



# Modern Hire Technology Overview

July 2021

*Private and Confidential*

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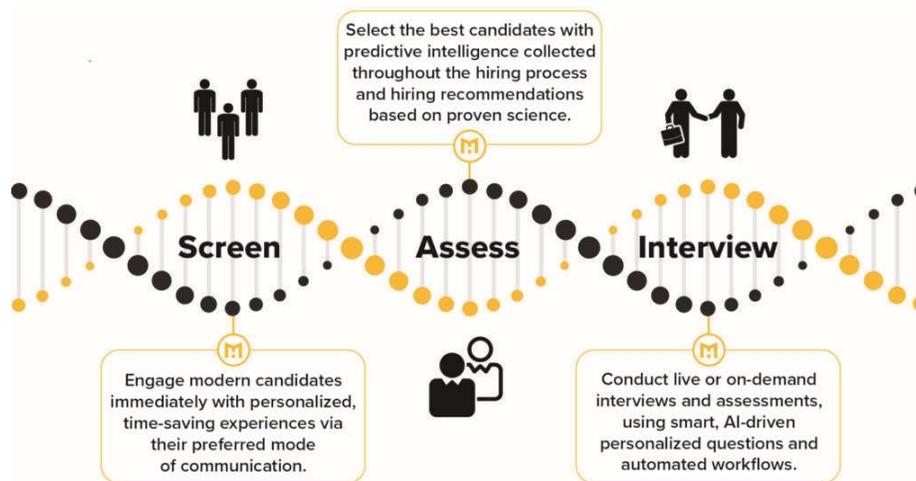
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## For our Clients and their IT Partners

Modern Hire’s client technology teams frequently ask questions regarding the application’s core capabilities, its architecture related to scaling and global delivery, data security, and any technology partners we use in support of our services. This document may not answer every question, but we think it is a good starting point in your technology investigation; though keep in mind that Modern Hire performs regular updates to its system in response to new requirements (data protection, performance, client demand, new technology).

## Modern Hire Core Capabilities

Modern Hire offers a rich, multi-media SaaS solution used by hiring managers, recruiters, staffing organizations and others to facilitate hiring, and placement of top talent. It is important for IT organizations to understand the impact to their corporate network to allow access to our solutions. There are three main focus areas of interest: digital interview, assessment, and workflow. A key benefit of the entire solution is the configurable branding and user experience which is configured to match your brand including: colors, logos, disclaimers and candidate communication, and other items.



## Digital Interview

Modern Hire’s digital interview products support both On-Demand and Live interview scenarios.

### On-Demand

A candidate can complete an On-Demand interview through various methods including text (SMS), chat (web based chat bot), voice, and video (including voice). In all cases, the candidate receives a client branded email or text message whose contents provide direction on completing the interview. This interview mechanism provides benefits for both the candidate and the recruiting team. The candidate can answer the questions at their convenience, and the recruiter gets to review the result at their convenience and quickly determine candidate applicability in much less than a traditional phone screen or one-on-one interview.

### Live Interview

A Live interview occurs via voice, video, or in person. In all cases, the user interface to coordinate, communicate interview details to the candidate and interviewers, and collect interview feedback is identical. The main

difference between each type of live interview is the communication mechanism, but the technology and infrastructure used is consistent.

(Note: The ability to use client managed live video products, such as Zoom, Microsoft Teams, and Cisco WebEx is currently in development or released for general availability. In these scenarios, Modern Hire manages scheduling and status of the live video event, but not the technology that processes the interview voice and video.)

## Assessment

Modern Hire's Virtual Job Tryout™ is a powerful, science-based pre-employment assessment that predicts job performance. It engages, informs, and evaluates candidates while giving hiring teams the insights they need to boost new-hire performance, reduce turnover, and increase efficiency.

The Virtual Job Tryout goes beyond conventional cognitive and behavioral assessment with innovative exercises that simulate the job, providing evidence of how candidates are likely to perform in your environment.

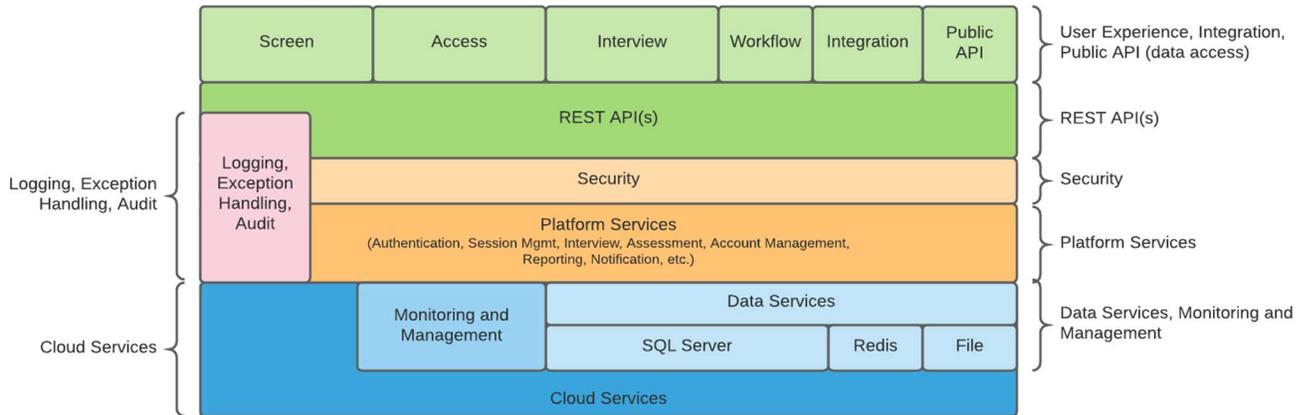
Our assessment tools use predictive analytics and data collected over two decades across numerous roles and industries. Our rigorous validation research combined with hiring and performance data from more than a billion candidate interactions are the scientific and analytic foundation of our award-winning assessment technology.

