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# Introduction

The Department of Veterans Affairs (VA), Veterans Health Administration (VHA) is facing unprecedented challenges providing prompt access to Care. The Veterans Health Information Systems and Technology Architecture (VistA) Scheduling application is an aging system with limited extensibility to provide patient-centric and resource-based scheduling in support of advanced care delivery models. To address this challenge, the Veteran experience is enhanced through an improved scheduling process utilizing Epic's Cadence Scheduling software. Cadence provides resource supply management, increased usability, additional Veteran engagement opportunities, and greater access to care for our nation's Veterans.

The enterprise-wide Medical Appointment Scheduling System (MASS), enabled by Cadence, will manage the appointment lifecycle, improve clinical resource management, and inform VHA management at all organizational levels with real-time business, resource utilization and demand, supply, and quality service metrics intelligence. To be successful, the MASS implementation will aim to exceed defined critical Success Criteria measurements. The implementation will address critical challenges for stakeholder and user adoption across the enterprise, seamless integration with VistA, and preserver local autonomy while introducing nationally standardized rules and workflows.

## Scope

To address the requirements of Task Order (TO) 0001, TeamSMS conducted a 60-day (41 business days) MASS Initial Site Assessment and Planning for Pilot activities. The actions outlined under this TO include analyzing and identifying business and user needs. Implementation plans will be developed across all identified work-streams to guide the successful and measurable implementation of Cadence at the proposed Pilot Site.

The TO 0001 Performance Work Statement (PWS) scope calls for the development of a comprehensive series of plans that detail the overall project plan, schedule, and detailed success criteria designed to successfully perform implementation of the Epic Cadence Scheduling software and related Infrastructure and Integration at one Pilot-site. During the Planning state, TeamSMS shall identify and prepare Project Management Accountability System (PMAS) and ProPath artifacts for the MASS Pilot Site implementation, including the initial version of 18 plans.

## User Profiles

The planned outreach of the MASS program encompasses and addresses the needs and interests of all internal and external target audiences and consumer markets. MASS is designed to connect patients, clinicians, and other resources in order to improve access to care, quality of care, operating efficiency, and operating and capital resources.

The MASS user base is comprised of Internal and External parties, including:

* Internal MASS users consist of VA personnel such as VA schedulers, clinicians, health care provider teams, and other clinical and administrative staff at VA Medical Centers (VAMC) nationwide. MASS will provide Internal Users with a formalized repository of standardized scheduling business rules, links to the Computerized Patient Record System (CPRS), and other VistA packages.
* External MASS users primarily consist of Veterans, family members and caregivers, and VA healthcare partners. Additional external stakeholders may include the Government Accountability Office (GAO), Official Questions for the Record (QFR), Congressional Inquiries, and media organizations. The external audience may be broken down into several user groups:
  + **Group 1.** The Patient: Veterans, veteran representatives and caregivers, and dependent beneficiaries. MASS provides these External Users with a standardized, centralized, user-friendly dashboard (information database) by which medical appointment requests made.
  + **Group 2.** VA Healthcare Partners/Providers: Shared VA/Department of Defense (DoD) Facilities, DoD, Active Duty, Health and Human Services (HHS), Indian Health Services (IHS), Center for Disease Control (CDC), Women’s Health, Homeless Veterans, Walter Reed Burn Center, Mental Health Partnership.
  + **Group 3.** Government Organizations/bodies: In direct relation to the accountability and oversight of the VHA MASS initiative, these Users are made up of the GAO, Official QFR, and Congressional Inquiries.
  + **Group 4.** Media and general public. In terms of accountability and public interest, MASS will stand as a platform for public announcements and news releases, in addition to serving as an inbox for general media requests.
  + **Group 5.** VA Administrative Staff performing scheduling registration, patient check in and checkout, travel benefits, etc.
  + **Group 6.** VA Executives requiring access to Business Intelligence reports.
  + **Group 7.** Veteran Service Organizations and related Non-profits.

# Background

The VHA MASS is a multi-year, multi-faceted development effort that will replace the legacy VistA scheduling system to provide more efficient access to care for Veterans. Medical appointment scheduling is complex in that it requires coordination across one or more medical service lines while enforcing numerous business rules.[[1]](#footnote-2)

MASS design supports standardization of scheduling data and business practices with full transparency across VHA, and with the flexibility and extensibility to enable VHA to deliver scheduling solutions with agility and the capability of continuous process improvement as healthcare changes. [[2]](#footnote-3)

The Access and Clinic Administrative Program (ACAP) is the single entity responsible for defining, standardizing, and coordinating system-wide administrative clinic operations and management. The scope of ACAP includes outpatient access optimization through standardization and workload capacity alignment, and call center operations, including triage, queuing, and standard operating procedures. Specialty Care clinic access will include the aforementioned plus consult management, including establishment of tracking and monitoring standards.

The ACAP Executive Director will serve as VHA’s business owner and manager, in collaboration with the VA Office of Information and Technology (OI&T) in matters regarding the MASS project.

The ACAP will bridge the gaps and disconnects between policy and operations necessary to comprehensively define and coordinate the transformation of clinic operations, which will require standardization through policies that are consistently implemented, performance measures that are reliable and actionable, and reporting structures that facilitate accountability. These initiatives will result in fundamental business processes that promulgate standardization of scheduling practices across VA healthcare systems and proactively and strategically focus on systemic improvements to Veterans’ access to care.

Key drivers for implementing a new scheduling capability include recommendations from multiple GAO and Office of Inspector General (OIG) reports, excessive wait times, and VA’s need to address Veterans’ access issues.

Modern scheduling capabilities are critical to the VHA’s transformation to patient-centered care for outpatient and inpatient services. In the current system, there is limited ability to adapt to changing care delivery modes, such as home-based healthcare, telehealth, and phone/email/web, and to provide resource-based scheduling. VHA requires the ability to manage one of its most expensive resources, the healthcare providers’ time. This requires integrated information systems that enable administrators and managers to balance the provider supply with patient demand.

An enterprise scheduling solution is needed to provide consistent, seamless, timely, and high-quality scheduling interactions for patients, providers, and VHA scheduling staff. The solution should provide access to resources and patient information for all patients’ scheduling. Currently:

* VHA Medical Scheduling is extensive, with over 100 million appointments made in Fiscal Year (FY) 2014 by over 50,000 staff at 150+ medical centers, and 700+ Community Based Outpatient Centers (CBOC).
* Users of the current process(es) are unable to reliably and consistently manage provider availability which impedes efficient use of resources and understates available supply and demand of patient services.
* Significant time and resources are spent identifying and collecting data required for day-to-day management, quality assurance, and auditing.
* There is inadequate information exchanged between clinic stakeholders internal and external to VHA.
* Notifications are not performed in a consistent automated process, resulting in missed appointments or available appointment slots that could be filled.
* Veterans’ scheduling needs and performance are not captured and communicated effectively. This is especially true for established patients who require urgent appointments. No electronic system to track and manage these requests currently exists.
* The process for linking and associating appointments is manual and inconsistent; opportunities for more efficient care are lost.
* There are inadequate integral business rules to efficiently distribute scheduling responsibilities among schedulers and staff and to manage resources in accordance with demand.

