



# FRAMEWORKS AND GUIDELINES FOR IMPLEMENTING VOICE-BASED SOLUTIONS IN HOTELS

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About HTNG

Hospitality Technology Next Generation (HTNG) is a non-profit association with a mission to foster, through collaboration and partnership, the development of next-generation systems and solutions that will enable hospitality professionals and their technology vendors to do business globally in the 21st century. HTNG is recognized as the leading voice of the global hotel community, articulating the technology requirements of hotel companies of all sizes to the vendor community. HTNG facilitate the development of technology models for hospitality that will foster innovation, improve the guest experience, increase the effectiveness and efficiency of hotels and create a healthy ecosystem of technology suppliers.

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## Document History

Version	Date	Author	Comments
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		John Swain	John Swain is Director of Product Management at Evolve Controls and Chair of the HTNG Voice Interaction Framework Workgroup
0.02	15 Jan 2018	Ajay Baalakrishnan	Ajay Baalakrishnan is a Customer Experience Specialist at BigParser Voice and is a contributor to this document

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# 1 This Document at a Glance

This document is intended to provide high-level guidance and set a minimum standard for the implementation of voice technologies in hotels, including but not limited to Amazon Alexa, Google Assistant, Apple Siri, Alibaba Genie and Baidu Raven. There are also other similar agents from large platforms and independent providers which process natural language that can be used in hotel rooms. This framework provides both hoteliers and technology vendors a common language for how to discuss voice-enabling hotels and ensure that hotel guests and staff have a positive experience with the rapidly evolving voice medium.

**NOTE:** The best practices contained herein should be considered neither exhaustive, nor prescriptive. Every organization is unique, even those ostensibly competing and offering similar solutions to the same customer base. As every organization is unique, every organization's business objectives for voice will be unique, and thus every organization's approach may be different. With that being said, certain minimum standards will ensure the guest experience is positive and that any risks are mitigated.

## 2 Document Information

### 2.1 Scope

This document is the first deliverable published by the Voice Interaction Framework Workgroup, within the trade organization [Hospitality Technology Next Generation \(HTNG\)](#).

This workgroup was chartered to address:

- Guest facing use cases, leaving other use cases for future phases of deliberation
- Far-field devices, that are touchless, always on and connected to the Internet
  - Far-field microphones are typically an array of microphones that utilize their location in space to amplify and reduce signals. This makes it possible to speak from across the room in a “hands-free” environment. Given this, far field devices are typically (1) touchless, (2) always on and (3) internet connected.
- Screenless devices, while recognizing that certain devices may incorporate touchscreen interfaces
- Minimum standards, leaving ample room for differentiation by both vendors and hoteliers above the minimum

The substance of this document relies heavily on the experience of the members of the workgroup. It provides guidelines for implementation (Section 2), establishes use cases that meet guest expectations (Section 3), outlines critical management features (Section 4), highlights use cases (Section 5) and shares technical considerations (Section 6).

### 2.2 Audience

The intended audience for this document encompasses:

- Hoteliers (including general managers, members of the IT operations team and marketing teams) should use this document to understand industry accepted best practices for implementation of voice-based solutions.
- Vendors should use this document to guide their product development schedule.
- Integrators should use this document to establish a guideline for their complex deployments.

### 2.3 Key Concepts and Terms:

- a) **Voice or Voice Service:** The term voice is generally used to refer to communication with far-field voice devices. However, any device that allows users to interact with guest services through the use of their human voice without the need to manually prompt or configure the device, may be considered a voice service.
- b) **(Active) Voice Device:** A device that a guest can start a conversation with through voice, without the need to touch, tap, wave or perform any other physical action. Devices that require another motion may be used in supplement to a voice device to enhance the overall guest experience, especially to protect guest privacy and avoid a device listening while still providing functionality (see below for mute buttons).
- c) **Voice Experience:** The term voice experience is generally used to refer to an overall guest experience achieved through the use of voice devices which enable voice.

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- d) **Voice Application:** The term voice application is generally used to refer to a set of guest experiences packaged to run on a voice device or as a voice service.

## 2.4 Considerations on Hardware Selection

- a) **Mute Button:** It is important that the device carries an obvious and easily accessible privacy button to allow the guest to disable the microphone on the device. If this is insufficient for the guest, they should also have access to the power source so they can remove the power source from the device.
- b) **Activation:** A visual indication that the activation words have been recognized and the device is listening for a command, as well as a clear indication that the device is on or off.
- c) **Volume Control:** It is important that the device has a manual control for volume, as an option.
- d) **Extendibility:** The voice device's hardware should be capable of integration with other guest- and staff-facing systems through software or hardware integration (e.g. Zigbee, IR, etc.).

