Synchronized clock system proposal

Eight floor hospital concept | 9 November 2026 | Revision 1

Provide one GPS-referenced NTP time source for **52 indoor analog clocks and one illuminated outdoor analog clock**. The following plan allocates all indoor clocks across the eight departments and separates the required endpoint specifications from catalogue capabilities.

System requirements

Equipment	Qty	Required configuration
Master clock	1	GPS-referenced NTP server
GPS antenna	1	Matched to the selected receiver and cable route
Indoor analog clocks	52	30 cm diameter; hour and minute hands; NTP; PoE
Outdoor analog clock	1	60 cm diameter; illuminated; hour and minute hands; NTP; 230 V AC

Recommended direction

Use a wired Ethernet time network with PoE distribution to the indoor clocks. Evaluate **HCE5436A-IV with Opt N** as the fixed-rack server candidate. Release the order only after the GPS input configuration, NTP option and 53-client operation are confirmed. The published clock catalogues do not establish a compliant 30 cm PoE analog model or 60 cm illuminated outdoor model.

Design basis

The eight floor functions come from the project brief. Room counts, room names, clock locations, switch positions and cable paths are proposed planning assumptions. All layouts are functional block diagrams, not scaled architectural or construction drawings. Clocks are proposed for visible facility time; no medical-device or clinical-system integration is included.

Product selection and compatibility

Catalogue based candidates and configuration requirements

Item	Selection basis	Technical disposition
Master clock	HCE5436A-IV + Opt N Clock Servers Catalog, p. 4	Provisional fixed-rack candidate. Catalogue lists 1U, dual AC inputs and NTP / RJ45 monitoring through Opt N. Confirm GPS receiver, antenna input, 230 V / 50 Hz supply, NTP implementation and capacity.
Alternative server	HCE211-Slave Clock Servers Catalog, p. 3	NTP service is documented, but portable battery-powered format is not the preferred fixed installation. GPS disciplining and continuous service require confirmation.
Indoor analog clock	S16W-E / S16W-B / S16W-S English Catalogue, p. 6	Reference family only, not a compliant selection. Published: 40 cm, aluminum alloy, <5 W, 5 V DC. Required: 30 cm, two hands, NTP and PoE. Exact compliant order code is not established.
Outdoor analog clock	No matching catalogue model established	Require 60 cm, two hands, illumination, NTP, 230 V AC, outdoor enclosure and mounting. Do not infer these features from S16W or a digital model.
GPS antenna	Configuration-specific accessory	Confirm antenna model, connector, receiver compatibility, cable loss/length limit, surge protection and mounting scope.

Can one master synchronize all 53 clocks

Architecturally yes, through a shared NTP network; model-specific confirmation remains required. A single Ethernet server connection can serve multiple NTP clients, but the reviewed catalogue does not specify this configuration's client capacity or validate the proposed analog endpoints. Obtain written confirmation and test all 53 clients at the agreed polling interval before acceptance.

Digital HCE-01 / HCE-10 models list NTP but are not analog substitutes. The HCE digital catalogue explicitly does not specify PoE for its seven models (p. 11). No catalogue-only claim of full compliance is made.

Whole building system layout

Functional topology | NTP data in blue | Proposed equipment, not an installed system



Core, switches and UPS are infrastructure allowances. NTP is carried over the LAN; PoE power comes from the access switches, not from the master clock. Antenna routing and F8 IT room are provisional.

Separate 230 V AC feed for O-01. Exterior data and power protection to be designed by the local installer.

Floor 1 Reception and emergency

8 indoor clocks | 5 clock-equipped rooms + 3 shared areas | Not to scale

Each green clock symbol represents one proposed 30 cm, two-hand, NTP / PoE analog clock. IDs identify locations and network assets; they are not product model codes.



