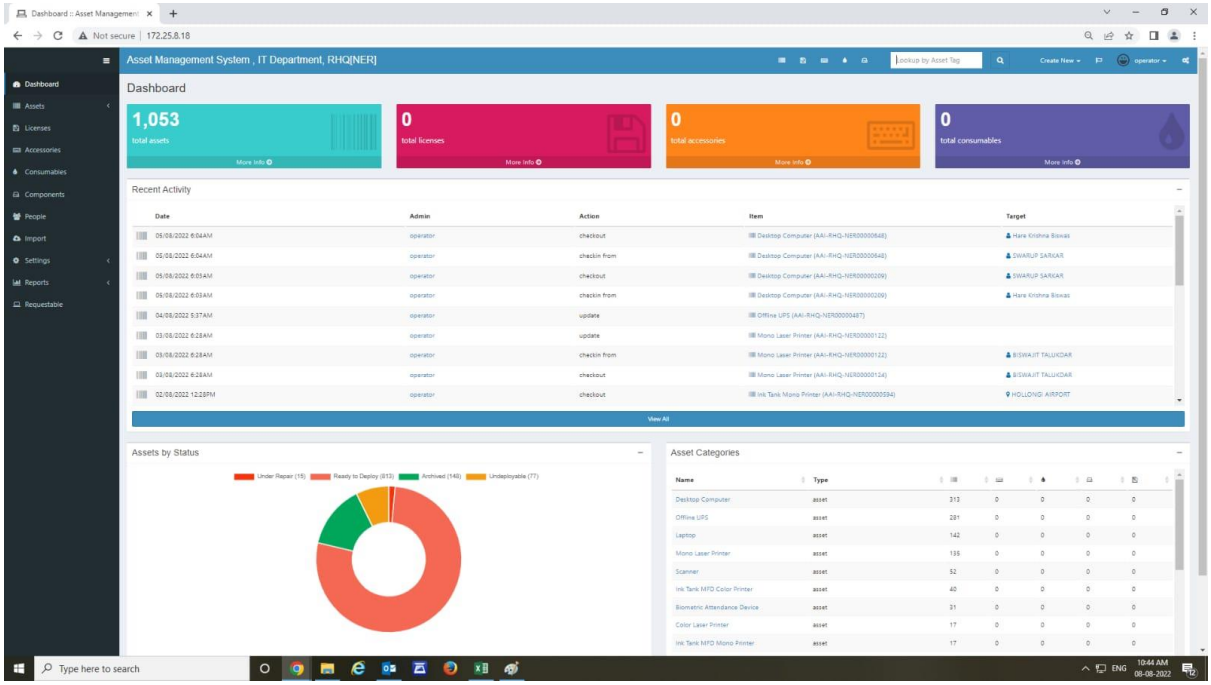

- Scanning of any downloaded media in the RHQ Machines for any malware



# ASSET MANAGEMENT

## ASSET MANAGEMNT SYSTEM :

The IT department uses a software called Asset Management System developed inhouse to track and monitor the distribution of equipments .They have the option to deploy an equipment asked by a user. This software has the record of each, and every IT equipment present in their organisation; either the item is ready to deploy, already deployed, under repair, everything is noted, and live status is shown. All equipments history can be traced in the software like – make/model, supplier, purchase date, warranty left, last serviced, used by whom and every issuing record of it.




## ASSET ACQUISITION:

### GeM

GeM stands form Government e Marketplace . Government e Marketplace (GeM), created in a record time of five months, facilitates online procurement of common use Goods & Services required by various Government Departments / Organisations / PSUs. GeM aims to enhance transparency, efficiency and speed in public procurement. It provides the tools of e-bidding, reverse e-auction and demand aggregation to facilitate the government users, achieve the best value for their money.

The purchases through GeM by Government users have been authorised and made mandatory by Ministry of Finance by adding a new Rule No. 149 in the General Financial Rules, 2017.

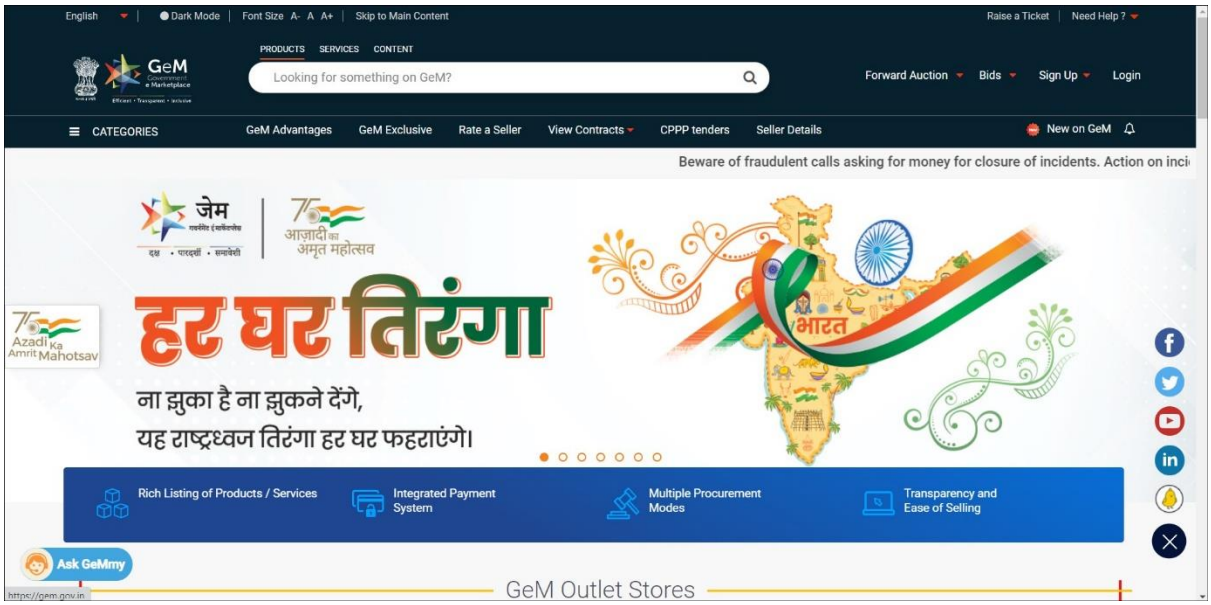
GeM is developed and maintained by NIC .The terms and condition in the process of purchasing assets from GeM in AAI are:

- Assets whose cost are less then 25000INR can be directly purchased.