VHA seeks to:

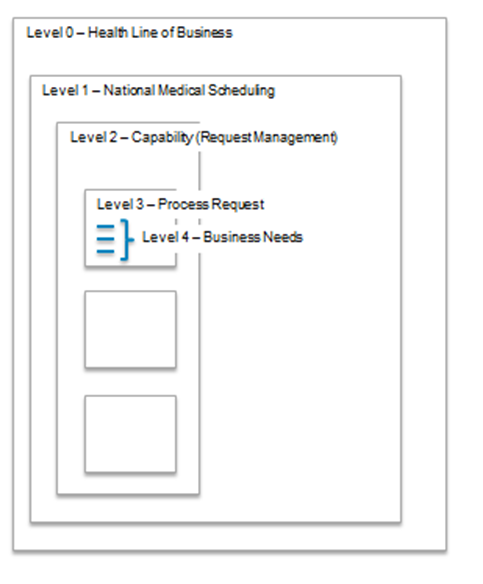
* Establish seamless patient-centered scheduling services.
* Implement resource-based scheduling.
* Improve supply and demand management.
* Standardize business rules and data collection.
* Implement standardized scheduling policies in part through designing a standardized software configuration.
* Enable better virtual function and geographic coverage through scheduling by call centers.
* Increase scheduler resource utilization.
* Reduce scheduling errors.
* Improve the availability of scheduling information in order to better manage appointment supply and demand.
* Standardize information sharing and data exchanges internal and external to the VHA.
* Meet Congressional reporting requirements including addressing the concerns of the GAO, OIG, and other external stakeholders. [[3]](#footnote-4)

## Overview of the System

VHA outpatient scheduling functions are defined within a framework. The framework draws a boundary around scheduling and clusters similar capabilities and their sub-capabilities.

Figure 2.1 shows the framework that represents the scheduling operation, capabilities, and business functions at four levels.

Figure 2.1: Scheduling Operation, Capabilities, and Business Functions Framework



* **Level 0:** Represented by the Health Care Line of Business. The Health Care Line of Business identifies the operational model within the VA that is related specifically to providing health care. Other lines of business might be the Financial Line of Business or The Burial and Cemetery Line of Business.
* **Level 1:** Represented as the VHA’s vision of the scheduling operation that encompass outpatient scheduling.
* **Level 2:** Represented by the business’ capabilities for the specific grouping of activities and functions (ex: “Manage Appointment”). In our framework, we have identified the following capabilities:
  + MASS Setup (Configuration)
  + Veteran Information Management
  + Request Management (Demand)
  + Appointment Management (Services and Delivery)
  + Coordinate Associated and Occasion of Services (Delivery and Services)
  + Encounter of Care Management (Episode of Care)
  + Report Management
* **Level 3:** Represented by a group of functions for each capability. For example, Manage Appointment has four functions; each function has a set of business needs.
* **Level 4:** Represents the business needs, as described in the end-to-end scheduling process activities, integration between the capabilities, and flow of information.

The framework serves as VHA’s highest level artifact and is used as a guide to identify high-priority and VHA-unique characteristics of scheduling. The business needs matrix, located in Appendix D, defined by ACAP and VA OI&T, shall take precedence for all MASS business requirements from decomposition level 4 and down.

## Overview of the Business Process

The MASS Framework illustrates the Operational Capability Model for scheduling (Figure 2.2).

Figure 2.2: Operational Capability Model for Scheduling

Operational Capability Model for Scheduling

Critical Business Processes supported by MASS include:

* **National Medical Scheduling Set up:** The MASS set up capability establishes system operating parameters, such as provider, facility, and equipment; care coordination agreements; notification templates; business rules; alerts; workflow; and system access. Facility, provider, and business rules are established at the national level. Other parameters, including workflow, alerts, and templates may be tailored at Veterans Integrated Service Network (VISN) and facility levels per security and policy constraints, yet still meet national standards to ensure accurate data exchanges and consistent reporting results.
* **Veteran Information Management:** The Veteran Information Management capability provides access to a common set of Veteran-related information (such as demographics and eligibility). This capability accommodates integration with other business units or organizations inside VA/VHA, with geographically dispersed health care locations across VA regions, between the VA and community based partners, and with other government partners. MASS capabilities include verifying the identity, eligibility, and enrollment status of Veterans and their dependents while fielding requests for care and scheduling appointments. MASS provides qualified entities (to include external partner organizations) with the ability to view, maintain, and continually update records of Veteran special needs and preferences, as permitted by policy and security regulations[[4]](#footnote-5)
* **Request Management:** The Request Management capability initiates the scheduling process with a request for care. The date a request is submitted and the Veteran's preferred date are key components to be captured during the request process. Requests are entered from a variety of input sources, including web, mobile applications, email, phone, and other communication modes using a standard set of information to be processed, tracked, and reported.

Requests are routed differently at each facility, yet the basic process is the same. VHA will set and monitor performance standards and guidelines for request processing. Requests are received, assessed, and routed. How they are received, the criteria for assessment, routing rules and practices, and workflow are all driven by business rules and practices unique to a facility.

* **Appointment Management:** The Appointment Management capability highlights the need to view the availability of all resources and services across facilities, time zones, and scheduling horizons from a single graphical representation screen, in order to instantly schedule an appointment within the Veteran's preferred date. (Note: A scheduling horizon is how far out on a schedule an appointment can be made, such as a 3 month scheduling horizon.) This capability provides the flexibility to cancel and reschedule appointments, and includes standardizing the notifications process to issue messages to Veterans, their families, and other stakeholders. [[5]](#footnote-6)
* **Occasions of Care Coordination:** The Coordinate Associated and Occasion of Services capability fosters open communication between VA facilities and outside of the VA to promote effective information sharing between stakeholders. The ability for VA users to view available enterprise resources enables the coordination and fulfillment of requests (such as compensation and pension [C&P] process, telehealth, fee basis, Integrated Disability Evaluation System [IDES], ancillary, travel and medical records). The ability to coordinate care and communicate with other government partners will provide more options, and track care across agencies.[[6]](#footnote-7)
* **Encounter Management:** The Encounter of Care Management capability summarizes the lifecycle of an appointment and merges it with the medical treatment information. These activities contribute to the spectrum of metrics used in wait-time reporting, capacity and resource planning, and follow-up activities to reach continuity of care goals. [[7]](#footnote-8)
* **Reporting:** The Report Management capability is an overarching business capability that uses data from the scheduling application and/or interfacing systems (internal and external) to provide managers with a coherent view of supply and demand. Data is used to produce reports from the service-line level to the national level and may be exported and/or shared with external partners.[[8]](#footnote-9)
* **User Interfaces, Existing VistA Reporting, and DSS Coding Capabilities**: Current VistA reporting and Decision Support System (DSS) coding must continue to support non-scheduling business processes as it does today [[9]](#footnote-10).However, the MASS implementation team fully expects the VA to perform data consolidation, cleansing, and clinic cleanup as a prerequisite to the MASS system going live in a particular VAMC.
* **Business Rules Management:** The process that ensures all Business Rules and Requirements are well defined, accountable and attributable to functional and technical requirements. The MASS Business Rules Management component will be responsible for ensuring that all Business requirements and rules are well integrated into the workflows and business processes created by the technical solution.
* **Workflow Management:** A workflow management component manages, defines, coordinates, and administers a series of tasks within organizations to produce a final outcome or outcomes. The MASS Workflow Management component will enable management of end-to-end work items/tasks that need to be performed as part of the scheduling process.

## Overview of the Significant Requirements

The following subsections provide an overview of significant requirements.

### Overview of Significant Functional Requirements

The MASS significant functional requirements are defined, in detail, in the business needs matrix, located in Appendix D.

The MASS Business Requirement Document, delivered as part of the original competition defined Business Need 9 as the group of specific enterprise-level functional requirements that are of specific importance to the MASS business community. These requirements are:

ENTR15: Security

* + All VA security requirements will be adhered to. Based on Federal Information Processing Standard (FIPS) 199 and National Institute of Standards and Technology (NIST) Special Publication (SP) 800-60, recommended Security Categorization is High.
  + The Security Categorization will drive the initial set of minimal security controls required for the information system. Minimum security control requirements are addressed in NIST SP 800-53 and VA Handbook 6500, Appendix D.