## Workflow

Modern Hire's SaaS platform provides advanced workflow solutions to help manage the processes listed above and drive further efficiencies in your hiring process. From multi-stage progression, automated scoring, scheduling and corporate calendar integration, Modern Hire has invested in a robust platform to digitally transform our client's hiring processes.

## Application Architecture

Modern Hire designed its SaaS solution using service oriented architecture (SOA) principles and methods in the form of interoperable services. These services have well-defined business functions built as software components. All software components are loosely coupled allowing Modern Hire the flexibility to distribute and load balance these components across multiple servers to maximize availability, performance, scalability, reliability, recoverability, maintainability, and security. The figure below illustrates an overview of the software architecture and the major services assembled to deliver the complete set of platform services.



### Modern Hire Application Stack Topology

#### User Experience, Integration, Data Access

User experience components are built using modern web 2.0 interfaces with ease of use, accessibility, and compliance in mind. When clients visit the Modern Hire application, they are invoking web applications which are communicating directly with the Modern Hire system via our internal REST interface. Modern Hire uses common web technologies HTML, CSS and JavaScript implemented in the Microsoft .NET platform to build these components. These components can be isolated and scaled independently and allow for rapid development and expansion in a compartmental fashion.

Integration and data access modules are provided for clients and partners to facilitate integrating with Modern Hire. A common scenario is for applicant tracking systems (ATS) such as Workday, Taleo, and others in use by clients to make integration requests to and process results from Modern Hire during the talent acquisition lifecycle.

#### REST API(s)

All requests for services and data pass through the Modern Hire REST API. Modern Hire maintains multiple versions of our API to maintain compatibility with internal, client, and partner developed integrations. A series of automated tests ensure future product updates maintain compatibility with integrations built against previous versions of the Modern Hire solution. (For more information regarding the Modern Hire API visit <https://api.montagetalent.com/v3/xml/help>.)

#### Security

All API requests must pass through the security layer, which verifies the requestor has the necessary rights to execute the request and then inspects the data for malicious content. Modern Hire utilizes a whitelist security philosophy; meaning data must meet specific criteria before allowed to pass beyond the security layer.

#### Logging, Exception Handling, Audit

At each layer of the Modern Hire architecture, common logging, exception handling, and audit tracking are in place. These components ensure that platform logic and layers provide appropriate information to track information for compliance and issue resolution.

## Platform Services

The Platform Services layer represents the key business functional layer in the architecture. Here, requests are translated into data or processing functionality and passed on to other business functions, integrations, APIs, data services, etc. Some key Platform Services are listed below.

### URL Service, Router Service

The URL Service creates user links for Modern Hire interview, assessment, and other module functions. These links rely on the Router Service to direct the user to the appropriate platform service. One of the primary features of the Router Service is utilized during Modern Hire maintenance windows. Since interviews and assessments can be scheduled well in advance, when maintenance occurs that impacts a particular component, the Router Service can redirect the request to the appropriate in-service component, minimizing and usually eliminating impact resulting from scheduled maintenance.

### Screening, Assessment, and Interview Services

Screening, Assessment, and Interview Services encompass:

- Interview coordination
- Live interview streaming
- Live voice service via telephone answering job-specific questions
- Multi-media and document services that transform and store voice and video content
- Assessment scoring
- Interview scheduling and calendar integration

### Communication Service

The Communication Service manages candidate and recruiter communication in the form email and texts

### Notification Service

Notification services support asynchronous communication of specific events such as completion of an interview or assessment. The Notification Service works on a subscription model via https.

### Authentication Service

The Authentication service verifies username, password and access rights for all users and authorizes all API requests to store or retrieve data.

Modern Hire recommends Single Sign On (SSO) integration as a standard for client administrator authentication, when available. SSO allows for the client's identify provider to authenticate administrative user access. (See Appendix 1 for more details)

## Monitoring and Management

The Monitoring and Management Service provides a dedicated mechanism to capture, track and report on application heuristics and performance metrics. This services directly feeds Modern Hire's infrastructure team with critical information about the real-time behavior and health of our platform.

## Data Services

All data storage and retrieval requests pass through the Data Services layer. By design, only the Platform Services have access to Data Services, as these services exist after appropriate security mechanisms have been utilized. Key Data Services components include:

### SQL Database

Modern Hire utilizes the latest Microsoft SQL Server Enterprise Edition to store all transactional data such as users (administrators, recruiters, candidates), clients, job-related information and their inter-relationships and their relationships to all data in the federated repository of photos, documents, and multi-media. Modern Hire operates a multi-node, always-on SQL cluster for high availability, scale and security.

### File

Modern Hire maintains a data store which stores file-based assets as part of our transactional processing. Items such as photos, recorded video and audio files, documents converted to a “trusted” format, and other items are located here.

Modern Hire relies on a Content Delivery Network (CDN) to ensure that static content, such as those in the File Data Service are presented in the most efficient manner.