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## 3 Guidelines for Implementation of Voice-based Solutions

### 3.1 Guest Education

During the early adoption phase of any technology, guest education is critical to utilization, experience and value. There is perhaps no technology for which this statement has been truer than for voice – with its perceived broad range of functionality, yet limited mechanism for discovery. Most guests' expectations are either non-existent or colored by the news media and consumer-oriented advertising, while those who have experienced the technology in their home will be surprised by both the limitations and additional functionality in the hotel context.

Below are steps hotels and/or vendors should take to educate guests on the technology and, in so doing, guide the experience rather than let the experience be self-driven by the guest.

#### *Mapping the guest journey*

Each step of the guest journey where voice technology can possibly be introduced should be identified and considered as part of a guest education campaign. Touchpoints should be identified and a strategy for using those touchpoints should be developed.

#### *Leveraging pre-identified touchpoints*

In leveraging the pre-identified touchpoints in the guest journey, every effort should be made to remove or mitigate potential fail points. Touchpoints should take place pre-stay, upon arrival and throughout the stay across the web, messages, print, screens, staff and voice itself.

Touchpoints aim to ensure the guest is (1) aware of the accessibility of hotel staff, services and technology by voice, (2) understands how to use it, and (3), knows its utility in the specific context.

#### *Matching interactions to relevant touchpoints*

Guests should not be expected to be able to select specific interactions from a menu or discover those interactions by chance. Interactions should be matched to specific times during the guest journey and “pushed” to them.

#### *Providing reference materials for most frequently asked questions*

Beyond communication that is intended to drive utilization and experience, hotels should convey answers to the most commonly asked questions by guests in a referenceable format. This material should be easily accessible by the guest, as well as the staff, if a guest requests such detail.

These frequently asked questions (FAQ) should include detail related to:

- **Functionality:** How guests\* can manage the device (especially turning it on or off)
- **Utility:** What the device can do for the guest
- **Privacy:** How the software running on the device protects the guest from infringement
- **Security:** How the hotel protects the guests' personally identifiable information from being released

\* The key aspect here is availability of the right information and documentation as part of the voice service. The management of the device may be driven by the guest, hotel staff or vendor service provider as the case may be.

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## 3.2 Staff Training

The implementation of voice-based solutions can impact the staff in a multitude of ways. It's critical to ensure the staff is trained on the solution and how their roles may change due to the solution. The following are points of reference to ease training of both current and new staff who are responsible for managing voice service.

### *Modules*

Training of hotel or vendor staff responsible for managing the voice service (listed in Section 3.2.2) should include, but may not be limited to, modules on:

- A. Hardware management
  - Remote management capabilities – varies by device
  - On-premise management requirements
    - Placement
    - Cleaning
    - Connectivity
    - Troubleshooting
- B. Content management
  - Best practices for engaging and serving guests through the solution
  - Creating brand-consistent guest experiences
  - Measurement and optimization
- C. Workflow
  - Changes to guest service processes due to solution, including receipt, service and management of items and service requests (both scheduled and immediate by staff), and automated workflows through other technologies between staff and guests
- D. Answering FAQs from guests
  - **Functionality:** Includes the capabilities of the solution and how to access those capabilities
  - **Utility:** Includes the services, staff and technologies that can be prompted by voice
  - **Privacy:** Addresses from a technical, legal and operational perspective
  - **Security:** Addresses from a physical and virtual perspective

### *Relevant Staff*

Depending on the operations roles in a hotel and the voice application modules implemented, the following is a list of potential departments to include in training:

- IT Staff (whether outsourced or internal)
- Concierge/Content Manager
- Operations Department/Operators
- Housekeeping Managers and Staff
- Food and Beverage/Catering Manager
- Director of Rooms
- Engineering Department



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- General Management
- Voice Service Provider Staff

### ***Change Management***

The impact of any new technology on staff should not be underestimated, but the voice-based solutions – given their human-like characteristics - have the potential to create disruption in the workforce. Proper consideration should be given to the process of implementation of this technology to ensure staff welcome the solution as an efficiency tool that enables them to focus on higher value interactions, rather than viewing the technology as a threat to their employment.

It is highly recommended that, during the change management process, departments affected by the change are identified and fully brought on board. Properly defining the use cases together with them is a key element of making these implementations successful.