ENTR2: Privacy

* + All VA privacy requirements will be adhered to. Efforts that involve the collection and maintenance of individually identifiable information must be covered by a Privacy Act system-of-records notice.

ENTR3: 508 Compliance

* + All Section 508 requirements will be adhered to.

ENTR4: Executive Order

* + All executive order requirements will be adhered to.

ENTR5: Identity Management

* + All Enterprise Identity Management requirements will be adhered to. These requirements are applicable to any application that adds, updates, or performs lookups on persons.

### Overview of the Functional Workload/Performance Requirements

The functional workload and performance requirements are of specific importance to the implementation of the infrastructure needed to support MASS. The *Initial Infrastructure Design Plan*, located in Appendix D, explains these requirements.

### Overview of Operational Requirements

The following subsections provide an overview of the operational requirements.

#### General Operational Requirements

Section 2.2 discusses an overview of the scheduling business process. In that overview, several capability areas are described. These capability areas translate directly into the high-level governing business need requirements of the MASS capability. These are:

* **BN1:** Mass Set-up Capability
* **BN2:** Veteran Information Management Capability
* **BN3:** Request Management Capability
* **BN4:** Appointment Management Capability
* **BN5:** Coordinate Associated and Occasion of Service Capability
* **BN6:** Encounter of Care Management Capability
* **BN7:** Report Management Capability
* **BN8:** Existing VistA reporting and DSS Coding Capability
* **BN9:** Enterprise Level Requirements

Each of these business needs is broken down into specific requirements in the business needs matrix, (refer to Appendix D). The exception is Business Need 9: Enterprise Level Requirements, which are described in Section 2.3.1 and elaborated upon in this document as a whole.

#### Conversion and Integration Requirements

This section will list the overall requirements for conversion and integration of the MASS system. The requirements listed are intended to be implemented at the time MASS is rolled out in a national implementation. As analysis is an ongoing process, first across the Pilot site, then for a Beta implementation and finally for a National implementation, conversion and integration requirements may be added, deleted, or modified based on the level of analysis. Requirements are prioritized based on these rollout targets.

MASS rollout targets include:

* **Pilot Site:** The VHA has determined that the first rollout will be at a specific VAMC and its CBOCs. Currently, this is planned to be the VAMC at Boise, ID. Initial implementations of the conversions and integrations for the Pilot Site may have to be re-engineered as Beta and National implementations are taken into account in future phases.
* **Beta Implementation:** The VA has determined that upon success of the Pilot Site, a broader rollout will occur to include a range of sites, currently estimated to be between 10-30 VAMCs. Initial implementations of the conversions and integrations for the Beta implementation sites may have to be re-engineered as National implementations are taken into account in future phases.
* **National Implementation:** The VA has determined that upon success of the Beta implementation a final rollout will occur to enable the MASS system VHA enterprise wide.
* **Future – TBD:** The VA has determined this is in scope for MASS, but has not decided on a phase yet. This could be for a number of reasons, for example, an enterprise shared service does not exist to integrate with, or another group needs to perform specific development in support of MASS.
* **Unknown:** This will denote that scope has not been vetted for this specific requirement. It can be assumed to mean post Pilot Site implementation.
* **None:** This will denote the domain/requirement/feature is out of scope for the MASS program. Some domains/requirements/features are mentioned for completeness even though they do not pertain to MASS.

##### Conversion Requirements

The conversion requirements are outlined in Table 2.1. Columns include:

* **Business Needs ID:** Initial mapping of the requirement to convert information from a specific VA system to Epic, based on the Business Need Matrix (refer to Appendix D).
* **Domain:** The domain aligns with the overall category of information being processed. This is not necessarily aligned to health or clinical domains, although they would be subsets of this. These are groupings that are required to be dealt with in any scheduling system.
* **Description:** This is a description of this data for the specified domain.
* **Pre-MASS Go-Live Authoritative System:** This is the existing system with the VA, if the domain exists, that will be used to extract data (or build a real-time integration) before Epic Cadence goes live.
* **Post-MASS Go-Live Planned Authoritative System:** This is the system within the VA that will house the authoritative data for the specified domain, once Epic Cadence is live and in use.
  + In some cases, the word **cached** will appear in the column. This is to identify those areas where Epic Cadence will cache some information locally but still maintain contact with the VA authoritative data source.
* **Planned Scope:** This is the scope for conversion for planning purposes. These will be one of the MASS rollout targets described above.
* **Planned Conversion Method:** This is the planned method to be used to convert the data from the pre-MASS go-live authoritative system into Epic Cadence. Methods used will be one of the following:
  + **New MASS Configuration:** This information will be validated through the MASS analysis, implementation, and validation process and configured into MASS by TeamSMS application analysts. The information may be referenced from existing systems.
  + **Manual:** This information will be loaded manually in Epic Cadence. Software or conversion scripts will not be developed.
  + **ETL (Import):** Extract, Transform, Load (ETL) script(s) will be written to pull this data from the pre-MASS go-live authoritative system to Epic Cadence.
  + **ETL (Health Level 7 [HL7] v2):** ETL scripts or services (as used by the real-time integration) will be used to pull data from the pre-MASS go-live authoritative system and format it as an HL7 v2 message that Epic Cadence can then ingest.
  + **TBD:** Conversion is planned, but the conversion method requires further analysis at this time.
  + **None:** No conversion is planned.