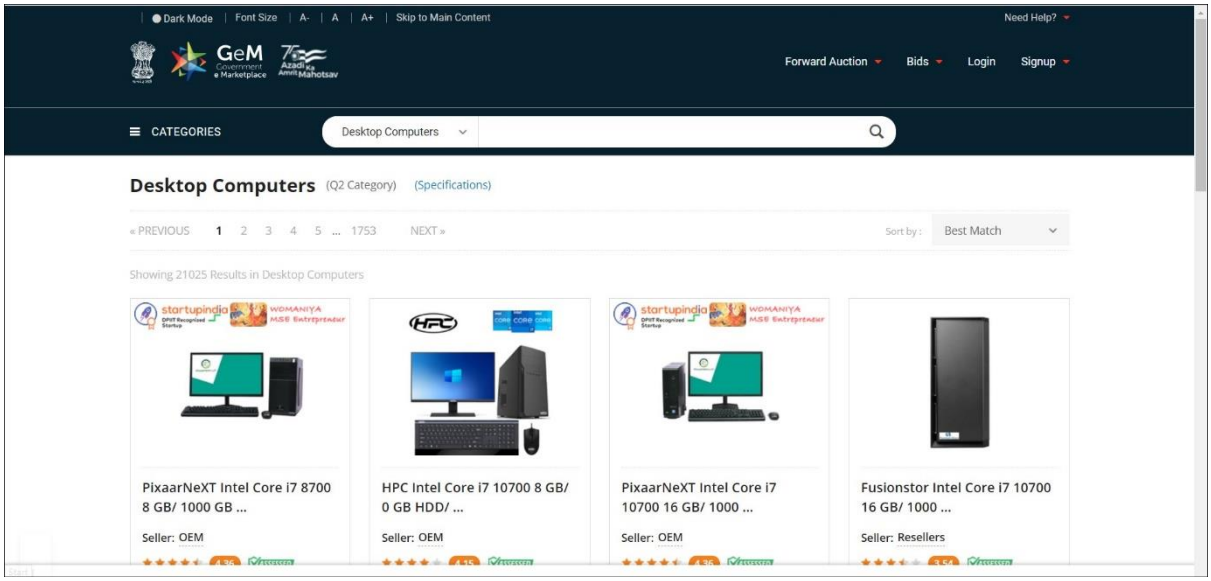
- Assets whose cost are more then 25000INR and less than 500000INR are purchased from L1 seller.
- Assets whose cost are more then 500000INR are purchased through bidding and tendering.

**GeM Interface**

- Home page




- Search page



## AAI Tech Support (Asset Maintenance):

**FMS:**
FMS stands for Facility management system. Hue Service is in charge of facility management system of AAI. The assets that are in warranty are maintained by FMS.

- **Hue Service:**

Hue Service offers Facilities Management Services which involve an effective combination of people, process & tools to ensure that our IT infrastructure is always up and running.

Catering to the customers & their service demands, they undertake complete responsibility of availability and performance of our IT Infrastructure.

Hue Service having over a decade's experience in providing IT products and services. Their facility management services include complete planning, reporting, escalations and management of complete IT.

Its main features are :

- Program Management
- Better uptime of IT infrastructure
- Server / Systems Management
- Network (WAN & LAN) Management
- Database Management
- Application Support
- Mail Management etc.


**CAMC:**

CAMC stands Comprehensive Annual Maintenance Contract. Pioneer C-Solutons is in charge of facility management system of AAI. The assets that are out of warranty are maintained by CAMC.

- **Pioneer Technologies:**

Pioneer Technologies Pvt. Ltd provides IT Consultancy, IT Infrastructure, IT Services, Cloud and Web Solutions .It provides complete end to end solutions at every level of our IT requirements ,it includes installation & maintenance of LAN, WAN and VPN. They are specialized in wired, Wireless & Fiber Networking. They provides the complete security solutions of Antivirus and Firewall. They are maintaining all type of server like File, Database, Application, Mail, Backup, Server etc.
Annual Maintenance Services of Pioneer Technologies:

- Maintenance of IT infrastructure has become essential to various corporate sector looking for better and better option to keep their system up running with minimum downtime.
- Pioneer Technologies offers Annual Maintenance contract, comprehensive or non comprehensive for IT infrastructure includes hardware and software support.
- Pioneer Technologies has immense technical team to take care on maintenance of all brands of Intel Server, Desktop, Laptop, Peripherals.
- Pioneer Technologies provides services between 9 am to 6 pm, Monday to Saturday and 24/7, 365 days with 6 hours resolution commitment for Intel Servers.