## **3.3 Guest Privacy and Terms of Use**

There is perhaps nothing more important to the successful implementation of voice-based solutions in hotels than ensuring the privacy of guests. Each hotelier and/or provider should address privacy from a technical, legal and operational perspective.

### ***Technical***

Any recordings or transcripts maintained by hotel or vendor processing requests should be treated consistent with other personally identifiable information of a guest by the procedures of the hotel and authorities with jurisdiction over the hotel.

Any association of a guest's identity with any recording or transcript should be treated consistent with other personally identifiable information of a guest by the procedures of the hotel and authorities with jurisdiction over the hotel.

Streaming of data should only occur when speech is followed within 10 seconds of a “wake word” or other form of device activation.

### ***Operational***

- Ensure all communication and material clearly call out that the user has the right to choose if the device is on or off once they enter the room and can mute it upon entry to the room
- Adopt an internal guest privacy protection process
- Ensure answers to FAQs regarding privacy are easily accessible to the guest

### ***Legal***

- Review all aspects of implementation with the hotel's legal counsel
- Adopt processes recommended by the counsel to mitigate any potential legal exposure

Voice service like any other software-based service has its terms of use which are either provided by the service provider or are defined by the property.

- The terms of use acceptance by a guest that uses voice is recommended. This ensures that the guest clearly understands their rights and obligations when using the service.
- The acceptance of such terms should be confirmed prior to the guest invoking the voice service for the first time.

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## 3.4 Data Security

There is limited benefit to the guest experience when sharing guests' personally identifiable information with providers of voice-based solutions. These benefits should be weighed by hoteliers and legal counsel against the vendor's data management procedure and the potential liability of sharing this information.

### *Customer's personally identifiable information*

- Share guests' personally identifiable information (PII) on an as-required basis to achieve specified business objectives. For example, if the guest experience your property would like to create includes addressing the guest by name, share this and only this profile information to the voice-based solution provider. If it includes recommendations customized for the guest, expand to guest preferences. In sum, as you would with any technology, ensure that personally identifiable guest information is shared as narrowly as possible while still allowing you to achieve business objectives.
- Maintain a layer (typically provided by a vendor disassociated with the provider of the natural language processing) between any recordings/transcripts and guests' personally identifiable information. Never associate, nor allow to be associated, data which may identify a guest with any recording or transcript. Depending on the implementation and voice service or solution provider being used, anonymity of a guest may break down if the hotel, natural language service platform or service applications are comingled. Natural language processing services can and should be configured, where available, to ensure recordings are not associated with a known guest and are deleted in accordance with retention policy.
- Incorporate language into agreements with vendors to ensure the protection of your guests' personally identifiable information.
- Make exceptions for integrated voice solutions that include a property management or customer management service within the voice backend. These providers may store information for the personalization of the guest experience. When working with these solution providers, properties must review the vendor's privacy statement with their legal teams and seek approvals and amendments as necessary.

### *Hotelier's intellectual property*

Ensure integrations are between hotel systems and the provider of interaction processing and management. Make sure a hotelier has a contractual relationship ensuring its IP will not be misappropriated, rather than the providers of the hardware or natural language processing technology who may have a more distant non-contractual relationship. This will ensure the hotelier's intellectual property is not exposed or misappropriated. For example, significant risk may exist if a hotelier purchases generally available hardware and attempts to utilize it themselves in a guest room without a contractual relationship with a third party that protects intellectual property from misappropriation.

## 3.5 Device Management

Devices should be managed locally and remotely to ensure their continued presence, operation and connectivity, as well as to inspect their casing for physical penetration. Hardware manufacturers should be encouraged to provide robust remote management capabilities.

### *Presence*

Staff should confirm the device has not been lost at each guest turnover and it should be placed in a prominent area of the guest room where it is easily noticed upon entrance.

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### ***Operation***

Staff should confirm the device has not been broken at each guest turnover and it should be tested with a simple phrase to ensure functionality is maintained.

### ***Connectivity***

Staff should confirm the device has not been disconnected at each guest turnover and it should be monitored and checked to ensure it does not go offline.

### ***Inspection***

Staff should confirm the device has not been damaged or tampered with at each guest turnover and it should be physically checked for any damage to the outer shell or skin.

## **3.6 Integration Management**

Flexible integration management will enable the hotelier's non-technical staff to easily change and update the actions taken in response to specific voice commands.