Table 2.1: Conversion Requirements

| Business Needs ID | Domain | Description | Pre-MASS Go Live Authoritative System | Post-MASS Go Live Planned Authoritative System | Planned Scope | Planned Conversion Method |
| --- | --- | --- | --- | --- | --- | --- |
| BN1A1, BN1A2, BN1A5, BN1A6, BN2B1, BN2C1, BN4, BN8, BN10 | Appointments - Future | All patient appointments with date of service on or post the MASS go-live | VistA | Cadence | Pilot Site | ETL (HL7v2) |
| BN1A, BN1D1, BN4A1 | Appointments – Reference Data | This relates to category lists and content, such as Appointment Type | VistA | Cadence | Pilot Site | New MASS Configuration |
| BN1A1, BN1A2, BN1A5, BN1A6, BN2B1, BN2C1, BN4, BN7C1, BN8, BN10 | Appointments - Past | All patient appointments with date-of-service prior to MASS go live | VistA | Cadence | Pilot Site | None |
| BN2C1, BN2C2, BN5D1, BN8 | Beneficiary Travel | VistA beneficiary travel | Beneficiary Travel | Beneficiary Travel | None | None |
| BN1A, BN2B1, BN2C2, BN3, BN5, BN7C1 | Consults | Consults for care in specified service lines | VistA Consults | VistA Consults/Cached | Pilot Site | ETL (HL7v2) |
| BN1A6, BN1B1, BN2A1, BN2B1, BN2C2, BN5 | Disability Exams | Disability exams and appointment dependencies | Disability Examination and Assessment Program (DEAP) | DEAP/Cached | TBD | TBD |
| BN2B1 | Contact - General | Patient contact information, including address | Administrative Data Repository (ADR) | ADR/Cached | Pilot Site | ETL (HL7v2) |
| BN2B1, BN2C1, BN6B1, BN7 | Contact - History | This shows the contact history with the Veteran, including appointments | Enterprise Customer Interaction History Service | Enterprise Customer Interaction History Service | None | None |
| BN1C1, BN2C1 | Correspondence – Notification Preferences | Patient correspondence notification preferences | TBD | TBD | Pilot Site | ETL (Import) |
| BN1A, BN1B1, BN2B1, BN2C1, BN2C2, BN4, BN5, BN6 | Clinical Video Telehealth (CVT) - Appointments | Telehealth appointments | CVT/Telehealth Scheduling System (TSS) | TBD | Pilot Site | ETL (HL7v2) |
| BN1A1, BN2C1, BN2C2, BN5B1 | CVT - Care Coordination Agreements | Care Coordination Agreements for telehealth care with specific locations, equipment and providers | CVT/TSS | CVT/TSS | None | None |
| BN2 | Demographics | Patient demographic content, including non-patient contacts like Next of Kin and Emergency | ADR | ADR/Cached | Pilot Site | ETL (Import) |
| BN1A1, BN1A6, BN2A1, BN3, BN7B1, BN7C1 | Eligibility and Enrollment (E&E) – National | This represents the primary patient eligibility, which is managed nationally | ADR | ADR/Cached | Pilot Site | ETL (HL7v2) |
| BN1A1, BN1A6, BN2A1, BN3, BN7C1 | E&E - VAMC | This represents the patient’s secondary eligibility which is managed locally at each VAMC | VistA | VistA/Cached | Pilot Site | ETL (HL7v2) |
| BN1A1, BN1A6, BN2A1, BN3, BN7B1, BN7C1 | E&E – Mean Test Scores | Non service connected eligibility | ADR | ADR | Pilot Site | ETL (HL7v2) |
| BN1A1, BN1A6, BN2A1, BN2C2, BN3, BN7B1, BN7C1 | E&E – Military Service History | Service connected information to inform eligibility | ADR | ADR | Pilot Site | ETL (HL7v2) |
| BN1A1, BN1A6, BN2A1, BN2C2, BN3, BN7B1, BN7C1 | E&E – Service Connected Conditions | Snapshot of all factors to determine eligibility known as the “Enrollment Record” | ADR | ADR | Pilot Site | ETL (HL7v2) |
| BN1A, BN3, BN4, BN6 | Encounters | An appointment that results in clinical treatment | VistA Patient Care Encounter (PCE) | VistA PCE | None | None |
| BN1A4, BN4A1 | Equipment | Non-person based resources to be scheduled | None | Cadence | Pilot Site | New MASS Configuration |
| BN1A, BN1B1, BN5B1 | External Partner Scheduling | Enables VA schedulers to create and view external appointments | TBD | TBD | TBD | TBD |
| BN1A2, BN3A1 | Groups | This domain represents groups of providers or groups of resources. Patient Aligned Care Teams (PACT) is similar in concept but there is not a 1-to-1 correlation between the concepts | None | Cadence | Pilot Site | New MASS Configuration |
| BN1A6, BN2B1, BN5 | Health Record | The patient’s medical history | VistA | VistA | None | None |
| BN1A1, BN1A3, BN1A6, BN1B1 | Locations - National | This is a VA nationally standardized list of physical buildings and clinics. It is maintained as a VistA patch that is periodically distributed | Patch to VistA/SDS | Patch to VistA / SDS | Pilot Site | New MASS Configuration |
| BN1A1, BN1A3, BN1A6, BN1B1 | Locations - VAMC | This is a representation of VA clinics within VistA scheduling | VistA | VistA/Cadence | None | New MASS Configuration |
| BN1A, BN1B1, BN2C1, BN8 | Mobile | Veteran Appointment Request (VAR) enables Veterans to request appointments | VAR | VAR | Pilot Site | ETL (HL7v2) |
| BN5, BN8 | Modes | Modes of care delivery, such as “telephone” | None | Cadence | Pilot Site | New MASS Configuration |
| BN1A, BN2C1, BN2C2, BN4, BN5, BN8 | MyHealth*e*Vet – Secure Messaging (SM) | A secure email system that enables patients to request appointments | MyHealth*e*Vet | MyHealth*e*Vet | Pilot Site | ETL (HL7v2) |
| BN2B1, BN4C1 | Notice of Death | Enterprise-wide notice of death | Master Veteran Index (MVI) | Cadence | Pilot Site | ETL (Import) |
| BN1C1, BN4, BN8, BN10 | Notification - Email | VistA will send email notifications to patients to remind them about upcoming appointments | VistA | Cadence | None | None |
| BN1C1, BN4, BN8, BN10 | Notification – Short Messaging System (SMS) | VistA will send text notifications to patients to remind them about upcoming appointments | VistA | Unknown | None | None |
| BN1C1, BN4, BN8, BN10 | Notification - Templates | Letters and reminders to patients, such as postcard templates, which are printed and mailed | VistA | Cadence | Pilot Site | New MASS Configuration |
| BN1A, BN2B1, BN3 | Orders | Order entry and linking | CPRS/VistA | CPRS/VistA/Cached | Pilot Site | ETL (HL7v2) |
| BN2A1, BN2C2, BN5E | Patient Flags - National | Patient adverse conditions or flags | Unknown Enterprise Shared Service | Unknown Enterprise Shared Service | Pilot Site | ETL (HL7v2) |
| BN2A1, BN2C2, BN5E | Patient Flags - VAMC | Patient adverse conditions or flags | VistA | VistA/Cached | Pilot Site | ETL (HL7v2) |
| BN1A6, BN2A1, BN2B1 | Patient Identity | This is the patient unique identifying information | MVI | MVI/Cached | Pilot Site | ETL (Import) |
| BN2 | Preferences – Special Needs | These represent patient preferences and their specific needs with respect to scheduling | VistA | Cadence | Pilot Site | ETL (Import) |
| BN1C1 | Printing | Scheduling printing, such as operational reports and notifications | Unknown | Cadence | Pilot Site | New MASS Configuration |
| BN1A1, BN1A2, BN1A6, BN3A1, BN6B1 | Providers | The providers that deliver care and may be scheduled for appointments | VistA | VistA/Cadence | Pilot Site | ETL (Import) |
| BN1A1, BN1A2, BN1A6, BN3A1, BN6B1 | Providers - Assignments | Providers assigned to teams for patient care | Primary Care Management Module (PCMM) | PCMM/Cached | Pilot Site | ETL (Hl7v2) |
| BN1A6, BN1D1, BN1E1 | Provisioning - Users | Provision users as records in MASS | Identity and Access Management (IAM) | IAM /Cached | Pilot Site | ETL (Import) |
| BN1A1, BN1A6, BN4 | Recall List | Patients that need appointments based on being called back | VistA | Cadence | Pilot Site | ETL (HL7v2) |
| BN5B1, BN5C1 | Registration – Commercial Insurance | Commercial insurance collected during patient registration | VistA | VistA | None | None |
| BN1A1, BN1A5, BN1A6, BN4, BN6B1 | Services | This is specialty of care (service lines) | Some information in VistA | Cadence | Pilot Site | New MASS Configuration |
| BN1A1, BN1A5, BN1A6, BN1B1, BN1D1, BN4, BN6B1 | Stop Codes | This relates to clinic type, category lists, and content, such as appointment type | VistA file 40.7/DSS | DSS/Cached | Pilot Site | New MASS Configuration |
| BN3, BN4, BN5 | Wait List - VAR/VAAC List | VAR coming from mobile | Unknown | Cadence | Pilot Site | ETL (HL7v2) |
| BN3, BN4, BN5 | Wait List – Electronic Wait List | Wait list for patients waiting for an appointment | VistA | Cadence | Pilot Site | ETL (HL7v2) |
| BN3, BN4, BN5 | Wait List – Enrollment Wait List | Appointment Requests coming from E&E | E&E | Cadence | Pilot Site | ETL (HL7v2) |
| BN1A, BN3, BN6, BN10 | Workflow | The scheduling workflow | None | Cadence | Pilot Site | New MASS Configuration |