## Cloud Services

Modern Hire relies on Amazon AWS for public cloud services. These services provide for basic networking, compute, storage, security, and other systems so that Modern Hire can focus on delivering the highest quality and industry leading talent acquisition platform. (See Infrastructure Overview below for more details)

## Hosting Infrastructure Overview

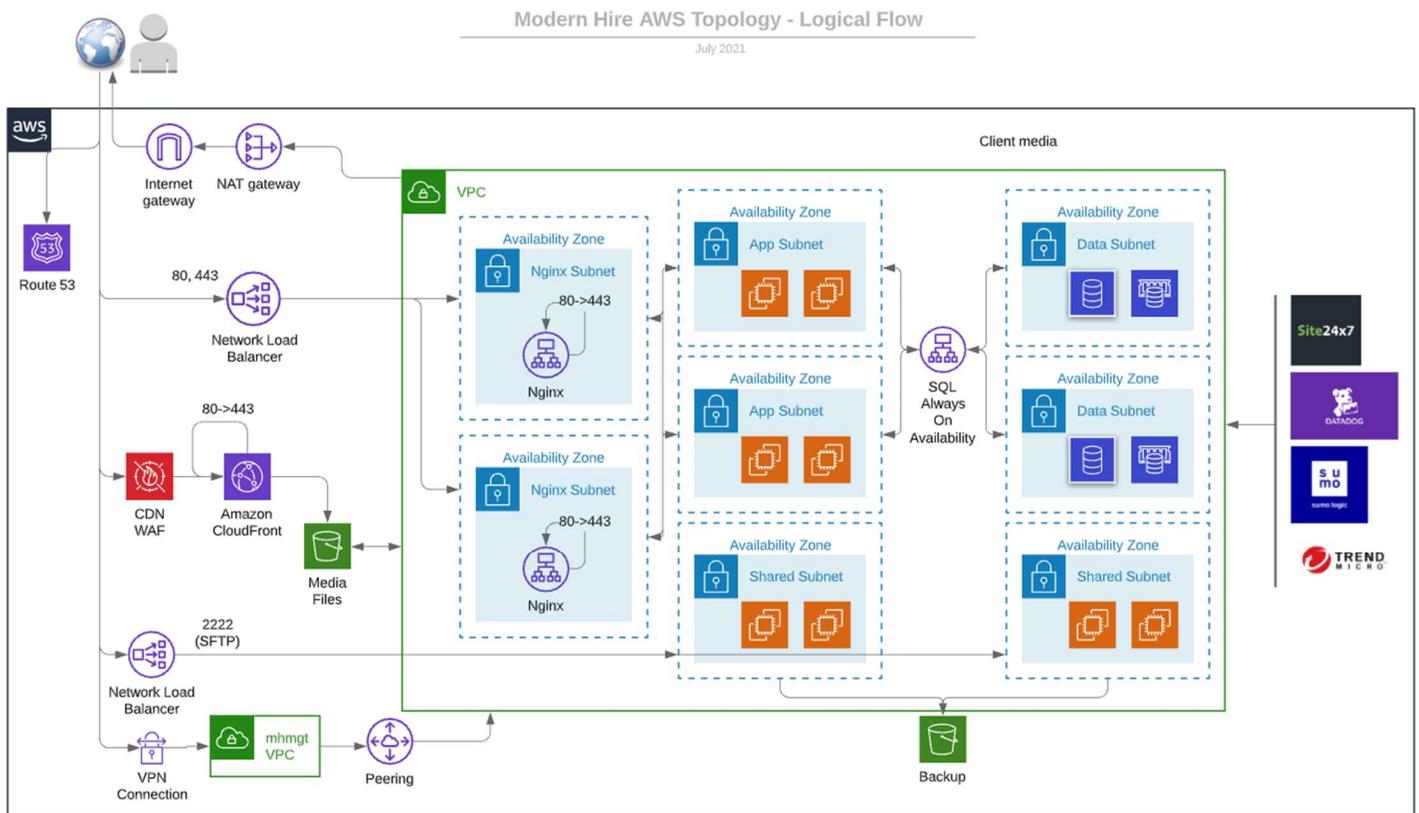
Modern Hire integrates custom developed and commercially available components, SaaS services, and cloud infrastructure to deliver our solution. Amazon’s AWS public cloud hosts our network, compute, storage, security, and other infrastructure services. Our application architecture described above reflects Amazon’s Web Application and Content and Media serving Reference Architectures and utilizes Microsoft’s .NET architecture and Enterprise SQL Server. Modern Hire will continue to follow Amazon’s recommendations to ensure our solutions follow Amazon’s security and scalability recommendations.

## Infrastructure Highlights

- Global application distribution with data processing in the US, EU and Australia. Once Modern Hire assigns a client to a specific region, EU for example, the application stores all client data, including backups, in that region.
- Globally distributed live video and recording video servers that optimizes video connectivity by connecting users to the closest servers located across the globe.
- Microsoft SQL Server Enterprise with Always On Availability plus Transparent Data Encryption (TDE).
- NGINX Clustered load balancers with SSL offloading and advanced Web Application Firewall (WAF).
- Amazon Cloud HSM providing FIPS Level 3 certificate management (US sites only).
- Secure infrastructure using segmented networks (subnets), security groups (SG), access control lists (ACL), network peering, and virtual private networking (VPN).

- Server based intrusion detection and prevention (IDS/IPS) agents providing real-time integrity, malware, virus, unexpected log activity and suspicious activity monitoring and alerts.
- Data in transit is encrypted via https/TLS 1.2 or higher throughout the Modern Hire infrastructure.
- Data at rest encrypted via AES-256.
- Limited secure file transfer (SFTP) available with request and controlled with source and destination matching.

The figure below shows a high-level overview of our infrastructure layout.



### Modern Hire Network Overview

#### Amazon Web Services (AWS) Global Footprint

Modern Hire utilizes Amazon’s AWS platform as a service to both host its application servers and store client data. Modern Hire provisions its client application in one of Modern Hire’s AWS existing AWS installations in the United States, European Union, or Australia. Modern Hire considers factors such as proximity and data protection regulations when provisioning client applications. The figure below shows our current global footprint.



📍 Primary hosting location    
 📍 Backup hosting location    
 📍 Additional video collection hosting location

<p><b>*modernhire.com</b>                  US Primary: us-east-1 (N. Virginia)                  US Backup: us-west-1 (N. California)</p>	<p><b>*modernhire.eu</b>                  EU Primary: eu-west-1 (Ireland)                  EU Backup: eu-west-2 (Frankfurt)</p>	<p><b>*modernhire.com.au</b>                  AU Primary: ap-southeast-2 (Sydney)                  AU Backup: ap-southeast-1 (Singapore)</p>
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## Modern Hire AWS Deployments

### AWS Services

Modern Hire incorporates many AWS services into our solution and will continue to take advantage of new services as we scale and enhance our solution. The following lists the most notable services and a basic description of Modern Hire’s use.