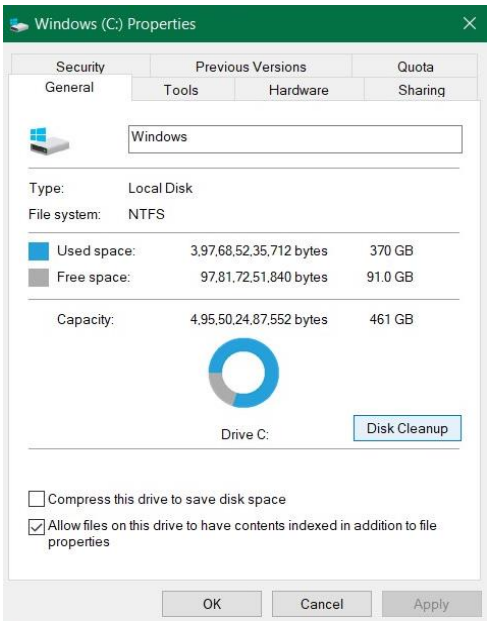
PIONEER
A Complete IT Solution Provider

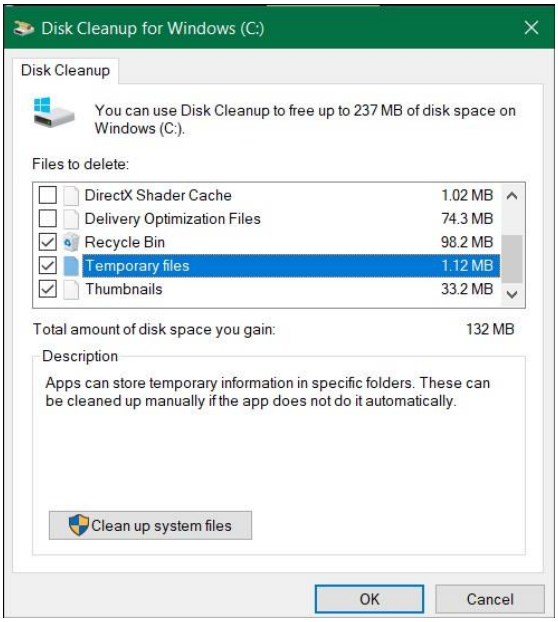
➢ **Preventive Maintenance**

After checking all the functionality of the assets the CAMC group have to submit a maintenance report after 3 months.

**Procedure for preventive maintenance**

1. Open run(Win + R).
2. Run temp, %temp% and prefetch respectively.
3. Permanently delete all the files present in the above folder respectively (Shift +Delete).
4. Open properties of Local Disk C Then click on Disk Cleanup.
5. Disk Cleanup dialogue box appears in which select the checkbox of temporary files, recycle bin and thumbnails.
6. Then click on OK.

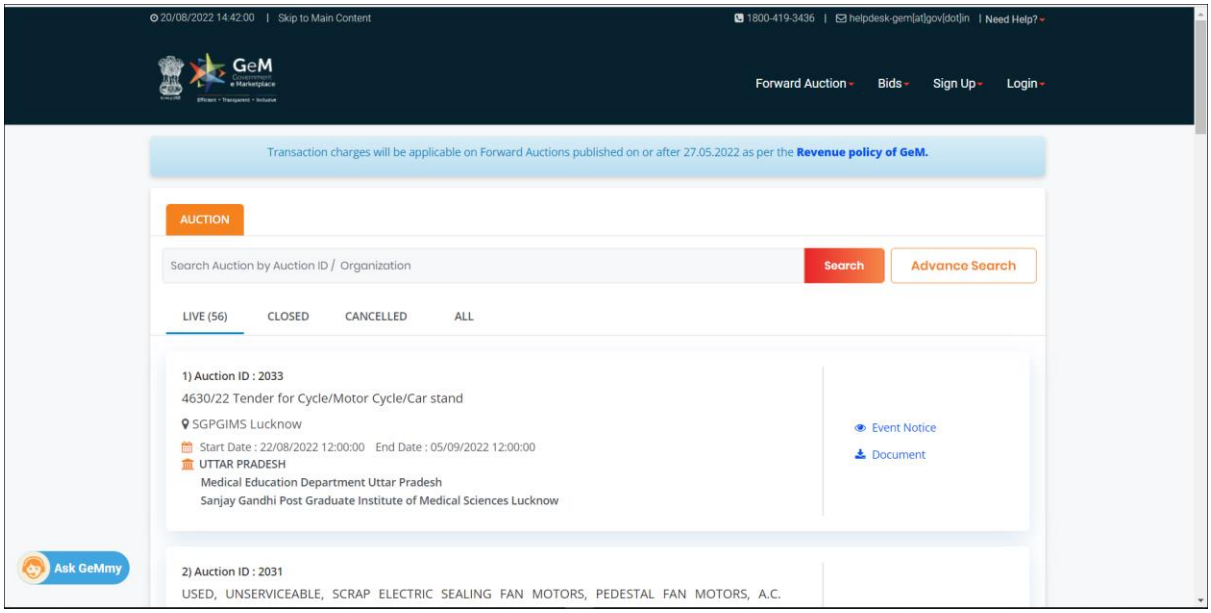


## Write-Off

- Assets which have reached end-of-life(usually it is after 6 - 7 years of use) or are rendered unusable are written-off . It refers to selling off the assets for disposal or recycling . This process is done through the GEM portal and handed off to 3rd parties .

**Ongoing auction page in GeM**




- These assets are sometime tender or are auction through eTender portal. E Tender portal is not currently used much as each terms and condition are need to be set whereas in GeM the terms and condition are already onset .

**e Tender portal**

# VIDEO CONFERENCING SYSTEM

**Webex**

Webex Meetings offers secure, integrated audio, video, and content sharing from any device, anywhere. Intelligent features such as noise removal, Webex Assistant, with real-time translations and People Insights automate meeting tasks to help people  work smarter.

The Webex ecosystem consists of various hardware such as:-

- AI Powered Smart Cameras

Webex Precision 60

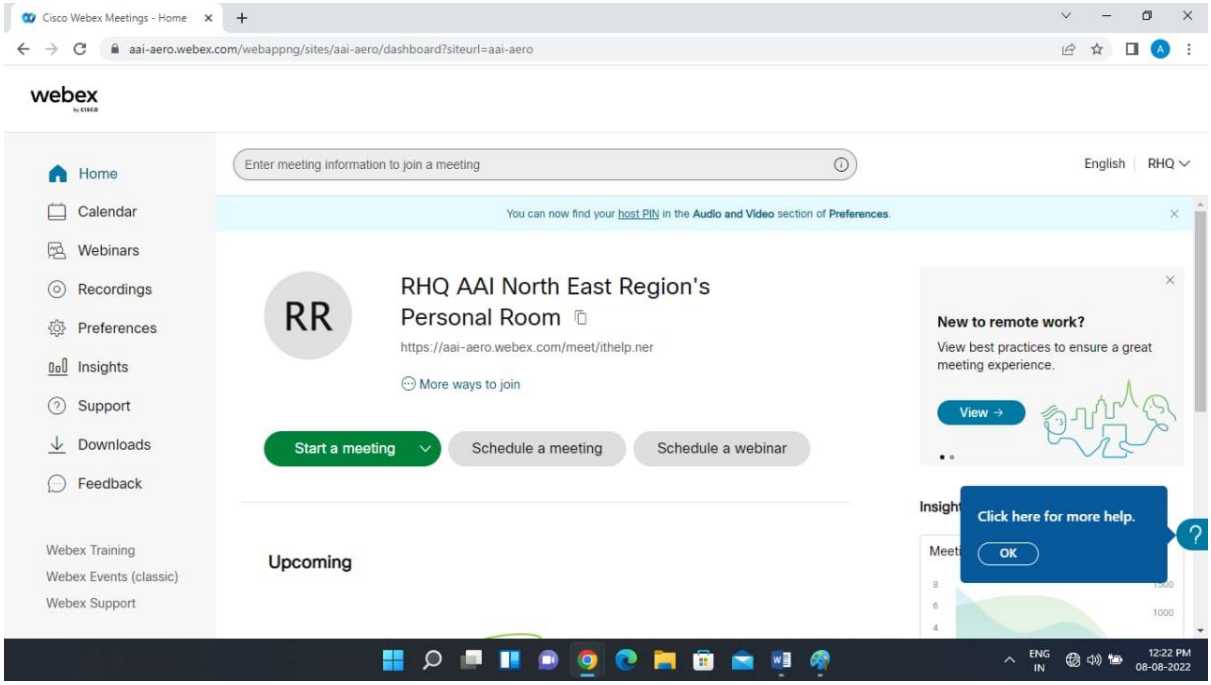
Remote controlled crisp imagery with 20x zoom, 80º field of view, 200º pan range and 40º tilt range.