Placement rationale

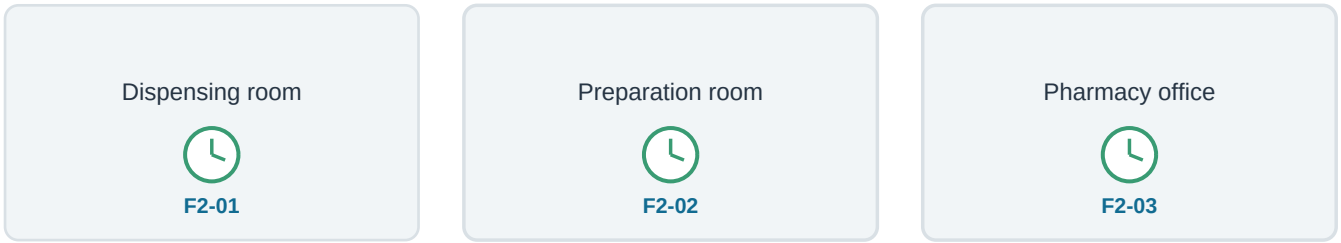
Prioritise staff visibility in triage and treatment rooms. Position waiting-area clocks where families can read them without entering clinical areas.

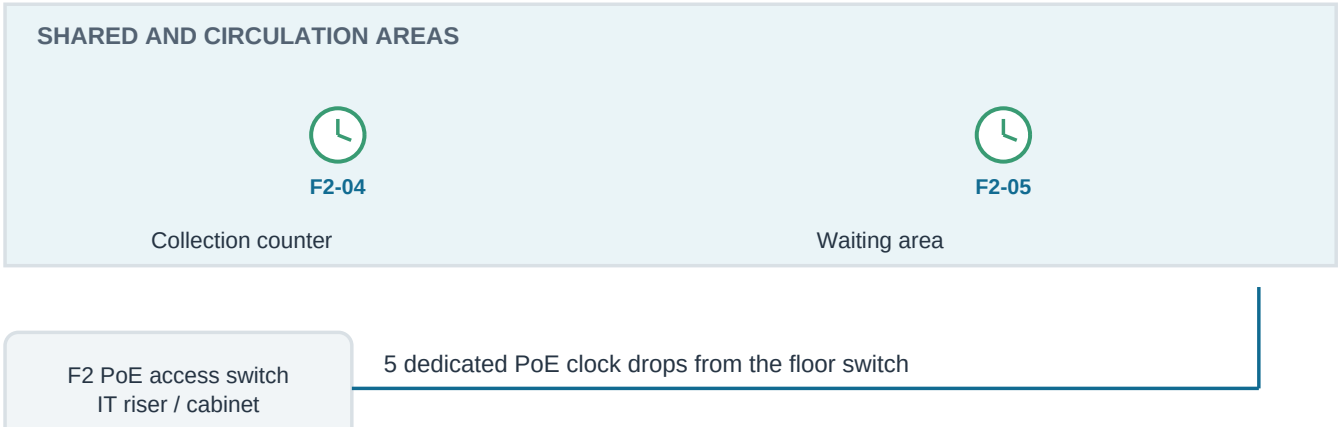
Route each clock cable individually to the access switch. The line below the plan represents network distribution, not a daisy chain or a measured cable route. Confirm wall positions, cleaning access, patient safety, sight lines and construction details on the final floor plan.

Floor 2 Pharmacy

5 indoor clocks | 3 clock-equipped rooms + 2 shared areas | Not to scale

Each green clock symbol represents one proposed 30 cm, two-hand, NTP / PoE analog clock. IDs identify locations and network assets; they are not product model codes.





Placement rationale

Provide a clock at medicine collection and within dispensing work areas. Final mounting must respect cleaning requirements and storage conditions.

Route each clock cable individually to the access switch. The line below the plan represents network distribution, not a daisy chain or a measured cable route. Confirm wall positions, cleaning access, patient safety, sight lines and construction details on the final floor plan.

Floor 3 Consultation rooms

7 indoor clocks | 5 clock-equipped rooms + 2 shared areas | Not to scale

Each green clock symbol represents one proposed 30 cm, two-hand, NTP / PoE analog clock. IDs identify locations and network assets; they are not product model codes.



Placement rationale

One clock per proposed consultation room supports shared time awareness. Waiting and corridor clocks serve accompanying families and moving staff.

Route each clock cable individually to the access switch. The line below the plan represents network distribution, not a daisy chain or a measured cable route. Confirm wall positions, cleaning access, patient safety, sight lines and construction details on the final floor plan.

