Centralized VC Room Automation & Monitoring Portal

1. Executive Summary

In today's hybrid work environment, ensuring seamless and reliable video conferencing experiences is critical to productivity and collaboration. This project proposes the development of a centralized portal leveraging Cisco Webex Admin APIs and Cisco RoomOS APIs to enable automated scheduling, proactive monitoring, and intelligent control of VC rooms across all locations.

The solution aims to transform the way video conferencing infrastructure is managed by introducing daily health checks, real-time network monitoring, and automated issue detection and resolution mechanisms. This will not only reduce downtime and manual intervention but also deliver a fantastic end-user experience by ensuring every meeting starts on time and runs smoothly.

By consolidating control and analytics into a single platform, IT administrators will gain unified visibility and centralized management over the entire video conferencing ecosystem—maximizing system uptime, accelerating response times, and enabling data-driven decisions for continuous improvement.

2. Project Objective

The primary objective of this project is to design and implement a centralized VC room automation and monitoring portal that achieves the following:

Daily Automatic Health Check of VC Devices

Automate diagnostics and status checks of all Cisco RoomOS-powered devices to ensure they are online, functional, and ready for use each day.

Real-time Monitoring of Network Connectivity & Performance

Assess key network parameters like latency, packet loss, jitter, and video quality to proactively detect and resolve quality degradation.

Automated Ticket Creation for Quick Resolution

Automatically log support tickets (e.g., via ServiceNow or email) whenever issues are detected during health checks or call sessions to ensure timely resolution.

Proactive and Rapid Issue Resolution

Enable real-time alerts to admin to reduce mean-time-to-repair (MTTR) and prevent user disruption before a scheduled meeting begins.

Deliver a Fantastic End-User Experience

Ensure all VC rooms are always in a ready state to minimize interruptions or technical difficulties, thereby delivering a great end-user experience.

Centralized Monitoring and Administration

Provide a unified web-based dashboard for IT administrators to monitor room availability, device health, call analytics, and network quality from a single console.

3. Portal Features and Scope

Portal will interact with Cisco Webex Admin APIs and Cisco RoomOS API to:

1. Daily Automatic Health Check of VC Devices
- Connect to each RoomOS and WebEX device via API.
- Fetch and display health parameters such as:
    - Device online/offline status
    - Peripheral status (camera, mic, speaker)
    - Software version and uptime
    - Room temperature and diagnostics
- Log results and flag any issues
- Option to auto-schedule checks at a defined time (e.g., 7 AM daily)

2. Automated Meeting Scheduling & Control
- Automatically schedule a test call daily for each room (time configurable).
- Before starting the test call:
    - Check if the room is free
    - If free, start the call using:
        - Cisco Webex API to schedule
- End the test call automatically 2 minutes after start
- Log the meeting details for audit and performance analysis
- Skip rooms already in an active call during the scheduled window

3. Test call Monitoring of Network Connectivity & Performance
- After call completion, collect metrics using Webex and RoomOS APIs:
    - Packet Loss
    - Jitter
    - Latency
    - Resolution and frame rate
- Show real-time stats on dashboard
- Trend graphs over time (weekly/monthly analysis)

4. Post-Call Quality Analysis
- After call termination:
    - Retrieve call quality metrics
    - Analyze audio/video stream quality
    - Store in a central database
    - Flag if metrics exceed configured thresholds (e.g., >5% packet loss)

5. Automated Ticketing System Integration
- Auto-create tickets if:
    - Device fails health check
    - Poor call quality is detected
    - Device is unreachable or errors occur

- Integrate with:
  - Email
  - ServiceNow
- Ticket includes: room name, issue description, timestamp, logs

6. Alerts & Notifications
- Real-time alerts via:
  - Email
  - SMS
  - Web dashboard notifications
- Admins alerted for:
  - Device offline
  - Failed health check
  - Call quality below threshold

7. Centralized Dashboard for IT Admins
- Unified web portal
- Modules:
  - **Room Status Overview**
  - **Live Health Monitoring**
  - **Call Metrics & Quality Reports**
  - **Error/Alert Logs**
  - **Device Inventory**
  - **Manual Diagnostics Controls**
- Admin authentication and role-based access control

8. Reporting & Audit Logs
- Daily summary reports:
  - Room health check status
  - Scheduled test call status
  - Call quality reports
- Export options: CSV / PDF
- Historical data storage for 3–6 months
- Call logs searchable by room, date, error type

9. Admin Configuration Panel
- Add/edit/delete room configurations (IP, hostname, credentials, etc.)
- Set health check & test call schedule per room
- Set quality thresholds and alert preferences
- Configure ticketing and notification integrations