OPERATIONS HUB

Complete Product Documentation

Hospital Operations Dashboard

ophub.naemedsolutions.com

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Part 1: Product Overview

1.1 Introduction

Operations Hub (Op Hub) is a web-based hospital operations dashboard designed to centralize and display real-time operational data across healthcare facilities. The application provides a unified platform for managing patient census, staffing assignments, displaying on-call information, rapid response team (RRT) rosters, provider availability, and interdepartmental communication—all without storing or transmitting protected health information (PHI).

The system serves as a comprehensive 24-hour report interface that allows staff to view, input, and manage critical operational data in real-time across desktop, tablet, and mobile devices.

1.2 Key Features

- Dual-Mode Interface: Build Mode for administrators to configure sections, layouts, and display pages; User/Input Mode for staff to enter and view operational data
- Real-Time Census Tracking: Monitor inpatient counts, observation, swing bed, ED holds, and other census categories with automatic totaling
- Staffing Management: Track day and night shift assignments with position-based organization and optional assignment fields
- On-Call Directory: Display on-call contact information with click-to-call functionality for mobile devices
- Clinic Provider Status: Track provider availability (In/Out) with optional status notes and photos
- Checklist: Track tasks and items with Done/Not Done status and optional notes for shift handoffs
- RRT Roster: Manage Rapid Response Team assignments by role and shift
- Communication Whiteboard: Rich text editor for shift-to-shift communication with status indicators
- Customizable Display Pages: Create multiple display configurations for different departments or screens
- Mobile Responsive: Fully functional on desktop, tablet, and mobile devices
- Automated Archiving: Historical data archiving with date-range search and CSV export
- Auto-save Functionality: Changes save automatically within 0.5 seconds
- Phone Directory with Auto-lookup: Automatic phone number population from directory

Part 2: Technical Overview (IT Summary)

Operations Hub is a web-based operational reporting application hosted entirely on Microsoft Azure. It requires no local software installation and is accessed through a standard web browser.

2.1 Architecture

The application utilizes a modern cloud-native architecture:

- Frontend: Delivered via Azure Static Web Apps
- Backend: Azure Functions (Node.js) for serverless API endpoints
- Database: Azure Cosmos DB for scalable, globally distributed data storage
- Source Control: GitHub repository with full audit trail and CI/CD integration
- Authentication: Federated single sign-on using Microsoft Entra ID or Google Workspace with server-side session management

2.2 Authentication & Identity

- The application does not store user passwords
- Authentication is fully delegated to the organization's Identity Provider (IdP)
- Users sign in using existing organizational credentials
- No user account provisioning, password management, or reset workflows required
- Server-side sessions are created upon successful authentication and expire after 8 hours

Microsoft Entra ID:

- Users authenticate via Microsoft's OAuth 2.0 flow
- Access is determined by matching the user’s email domain against the organization’s domains array
- Access can be granted via domains array (org-wide) or individual emails array
- Server-side sessions are created in Azure Cosmos DB
- Admin status is determined by the adminEmails array in organization config
- Sessions expire after 8 hours
- Build Mode access requires valid admin session token
- Standard consent flow on first use (basic sign-in permissions only)

Google Workspace:

- Users authenticate via Google's OAuth 2.0 flow
- Access can be granted via domains array (org-wide) or emails array (individual users)

- Server-side sessions are created in Azure Cosmos DB
- Admin status is determined by the adminEmails array in organization config
- Sessions expire after 8 hours
- Build Mode access requires valid admin session token

2.3 Server-Side Authorization

All Build Mode operations are protected by server-side authentication. This ensures that layout changes, role configurations, and administrative settings can only be modified by authorized users with valid session tokens.

Protected Operations (require admin session):

- Saving layout/section configuration (buildjson)
- Updating phone directory (phonenumbersjson)
- Managing display pages (displaypagesjson)

Unprotected Operations (no token required):

- Input Mode data entry (inputjson)
- Loading/viewing configuration and data

2.4 Data Handling & Scope

- Secure, multi-tenant architecture with logical isolation between organizations
- Prevents cross-tenant data access
- Designed for operational and administrative use only
- Does not require or expect entry/storage of patient identifiers or PHI
- Input data auto-saves within 0.5 seconds
- 15-second refresh interval keeps data current across devices

2.5 Security & Network

- All data encrypted in transit using HTTPS (TLS 1.2+)
- All data encrypted at rest within Azure Cosmos DB
- No third-party analytics or tracking scripts
- Network access requires outbound HTTPS (port 443) to Azure services and IdP
- No inbound firewall rules required
- Session tokens stored in browser localStorage, expire after 8 hours
- Server-side session validation on all administrative operations

2.6 Onboarding Requirements

To enable access, only the following are required:

- Organizational email domain
- Identity provider selection (Microsoft or Google)
- Administrative or technical contact
- List of admin email addresses for Build Mode access

No app registrations, service accounts, or API permissions are needed on the organization's side.