Floor 4 Consultation rooms

7 indoor clocks | 5 clock-equipped rooms + 2 shared areas | Not to scale

Each green clock symbol represents one proposed 30 cm, two-hand, NTP / PoE analog clock. IDs identify locations and network assets; they are not product model codes.



Placement rationale

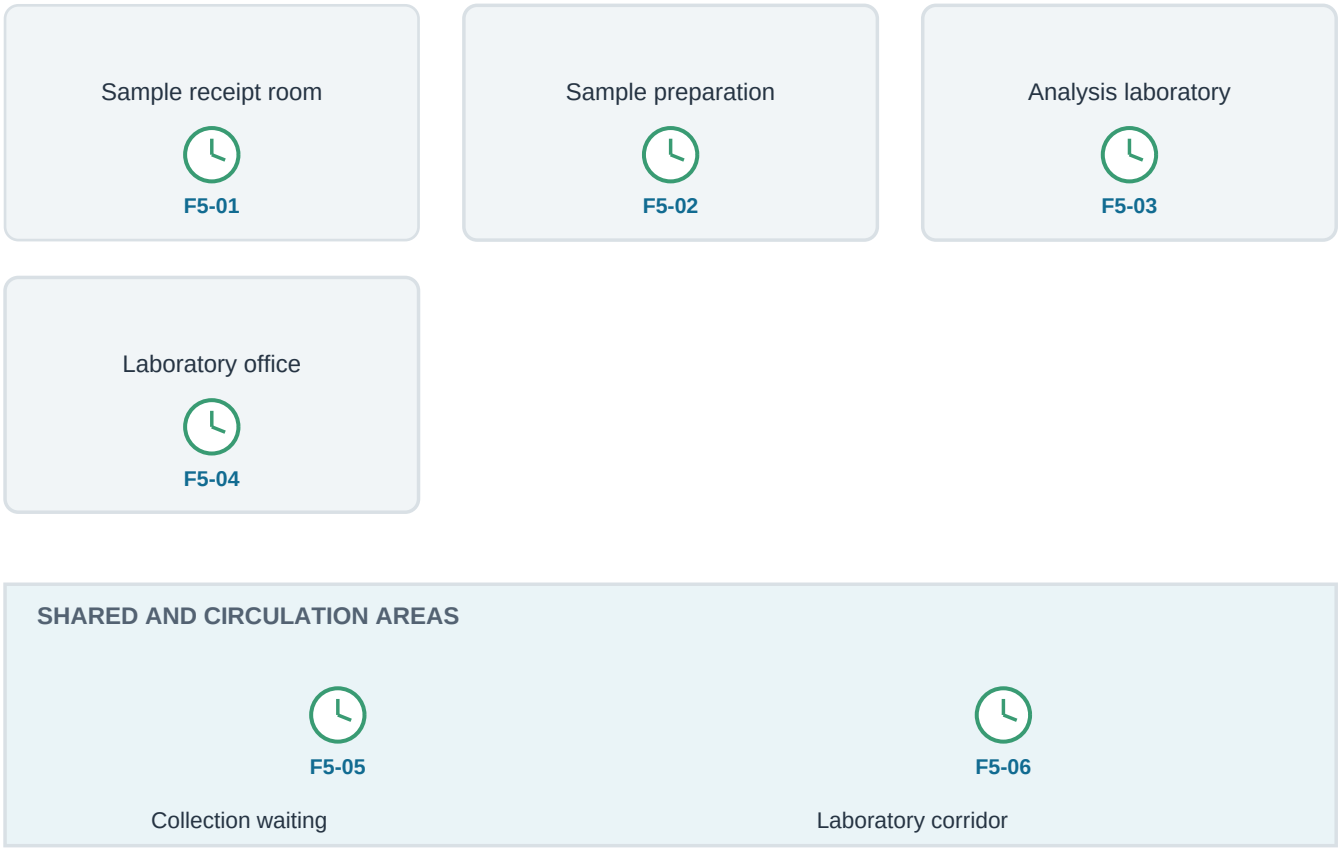
Repeat the consultation-floor arrangement for a consistent patient journey. Confirm actual room divisions and sight lines against the architectural plan.