## **3.7 Third Party Integrations**

<b>Integration</b>	<b>Purpose</b>
Concierge Tools	Enable follow-up to voice-interactions by a different medium (e.g., phone, messaging, or a knock on the door)
Task Management Tools	Enable seamless service and eliminate human fail points in follow-up to voice interactions by guests and staff
In-Room Controls	Enable easy voice-based control of the thermostat, lights, and drapery in the guest room
In-Room Screens	Enable companion detail to voice interactions to be conveyed visually and enable access to video entertainment by voice control
Entertainment Offerings	Enable access to music and other content guests may enjoy by voice control
Security Systems	Enable guests and staff to get help when needed
Property Management Systems	Enable the clearing of any guest personal information and resetting of in-room voice hardware for new guest interactions
Business Insight Tools	Used to track usage, request types, uptake, etc.
PBX	Ability to make calls and summon emergency help
CRM	Saves guest preferences
Electronic Do Not Disturb (DND)	Ability to turn DND on or off using voice
F&B Reservations	Enable voice reservations at a property's F&B outlets
General Information	Integrates to hotel information systems that provide information on facilities, menus, spas, events and other services inside or around the hotel

Note: Response time is a critical element of the third-party integration for this kind of service, as a slow response will give a non-acceptable guest experience.

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### 3.8 Language Support

Multi-language support should be adopted where available from the chosen voice service provider. Large hoteliers may opt-in for different NLP providers to provide guest services in different languages, which may be required across a global portfolio of properties. However, this is a fine line and must be taken in balance with the need to adopt a common framework for voice interaction to ensure consistency of brand experience.

## 4 Guidelines for Operations of Voice-based Solutions

### 4.1 Service-level Agreements

Properly documenting and effectively managing service-level agreements are key factors in ensuring an effective voice service. Make sure that:

- Prior to starting a hotel voice operation, an SLA that is well-documented is in place.
- This SLA document has been shared with and reviewed by all parties.

### 4.2 Service Incident Logging

Defining where any issues or incidents with the service are logged, preferably part of an existing incident or issue management system, is important to be able to measure and monitor adherence to the SLAs and subsequent reviews of the service.

- Use of a proper issue tracking or incident management system is highly recommended in addition to any issue reporting that may be required by the voice service or hardware provider.
- Each service incident must capture the incident name, description, impacted service/department, room number, date and time of the incident.
- All incidents including service disruption, software- or hardware-related, etc. must be captured.

### 4.3 Service Metrics

Defining metrics for any service provides an objective measurement of the service, which helps identify gaps and aids in improving service maturity and quality. A few key metrics are recommended below, and individual properties are encouraged to detail out the metrics or include additional metrics that meet the specific situation. These metrics have been defined to allow for objective comparison of voice adoption across various properties.

- Service Adoption and Usage: Defining metrics that provide insight on the adoption of the service by guests.
  - AVR: Average number of voice requests per room/per day
  - AVR by Room Type: Average number of voice requests per room/per day by room type
  - AVR by Department: Average number of voice requests per room/per day by department
- Service Reliability:
  - Success Ratio: The total number of requests that were successfully rendered divided by the total number of requests. The highest success ratio achievable is 1, which indicates that 100% of voice requests were successfully delivered. When calculating the success ratio, it is important to correctly measure success with a few guidelines:
    - For Information Requests: Informational requests may sometimes provide an incorrect response which may be due to speech converting to text or natural language processing reasons. When calculating the success ratio, ensure incorrect responses are not considered successes.
    - For Service Requests: Service requests made by voice may sometimes result in incomplete or incorrect information being passed to the property management system or other service request management system used by the hotel. This may be due to various reasons including speech being converted to text, natural

language processing or incorrect integration mapping. When calculating the success ratio, ensure incorrect responses are not considered successes and they should be tracked, measured and monitored.

- **Service Incidents:** This is the total number of incidents that pertain to the outage of the service.

Note on Benchmarking: When evaluating voice solutions, or integration voice logs in an enterprise system for service management, it is important to accurately take the above information into account to enable proper benchmarking of the service quality.

## 4.4 Service Escalation

Service escalation procedures for voice services that are dependent on external vendor services or require multiple vendors to support them, should be clearly documented and escalation paths should be defined.

### *Voice Services*

- Service escalation procedures and SLAs must be clearly defined and agreed upon with the voice hardware manufacture, voice service provider and other service providers (e.g. Network/Wi-Fi) to ensure that the SLAs for service availability, response times and resolution times (depending on the nature of issue) are clearly documented and agreed upon by all vendors forming the service delivery chain.