Part 3: IT Configuration & Onboarding

3.1 Cosmos DB Organization Structure

Each organization is stored as a document in the 'organizations' container with the following structure:

Field	Type	Description
id / orgId	string	Unique organization identifier
authProvider	string	"google" or "microsoft"
domains	array	Allowed email domains (both Google and MS)
emails	array	Individual user emails (for non-org users)
adminEmails	array	Emails with Build Mode (admin) access
buildjson	string	Layout and section configuration (JSON)
inputjson	string	User input data (JSON)
phonenumbersjson	string	Phone directory (JSON)
displaypagesjson	string	Display page configurations (JSON)

New Organization Template:

```
{
  "id": "",
  "orgId": "",
  "authProvider": "",
  "domains": [],
  "emails": [],
  "adminEmails": [],
  "buildjson": "",
  "phonenumbersjson": "",
  "displaypagesjson": "",
  "inputjson": ""

}
```

3.2 Session Management

Sessions are stored in the 'Sessions' container in Cosmos DB. Sessions are created on successful authentication and validated on all Build Mode operations.

Field	Description
id	64-character hex session token
orgId	Organization identifier
email	Authenticated user's email
name	User's display name
authProvider	"google" or "microsoft"
role	"admin" or "user"

createdAt	ISO timestamp of session creation
expiresAt	ISO timestamp, 8 hours from creation

3.3 API Endpoints

Endpoint	Purpose
/googleAuth	Initiates Google OAuth flow
/googleAuthCallback	Handles Google auth callback, creates session
/msAuth	Initiates Microsoft OAuth flow
/msAuthCallback	Handles MS auth callback, creates session
/loadData	Loads organization configuration (no auth required)
/saveData	Saves input data only (no auth required)
/saveBuild	**Saves build config (requires valid session token)**
/lookupOrg	Finds organization by domain or email

3.4 Onboarding Checklist

For Google Workspace Organizations:

1. Create organization document in Cosmos DB with authProvider: "google"
2. Add organization domain to domains array, OR add individual emails to emails array
3. Add admin user emails to the adminEmails array (required for Build Mode access)
4. Admin user logs in and configures layout in Build Mode

For Microsoft Entra ID Organizations:

5. Create organization document in Cosmos DB with authProvider: "microsoft"
6. Add organization's email domain(s) to the domains array
7. Add organization email domain(s) to the domains array, OR add individual emails to emails array
8. Add admin user emails to the adminEmails array (required for Build Mode access)
9. Admin user logs in and configures layout in Build Mode

Part 4: User Guide

4.1 Getting Started

Accessing the Application

Navigate to ophub.naemedsolutions.com in your web browser. The application works on desktop computers, tablets, and mobile devices.

Logging In

10. Click the Login button in the top-right corner
11. Enter your work email address
12. You will be redirected to your organization's authentication (Microsoft or Google)
13. Complete the sign-in process
14. You will be returned to Operations Hub with your organization's configuration loaded

Your login session remains active for 8 hours. To log out, click the Login button (which shows your email when logged in) and confirm logout.

4.2 Understanding the Three Modes

Operations Hub operates in three distinct modes, each designed for specific purposes and user roles:

Mode	Purpose	Access
Data Pages	Display information in read-only format for public viewing	No authentication required
Input Mode	Enter and update data in all sections	Login required
Build Mode	Create sections, configure layouts, manage settings	Admin access required

Data Pages (Display Mode)

Data Pages are custom display views designed for public-facing information displays, such as unit status boards or waiting room monitors.

Features:

- Read-only display of selected sections
- Dark theme for visibility on large displays
- Auto-refresh every 15 seconds
- Click-to-call phone icons on mobile devices
- Switch between multiple Data Pages using the dropdown

To navigate to Input Mode, click the "Input" button in the top-right corner.

Input Mode (User Mode)

Input Mode is where staff members enter and update operational data. This is the primary working mode for day-to-day operations.

Features:

- All input fields are editable
- Changes auto-save within 0.5 seconds of input
- Last updated timestamps shown on each section
- Auto-refresh from server every 15 seconds

Build Mode (Administration)

Build Mode provides full administrative control over the Operations Hub configuration. Only authorized personnel should access this mode.