Route each clock cable individually to the access switch. The line below the plan represents network distribution, not a daisy chain or a measured cable route. Confirm wall positions, cleaning access, patient safety, sight lines and construction details on the final floor plan.

Floor 5 Laboratory

6 indoor clocks | 4 clock-equipped rooms + 2 shared areas | Not to scale

Each green clock symbol represents one proposed 30 cm, two-hand, NTP / PoE analog clock. IDs identify locations and network assets; they are not product model codes.



Placement rationale

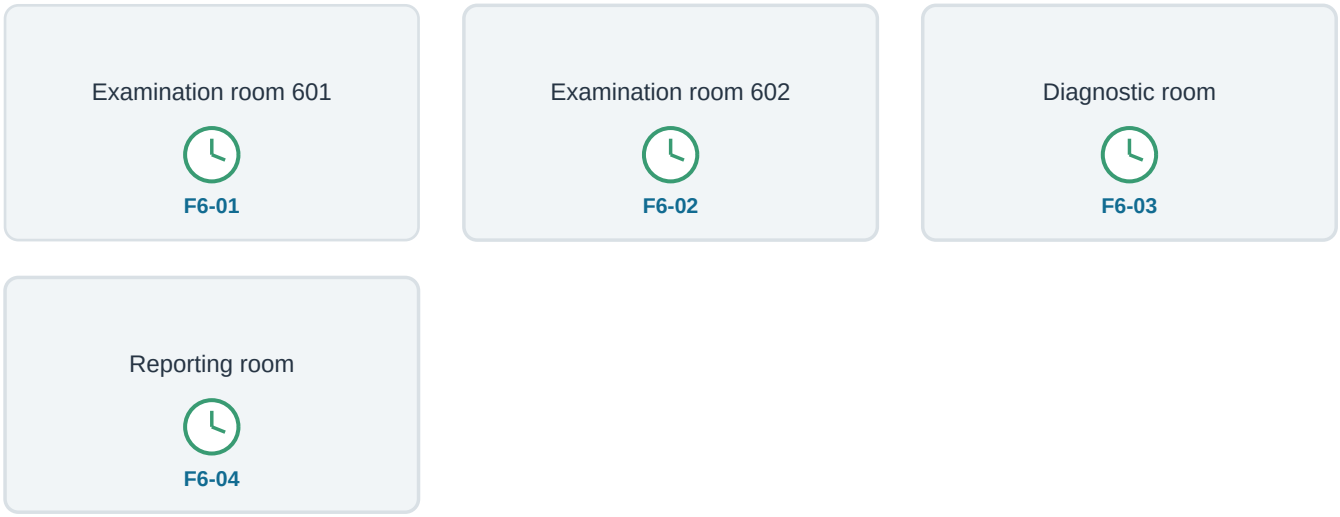
Laboratory functions are planning assumptions for the source term chemical testing area. Wall clocks provide visible time, not certified instrument timestamps.

Route each clock cable individually to the access switch. The line below the plan represents network distribution, not a daisy chain or a measured cable route. Confirm wall positions, cleaning access, patient safety, sight lines and construction details on the final floor plan.

Floor 6 Examination and diagnostics

6 indoor clocks | 4 clock-equipped rooms + 2 shared areas | Not to scale

Each green clock symbol represents one proposed 30 cm, two-hand, NTP / PoE analog clock. IDs identify locations and network assets; they are not product model codes.