### *Critical Guest Services*

- This is most important in the initial phases of voice adoption until voice services mature and stabilize for a property. It is also relevant for the adoption of any new voice use case, even for a property where voice has been implemented for a while.
- For voice-activated critical guest services such as maintenance for AC, emergency systems, alarms or any other critical guest service relying on a third-party provider, an escalation path must be established outside the voice channel (e.g. by messaging or email alerts) to ensure the guest service experience does not break.

## 4.5 Service Quality Review

Periodic review of service incidents and problem analysis is key to ensure continuous improvement of any service but given the continually moving target of natural language processing, it is even more critical for voice services. Therefore, it is highly recommended that a property implements a service review for the voice service on a standard schedule.

- Service quality reviews are recommended to be conducted once a quarter
- Service quality reviews should include general management of the hotel and key department heads/service managers of the various guest services
- Service quality reviews should review all service metrics including guest feedback on the voice service.

## 5 Use Cases Recommended Vary by Property Type

Utility is a significant driver of guest experience. Early deployments of voice-based solutions performed by members of this workgroup have shown that, not unlike other amenities, guest's expectations of voice-based solutions are correlated to the property type at which they are staying.

In sum, as guest expectations are different across property types, so are the use cases deemed to meet those expectations. Every effort should be made to meet the guests' expectations of utility when engaging with voice.

### 5.1 Lodging-Only Property

Guests at lodging-only properties expect the voice-based solution to enable them to get:

- All standard information accessible “out of the box” (e.g. news, weather, time, etc.)
- Basic information about the hotel
- Basic information about the local area
- Access to items and services provided by the hotel (e.g. housekeeping, maintenance, valet, issue reporting, etc.)
- Access to recommendations curated by the hotel
- Greetings from management
- Summon help in case of emergency
- Request or notify the hotel of check-out immediately or at a specific time with confirmation of where the final folio will be made available
- Contact the front desk or hotel staff through new voice to telephone calling features or if the hotel does not have resources to pick up a phone call immediately, then a text messaging feature that would alert staff to call the guest back on the hotel room phone should be used

### 5.2 Full Service Property

Guests at full service properties expect all the utility of guests in lodging-only properties plus:

- Voice-controlled entertainment
- Select F&B ordering to ensure a positive guest experience

### 5.3 Luxury Property

Guests at luxury properties expect all the utility of guests in full service properties plus:

- Voice-controlled television
- Voice-controlled thermostat
- Voice-controlled lighting
- Voice-controlled drapery
- Voice-controlled “Do Not Disturb” and “Make Up Room” signage
- First entry welcome and basic instruction messaging

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## 5.4 Ultra-Luxury Property

Guests at ultra-luxury properties expect all of the utility of guests in luxury properties plus:

- Custom and coupled voice-controlled experiences
- If a guest has a guest/customer loyalty account, it should be made available where feasible and in accordance with privacy requirements. Please refer to the privacy section for details.
- If a guest has a personal account with the voice device service provider, it should be made available, where feasible, for the guest to access their account and features in accordance with the privacy requirements. Please refer to the privacy section for details.



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## 6 Management Features

Robust management features enable the hotelier to provide an improved (e.g. more relevant, tailored or brand consistent) guest experience.

Reply content – the audio or video response to a voice prompt – should be closely managed to ensure a consistent and branded guest experience. Its management should be considered a high priority and sensitive function for hotel staff. A best practice is to assign a single owner of reply content, while limiting access to editing functionality for other staff. Every reply should be considered carefully, reviewed periodically and updated as required.

Non-technical hotel staff should have the ability to conduct:

- Real-time interaction updating
- Voice recording
- Interaction scheduling
- Next interaction voice-push
- In-reply appendages
- Multiple trigger management for each interaction
- Real-time analytics and aggregated reports
- Request management
- Unlimited users with assignable security roles
- Privacy

### 6.1 Real-Time Interaction Updating

While most of the interactions accessible to guests and staff will not require regular updates, personalization to groups, customization for events and general business objectives, they may require changes for the interactions available on the hotel property. Hotels should ensure their chosen solution enables these changes to be made by non-technical staff so as to not be limited to a small segment of staff.

### 6.2 Voice Recording

Digital voice assistants are perceived as impersonal in many instances. Human voice replies enabled by easy and instantaneous voice-recording technologies enable staff to create and manage interactions consistent with their brand's voice, tone and tenor.

### 6.3 Interaction Scheduling

Replies are often time-sensitive and should vary based on the hour, day or month. Scheduling these interactions will enable for more seamless management of the voice experience.