##### Integration Requirements

The integration requirements are outlined in tabular format here. Table 2.2 has columns as described:

* **Business Needs ID:** Initial mapping of the requirement to convert information from a specific VA system to Epic based on the business need matrix as defined Appendix D.
* **Domain:** The domain aligns with the overall category of information being processed. This is not necessarily aligned to health or clinical domains, although they would be subsets of this. These are groupings that are required to be dealt with in any scheduling system.
* **Description:** This is a description of this data for the specified domain.
* **Pre-MASS Go-Live Authoritative System:** This is the existing system with the VA, if the domain exists, that will be used to extract data (or build a real time integration) before Epic Cadence goes live.
* **Post-MASS Go-Live Planned Authoritative System:** This is the system within the VA that will house the authoritative data for the specified domain, once Epic Cadence is live and in use.
  + In some cases, the word **cached** will appear in the column. This is to identify those areas where Epic Cadence will cache some information locally but still maintain contact with the VA authoritative data source.
* **Planned Scope:** This is the scope for conversion for planning purposes. These will be one of the MASS rollout targets described above.
* **Planned Integration Method:** This is the method that is planned to be used to perform a near real-time integration with another VA data source. Planned integration methods include:
  + **Embedded Application:** Applications that are embedded within the Epic Cadence workflow but no specific integration is developed between the two applications.
  + **Epic Pull:** This real-time integration denotes a synchronous query/response type interface where Epic calls a service with a query and gets a response.
  + **Epic Push:** This real-time integration denotes an asynchronous message will be sent from Epic with no further action required on the part of Epic.
  + **Pull from Epic:** This real-time integration denotes a synchronous query/response type interface where another system calls an Epic service, proxied through an Enterprise Scheduler Service (ESS), with a query and gets a response.
  + **Push to Epic:** This real-time integration denotes an asynchronous message being pushed to Epic with no further action required on the part of the pushing system.
  + **TBD:** To be determined integration method. The implementation team may hold meetings following delivery of the Software Design Document (SDD) to discuss the integration method. Any information gleaned from these meetings will be addressed in subsequent SDD updates.
  + **SMTP:** This integration will use the Simple Mail Transfer Protocol (SMTP) to send scheduling related information.