- CloudFormation is used to provision new servers, services or complete new environments based on predefined standards. This is known as “infrastructure as code”.
- Virtual Private Cloud (VPC) provides the network infrastructure and segregation that hosts other AWS services.
- Elastic Compute Cloud (EC2) houses Modern Hire’s web, application, database, and media servers and provides virtual disk drives, load balancing, auto-scaling, and firewall and security services.
- Simple Storage Service (S3) stores client media such as video files, audio files, documents and backups. All data directed to S3 is encrypted at rest and automatically mirrored to a backup region.
- Identity and Access Management (IAM) controls operational access to AWS environments.
- Route53 is Amazon’s Domain Name System (DNS) and is used to route user requests to hosted applications. Route53 is also a pivotal part of our disaster recovery solution.

- CloudFront is Amazon's global Content Delivery Network (CDN) and is used to deliver recorded video, audio, and document content to users at the most effective location.
- CloudWatch provides system-wide operational health monitoring.
- Simple Queueing Service (SQS) provides scalable management to asynchronous activities, such as media transcoding, and reliability in the event of server failure.
- Simple Email Service (SES) is used for outbound email delivery.
- Polly is used to delivery human-like delivery of questions to end users.
- Key Manager Service (KMS) is utilized for encryption key management.
- Cloud Hardware Security Module (HSM) is used
- GuardDuty monitors virtual private cloud logs and DNS requests for malicious, unauthorized, or unexpected behavior.
- CloudWatch monitors activities related to our AWS environment and alerts operational personnel to events such as low disk space, unexpected CPU load, to automatically trigger specific actions and alert operational personnel.

Modern Hire follows AWS security recommendations for access management, security groups, virtual private clouds and cloud formation to maintain secure control over client data.

## Other Third-Party Services

### Vonage (TokBox)

For clients utilizing WebRTC live interview applications, their Modern Hire web application routes their live video streams through WebRTC servers hosted by TokBox. Each user routes through the closest available server located in one of the following regions.

- United States (Oakland, San Jose, Dallas & New Jersey)
- South America (Sao Paolo, Brazil)
- European Union (London, Amsterdam & Spain)
- Eastern Europe (Ukraine)
- APAC (Japan, Singapore, Mainland China & India)

In support of Modern Hire's commitment to its Mainland China clients, and clients interview candidates residing in Mainland China, TokBox recently added servers within Mainland China which improve the connectivity and video quality of Chinese interview participants, connecting to interviews hosted in our US, EU, and AU client applications.

TokBox does not collect or store client specific data, nor is TokBox aware of Modern Hire client relationships. TokBox operates similarly to a standard telephony company, and merely routes encrypted video between endpoints.

Note: WebRTC traffic to/from TokBox is encrypted with AES-128 level encryption. Once files are available in TokBox S3 buckets, the files are moved to Modern Hire's S3 buckets for customer use.

### Twilio

Twilio is utilized by Modern Hire for text (SMS) and voice services. All inbound and outbound SMS messages are delivered via Twilio SMS APIs which provide for dynamic two-way conversations. Additionally, Twilio's voice

APIs are used for OnDemand and Live voice services to deliver two-way voice interactions (OnDemand) and conference style voice services (Live).

### Trend Micro

Trend Micro Deep Security as a Service provides Modern Hire's infrastructure with Intrusion Detection, Intrusion Prevent, Integrity Monitoring, Log Inspection, Content Filtering, Malware, and virus detection and protection services.

## Data and Data Security

Modern Hire transfers all data encrypted via https/TLS 1.2 and then encrypted at rest (AES-256). (See note on page 11 for WebRTC based live video encryption in transit.) Modern Hire stores all information and data in Amazon AWS data centers, each of which meets established compliance standards including SOC, ISO 27001 and ISO 27017. Modern Hire follows Amazon AWS best practices and their web application reference architecture with multiple levels of backup to redundant data centers. Modern Hire does not collect personal finance information, personal health information, or national identification numbers such as social security numbers. The information stored in Modern Hire's data store is confidential information for both the corporation and job candidates. The corporate employee contact information, the open positions and the fact that an individual is a candidate for a specific position is highly confidential. Amazon's AWS (Modern Hire's hosting partner) security measures for electronic and physical server security are state-of-the-art.

### Types of Data Collected by the Modern Hire Application

Modern Hire limits the amount of personal information collected from Modern Hire's corporate users and job candidates. The following list describes the information stored in each Modern Hire client's application data store.

- Corporate branding information (Logos, colors, corporate videos, email formats)
- Corporate user's email, first and last name.
- Corporate job-related information like data available on a client's careers website.
- Corporate job specific questions.
- Candidate's email, first and last names.
- Candidate's video, audio, text and multiple-choice responses to corporate questions.
- Optional candidate contact information.
- Optional candidate photograph.
- Optional candidate's resume and artifacts detailing their qualifications.
- Optional Modern Hire Live Interview video and audio recordings
- Optional corporate user's notes about job candidates.

Note: Collection of optional information can be disabled, so Modern Hire never collects the optional information from the candidate.

### Data Integrity, Backups & Data Transfers

Modern Hire mirrors client data across a minimum of two AWS availability zones (data centers) within an AWS geographic region.

## User Roles

There are four main client roles, client administrator, recruiter, hiring manager and candidate. Roles are predefined, but clients have the option of limiting application features by role. For instance, some clients limit job question definition to the client administrators restricting recruiters to use a predefined set of job specific questions. Modern Hire maintains separate roles for its operational and client support personnel.