Placement rationale

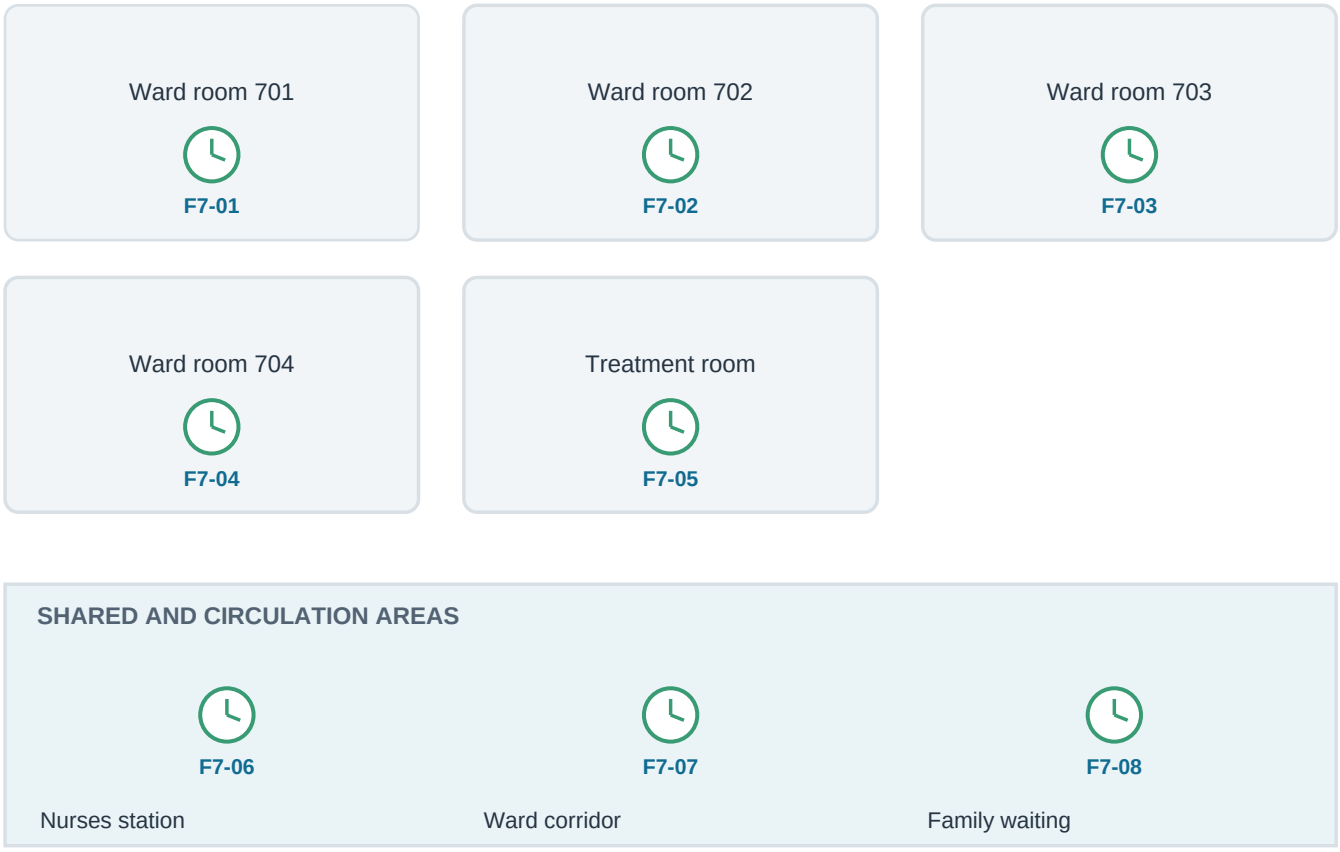
This concept interprets the source term inspection area as examination and diagnostics. Confirm department scope. No clock is proposed inside an MRI magnet room.

Route each clock cable individually to the access switch. The line below the plan represents network distribution, not a daisy chain or a measured cable route. Confirm wall positions, cleaning access, patient safety, sight lines and construction details on the final floor plan.

Floor 7 Inpatient ward

8 indoor clocks | 5 clock-equipped rooms + 3 shared areas | Not to scale

Each green clock symbol represents one proposed 30 cm, two-hand, NTP / PoE analog clock. IDs identify locations and network assets; they are not product model codes.



Placement rationale

Use quiet, cleanable clocks suitable for ward environments, subject to product confirmation. Place the nurses-station clock in the shared staff sight line.

Route each clock cable individually to the access switch. The line below the plan represents network distribution, not a daisy chain or a measured cable route. Confirm wall positions, cleaning access, patient safety, sight lines and construction details on the final floor plan.

Floor 8 Administration

5 indoor clocks | 3 clock-equipped rooms + 2 shared areas | Not to scale

Each green clock symbol represents one proposed 30 cm, two-hand, NTP / PoE analog clock. IDs identify locations and network assets; they are not product model codes.

