

S-12019/128/2021-NDHM
Date: 27th July 2022

To,

1. Additional Chief Secretaries/Principal Secretaries/Secretaries of Health of all States/UT's
2. State Mission Directors for ABDM of all States/UT's

Subject - Hardware Guidelines for States/UTs and Healthcare Institutions – Reg.

Sir/Madam,

As you are aware, Ayushman Bharat Digital Mission (ABDM) intends to support Universal Health Coverage (UHC) in an efficient accessible, inclusive, affordable, timely, and safe manner, wherein ABDM will connect the digital health solutions of hospitals across the country with each other. To achieve this IT infrastructure plays a pivotal role in creation and exchange of digital health records across the ecosystem.

In this regard, please find attached hardware guidelines for states and healthcare institutions. The said guidelines can provide a basic framework to States/UTs in the planning, assessment and procurement of the IT hardware (including IT specifications of various hardware equipment) to operate applications compliant with ABDM. It is important to note that the guidelines proposed herewith are suggestive and flexible in nature. Accordingly, States/UT's may modify these guidelines based on local requirements and circumstances. You are requested to consider these guidelines while planning and procuring IT assets for Health care institutions in your State/UTs. As stated in earlier communications, NHA shall not be funding procurement of hardware for healthcare facilities. This can be done from other funds.

Your cooperation and active involvement would be essential to take this mission forward and achieve the intended objectives of improving access and affordability of health services in the country. For any further support, you may reach out to Dr Akshay Jain, Joint Director Coordination, (011-23468720; jd.coord1@nha.gov.in).

Thanking you,

Yours sincerely,



(Dr. Praveen Gedam)

Mission Director, Ayushman Bharat Digital Mission,
Additional Chief Executive Officer, National Health Authority

Copy to:

Secretary, Department of Health and Family Welfare, Government of India, Nirman Bhawan,
New Delhi – 110011

HARDWARE GUIDELINES FOR STATES AND HEALTHCARE INSTITUTIONS

AYUSHMAN BHARAT DIGITAL MISSION

Abbreviations

Sr No.	Acronym	Full form
1.	ABDM	Ayushman Bharat Digital Mission
2.	AB-HWC	Ayushman Bharat-Health Wellness Centre
3.	ADT	Admission, Discharge, and Transfer
4.	API	Application Programming Interface
5.	CHC	Community Health Centre
6.	COW	Computer on Wheels
7.	DH	District Hospital
8.	Gol	Government of India
9.	IPHS	Indian Public Health Standards
10.	HMIS	Hospital management information system
11.	NDHB	National Digital Health Blueprint
12.	NHA	National Health Authority
13.	OT	Operation Theatre
14.	PHC	Primary Health Centre
15.	QR Code	Quick Response Code
16.	SDH	Sub-District Hospital
17.	CSSD	Central Sterile Supply Department
18.	UHC	Universal health coverage
19.	UPS	Uninterruptible Power Supplier

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1. Introduction

Health systems and policies have a critical role in determining the way health services are delivered, utilized, and affect health outcomes. These guidelines briefly describe the required infrastructure for efficient implementation of the program with a particular focus on quality patient care and adoption of digital initiatives under Ayushman Bharat Digital Mission (ABDM).

ABDM is a national-level digital health ecosystem that intends to support Universal Health Coverage (UHC) in an efficient, accessible, inclusive, affordable, timely, and safe manner, through the provision of a wide range of data, information, and infrastructure services, duly leveraging open, interoperable, standards-based digital systems, and ensuring the security, confidentiality, and privacy of health-related personal information.

ABDM will connect the digital health solutions of hospitals across the country with each other. The mission will not only make the processes of hospitals simplified but also will increase ease of living. The digital ecosystem will also enable a host of other facilities like digital consultation, consent of patients in letting medical practitioners access their records, etc. With the implementation of this scheme, old medical records cannot get lost as every record will be stored digitally.

These guidelines shall help the states in the planning, assessment and procurement of the IT hardware including IT specifications of various hardware equipment to operate applications in line with ABDM for all the healthcare institutions in the state. To achieve the digitization of health systems the states must implement Hospital Information systems across health facilities.