- Barco Device (wireless screenshare)

- Room Navigator Tablets

- Table Microphones


**Webex interface**




**Bharat VC**

The Bharat VC is an "on-premises VC platform" which ensures a secure communication with useful features that meets the Government VC requirement and provide immersive meeting experience. Moreover, this product has potential to enhance further and make it suitable for various other government Videoconferencing application like Judiciary/Tribunal, Health, Education etc.

- Bharat VC comes with built-in scheduling, allowing us to schedule conferences and send out invitations. We can then view, edit and manage scheduled conferences within any version of the client or app. We can set permissions like mute all participants on join conference ,set screen share permission etc.

- With the Active and Passive Waiting Room feature enabled in a conference, participants that attempt to join your conference will be funneled into a waiting room. The host can then admit participants (active and passive one by one) once they are ready, or once they have screened the participants.
- Two-factor (2FA) or multi-factor authentication (MFA) is an additional security layer for our account Multi-factor authentication is an electronic authentication method in which a user is granted access to a website or application only after successfully presenting two or more pieces of evidence to an authentication mechanism.

**Bharat VC ecosystem :-**


**Logitech Group Video Conferencing System For Mid To Large Room**

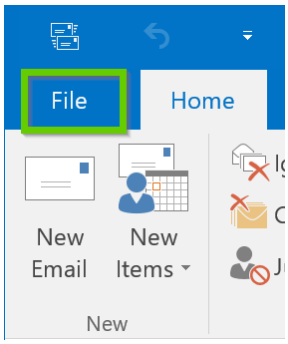
# Mail Configuration using Ms Outlook

AAI uses and maintains its own mail-server situated in CHQ, Delhi . Each AAI employee is registered on the server and gets their own AAI – issued email id ending with **@aai.aero** domain along with storage space on the server for mail . To utilize the provided email, all AAI employees must use outlook . Outlook has the feature of storing mail locally in the form of **personal storage table** (.pst) files when the user allocated space in the CHQ mail-server gets filled.

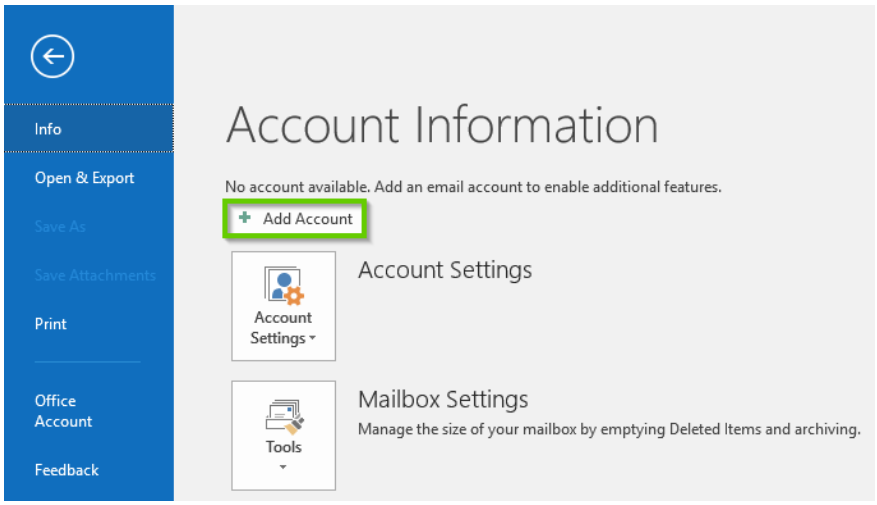
Steps to configure Ms Outlook:

1. Open **Outlook**.

2. Click the **File** menu.

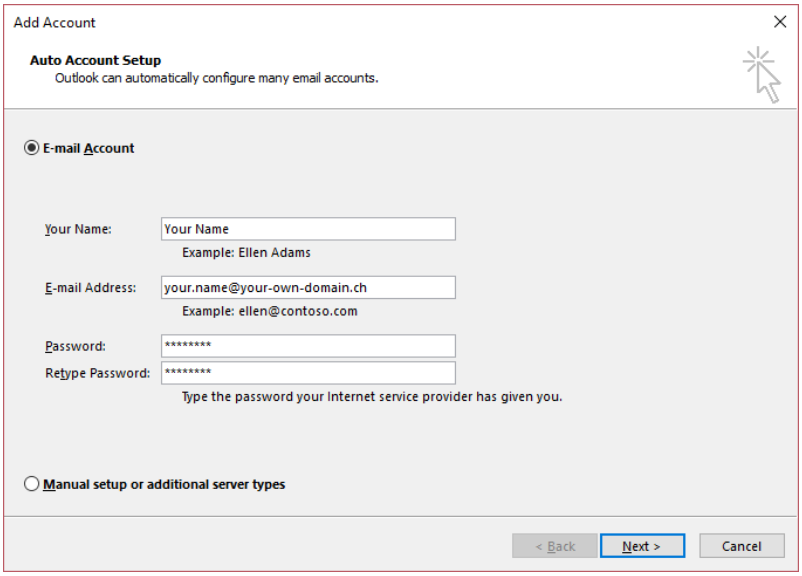



3. Click **Add Account**.

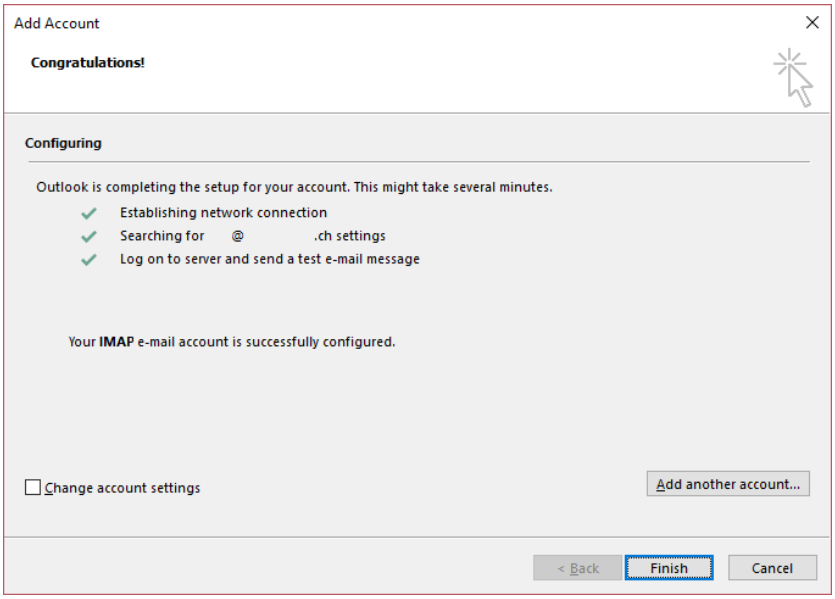



4. In the **Add New Account** dialog box, to configure the new email account automatically, configure the following settings in the **Email Account** section under **Auto Account Setup**:
    1. In the **Your Name** box, type user's full name.
    2. In the **Email Address** box, type user's e-mail address.

       Note The ISP provides this information.
    3. In the **Password** box, type the password that RHQ-NER ISP provided for the user.
    4. In the **Retype Password** box, retype the password, and then click **Next** to begin the Auto Account Setup process.




Outlook will then try to automatically configure user's account. Some ISPs require the full email address to be entered into the **User Name** field. If user's account is successfully configured, the **Add New Email Account** dialog box indicates that the account is created successfully.




5. Select **Finish** > **Close**

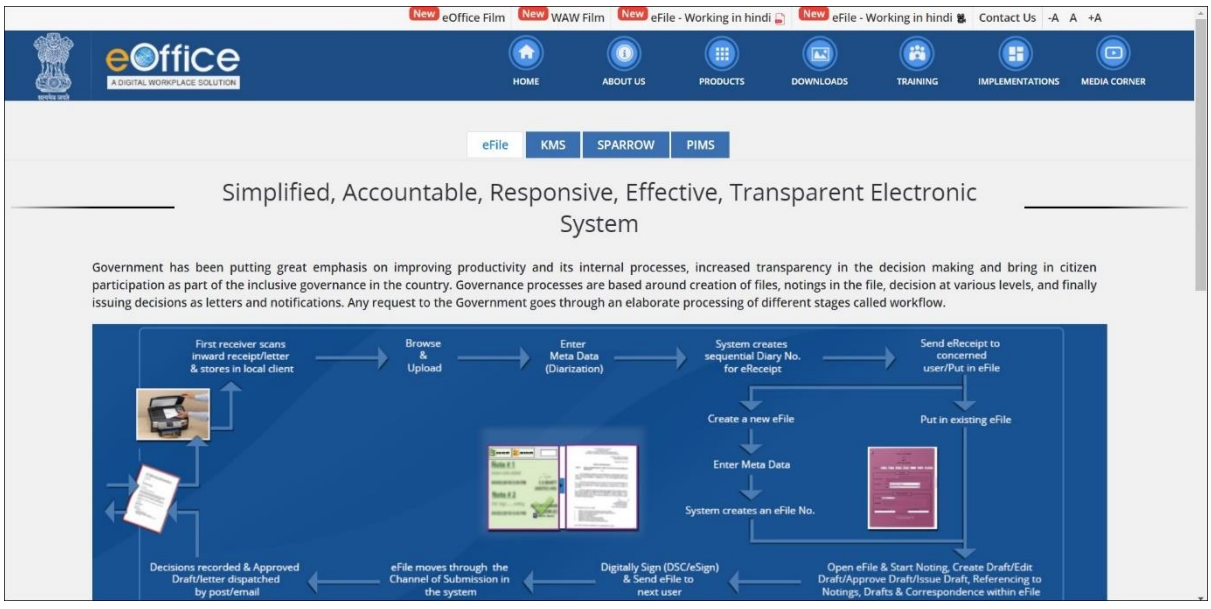
# E OFFICE

The eOffice product aims to support governance by ushering in more effective and transparent inter and intra-government processes. The vision of e-Office is to achieve a simplified, responsive, effective and transparent working of all government offices. The Open Architecture on which eOffice has been built, makes it a reusable framework and a standard reusable product amenable to replication across the governments, at the central, state and district levels. The product brings together the independent functions and systems under a single framework.

**Features**

- Enhance transparency – files can be tracked and their status is known to all at all times
- Increase accountability – the responsibility of quality and speed of decision making is easier to monitor.
- Assure data security and data integrity.
- Provide a platform for re-inventing and re-engineering the government.
- Promote innovation by releasing staff energy and time from unproductive procedures.
- Transform the government work culture and ethics.
- Promote greater collaboration in the work place and effective knowledge management.

**eOffice portal**



# SAP


**SAP** stands for System Analyse Program development. Traditional business models often decentralise data management, with each business function storing its own operational data in a separate database. This makes it difficult for employees from different business functions to access each other's information. Furthermore, duplication of data across multiple departments increases IT storage costs and the risk of data errors.