Features:

- Create, edit, and delete sections
- Drag sections to reposition them on the canvas
- Resize sections using the corner handle
- Configure section items (rows)
- Create and manage Data Pages
- Manage Phone Numbers directory
- Set default start page

IMPORTANT: You must click "Save Layout" to persist any changes made in Build Mode. Changes to input values in Build Mode are not saved.

Access Control: Build Mode is restricted to administrators only. For both Google and Microsoft organizations, your email must be in the adminEmails array. All Build Mode saves are validated server-side.

4.3 Section Types Reference

Operations Hub supports eleven different section types, each designed for specific data management needs.

Elements Section

The Elements section is used to track numerical data such as patient counts, bed availability, and other countable items.

Build Mode Configuration:

- Click + to add a new element row
- Enter the element name (e.g., "Total Beds", "Admitted Patients")
- Set the rank number to control display order (lower numbers appear first)
- Check "Census" if this item should be included in census calculations

Input Mode Usage:

- Enter numerical values in the input field for each element
- Values auto-save as you type
- Census Display sections will automatically update when census items change

Staff Section

The Staff section tracks personnel assignments including names, positions, shifts, and optional work assignments.

Build Mode Configuration:

- Click + to add a new staff position
- Enter the position name (e.g., "Charge Nurse", "Unit Secretary")
- Check "Assign" if this position needs an assignment field
- Select Day or Night shift from the dropdown

Input Mode Usage:

- Enter the staff member's name
- If assignment is enabled, enter their work assignment (e.g., room numbers)
- Staff names automatically populate RRT section dropdowns

On Call Section

The On Call section displays on-call personnel with their contact information and provides click-to-call functionality.

Build Mode Configuration:

- Click + to add a new on-call position
- Enter the position name (e.g., "On Call Physician", "Administrator")
- Check "Show" to display this row in Data Pages (uncheck to hide sensitive entries)

Input Mode Usage:

- Enter the person's name - phone number will auto-populate if found in the Phone Numbers directory
- Manually enter or correct the phone number if needed
- On mobile devices, tap the phone icon to call directly

Clinic Provider Status Section

The Clinic Provider Status section tracks provider availability in clinic settings, showing whether providers are currently In or Out with optional status notes and photos.

Build Mode Configuration:

- Click + to add a new provider
- Enter the provider's name
- Optionally paste a photo (copy an image to clipboard, then click "Paste Photo")

Input Mode Usage:

- Toggle between IN and OUT status using the toggle buttons
- Add optional status notes (e.g., "Lunch", "Back in 15 min", "With patient")
- Status changes auto-save immediately

Display Page Appearance:

- Providers show with their photo (or placeholder icon)
- IN status displays with green indicator
- OUT status displays with red indicator
- Status notes appear below the provider name

WhiteBoard (Communication) Section

The WhiteBoard section provides a rich text area for notes, announcements, and communication with a visual status indicator.

Build Mode Configuration:

- No items to add - the section contains a single rich text editor
- Resize the section to provide adequate space for content

Input Mode Usage:

- Click "Tools" to show the formatting toolbar
- Use formatting options: bold, italic, underline, colors, font sizes, lists, links, images
- Click the status dots to set the section status:
    - Green = Normal - no issues or alerts
    - Yellow = Caution - attention needed, non-critical issue
    - Red = Alert - critical issue requiring immediate attention

RRT (Rapid Response Team) Section

The RRT section manages Rapid Response Team assignments with predefined roles and day/night shift coverage.

Predefined Roles:

- Team Leader
- I.V. Med Nurse
- Airway
- Compressions
- Recorder

Input Mode Usage:

- Select staff from dropdown menus (populated from Staff sections)
- Select "-- Other --" to manually enter a name not in the list

Census Display Section

The Census Display section shows an aggregated total of all items marked as "Census" in Elements sections.

Build Mode Configuration:

- Select the source section from the dropdown
- "All Elements Sections" - sums census items from all Elements sections
- Specific section - shows census only from the selected section
- Enter a custom display label (default: "Total Census")

Assignment Display Section

The Assignment Display section provides a visual summary of staff assignments organized by Day and Night shifts.

Build Mode Configuration:

- Select a Staff section as the data source from the dropdown

Input Mode Usage:

- Display only - shows staff from the linked Staff section organized by shift
- Updates automatically when Staff section data changes

Other Items Section

The Other Items section provides flexible label/value pairs for miscellaneous information.