## Data Visibility

Clients limit job and candidate data visibility using user groups. Each Modern Hire user belongs to a group which restricts their data visibility to only the data permitted for their assigned group. There are no limits to the number of groups or to a user's group assignments.

## Availability

Modern Hire utilizes load balancing within data centers, automated server provisioning in response to unexpected demand spikes and real-time data mirroring with auto-failover to ensure high availability. Modern Hire performs annual testing of failover and on-demand scaling infrastructure.

## Data Retention

Modern Hire retains data as specified in client agreements with each client. Retention periods are configured specific to client requirements. Modern Hire implements an automated purging process and automatically purges data at the end of the defined retention period. The automated purge process logs all activity and is available for client review upon request.

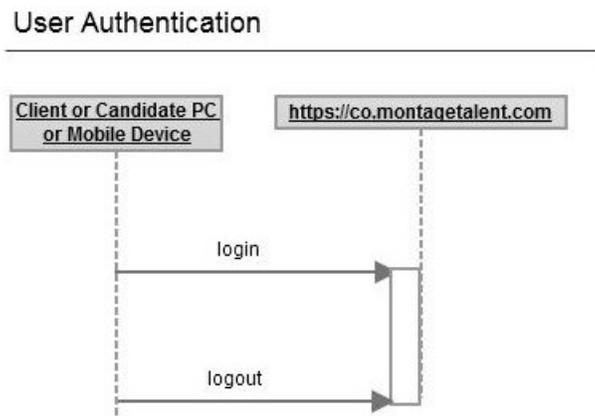
Modern Hire retains meta data related to product usage and interview events, such as interview type, date, time, duration, number of participants, endpoint technology utilized, which Modern Hire utilizes to report on historical usage and capacity planning. Meta data does not contain personally identifiable information (PII).

## Appendix 1: User Authentication (non-SSO and candidates)

Users accessing stored data such, as recruiters and candidates recording video responses to On-Demand questions, require login credentials. Users create their initial password when creating their account through a URL sent to their email account of record with no use of a temporary password. Users invited to participate in a Live Interview and candidates invited to participating in an On-Demand Voice interview do not require login credentials and use a URL in their email invitation to join their respective interview.

Users use an assigned username (email address) and password to log into the Modern Hire application. At a minimum, passwords must be a minimum of eight characters with at least one non-alphanumeric character (!, \$, @, etc.) and is configurable to client security standards (length, character complexity, aging, history, lockout parameters, exclude username, and word blacklist). The following figure, User Authentication, illustrates the servers and ports involved with user authentication and associated data flow. All communication between a user’s PC or mobile device occurs via https through port 443. In typical enterprise integration, Modern Hire supports Single Sign-On (SSO) for client users via SAML 2.0 or SSO with a direct integration with our client’s Applicant Tracking System (ATS) such as Taleo, Kenexa, iCIMS, and SuccessFactors.

Modern Hire supports a self-service “forgot password” mechanism for candidates and non-SSO integrated clients. Users selecting “forgot password” must enter their email address and assuming a valid user account, are sent a reset URL to their email address of record allowing creation of the new password.



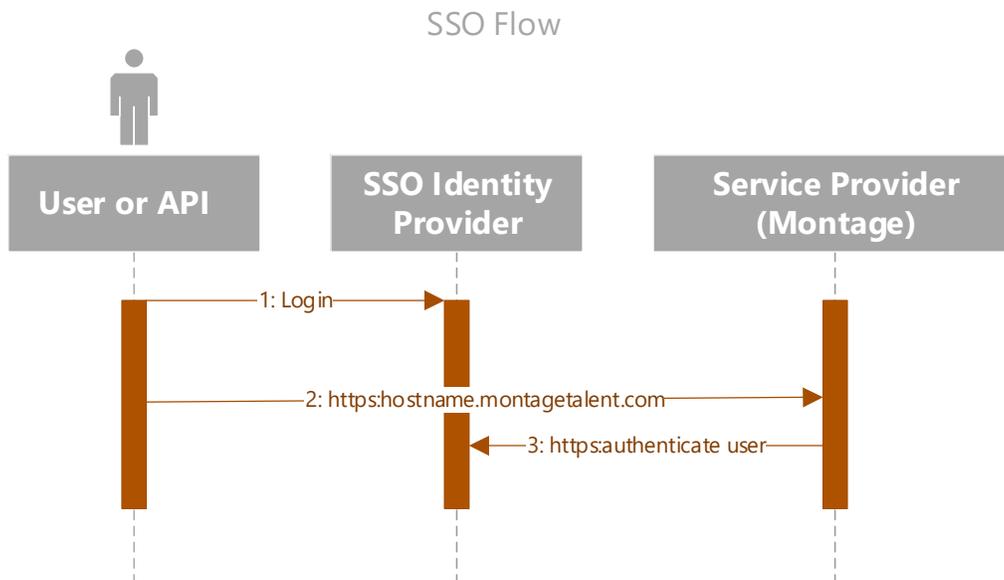
**User Authentication**

Key steps and associated data flow:

1. The client user attempts to access the Modern Hire client’s assigned unique URL (hostname.modernhire.com)
2. Modern Hire requests the user’s username (registered email address) and password (masked on entry).
3. If unsuccessful Modern Hire displays a generic error message (login failed) and if success, Modern Hire display’s the user’s home page.

## Appendix 2: SSO Integration

Modern Hire recommends SSO integration to its client's identify provider for client user management. The following documents the data flow in the SSO integration between the Modern Hire application and the client's SSO identify provider. See the Modern Hire publication "SSO Interview Overview – External.pdf" for more information.