By centralising data management, SAP software provides multiple business functions with a single view of the truth. This helps companies better manage complex business processes by giving employees of different departments easy access to real-time insights across the enterprise. As a result, businesses can accelerate workflows, improve operational efficiency, raise productivity, enhance customer experiences and ultimately increase profits.

SAP helps companies and organisations of all sizes and industries run their businesses profitably, adapt continuously, and grow sustainably.

# CNS

CNS stands for Communication, Navigation and Surveillance are three main functions (domains) which constitute the foundation of Air Traffic Management (ATM) infrastructure.

The following provide further details about relevant domains of CNS:

a) **Communication:-** Communication is the exchange of voice and data information between the pilot and air traffic controllers or flight information centres.

b) **Navigation:-** Navigation Element Of CNS/ATM Systems Is meant To provide Accurate, Reliable And Seamless Position Determination Capability to aircrafts.

c) **Surveillance:-** The surveillance systems can be divided into two main types:- Dependent surveillance and Independent surveillance. In dependent surveillance systems, aircraft position is determined on board and then transmitted to ATC. The current voice position reporting is a dependent surveillance systems in which the position of the aircraft is determined from on-board navigation equipment and then conveyed by the pilot to ATC. Independent surveillance is a system which measures aircraft position from the ground. Current surveillance is either based on voice position reporting or based on radar (primary surveillance radar (PSR) or secondary surveillance radar (SSR)) which measures range and azimuth of aircraft from the ground station.

# AIRPORT INFORMATION MANAGEMENT SYSTEM

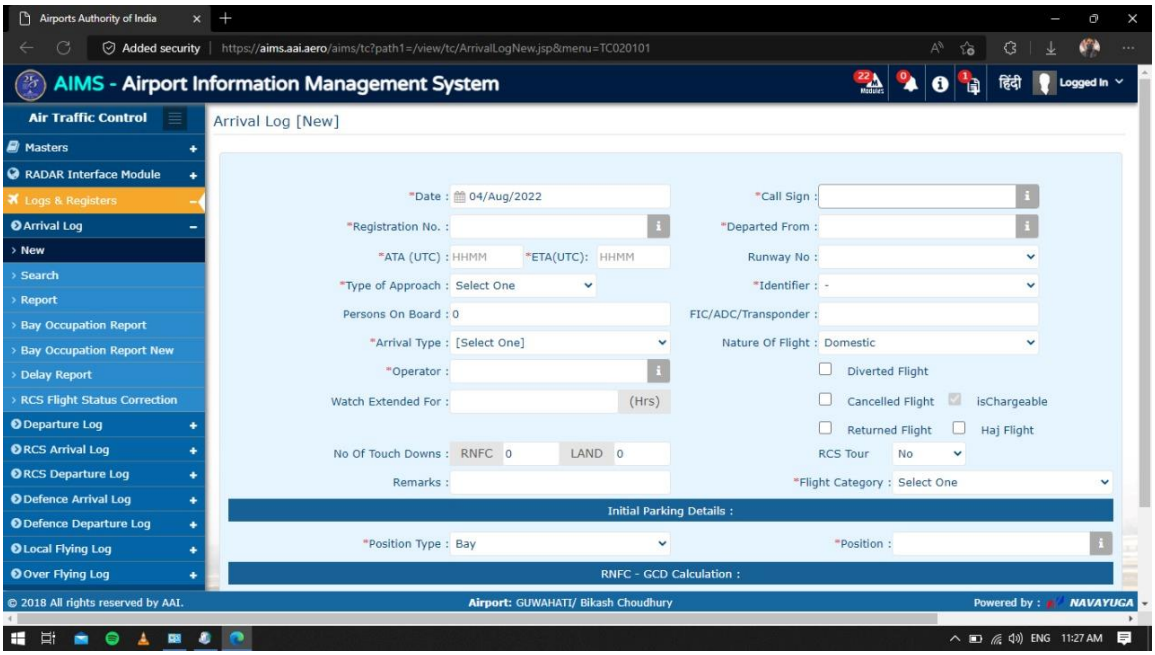
Today's airport authorities are faced with non-stop passenger growth. Short waiting times, constant access to up-to-date information and smooth processes are what make an airport attractive and guarantee that rising passenger demands are met. Navayuga Infotech's Airport Information Management System (AIMS) contributes substantially to meeting these prerequisites. AIMS is currently being used by several Airports to manage information pertaining to various ongoing and dayto-day activities in the airports AIMS is suitable for large international airports as well as smaller regional and general aviation airports

In sort , AIMS is software with the help of which every airport logistics can be managed efficiently.