Build Mode Configuration:

- Click + to add a new item
- Enter a label for the item

Input Mode Usage:

- Enter any text in the value field
- Text area expands automatically as you type
- Supports multi-line text

Checklist Section

The Checklist section allows tracking of tasks or items with Done/Not Done status and optional notes. Ideal for shift handoff tasks, daily checklists, or procedural tracking.

Build Mode Configuration:

- Click + to add a new checklist item
- Enter the item name (e.g., "Check crash cart", "Verify narcotics count", "Update whiteboard")

Input Mode Usage:

- Toggle between DONE and NOT DONE status using the toggle buttons
- Add optional notes for each item (e.g., "Completed by J. Smith at 0800", "Pending pharmacy delivery")
- Status changes and notes auto-save immediately

Display Page Appearance:

- Items display with their current status badge
- DONE status displays with green indicator
- NOT DONE status displays with red indicator
- Notes appear below the item name when provided

Phone Directory Section

The Phone Directory section provides a searchable interface to look up contact information from the Phone Numbers directory. This is the only section type that is fully functional on Data Pages, allowing users to search and call contacts directly from display screens.

Build Mode Configuration:

- No items to configure – the section automatically connects to the Phone Numbers directory
- Resize the section to provide adequate space for search results
- Add phone numbers using the “Phone Numbers” button in the toolbar (see section 4.6)

Input Mode and Data Page Usage:

- Type in the search box to find contacts – results appear dynamically as you type
- Search matches both names and phone numbers (e.g., typing “LE” finds “Dr. Levi” and any number containing “LE”)
- Matching text is highlighted in the results
- Tap the phone icon next to any result to call directly (mobile devices)

Key Features:

- Always accessible – not restricted by role-based access control (RBAC)
- Read-only – no data entry or saving required
- Fully functional on Data Pages – ideal for wall-mounted displays or kiosks
- Click-to-call functionality on mobile devices

4.4 Build Mode Operations

Adding a Section

15. Click the "+ Add Section" dropdown in the toolbar
16. Select the section type you want to create
17. The new section appears on the canvas
18. Drag it to your desired position
19. Resize using the corner handle
20. Edit the section title in the header

Configuring Section Items

- Click the + button in the section header to add items
- Configure each item's name and options
- Click the × button on an item row to delete it

Deleting a Section

- Click the × button in the section header
- Confirm the deletion when prompted

WARNING: Deleting a section removes all its data. This action cannot be undone after saving.

Saving Your Layout

Changes made in Build Mode are NOT automatically saved. You must click "Save Layout" to persist your changes.

What gets saved:

- Section positions and sizes
- Section titles
- Item configurations (names, options)
- Data Page configurations
- Default start page setting

Note: Save operations are validated server-side. Only authenticated administrators can save layout changes.

4.5 Data Pages Management

Data Pages are custom display views that show selected sections in a read-only format, ideal for wall-mounted displays or public viewing.

Creating a Data Page

21. In Build Mode, click "Add Page" in the toolbar
22. Enter a name for the page

23. The Page Builder opens - check the sections you want to include
24. Click "Save" to create the page
25. Click "Preview" to see the page layout

Arranging Sections on a Data Page

When viewing a Data Page in Build Mode:

- Drag sections to reposition them
- Use the corner resize handle to change section dimensions
- Use the Scale controls (+/-) to adjust overall page zoom
- Enter a number in the rank field to set mobile display order

Managing Existing Pages

- Click "Manage Pages" in the toolbar
- Enter a number to edit that page
- Enter "d" followed by a number to delete a page (e.g., "d2")
- Enter "r" followed by a number to rename a page (e.g., "r1")

4.6 Phone Numbers Directory

The Phone Numbers Directory enables automatic phone number lookup when entering names in On Call sections.

Note: The Phone Numbers directory is also used by the Phone Directory Section, which provides a searchable interface for users to look up contacts. See the Phone Directory Section in section 4.3 for details.

Adding Phone Numbers

26. In Build Mode, click "Phone Numbers" in the toolbar
27. Enter phone numbers in the format: Name, Phone Number
28. One entry per line
29. Click "Save"

Example format:

John Smith, 509-555-1234

Jane Doe, 509-555-5678

Dr. Brown, 509-555-9012

4.7 Archives

Operations Hub automatically archives data for historical reference and compliance purposes.

