

Biometric Attendance System (BAS) - National Rollout

“Digital India” programme of Government of India seeks to transform India into a digitally empowered society and knowledge economy. As a part and parcel of this programme, DeitY/NIC/UIDAI has implemented Aadhaar enabled Biometric Attendance System (BAS) in all the Central Government Offices in Delhi. The initiative is now being extended to the offices of all the State Governments.



S. MAHALINGAM
Principal Systems Analyst
NIC - PIB
mahalingam@nic.in

Edited by
MOHAN DAS VISWAM

BAS enables an employee to register attendance by using his / her biometric (finger print/iris), which is authenticated online after one-to-one match with the biometric attributes stored in the UIDAI database against the employee’s Aadhaar Number. The system allows anyone to track the employees’ attendance on the website-<http://attendance.gov.in/>

The cloud-based attendance software is installed and operated from NIC National Data Centre. For authentication, NIC has further furnished dedicated secure connectivity between National Data Centre and UIDAI Data Centre.

All Ministries / Departments / Subordinate Organizations can access the system using NIC network or through internet connection provided in bhawans / offices. Biometric enabled terminals/devices have been installed in all the offices for marking attendance. The connectivity of terminals / devices is established through Wi-Fi / GPRS/ LAN.

Customized reporting formats for various levels of employees have been developed and facility for centralized compilation and publication of attendance data in public domain is provided as per the requirement.

FEATURES OF BIOMETRIC ATTENDANCE SYSTEM

- BAS is based on Aadhaar Authentication (fingerprint and iris based authentication).



Dr. Ajay Kumar, IAS
Joint Secretary, DeitY & DG, NIC

Early Harvest Programmes, of which Biometric Attendance System (BAS) is a part, is one of the important pillars of the Digital India. Implementation of BAS is integral in ensuring punctuality among Government employees through real time monitoring, strengthening the cause of good governance. Built using Open Source tools, BAS is reckoned for its speed of roll-out i.e. 5 weeks in 150 offices. It is planned that BAS will be made fully operational in all the departments/offices of the Central Government. The scalable system will be further rolled out in all the Central Government Offices. Several State Governments have also come forward to implement the programme.



- BAS facilitates real time monitoring and comes with a comprehensive MIS.
- It is a light weight system without any prerequisite of special hardware or algorithm and is compatible with multiple platforms (Windows, Android, etc.) and form factors (laptop, desktop and tablets, etc.)
- The system is robust and self sustainable for small power cuts as it uses tablets at the front end.
- Time taken to record attendance through the system is 1-2 seconds on Wi-Fi & 8-11 seconds on GPRS (SIM).
- BAS is securely integrated with the SMS communication channel. Every time, a new user registers on the system, an SMS is generated and sent on to his/her mobile. Similar is the case with the non-marking of attendance.

HOW BAS WORKS?

To start with, every government organization needs to get registered itself on the portal-<http://attendance.gov.in/>, where in apart from the organization details, the details of the concerned Nodal Officer also needs to be furnished.

Aadhar Card is a mandatory criterion for the employees to register in BAS. The Attendance ID of the employees will be generated by the Aadhar Card numbers. The Attendance ID will be verified only after the employee's

Aadhar information has been verified by UIDAI and activated by the Nodal Officer.

Post organization and employee registration, a unique 6 digit ID is generated by the system. The employees have to use this six digit ID to mark their attendance on the biometric sensors (for fingerprint verifications or iris scanning) that is installed in the premises of every Government entity.

An employee can mark his/her attendance on the BAS terminal installed in any of the government buildings. The dashboard generated reports display the location/building from where an employee has marked his attendance.

The connectivity options which are available are Wi-fi on NICNET/ Internet or broadband and SIM based GSM connectivity on tablets. The front-end system consists of installed BAS terminals such as

an Android tablets or a desktop PC having the client application.

The application prompts employees to provide biometric data via fingerprint or iris scans, which will be sent to the back-end system. At the back-end, there are attendance servers hosted in NIC Data Centre with connectivity to UIDAI for real-time biometric authentication.