Administration office
F8-01

Meeting room
F8-02

Staff office
F8-03

SHARED AND CIRCULATION AREAS

F8-04
Office corridor

F8-05
Staff lounge

F8 PoE access switch
IT riser / cabinet

5 dedicated PoE clock drops from the floor switch

Placement rationale

Serve shared administrative spaces and staff areas. The server-room position shown in the overall diagram is a planning assumption, not a surveyed location.

Route each clock cable individually to the access switch. The line below the plan represents network distribution, not a daisy chain or a measured cable route. Confirm wall positions, cleaning access, patient safety, sight lines and construction details on the final floor plan.

Distribution and installation plan

Endpoint quantities are fixed; infrastructure quantities are provisional

Floor	Department	Rooms	Shared	Clocks
1	Reception and emergency	5	3	8
2	Pharmacy	3	2	5
3	Consultation rooms	5	2	7
4	Consultation rooms	5	2	7
5	Laboratory	4	2	6
6	Examination and diagnostics	4	2	6
7	Inpatient ward	5	3	8
8	Administration	3	2	5
Total	Indoor clocks	34	18	52

Network and power

Allow 52 PoE clock ports and one separate outdoor data port, plus the server and switch uplinks. A planning allowance of eight floor PoE switches is used in the diagrams; existing hospital switches may be reused if capacity, segregation and reliability are suitable. Reserve approximately 20% spare clock ports: at least 63 PoE access ports in aggregate, subject to floor-by-floor sizing.

Do not calculate PoE capacity from the catalogue's 5 V DC analog-clock value. Obtain the actual PoE class, IEEE standard, maximum draw and start-up load. Size each switch power budget against the selected clocks with an agreed margin. Confirm Ethernet channel lengths and use a suitable backbone where copper distance limits would be exceeded.

Installation safeguards

Provide a surveyed roof antenna location with clear sky view, approved cable loss budget and local lightning/earthing design. Confirm outdoor IP rating, temperature range, UV resistance, wind loading, fixing method and illumination control. Protect exterior Ethernet and the 230 V AC supply. Size UPS support for the server, core and selected floor switches to the hospital's continuity target.

Configuration and acceptance

Requirements to close before procurement and handover

Confirm the complete configuration

Obtain exact order codes and datasheets for the GPS-referenced NTP server, compatible antenna, 52 indoor clocks and one outdoor clock. Confirm the analog hand arrangement, diameters, PoE implementation, outdoor 230 V input and illumination. Request applicable EU compliance documentation, warranty, lead time and a priced supply boundary including accessories and infrastructure.

Commissioning sequence

1. Bench test: verify GPS lock and UTC source status; connect both proposed clock types and prove NTP compatibility. Confirm server capacity at all 53 clients, including simultaneous restart.
2. Site test: record all 53 clock IDs, IP addresses, locations and source settings. Test VLAN reachability and controlled NTP access on UDP 123. Use hospital-approved management access and configuration backups.
3. Time behaviour: configure Romanian local time using Europe/Bucharest where supported, or verified equivalent rules. Test winter/summer transitions and hand correction. NTP distributes UTC; local-time conversion must be defined at the endpoint/controller.
4. Resilience: test GPS loss, network loss and power recovery. Agree acceptable drift, alarms and recovery times before testing. One server is a single point of failure; a second server is outside the requested quantity.
5. Acceptance: agree the visible hand-position tolerance and test method; record pass/fail for every clock. A two-hand clock does not demonstrate subsecond display accuracy. Supply as-built locations, configuration records and operating instructions.

Technical references

Project brief: supplied document dated 9 November 2026. Floor functions and quantities follow that brief. Catalogue references accessed 9 November 2026:

Clock Servers Catalog, pp. 3-4 and 8

Synchronized Clock Catalogue, analog series p. 6

HCE Digital Synchronized Clocks, pp. 2 and 11

Hospital name, city, architectural plans, floor dimensions and existing IT infrastructure are not specified. The floor layouts therefore establish a proposed allocation only. No product compliance, installed performance or delivery commitment is implied beyond confirmed configuration-specific documentation.