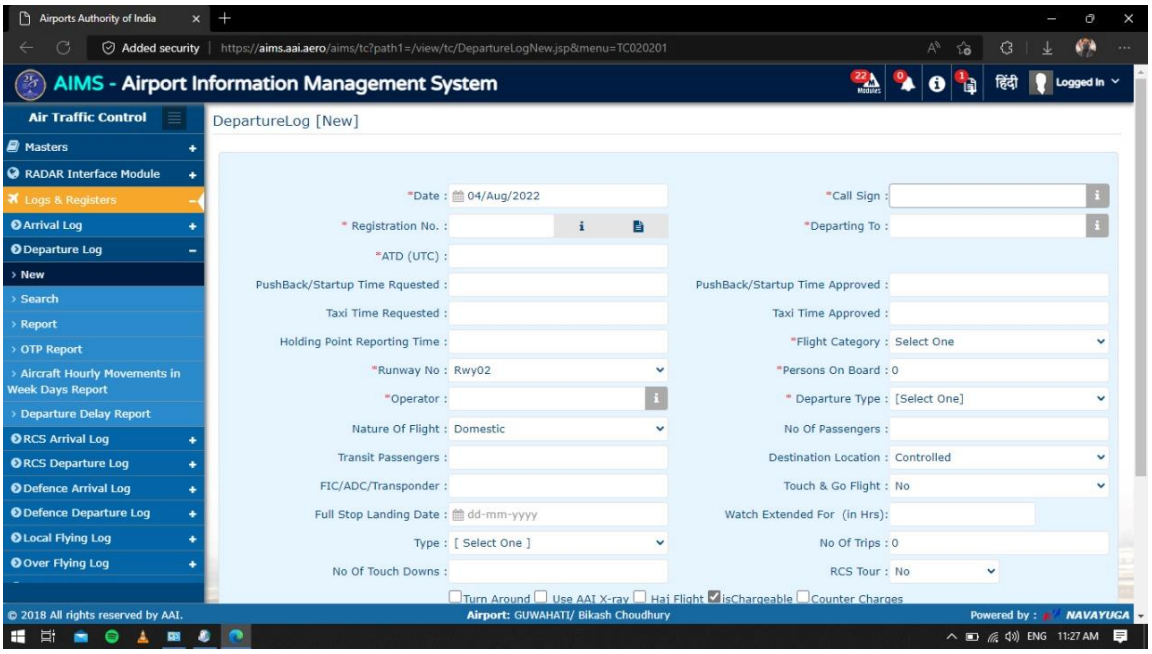
**Key Features of AIMS :**

- The AIMS application is an Enterprise Application, which covers the entire gamut of operations in any international airport from finance, logistics, business performance, infrastructure and facilities management.
- All service and maintenance activities such as Ground equipment, automobiles, baggageand cargo-handling equipment, elevators and lights. The solution also supports all service operations for airport property management, such as departure and arrival terminals, hangars, runways, and the tower.
- Other services provided at an airport, such as aircraft fuelling and cleaning, security, and Cargo Handling are managed within the same business solution. AIMS paves the way to higher productivity, and greater efficiencies and to enable quick decision-making, ensure maximum optimization of resources and minimize maintenance operation costs. The use of the application will go a long way in maximizing overall productivity at all airports.
- AIMS generates reports based on the information captured through authorized nodes serving as clients and presents data whenever required to the users at various clients. It enables the passengers to register suggestions, complaints and grievances. It also facilitates handling of lost, found and left behind luggage and status on availability of retiring rooms.
- AIMS allows Airline agencies to update flight information i.e., estimated arrivals and departures, which will be displayed on Closed Circuit Television (CCTV) and Flight Information Display Systems
- AIMS records static data comprising of technical details of the airport, Circulars & Standing instructions, Procedures, Tourist Information, etc.
- AIMS generates alerts and links relevant data for the expected actions to be taken by the client user when a complaint is lodged by any other department personal or by public. Linkage with Automated Message Switching System (AMSS) is provided to capture dynamic information on flight movements