2. Background

The establishment of ABDM was announced by the Hon'ble Prime Minister of India, Shri Narendra Modi, on the 15th of August 2020, on the occasion of the 74th Independence Day of India. Pilot exercise for ABDM had been initiated in August 2020, in six union territories (UTs), namely Andaman and Nicobar Islands, Chandigarh, Dadra & Nagar Haveli and Daman & Diu, Ladakh, Lakshadweep and Puducherry. With its vision and commitment to revolutionizing and strengthening the health ecosystem in India, the Government of India (GoI) launched the Ayushman Bharat Digital Mission (ABDM) nationwide on the 27th of September 2021.

Since ABDM is an initiative to digitize the entire healthcare ecosystem of India, all the healthcare facilities in India need to be well equipped with the required technical infrastructure which supports a hassle-free digital experience,

3. Guidelines Principles

The underlying principles and objectives of the hardware requirement have been listed below:

Objectives:

In this document, an attempt has been made to frame and contextualize the hardware requirement for the states and individual healthcare entities. However, NHA understands that there might still be gaps with respect to practical implementation, some of which may depend upon the interpretation of the guidelines. The information given is not intended to be an exhaustive account of hardware requirements and should not be regarded as complete or authoritative. The approach and guidelines mentioned henceforth are ideas and not decisions. The final decision should be taken after mapping the guidelines with the individual state, department and facility requirements.

HARDWARE GUIDELINES FOR STATES AND HEALTHCARE INSTITUTIONS

Hardware guidelines can be referred by:

- Central departments/ministries/PSUs
- State/UT ABDM Offices
- District Administration offices
- Healthcare facilities

Note: All of these entities shall have flexibility to modify these guidelines based on local circumstances.

These guidelines may be used for the procurement of the following IT hardware and equipment:

- a. Desktops & Laptops
- b. Printers
- c. QR code readers
- d. QR code printers
- e. Fingerprint scanners
- f. Uninterrupted power supply (UPS)
- g. Any other related IT devices required for the purpose.

4. Guidelines

The guidelines shown below for the individual type of hardware have been prescribed keeping in mind the best practices and IPHS (Indian Public Health Standards) guidelines 2022.

Categorization of Healthcare facilities

For simplification of the desktop/laptop guidelines, healthcare facilities have been categorized into two categories.

Category	Number of Beds	Type of public hospitals
Small Hospitals	6-50 Beds	PHC, CHC, and HWC
Large Hospitals	>50 Beds	SDH, DH and Hospital with Medical Colleges

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4.1 Guidelines on Endpoint Desktops and Laptops

Following guidelines have been established for the number of desktops/laptops required in the individual department. It will not be applicable for the departments which do not exist in the healthcare facility. **Also, it may be noted that laptops may be preferred over desktops** due to their mobility and power back up.

To achieve the ultimate objective of ABDM that is generation and sharing of digital health records, installation of hardware can be prioritized as below. For complete digitization, essential clinical functions and patient registration are to be prioritized first (highlighted in green) over support services (highlighted in blue).

	Large Hospital	Small Hospital
	More than 51 beds like DH & SDH	6 to 50 beds like CHC, PHC & HWC
Registration	1 per registration counter	
Laboratory/ Pathology	Minimum 1 desktop per laboratory and thereafter one desktop per additional 120 hospital beds	1 per laboratory
Medical Imaging	Minimum 1 desktop per medical imaging facility and thereafter one desktop per additional 100 hospital beds	1 per medical imaging facility
Drug Dispensing Counter	1 per drug dispensing counter	
OP Consultation rooms	1 per consultation desk/room	
Blood Bank	2 per department	1 per department
Dialysis	1 per dialysis unit	
Emergency Ward	2 per emergency ward	1 per emergency ward
Nursing Station/ Patient ward/Discharge Summary	2 per ward (one at the nursing station and one COW/Tablet) (In the initial stages, only one desktop can be considered)	
Billing	1 per billing counter	
Operation theatre department	1 per operation theatre department	
Medical Records	Minimum 1 desktop per medical records department and thereafter one desktop per additional 150 hospital beds	1 per medical records department
Stores	1 per 150 hospital beds	
CSSD	1 per department	
Administration	3 in administration department	1 in administration department
IT Department	1 per 150 hospital beds	
Finance and Accounts	2 per department	1 per department
Learning & Development	1 per department	

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4.2 Guidelines on Printers/QR code Readers/QR code Printers

Following guidelines have been established for the number of printers, QR code readers and QR code printers required in the individual department of a healthcare facility.