Viewing Archives

1. Click "Archives" in the header (visible when logged in)
2. Select a start date and end date
3. Click "Search" to find archives in that date range
4. Click on any archive entry to view its contents

Exporting Archives

- Click "Download CSV" to export archive data as a spreadsheet
- The CSV includes: Date, Time, Section, Field, Value
- Useful for reporting, auditing, and compliance documentation

4.8 Mobile Usage

Operations Hub is fully responsive and optimized for mobile devices.

Mobile Interface

- Sections appear as full-width cards
- Use the section dropdown at the top to jump between sections
- Tap "← Back to Sections" to return to the section list
- Data Pages show sections in order by their mobile rank setting

Click-to-Call

- On Call sections display phone icons next to each entry
- Tap the phone icon to initiate a call directly
- Phone icons are only visible for entries with "Show" enabled

Mobile Limitations

- Build Mode is not available on mobile devices
- Use a desktop or tablet to configure sections and layouts

Part 5: Role-Based Access Control (RBAC)

5.1 Google Organizations

For Google Workspace organizations, access is controlled via arrays in the organization configuration:

- **domains array:** Allows all users from specified email domains
- **emails array:** Allows specific individual users (for non-org or external users)
- **adminEmails array:** Lists users with Build Mode (administrator) access

Users not in adminEmails can only access Input Mode. All Build Mode save operations are validated server-side against the adminEmails list.

5.2 Microsoft Organizations

For Microsoft Entra ID organizations, access control is now unified with the same model used by Google organizations:

- **domains array:** Allows all users from specified email domains
- **emails array:** Allows specific individual users (for non-org or external users)
- **adminEmails array:** Lists users with Build Mode (administrator) access

Users not in adminEmails can only access Input Mode. All Build Mode save operations are validated server-side against the adminEmails list.

5.3 Section-Level Permissions

Administrators can restrict which users can edit specific sections using email-based permissions:

- In Build Mode, click the Permissions button on a section header
- Enter comma-separated email addresses of users who can edit that section
- Example: Only ED staff can edit ED staffing sections
- Locked sections display a lock icon and disable input fields for unauthorized users

5.4 Role Inheritance

- Admin access is determined by the adminEmails array in the organization's Cosmos DB configuration
- Ensures consistency with existing access management policies
- No separate user management required in Operations Hub

Part 6: Accessibility Compliance

Operations Hub meets WCAG 2.1 Level AA accessibility standards.

6.1 Accessibility Features

Screen Reader Support:

- Full compatibility with NVDA, JAWS, and VoiceOver
- Proper ARIA labels, roles, and live regions throughout

Keyboard Navigation:

- Complete keyboard accessibility for all functions
- No keyboard traps
- Visible focus indicators on all interactive elements
- Skip link to bypass header and navigate to main content

Visual Accessibility:

- Minimum 4.5:1 contrast ratio for text
- Color is never the sole means of conveying information
- Content reflows properly at 200% browser zoom

6.2 VPAT Documentation

A complete Voluntary Product Accessibility Template (VPAT®) 2.5 Accessibility Conformance Report is available upon request. The report documents conformance status for all WCAG 2.1 Level A and AA success criteria.

Part 7: Troubleshooting

7.1 Common Issues

Changes not saving

- In Build Mode: Make sure to click "Save Layout" before leaving
- In User Mode: Check your internet connection - changes auto-save but require connectivity

Cannot access Build Mode

- Google: Your email must be in the adminEmails array—contact your administrator
- Microsoft: Your email must be in the adminEmails array—contact your administrator
- Your session may have expired—log out and log back in

Build Mode changes not saving

- Ensure you click "Save Layout" before leaving Build Mode
- Check for error messages indicating permission denied
- Your session may have expired (sessions last 8 hours)—log out and log back in

Session expired error

- Sessions expire after 8 hours—log out and log back in to continue

Phone numbers not auto-populating

- Verify the name matches exactly as entered in the Phone Numbers directory
- Check the Phone Numbers list in Build Mode for typos

RRT dropdowns are empty

- RRT dropdowns are populated from Staff sections
- Enter staff names in a Staff section first

Census Display showing wrong total

- Check that the correct items are marked as "Census" in Elements sections
- Verify the source section setting in the Census Display

Provider Status not showing on Display Page

- Ensure the Provider Status section is added to the Data Page in Page Builder
- Verify providers have been added in Build Mode
- Check that IN/OUT status has been set in Input Mode

7.2 Getting Help

For additional support, contact NAE Medi Solutions:

Email: info@naemedsolutions.com
Website: ophub.naemedsolutions.com

Contact Information

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— End of Documentation —