### 6.4 Next Interaction Voice-Push

The ability to trigger interactions with guests is valuable to hotels as they look to promote specific events or offers that take place at specific times. This might be a proactive response, or a message appended to the end the next interaction on all devices at a property.

### 6.5 In-Reply Appendages

Appending contextually relevant messages to the end of voice-replies can allow the hotel's promotions to appear as suggestions, presented at the right time in the guest's journey.

## 6.6 Multiple Trigger Management for Each Interaction

Truly remarkable guest experiences result from the management of replies and API calls across a host of third party technologies operating in a hotel at one time. This enables hotels to cultivate guest experiences that are surprising and remarkable to positively differentiate their stay from others.

## 6.7 Real Time Analytics and Aggregated Reports

Hoteliers should require the selected provider to share real time analytics including time/date stamp, interaction type and room number for every interaction. Reports, including this raw data, should be available for use alongside other data sets in existing analytical tools and should be provided in easy-to-digest tools that can improve guest services' decision making. Take the following into consideration:

- Logging of all voice requests must be done and a mechanism to make them available for audit should be provided.
- Detailed operator SLAs have been discussed in the SLA section. Refer to these to establish a baseline for developing analytics for voice.
- Voice service should be able to provide its own feedback collection capability from the guest through voice.

## 6.8 Request Management

Most full-service hotels will employ separate work order management software. This software should be integrated into the voice-management software to ensure human fail points are avoided. Those properties that do not employ a work order management solution should require a means of managing voice-enabled requests from guests from their provider of voice-management software. Such means would include text or email-based alerts to the relevant departments or staff and logging of such requests for the purpose of analytics and management. Examples of these interactions are: do not disturb, housekeeping service requests and guest requests (e.g. extra towels, crib, mini-fridge, etc.).

## 6.9 Unlimited Users with Assignable Security Roles

Assignable roles and access levels are critical to a secure solution. Reply content should be managed by the appropriate member(s) of the guest-facing staff, whether on property, at the management group or at the brand company. Devices should be managed by appropriate members of the IT staff whether at the property, management group, brand company or outsourced provider. Data and analytics should be available to appropriate or relevant staff.

## 6.10 Privacy

Any user sessions active on the device must be cleared every time the guest checks out of the room. The guest should be given the option to enable the ability to stay logged in to their account for the duration of the stay in the room, with a clear call out on the risks associated with using such a feature.

## 7 Additional Technical Considerations

### 7.1 Network

For most use cases, network requirements are light, bandwidth requirements *de minimis* and there is some variability dependent on the selected hardware, but minimum guidelines are as follows:

- A strong Wi-Fi signal or wired ethernet where the devices will be installed. Weaker signals can cause noticeably poor performance in the form of delays or truncated audio responses.
- The Wi-Fi network cannot have an HTML authorization page requirement.
- Confirm whether the solution requires a hidden or visible SSID.
- The Wi-Fi network(s) the devices connect to must support one of the following security methods:
  - Open network (properties can whitelist the devices' MAC addresses if desired)
    - If using an open network, confirm that traffic is TLS or SSL encrypted; the leading platforms do provide this encryption standard.
  - WEP
  - WPA/WPA2 Personal/PSK

Use cases that incorporate in-room controls may have more robust requirements and the hotelier should contact the in-room controls' providers for details.

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## 8 Conclusion

This document encapsulates the most critical aspects of an effective implementation of voice-based technologies. These are mainly separated into two categories for a property to take into consideration: hardware selection and implementation partner selection.

### Hardware Selection:

Incorporating a new technology such as voice can be challenging. The key factors to balance when making choices on hardware selection, implementation and operationalization of the voice service include:

- **Open Framework:** Ensure that the framework used is open and provides ability to integrate with third party technologies
- **Standards Compliance:** Ensure that the framework used follows the above guidelines to ensure ease of use and adoption
- **Future Proofing:** When making vendor selection, consider a strategy toward maintaining flexibility in the future

### Implementation Partner Selection:

Voice is still a very nascent space, while still evolving, it is recommended to use niche providers in this space who have specific expertise working with voice. Some key aspects to consider when determining a partner include:

- Demonstrated ability to deliver an end-to-end voice-based solution
- Uses or recommends an open framework that allows for integration
- Expertise in working with the nuances of natural language processing
- Domain knowledge and understanding of property management and related guest services
- Resource and skill availability to achieve the implementation timeline
- Network and reach to service the required hotel property footprint