Table 2.2: Integration Requirements

| Business Needs Id | Domain | Description | Authoritative System | Planned Scope | Planned Integration Method |
| --- | --- | --- | --- | --- | --- |
| BN1A1, BN1A2, BN1A5, BN1A6, BN2B1, BN2C1, BN4, BN8, BN10 | Appointments – Future | All patient appointments with date of service on or post the MASS go-live | Cadence | Pilot Site | Epic Push |
| BN1A5.14, BN1A, BN1D1, BN4A1 | Appointments – Reference Data | This relates to category lists and content, such as Appointment Type | Cadence | None | None |
| BN1A1, BN1A2, BN1A5, BN1A6, BN2B1, BN2C1, BN4, BN7C1, BN8, BN10 | Appointments - Past | All patient appointments with date of service prior to MASS go-live | VistA Scheduling | None | None |
| BN3A1.7 | Authentication – Patient | Patient authentication for portal access via VA Authentication Federation Infrastructure (VAAFI) | IAM | Pilot Site | TBD/Epic Pull |
| BN1D1, BN1E1 | Authentication – Staff – Personal Identity Verification (PIV) | Staff authentication using PIV | IAM | Pilot Site | TBD/Epic Pull |
| BN1D1, BN1E1 | Authentication – Staff – Active Directory (AD) | Staff authentication using AD | IAM | Pilot Site | TBD/Epic Pull |
| BN1D1, BN1E1 | Authentication – Staff – Single Sign-On Integration (SSOi) | Staff authentication using CA SiteMinder and the SSOi framework | IAM | Pilot Site | TBD/Epic Pull |
| BN1D1, BN1E1 | Authorization | This is interface is to ensure that the IAM system has authorized the current Epic Cadence user | IAM | Pilot Site | TBD/Epic Pull |
| BN1A, BN1B1, BN2C1, BN3A1, BN3A1.3, BN3A1.10, BN8 | Appointment – Telephone reminders | Audiocare Interactive Voice Response (IVR) can receive input from patients to cancel future appointments | Audiocare (deployed at specific VAMCs) | Pilot Site | Epic Flat File Export / Import |
| BN2C1, BN2C2, BN5D1, BN6D1.15, BN8 | Beneficiary Travel | VistA beneficiary travel needs to verify appointments happened | VistA | Future – TBD | Epic Push |
| BN1A, BN2B1, BN2C2, BN3, BN3A1.2 BN4A1.15.1 BN4A1.24, BN5, BN7C1 | Consults | Consults for care in specified service lines | VistA Consults | Pilot Site | Push to Epic |
| BN2B1, BN3B1.5 BN3B1.6 | Contact - General | Patient contact information, including address | ADR | Pilot Site | Push to Epic |
| BN2B1, BN3B1.5 BN3B1.6 | Contact - General | Patient contact information, including address | Contact Information Service (CIS) | National | Push to Epic |
| BN2B1, BN2C1, BN4C1.20, BN6B1, BN7 | Contact - History | This shows the contact history with the veteran, including appointment history | Enterprise Customer Interaction History Service | Pilot Site | Epic Push |
| BN1C1.5 BN1C1.6  BN4C1 | Correspondence – Notification | Patient correspondence enterprise shared service | TBD | Future - TBD | TBD |
| BN1C1.5 BN1C1.6  BN4C1.1 | Correspondence – Notification Preferences | Patient correspondence notification preferences | TBD | Future - TBD | TBD |
| BN1A6.4 | Customer Relationship Management (CRM) | The call center/case management customer Relationship Management application will create appointment requests | CRM | Future – TBD | Push to Epic |
| BN1A5, BN1A, BN1B1, BN2B1, BN2C1, BN2C2, BN4, BN5, BN5D1, BN6 | CVT - Appointments | Telehealth | TBD | Future – TBD | TBD |
| BN1A5, BN1A, BN1B1, BN2B1, BN2C1, BN2C2, BN4, BN5, BN5D1, BN6 | CVT - Care Coordination Agreements | Care Coordination Agreements for telehealth care with specific locations, equipment and providers | CVT/TSS | None | None |
| BN2B1.1 BN2B1.2 | Demographics | Patient demographic content, including non-patient contacts like Next of Kin and Emergency | ADR | Pilot Site | Push to Epic |
| BN1A6, BN1B1, BN2A1, BN2B1, BN2C2, BN5, BN5A1.5 | Disability Exams | Disability exam and appointment dependencies | DEAP | TBD | TBD |
| BN1A1, BN1A6, BN2A1.2 BN3, BN5B1.2, BN7B1, BN7C1 | E&E - Mean Test Scores | Non service connected eligibility | ADR | Pilot Site | Push to Epic |
| BN1A1, BN1A6, BN2A1, BN2C2, BN3, BN7B1, BN7C1 | E&E – Military Service History | Service connected information to inform eligibility | ADR | Pilot Site | Push to Epic |
| BN1A1, BN1A6, BN2A1, BN3, BN4C1.10, BN7B1, BN7C1 | E&E – National | This represents the primary patient eligibility, which is managed nationally | ADR | Pilot Site | Push to Epic |
| BN1A1, BN1A6, BN2A1, BN2C2, BN3, BN7B1, BN7C1 | E&E – Service Connected Conditions | Snapshot of all factors to determine eligibility known as the “Enrollment Record” | ADR | Pilot Site | Push to Epic |
| BN1A1, BN1A6, BN2A1, BN3, BN7C1 | E&E - VAMC | This represents the patient’s secondary eligibility, which is managed locally at each VAMC | VistA | Pilot Site | TBD |
| BN1A, BN3, BN4, BN5A1.6 BN5B1.10  BN6D1.2 | Encounters | An appointment that results in clinical treatment | VistA PCE | Pilot Site | Epic Push |
| BN1A4, BN4A1 | Equipment | Non-person based resources to be scheduled | Cadence | Beta | Pull from Epic |
| BN1A, BN1B1, BN5B1.8 | External Partner Scheduling | Enables VA schedulers to create and view external appointments | TBD | National | TBD |
| BN1A, BN1B1, BN5B1.8 | External Partner Channels | This is related to the Veterans Access, Choice, and Accountability Act (VACAA). This has the goal of getting data back from third-party administrators | TBD | National | TBD |
| BN1A2, BN2B1.1, BN3A1, BN6A1.1 | Groups | This domain represents groups of providers or groups of resources. PACT is similar in concept but there is not a 1-to-1 correlation between the concepts | Cadence | Beta | Pull from Epic |
| BN1A6, BN2B1, BN5, BN6D1.5 | Health Record | The patient’s medical history | VistA | None | None |
| BN6A1.3, BN8 | Kiosk | Vet Link | Vet Link | Pilot Site | Push to Epic |
| BN1A1, BN1A3, BN1A6, BN1B1 | Locations - National | This is a VA nationally standardized list of physical buildings and clinics. It is maintained as a VistA patch that is periodically distributed | Patch to VistA / SDS | None | None |
| BN1A1, BN1A3, BN1A6, BN1B1 | Locations - VAMC | This is a representation of VA clinics within VistA scheduling | VistA Configuration | None | None |
| BN1A, BN1B1, BN2C1, BN3A1 BN3A1.10, BN8 | Mobile | VAR enables mobile Veterans to request appointments | VAR | None | None |
| BN3A1.10, BN5, BN8 | Modes | Modes of care delivery, such as “telephone” | Cadence | Beta | Pull from Epic |
| BN1A, BN2C1, BN2C2, BN4, BN4C1.17, BN8 | MyHealth*e*Vet –SM | A secure email system that enables patients to request appointments | MyHealth*e*Vet | Future - TBD | Push to Epic |
| BN2B1, BN4C1 | Notice of Death | Enterprise-wide notice of death | Enterprise Death Notification | Beta | Push to Epic |
| BN3B1.1 BN4C1 BN4C1.1, BN8, BN10 | Notification - Email | VistA will send email notifications to patients to remind them about upcoming appointments | VistA | Pilot Site | SMTP |
| BN1C1, BN4C1.1 BN4C1.3, BN8, BN10 | Notification –SMS | VistA will send text notifications to patients to remind them about upcoming appointments | VistA | Pilot Site | SMTP |
| BN1C1, BN4C1, BN8, BN10 | Notification - Templates | Letters and reminders to patients, such as postcard templates that are printed and mailed | VistA | None | None |
| BN1A1, BN6D1.6, BN5E | Clinical Orders | Order entry and order linking to appointments | VistA | Pilot Site | Push to Epic |
| BN1A1, BN2B1, BN5E | Patient Creation | Create patients for the VA in their identity systems | MVI | Pilot Site | Push to Epic |
| BN5B1 BN5B1.1 BN5D1.6 | Provider - View Assignment | Assignment of patient care teams and drive scheduling processes | PCMM | Pilot Site | Push to Epic |
| BN1A2.1 BN1A2.1.1 | Provider - Update Assignment | Update assignment of patient care teams | PCMM-R | Future - TBD | TBD |
| BN1E1.2, BN2A1, BN2C2, BN5E | Patient Flags - National | Patient adverse conditions or flags | Peer-to-Peer VistA Sync | Pilot Site | Push to Epic |
| BN2A1, BN2C2, BN4B1.4, BN5E | Patient Flags - VAMC | Patient adverse conditions or flags | VistA | Pilot Site | Push to Epic |
| BN1A6, BN2A1, BN2A1.1, BN2B1 | Patient Identity | This is the patient unique identifying information | MVI | Pilot Site | Push to Epic |
| BN2B1.1 BN2C1 | Preferences – Special Needs | These represent patient preferences and their specific needs with respect to scheduling | Cadence | National | Pull from Epic / Push to Epic |
| BN4C1.15 BN4C1.16 | Printing - Local | Local printing, such as ad hoc patient letters and operational reports | Local Printers | None | None |
| BN4C1.15 BN4C1.16 | Printing - Centralized | Centralized printing, such as batch post cards or reminder letters | Centralized Printing Center | Pilot Site | Epic Flat File Export |
| BN1A2.1 BN1A2.1.1 | Provisioning - Providers | The providers that deliver care | VistA | Pilot Site | Push to Epic |
| BN1A6, BN1D1, BN1E1.1, BN1E1.3, BN4 | Provisioning - Users | Provision and authenticate users into Epic | IAM | Pilot Site | TBD |
| BN1A1, BN1A6, BN3A1.2, BN3B1, BN4 | Recall List | Patients that need appointments based on being called back | VistA | Pilot Site | Epic Push |
| BN5B1, BN5C1, BN7B1 | Registration – Commercial Insurance | Commercial insurance collected during patient registration | VistA | None | None |
| BN7B1, BN7C1 | Reporting Data | National reporting to the Corporate Data Warehouse (CDW) | CDW | National | Epic Push |
| BN1A1, BN1A5, BN1A6, BN4A1.24, BN6B1 | Services | This is specialty of care (service lines) | Cadence | Beta | Pull from Epic |
| BN1A1, BN1A5.13, BN1A6, BN1B1, BN1D1, BN4, BN6B1 | Stop Codes | This is a back-end value relating clinic type and provider seen at visit used in billing/reporting | VistA file 40.7/DSS | None | None |
| BN3B1.7, BN4, BN5 | Wait List - VAR/VAAC List | VAR coming from mobile | VAR | None | None |
| BN3A1.2, BN4, BN5 | Wait List – Electronic Wait List | Current VistA maintained electronic wait list will move to Cadence functionality | Cadence | None | None |
| BN3A1.2, BN4, BN5 | Wait List – Enrollment Wait List | The NEAR wait list coming from the E&E system | E&E | National | Push to Epic |
| BN3B1.1 | Web Portals – MyHealth*e*Vet | MyHealth*e*Vet providers view information from VistA Scheduling. This can show a calendar view. | VistA | Future – TBD | TBD |
| BN1A6, BN4 | Web Portals - eBenefits | eBenefits can view patient schedule information | eBenefits | Future - TBD | TBD |
| BN1A6, BN4 | Web Portals – Vets.gov | Veteran information website | Vets.gov | Future - TBD | TBD |
| BN1A6, BN4 | Web Portals – Stakeholder Enterprise Portal (SEP) | VA business partners who can view scheduling. | SEP | Future - TBD | TBD |

### Overview of Pivotal Technical Requirements

The pivotal technical requirements are those items that satisfy the business needs while providing thresholds to measure success of the MASS program. MASS has at least 3 rollout targets, as described in Section 2.3.3.2. Varying levels of requirements and success criteria will be used to measure the success and maturity of the MASS solution through the rollout targets.

Specific pivotal technical requirements for the infrastructure component of MASS are defined using best practices as defined by Epic and by VirtuStream, based on their commercial customer experiences. These requirements are elaborated in the *Initial Infrastructure Analysis Plan* and *Initial Infrastructure Design Plan*, located in Appendix D.

The specific pivotal technical requirements, as related to the business needs, are defined initially for the pilot site and will be used as the basis for success criteria through the rollout targets. These requirements are specified in the *Initial Success Criteria and Evaluation Plan*, located in Appendix D.