Key steps and associated data flow:

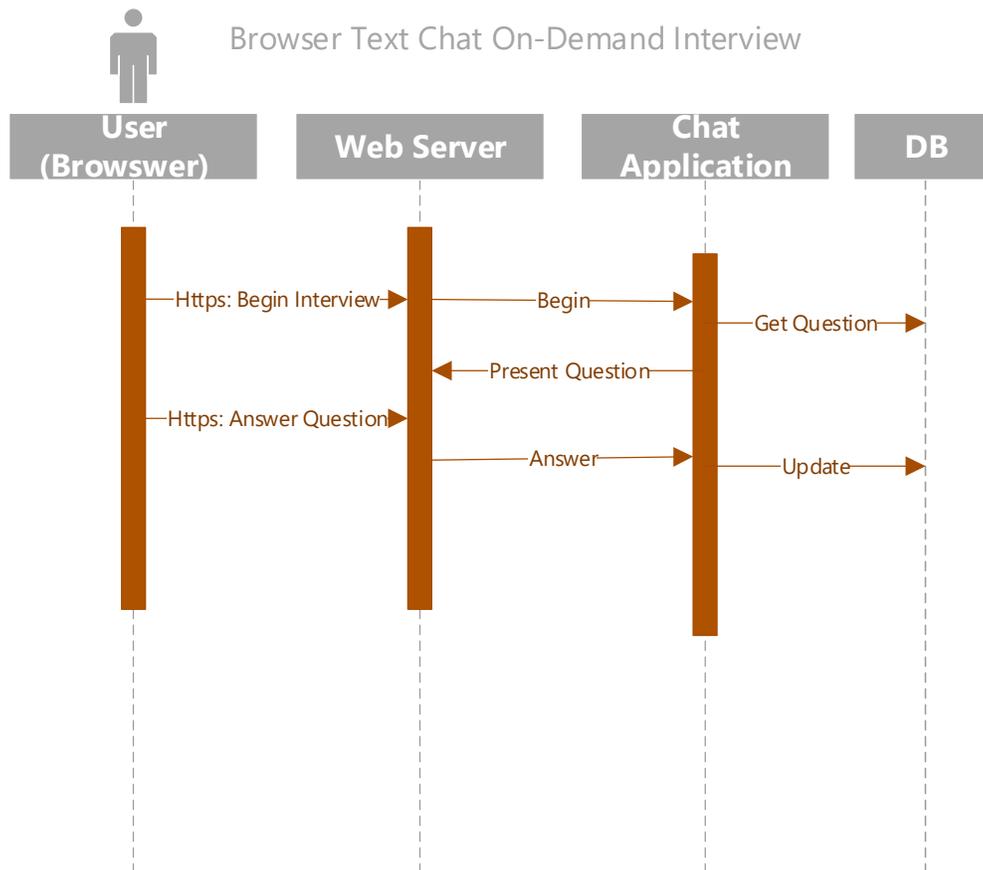
1. The client user logs in the client's SSO identity provider.
2. The client user attempts to access the Modern Hire client's assigned unique URL (hostname.Modern Hire.com)
3. Modern Hire requests user authentication from the client SSO identity provider which returns a SAML token

### Appendix 3: Chat Based Interview

The Candidate Chat Based On-Demand Text and SMS figures below illustrates the data flow and sequencing when a potential job candidate creates a Modern Hire On-Demand Interview through the either the SMS or web-browser chatbot user interface. Modern Hire configures each client’s application to support the client’s preferred chat options; browser-based text message interaction via the Modern Hire web application, or SMS-based interaction via standard SMS interaction with the candidate's SMS enabled mobile device.

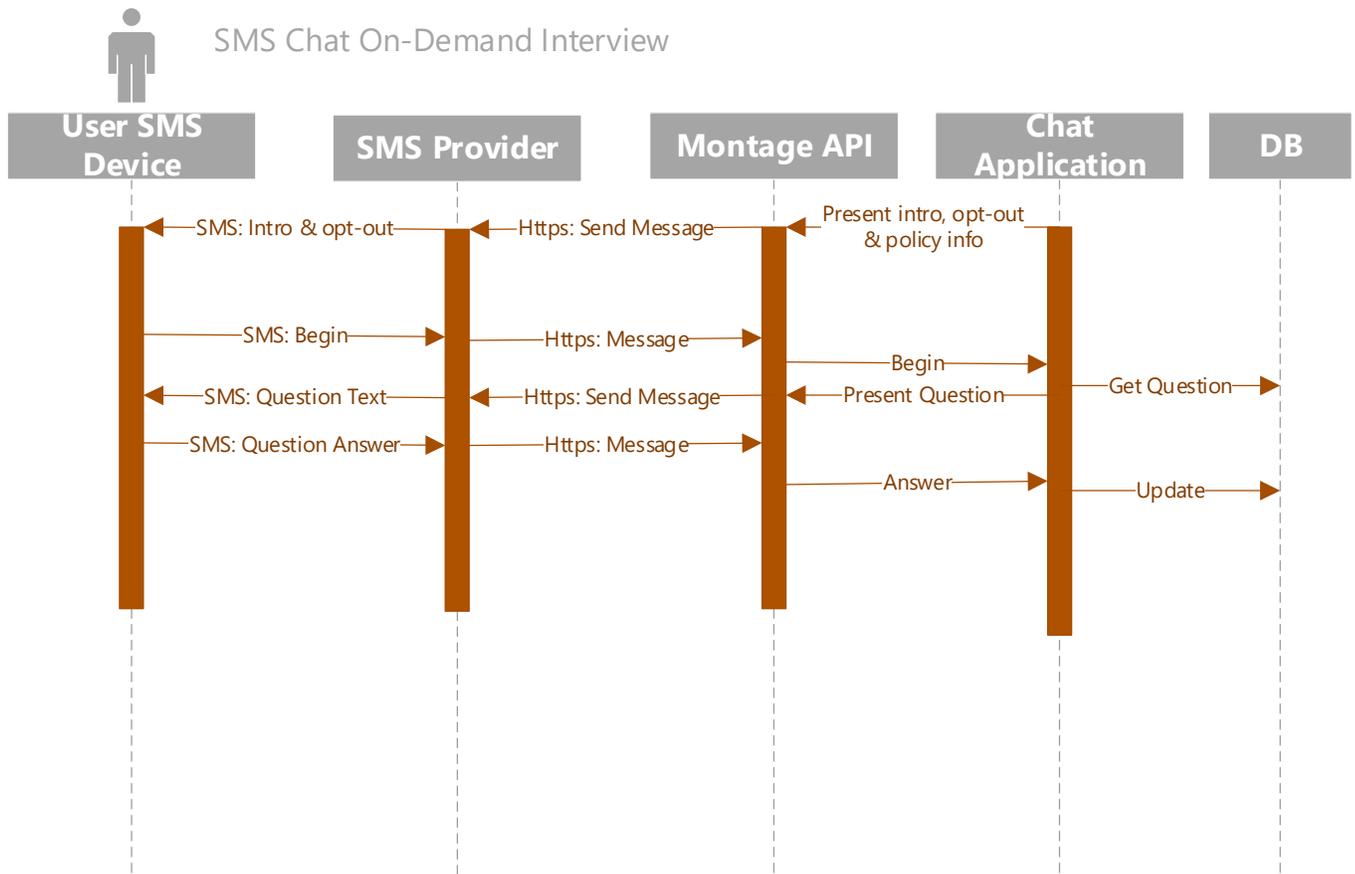
As show below, the browser chat based on-demand interview follows the same external communication mechanism for all Modern Hire browser interaction. Some key points regarding the browser-based chat text interview:

- The text messages are sent and received via the Modern Hire web application browser user interface.
- All messages sent to/from the browser are encrypted via https/TLS 1.2 through the Modern Hire API endpoints (no SMS providers involved).
- Does not require a mobile or SMS enabled device.
- No data is stored locally on the user's device.
- The Modern Hire application analyzes all messages for suspicious content upon receipt.
- All messages stored encrypted (AES-256).



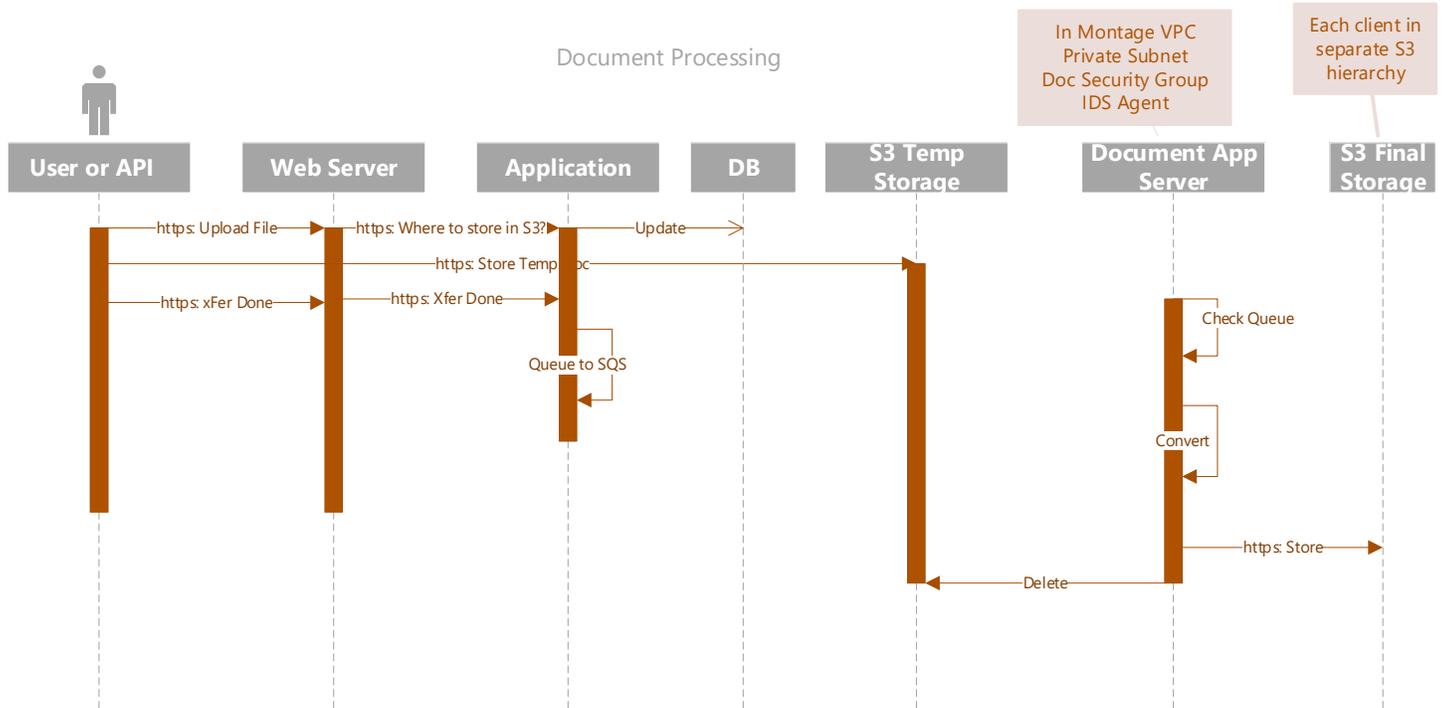
The SMS chat on-demand interview is very similar to the browser chatbot interview with the exception that all communication occurs through the user's SMS enabled device. Key points related to SMS-based text interviewing.

