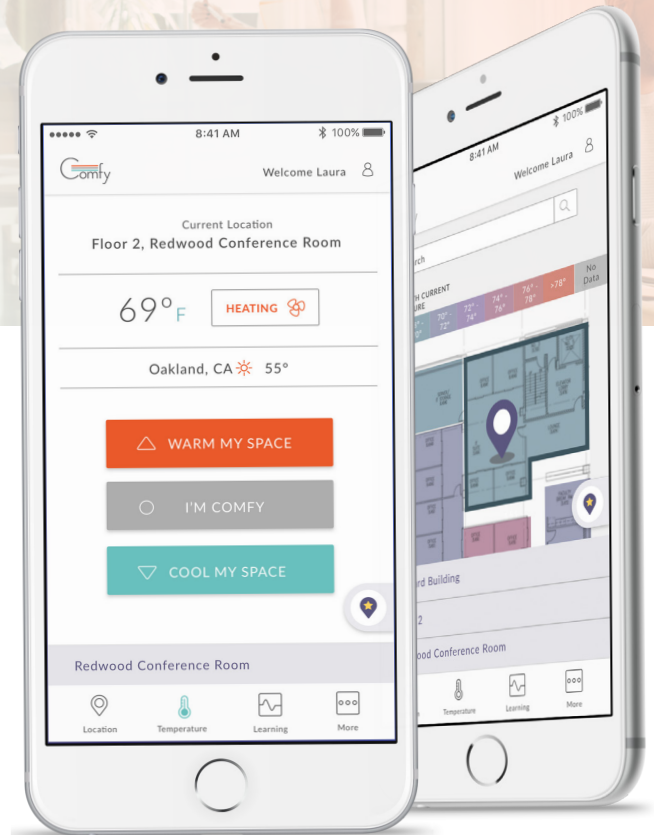




Comfy makes automatic adjustments to workplace comfort based on employee feedback, reducing temperature complaints and optimizing operational resources.

FEATURES & BENEFITS

- Allows employees to request 10 minutes of warm or cool air into a HVAC zone
- Grants immediate comfort in lieu of submitting facilities tickets, eliminating 90% of hot and cold complaints
- Optimizes building operations by identifying and prioritizing mechanical faults
- Saves HVAC energy of up to 20% by reducing over-conditioning
- Provides data and insights on building performance via Comfy Insights dashboard



Comfy provides an immediate stream of warm or cool air through an employee request from the Comfy mobile or desktop application. Comfy works with any BACnet-enabled HVAC system. Comfy overwrites the zone airflow and temperature setpoints for a ten-minute duration. Control is always at the local terminal unit, never making changes to central plant equipment. Over time Comfy aggregates employee behavior data, applies machine learning to

identify patterns in their preferences, and proactively adjusts the building's temperature setpoints to match those preferences. Facility teams establish max/min temperature setpoints and Comfy will operate within set ranges. In zones with limited activity, Comfy can widen setpoints to maximize energy savings.

Comfy connects to the existing Building Management System (BMS).



Comfy is the first app to connect employees to the system that controls air flow in most commercial buildings.

Employees log in and make a request to warm or cool their space.

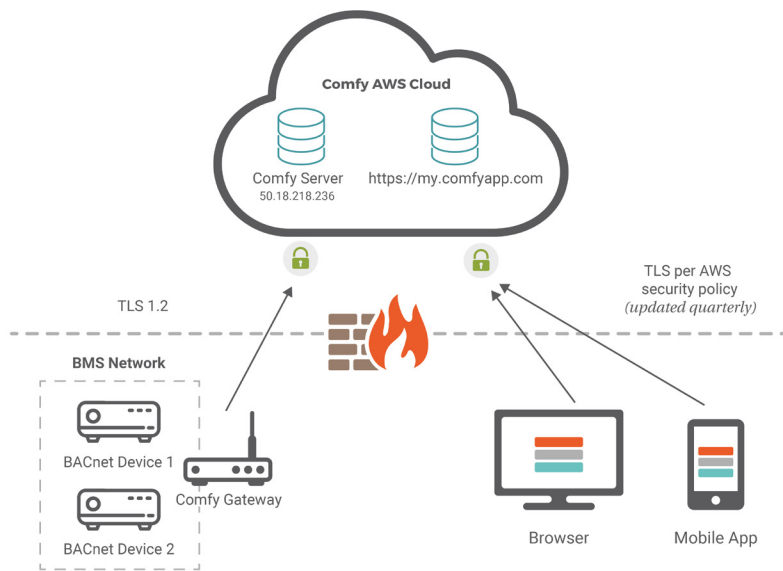


Comfy immediately sends a 10-minute stream of warm or cool air to the requested zone.

Machine learning optimizes the workplace based on people's preferences.



Comfy's patented algorithms recognize patterns and automatically tune temperature settings.



Comfy is provided as a hosted internet service. The system uses outbound connections only, meaning no ports need to be opened in the corporate firewall; Comfy also supports Internet access through an HTTP proxy server.

Comfy typically **writes** to the following BACnet points:

Occupied Cooling Setpoint	Comfy floating setpoints write every 20 minutes and immediately after requests for 10 minutes.
Occupied Heating Setpoint	
Maximum Airflow Setpoint	Immediately after the request, 3 minutes after the request, and released 10 minutes after the request.
Minimum Airflow Setpoint	

Comfy **does**:

Provide immediate response to occupants
Widen deadbands in underused zones
Merge BACnet messages (eg readPropertyMultiple) to reduce load on network and controllers
Use a configurable BACnet priority level
Return systems to normal operation afterwards

Comfy typically **reads** the following BACnet points:

Room Temperature	Damper Position
Room Airflow	Heating Valve Position
Discharge Air Temperature	Any other relevant information

Comfy **does not**:

Write to points every 10 seconds
Make changes to central plant equipment (chillers, air handlers, pumps, etc.)
Allow occupants to adjust setpoints
Write to points using temporary memory (eg EEPROM, non-unbundlable)

SECURITY

- Redundant, managed cloud service (Amazon AWS)
- TLS 1.2/256 bit AES encrypted transport
- 3rd Party Penetration Testing
- Multi-factor Authentication
- Automated Vulnerability Scans



COMPATIBILITY

- Comfy works across various digitally-addressable mechanical systems: **VAV, Active Chilled Beams, UFAD, VRF, heat pumps, etc**
- Comfy is compatible with most major controls vendors: **Siemens, JCI, ALC, Alerton, Honeywell and more**
- Effective across multiple space types: **Open floorplans, conference rooms, private offices**

HARDWARE

The Comfy Gateway device connects to the building management system via BACnet/IP network and to the cloud through an outbound internet connection; no inbound internet traffic required

- **Advantech UTX-3115**
 - Dimensions: 4.6 x 5.6 x 1.4 in
 - Fanless
 - Intel ATOM e3826 1.46GHz
 - Dual NICs
- Authenticates with AWS server via mutually authenticated, TLS encrypted connection (port 443)
- **Hardening Process**
 - Comprehensive hardening procedure based on NIST Cybersecurity recommendations
 - Hardware-based trust root for secure provisioning and updates
 - Push updates via cloud-connection ensure latest patches
 - BACnet Testing Laboratories listing (pending)