### Overview of the Security and Privacy Requirements

The security requirements of the MASS system are detailed in Section 4.8 of the *Initial Infrastructure Design Plan*, located in Appendix D.

MASS inherits the following privacy requirements:

* Federal Information Security Management Act (FISMA) high system, as detailed in the *Privacy Act of 1974, 5 U.S.C. § 552a*
* The Health Insurance Portability and Accountability Act (HIPAA) of 1996
* NIST Special Publication 800-66 Revision1
* Federal Register 45 CFR Parts 160, 162, and 164 Health Insurance Reform: Security Standards; Final Rule.

### Overview of System Criticality and High Availability Requirements

The MASS Scalability and High Availability requirements are based on various success criteria thresholds. The MASS Scalability and High Availability requirements are defined Section 3.4 and Section 3.5, respectfully of the *Initial Success Criteria and Evaluation Plan*, located in Appendix D.

The MASS system is replacing and enhancing existing functionality with VistA scheduling. Based on the [VA systems inventory](http://vaww.ea.oit.domain/enterprise-architecture/va-systems-inventory/), the “VHA recognizes the importance of maintaining hospital mission-critical systems for continued patient care under any circumstances. VistA is a VHA Critical Hospital System“. MASS will provide the scheduling capabilities for VistA, making it a mission critical system.

### Overview of Single Sign-On Requirements

Cadence will use pass-through authentication (PTA) to log in end users based on information from Windows. This option is a light-weight alternative to *Clinical Context Object Workgroup* (CCOW) or third-party single sign-on (SSO) software to enable access to Cadence without a password or other authentication beyond what Windows requires.

PTA does not apply to revalidation; users still have to enter their passwords or use another authentication method if a workflow in Cadence requires additional validation.

Users who attempt to use PTA into Cadence that do not have a user account in the Cadence system will be presented with a login screen.

PTA should not be used on a Kiosk style workstation, as the generic user will not exist in Cadence. To our knowledge, Kiosk style workstations are not in use at the VA due to security concerns.

When PTA is in use, the security of Cadence sessions depends upon the timely locking of Windows sessions. Access to a workstation with PTA becomes equivalent to Cadence access. At a minimum:

* Configure workstation timeouts so that Windows locks after a period of inactivity.
* Alert users that they must log out of Windows instead of Hyperspace.

Cadence can support a number of other login strategies. These are not in scope for the Pilot, but are possibilities if the VA needs change at Pilot, or change as part of the Nationwide rollout and include:

* Lightweight Directory Access Protocol (LDAP) integration, enabling users to provide a domain user and password to obtain access.
* Integration with third-party SSO applications, such as Sentillion, Imprivata, or Healthcast, among others.
* Integration with card-based authentication solutions, like the VA PIV cards. In the case of the Pilot Site, the PIV card integration will be done at the Windows OS level. We will assume those credentials at login and no PIV integration is expected for the Pilot. A small amount of configuration and testing will be required IF we decide to do direct PIV integration in the future.
* Security Assertion Markup Language (SAML) token-based authentication.

Patients also will have logins into the system for MyChart and MyChart mobile access. The patient database in Cadence is separate from the user database, and the previous section does not apply to patients. Patient authentication will occur via Application Programming Interface (API)-based integration with the SSO-E IAM solution to conform to the standard recommended patient authentication approach for the VA.

### Overview of Use of Enterprise Portals

Use of enterprise portal requirements will be provided in a future PMAS milestone update document release.

### Overview of Special Device Requirements

Special device requirements will be provided in a future PMAS milestone update document release.

# Conceptual Design

The following subsections describe the MASS conceptual design.

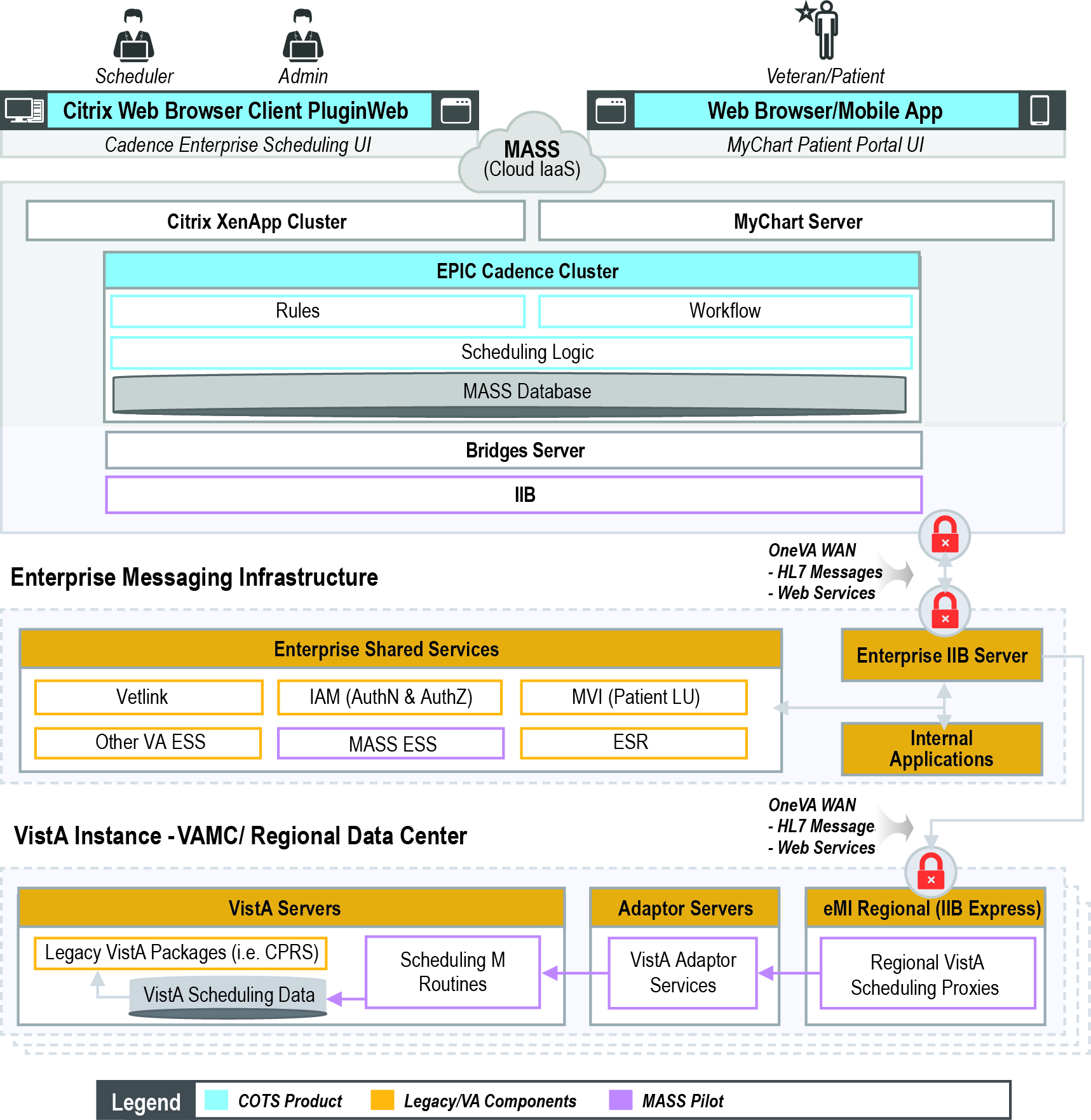
## Conceptual Application Design

The following subsections provide information regarding the MASS conceptual application design.