Number of Printers, QR Code Readers, QR Code Printers in all hospitals			
	Printers	QR code Readers*	QR code Printers
Registration Area	1 per registration counter	1 per registration counter	1 per registration counter
Laboratory/Pathology	1 per laboratory	1 per laboratory	1 per laboratory
Medical Imaging	1 per Imaging department**	1 per Imaging department	Not suggested
Drug Dispensing Counter	1 per 2 counters in a pharmacy	1 per counter	Not suggested
OP Consultation rooms	1 per consultation room	1 per consultation desk/room	Not suggested
Blood Bank	1 per blood bank	1 per blood bank	Not suggested
Emergency Ward	1 per ward	1 per ward	1 per ward
Nursing Station/Patient Ward/Discharge Summary	1 per nursing station	Not suggested	1 per nursing station
Patient Billing	1 per billing counter	1 per billing counter	1 per billing counter
Operation Theatre Department	1 per OT department	Not suggested	Not suggested
Medical Records	1 per medical record department***	1 per medical record department	Not suggested
Stores	1 per store	Not suggested	Not suggested
Administration	1 per administration department***	Not suggested	Not suggested
IT Department	1 per IT department	Not suggested	Not suggested
Finance and Accounts	1 per finance department	Not suggested	Not suggested

Notes:

* QR Code readers in mobile phones could also be used if the HMIS is mobile compatible, and therefore the requirement of QR code readers could be suitably modified.

**A Color printer is required for Ultrasound, Foetal Medicine, Endoscopy, and Nuclear Medicine areas if the said facility is available.

***. Medical Records and Administration can opt for printer cum scanner instead of printers.

4.3 Number of Uninterruptible Power Supplies (UPS)

Uninterruptible Power Supplies (UPS) provide short-term emergency backup power in the event of any disturbances or disruptions to the mains electricity supply. Clean, quality and continuous power is an essential requirement of healthcare facilities so that there is no data loss. Each desktop should be connected with a UPS for an uninterruptible power supply to protect critical loads from utility-supplied power problems including spikes, burnouts, fluctuations, and power outages. Sine wave UPS or better with 2-hour backup is recommended.

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Alternate sources of power like generators must be provisioned for uninterrupted functioning of facilities during long power outages.

Number of UPS (For all Hospitals)

Each desktop should be connected with a UPS. Not required in the case of laptops. Alternatively, health facilities can opt for a centralized UPS system that will cater to all desktops and printers.

4.4 Guidelines for Fingerprint scanner

Following guidelines have been established for the number of Fingerprint scanners required in a healthcare facility:

Number of Fingerprint scanners (For all Hospitals)

Registration	1 Fingerprint scanner per registration counter
OP Consultation Room	1 Fingerprint scanner per desk/room
Emergency Ward	1 Fingerprint scanner per emergency ward

4.5 Guidelines for Web Camera

Number of Web Cameras (For all Hospitals)

Registration	1 external web camera per registration counter (attached with desktop)
Consultation Rooms	1 external web camera per consultation desk/room (attached with desktop)

5. Hardware failure mechanism

It is recommended that 5% of the total number of hardware requirements should be planned and kept as reserve in case of any contingency.

For Internet connectivity, it is strongly recommended that an alternate source of internet connectivity as a Lease line should be planned for all hospitals. Primary health centers can opt for broadband connectivity as an alternate source of internet. **Also, note that Wi-fi connectivity is preferred over LAN.**

5.1 Maintenance of devices

Healthcare facilities must have maintenance support for all the medical devices, computers, laptops, printers, scanners, networks, and other devices. The selected vendor must be able to provide onsite installation, maintenance, and support. A buffer stock of spare parts should be available for a quick resolution.

State governments or healthcare facilities should plan and develop SLAs with the vendors to provide the service on time in case of any hardware failure.

6. Technical Specifications

Below specifications should be referred as suggestions and not decisions as these are dynamic in nature. It may vary on multiple other factors like hospital size, patient load, and existing infrastructure.