The system helps not only get an idea of the number of employees present, but also the number of active BAS devices installed in various government organizations. Users also have the authorization to export this data.

WORKFLOW

- Attendance request from the client is sent with the attendance ID and biometric data on a Centralized Attendance Server.
- The Aadhaar Number mapped against the ID and fingerprints are sent to UIDAI for authentication.
- The authentication response is again sent back on to Centralized Attendance Server. On valid authentication, the attendance is marked.
- The response is finally sent to the client (successfully marked/failed).





Dashboard of the <http://attendance.gov.in/>

This page provides a summary of employees present today across various registered organizations. The table below lists the organizations and their respective employee counts.

S No	Organization Name	Employees Registered	Attendance Marked
1	Central Public Works Department (CPWD) - Ministry of Urban Development	71552	5873
2	Ministry of Railways	2052	2327
3	Ministry of Home Affairs (MHA)	8936	1879
4	National Informatics Centre (NIC) - Govt	2278	1711
5	Ministry of External Affairs (MEA)	2300	1718
6	CEED - Reserve Sec Office in CR Building Delhi	1148	384
7	Ministry of Environment and Forests (MOEF)	5930	870
8	Department of Agriculture and Cooperation (DAC)	1681	829
9	Department of Personnel (DOP)	1106	822
10	Central Water Commission (CWC)/WWS	1084	817
Total		27804	17881

Overview of the number of "employees present today" in various registered organizations

This page shows the attendance details for an employee named BALMURI MAHTO, who is a Personal Assistant. The page includes a profile picture, contact information, and a detailed attendance log.

S. No	Date	Location (In)	Location (Out)	In Time	Out Time
1	01-12-2014	Shashi Shivan	Shashi Shivan	01-12-2014 09:46:55	01-12-2014 17:34:21
2	02-12-2014	Shashi Shivan	Shashi Shivan	02-12-2014 09:44:26	02-12-2014 18:28:44
3	03-12-2014	Shashi Shivan	Shashi Shivan	03-12-2014 10:18:58	03-12-2014 18:18:32
4	04-12-2014	Shashi Shivan	Shashi Shivan	04-12-2014 09:50:20	04-12-2014 18:28:25
5	06-12-2014	Shashi Shivan	Shashi Shivan	06-12-2014 09:47:43	
6	08-12-2014	Shashi Shivan	Shashi Shivan	08-12-2014 09:38:38	08-12-2014 18:31:32
7	09-12-2014	Shashi Shivan	Shashi Shivan	09-12-2014 09:53:16	09-12-2014 18:30:28
8	10-12-2014	Shashi Shivan	Shashi Shivan	10-12-2014 10:26:19	10-12-2014 18:38:38
9	11-12-2014	Shashi Shivan	Shashi Shivan	11-12-2014 09:43:11	11-12-2014 18:28:25
10	12-12-2014	Shashi Shivan	National Media Centre	12-12-2014 13:09:22	12-12-2014 20:58:21

Employee Attendance details

The system has an in-built Leave Management System wherein an employee can be marked "on leave". In such a case, no late attendance SMS is sent to the user.

The system maintenance is largely automated. The centralized monitoring of devices is done through a dash-board, push-based updating of software on devices and PCs over the air. BAS automatically switches over to SIM based connectivity once the Wi-Fi goes down. This is also applicable in the case of centralized scheduling of shut-down of devices during out of office hours.

BAS WEBSITE

The website-<http://attendance.gov.in/> provides a graphical representation of the attendance numbers in terms of employee registration, attendance activity according to time and authentication of the BAS devices.

The Homepage dashboard provides information regarding the number of organizations registered, registered employees, employees present today and active devices. It comes with a "More Info" button below each of these boxes which directs users to the detailed page with complete breakup analysis of organizations and employees.

Till date, 370 organizations and 70,198 employees have registered themselves through this system using 2809 active devices and this number is increasing every minute. The system has ensured transparency in monitoring the employee attendance in various government organizations. Also, efforts are on to make the system more resourceful and well-equipped for the future needs.

For further information:
S. MAHALINGAM
 Principal Systems Analyst, NIC – PIB
 E-mail: mahalingam@nic.in