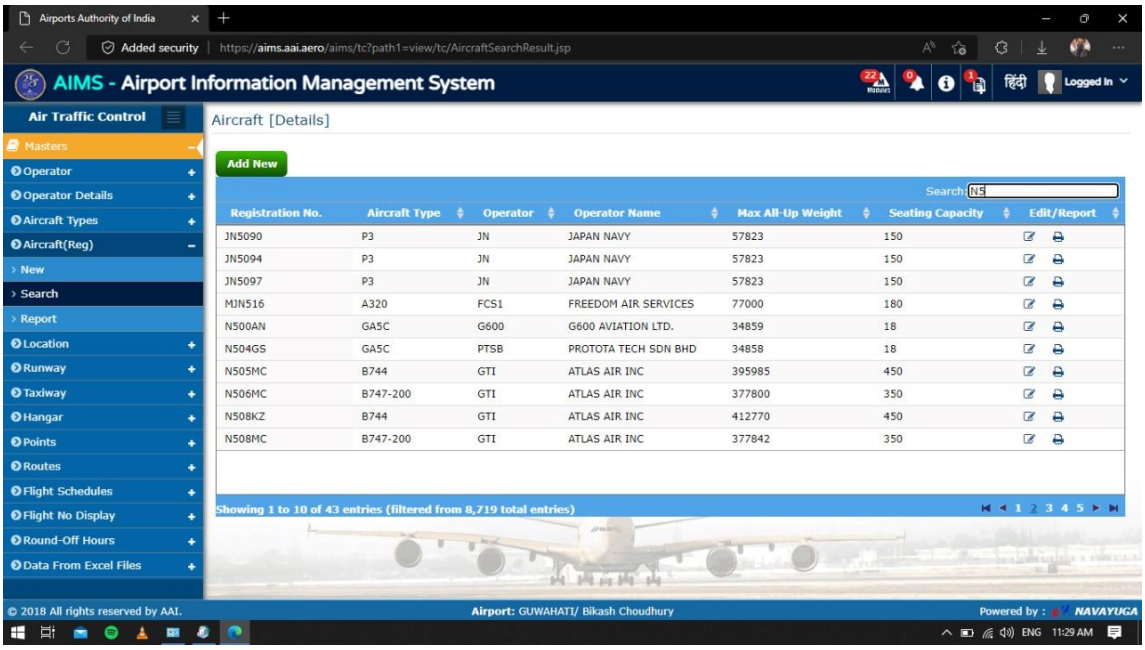
✓ Arrival Log Page



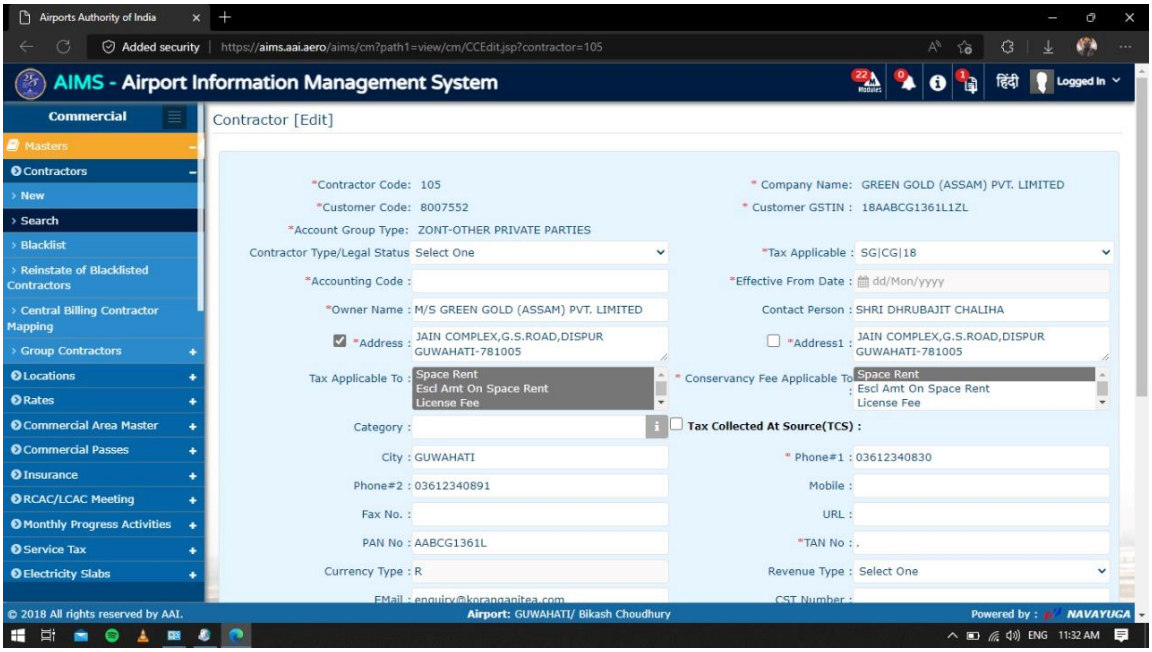

✓ Departure Log Page



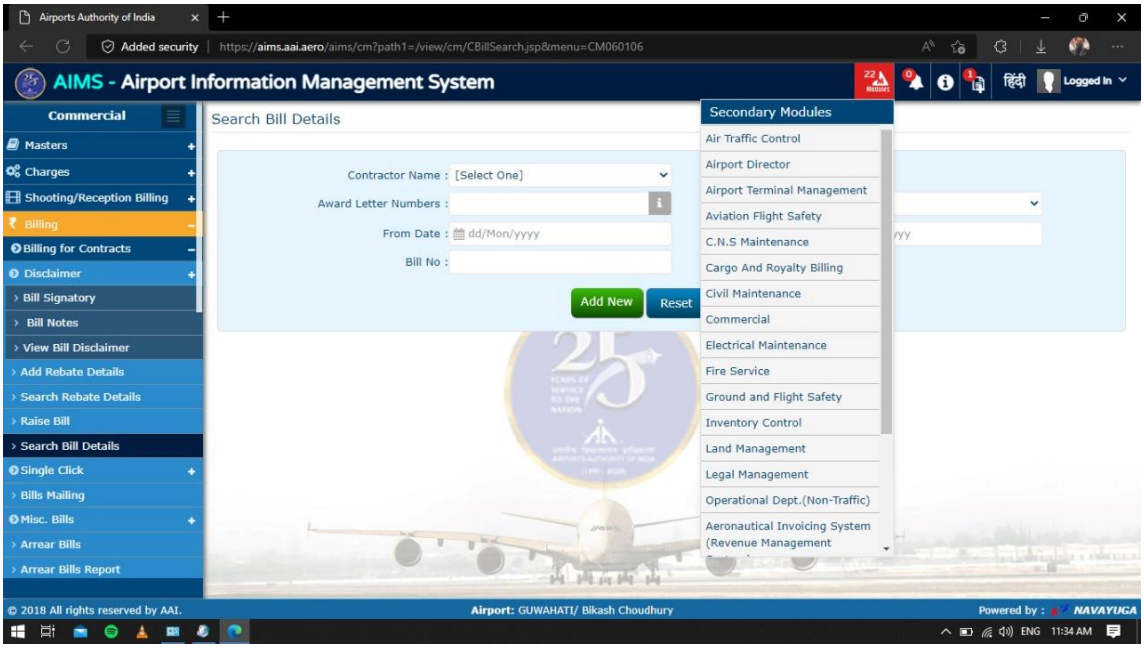
✓ Aircraft Page




✓ Contrator Page



✓ Bill Details Page



# AAI SERVICES

## Airport Rescue and Fire Fighting (ARFF)

Airport Rescue and Fire Fighting (ARFF) services provided at 67 airports as per guideline provided by International Civil Aviation Organization (ICAO) & Directorate General of Civil Aviation (DGCA).

Two Fire Training establishments which are responsible for ensuring that safety services are well organized, equipped, staffed in such a manner to fulfill its principal objectives of Airport Rescue and Fire Fighting Services (ARFF).

Airport Rescue & Fire Services have also become binding on safety of occupants and avoidance of fire risks to equipments ,terminal / technical building and vital installations at 125 airports.

AAI Rescue and Fire Services always make efforts on focused mission of organization which is *"To achieve highest standards of safety and quality in air traffic services and airport management by providing state-of-the-art infrastructure for total customer satisfaction, contributing to economic growth and prosperity of the nation".*

### OBJECTIVE OF AIRPORT RESCUE & FIRE SERVICES

1. To provide excellent Rescue and Fire Fighting Services to save life and property at AAI Airports.
2. To impart emergency response training to Rescue and Fire Fighters to update their professional skills and knowledge.
3. To meet the deficiency of trained Fire Personnel as well as to upgrade the professional skills and human behaviour in Fire Services.

- **Rosenbauer Panther 6x6** is used in LPGB Airport .It has a water capacity of 12,500 litres .The fire truck is fitted with a forward Looking Infrared Camera (FLIR) which help fire fighters to look through the dense smoke ,fog or rain.

# RUNWAY FRICTION TESTER


**SARSYS Surface Volvo friction tester (SVFT)**

The SARSYS Surface Volvo friction tester (SVFT) is a Volvo V70 car combined with an installed system designed for measuring friction on airports runways, taxiways and highways. The system operates via a measuring wheel, mechanically geared to one of the rear main wheels of the base car.

Friction against the runway surface, in combination with the vertical load on the measuring wheel, creates forces on the measuring wheel mechanism that are constantly measured by the electronic sensor system. Signals from the sensor system are then processed in the SVFTs measuring computer system.

By processing these signals, the computer continuously calculates the friction coefficient, the friction number and the relation between the horizontal and vertical forces acting on the measuring wheel. The computer in the SVFT is pre-programmed to measure and report runway friction in accordance with standards and regulations issued by ICAO, FAA, etc.

The result is then shown on the screen in a colour graph or can be printed on paper in diagram form and figures. The data can also be transmitted to other receivers by means of radio link or PC-USB.

*This vehicle is maintained by a technical department namely* ***Motor Transport Pool (MT Pool)****.*