Sr. No.	Item	Technical Specification
1	Desktop Computers	<p>All in One Desktop Configuration: Similar to or better than (2.2 GHz Speed, Dual-core, 8 GB DDR4 RAM, 500 MB HDD SATA 7200 rpm, 23.8" FHD monitor, WI-FI, Ethernet Port, Bluetooth, 5 or more USB ports, 1 HDMI, Mouse & keyboard, 5 years onsite warranty) + With original Windows 10 Pro License + in-built microphones and speakers.</p> <p>For Registration counters at all facilities, 1 additional monitor will be required, facing the patient side.</p> <p>External Web cameras for Registration counters and Consultation rooms.</p>
2	Laptop	<p>Similar to or better than (2.2 GHz Speed, Dual-core, 8 GB DDR4 RAM, 1 TB HDD, 14" FHD screen, WI-FI, Ethernet Port, Bluetooth, wireless mouse, 3 or more USB ports, 1 HDMI, 5 years onsite warranty) + With original Windows 10 Pro License</p>
3	Printer	<p>Printer Configuration: Similar to or better than Printer Type – LaserJet/ Ink Tank</p> <p>Functionality - Multi-Function (Print, Scan, Copy), Scanner type - Flatbed; Printer Output - Black & White only; Connectivity - Wireless, USB, Ethernet; Operating System: Windows: 10 and 8 (32-bit, 64-bit), 7 (32-bit, 64-bit), Vista (32-bit, 64-bit), XP (32-bit), Mac, Android, and iOS; Pages per minute - at least 20 pages; Page size supported - A4, A5, B5, envelopes, postcards. Duplex printing, Duplex scanning; Print resolution - Up to 1200 x 1200 DPI; At least a 5-year warranty; More than 200 DPI</p>
4	QR code Reader	<p>Wired USB Optical Laser High-Speed 2 D QR code Reader.</p> <p>Connectivity Technology: USB cable</p>
5	QR code printers	<p>Printer Configuration: 2 D (2 in 1). Resolution should be at least 200 DPI</p>
6	LAN/Wi-Fi Connectivity	<p>LAN points and Wi-Fi connectivity to all identified locations in each facility. Wi-Fi connectivity is preferred over LAN</p> <p>Wi-Fi Switch based on the number of WIFI devices and WIFI Repeater for complete coverage (if required)</p> <p>100 Mbps leased line internet connectivity recommended. Additionally, alternate source of connectivity for all hospitals in case of failure of primary connection.</p> <p>Broadband connectivity with high speed for PHC facilities.</p>

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		Provision of open WIFI for patients and visitors	
7	CAT 6 Cable	Category 6 Unshielded Twisted Pair 4 pair 100 Ohm. The 4 pair Unshielded Twisted Pair cable should be RoHS Compliant.	
8	CAT 6 Information Outlet	Surface Mount Face Plate & Box with CAT6 Work Area Data I/O Outlet (RJ45)	
9	Switch (Power over Ethernet)	Port	8/16/24/48 ports 10/100/1000Base-T and 2 ports 1000 Base-X, 2 Giga SFP ports. Gigabit Fast Ethernet Web Managed L2 POE Switch
		Power Over Ethernet (PoE)	1. Support for 802.3af, 802.3AF 2. Power per port - 31Watts for 4 ports, Rest of the ports support 15.4Watts
10	Router	Interface	4 ports 10/100Mbps LAN and 1 port 10/100Mbps WAN
11	Wall Mount Rack	Type	19", 12U Rack wall mount heavy Duty Extruded Aluminum Frame for rigidity with power distribution unit, Fan tray, Provision for cooling with Earthing kit.

7. Expected Outcomes

The adoption of ABDM in health facilities has numerous benefits. The treatment process becomes very organized and coordinated as technology takes over the tiresome and lengthy manual process. Patients have their data safe in systems that can be recovered at any time. The organized process also helps healthcare workers to take care of the patients in a much better and more efficient way. Medical errors due to manual data entry also get eliminated with the adoption of a digital healthcare ecosystem.

With the introduction of technology, the solutions to two factors- accessibility and performance analysis reach a new level. Facility administration will find it very helpful to analyze the growth of the facility staff with respect to performance. Data in the forms of dashboards and reports are readily available for analysis and with more and more advancement even analysis can be automated with the administration to worry very little to analyse staff performance. All patient records are available to the healthcare workers only at the click of a button leading to a seamless and instantaneous approach to problem-solving. Most importantly, a lot of time gets saved and hence the patients realize a very satisfying experience with utmost ease.