- User is immediately presented with instructions to opt-out of future communications and information regarding their rights and data protection information.
- All messages sent and received via the user's SMS enabled device.
- All messages sent and received from the SMS provider to and from the Modern Hire web application are encrypted via https. (SMS messages between the SMS provider and the user's mobile device are not under Modern Hire's control)
- The Modern Hire application analyzes all messages for suspicious content upon receipt.
- All messages stored encrypted (AES-256).



## Appendix 4: Document Processing

Modern Hire supports document uploads by Modern Hire users and candidates and take precautionary action to eliminate potential spread of malicious content. As shown in the following flow, all documents are processed on an isolated document application server located in the EU and converted to PDF for final storage in the Modern Hire document store. The document application server is isolated in its own private subnet without network ingress/egress access to any other Modern Hire servers (web, application, or database).

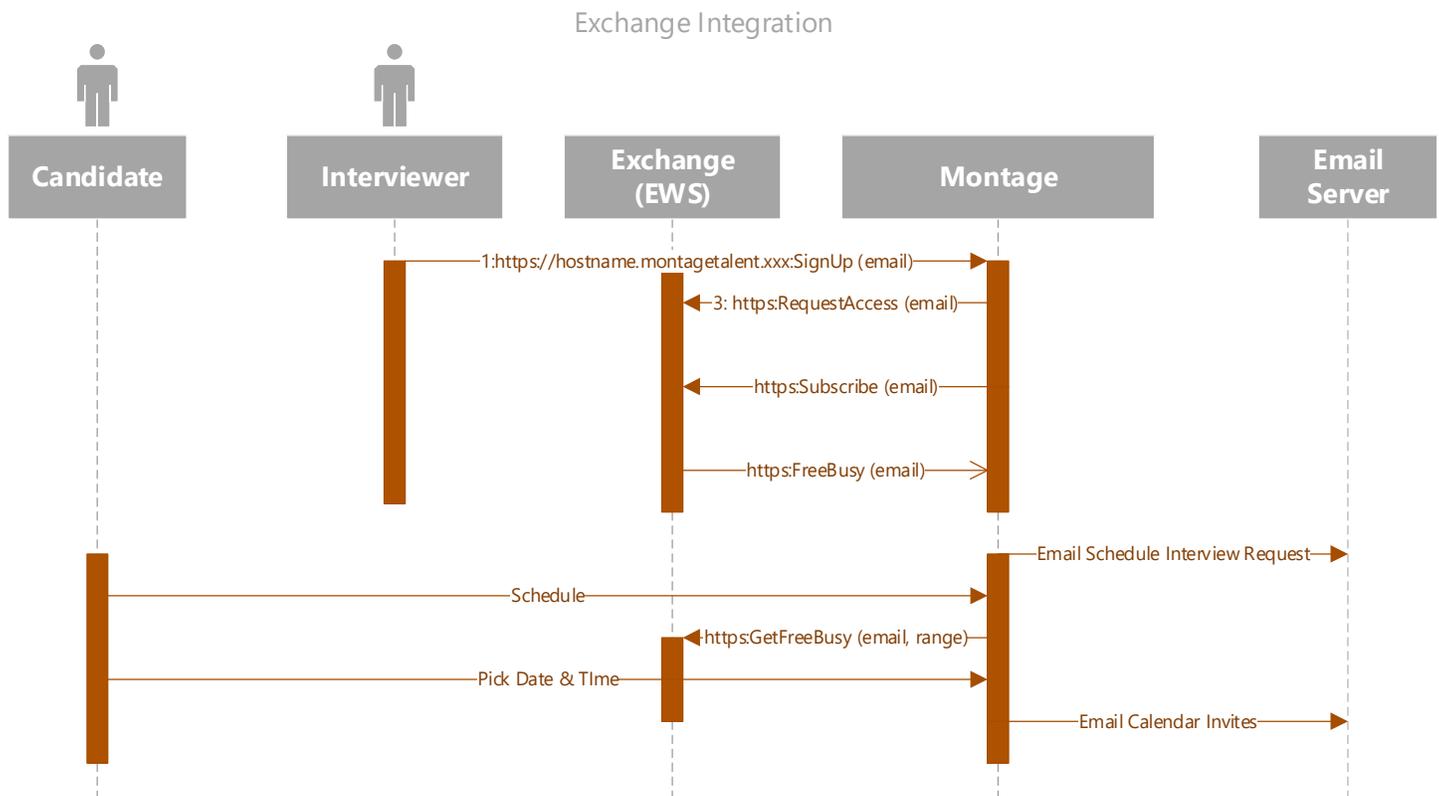


Document Processing

## Appendix 5: Calendar (Microsoft Exchange) Integration

Modern Hire supports Microsoft Exchange integration allowing, interviewers calendar sharing capabilities and streamlining candidate interview scheduling. As shown in the accompanying workflow, Modern Hire integrates with the Exchange Web Services (EWS) with client assigned credentials and SOAP requests via HTTPS. Client sign-up for free-busy information exchange for their calendar using their assigned corporate email address. Information exchanged with Modern Hire is limited to free-busy information and does not include detailed information such as meeting subjects, notes or participant lists. Modern Hire maintains a local time-limited free/busy information cache (twelve hours unless modifications detected) to minimize redundant communication and server load on Modern Hire's and our client's servers. Modern Hire utilizes encrypted communication (https/TLS 1.2) with EWS.

Regarding client exchange credentials: Modern Hire utilizes the Amazon AWS Systems Manager Parameter Store to securely store encrypted credentials and control who and which application has access. Credentials are encrypted at rest and in transit (AES-256).



### Appendix 6: Email Processing

Modern Hire utilizes Amazon AWS Simple Email Service (SES), Simple Queue Service (SQS) and Simple Notification Service (SNS) for email message delivery, receipt and processing. Application servers drop messages onto SQS queues with notifications for processing by SES.

Note: AWS currently only support SES inbound in US and EU regions. For this reason, inbound messaging to AU clients are received through EU infrastructure.