### Application Context

Figure 3.1 provides the conceptual context for MASS with respect to other VA systems. The MASS application contains three main components: Epic, the ESS available on the Electronic Messaging Infrastructure (eMI), and the local VAMC services made available through one or more VistA Adapters at that specific VAMCs VistA instance.

Figure .1: MASS Conceptual View

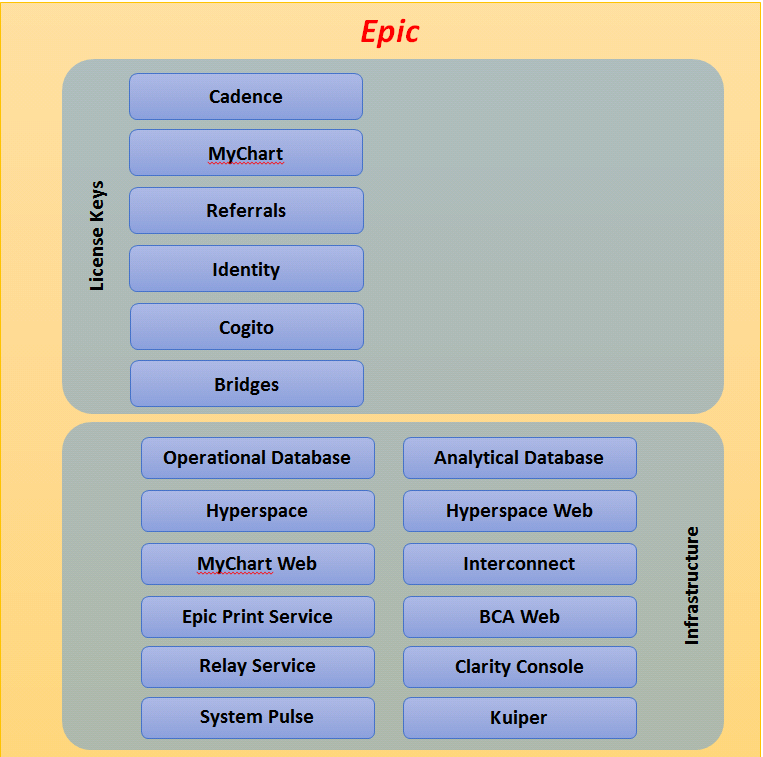


The application context will focus on the commercial application purchased from Epic. The MASS ESS, VistA Adapter services, and regional proxies are considered helper services. These helper services facilitate transforming VA scheduling information into industry standard messaging and vice versa. This methodology provides the VA with a commercial application that has not been refactored at the software development level for specific VA use. The methodology also provides a scheduling interface to VistA that does not break existing downstream scheduling integrations with VistA.

#### Application Context Description

The Epic cluster, as shown in Figure 3.2, contains many configurations purchased by the VA in support of scheduling. These configurations enable various components within the Epic software. The components that are enabled have been limited by the VA to include only licensing scheduling-related features. Any features not specifically related to scheduling, such as display of clinical information in the MyChart portal, are outside the scope of MASS and therefore outside the scope of the VA’s Epic license. Although this functionality can be easily turned on in Epic, it requires the VA to purchase additional licenses from Epic and to re-evaluate the data center requirements and integration and conversion requirements of the system.

Figure .2: Epic Functionality Purchased by the VA



The VA purchase of Epic is divided into the infrastructure components that come with every instance of Epic and the specific license keys that enable the MASS specific functionality.

EpicInfrastructure components include:

* **Operational Database:** The operational database is the core to Epic’s single integrated record for each patient. A foundational component of Epic is the open **Chronicles Extended Relational Database Management System**, the high-performance data engine at the heart of the integrated product suite. Chronicles has no built-in capacity limits. It supports thousands of concurrent users and millions of records while still providing excellent response times.
* **Hyperspace:** Hyperspace is the Epic integrated product suite user interface. The user interface is service-driven, separating the presentation layer from business logic, enabling the presentation to be configured consistently across all of Epic’s products.
  + Embedded in Hyperspace and integrated with System Pulse, the Response Time Tracking (RTT) utility records response time data for over 300 pre-defined workflow steps.
* **MyChart Web:** MyChart is Epic’s browser based, iOSbased, or Android based, patient access portal. Its self-serve online functions can activate patients to improve their own health, reduce the cost of customer service and provide a vital communication link to support accountable care.
* **Epic Print Service:** The Epic Print Service (EPS) is a server solution for transporting rich text documents received from Epic to the printer.
* **Relay Service:** The relay service stores reports coming from the database before they are distributed to the client that will print them.
* **System Pulse:** Epic’s monitoring package, which consolidates system messages from various sources (database servers, Epic environments, Windows servers, XenApp servers) and presents them in a single web-based dashboard. Provides operations and maintenance services the ability use this dashboard to monitor the overall health and performance of the scheduling system and execute any necessary corrective actions.
* **Analytical Database:** The analytical database extracts data from Chronicles and stores it on a dedicated analytical reporting server in a relational format, organized as tables and columns.
* **Hyperspace Web:** Is the next generation of Hyperspace, which will be web delivered.
* **Interconnect:** Epic’s web service layer used to connect to the VA’s Enterprise Services.
* **BCA Web:** An application that enables users to view and print downtime reports through any web browser on the network.
* **Clarity Console:** Clarity serves as a communication box between the Cache environment and reporting server.
* **Kuiper:** Epic’s service delivery tool that enables administrators to script and apply consistent software packages to multiple windows based servers.

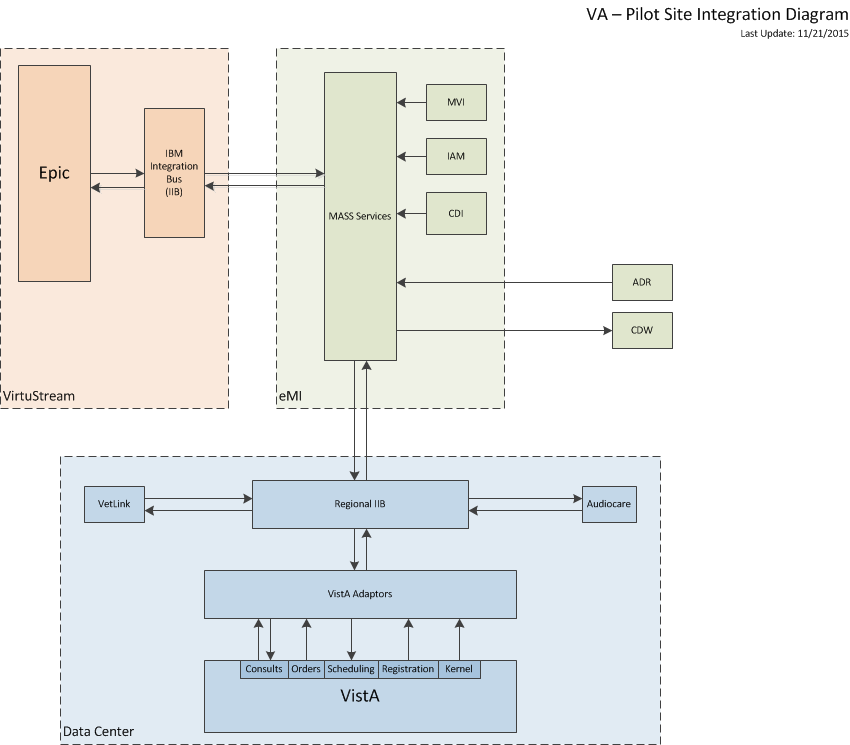
Epic Licenses include:

* **Cadence:** Epic’s enterprise, resource-based, advanced rules-based for scheduling and referral tracking system. Cadence Scheduling is an advanced and flexible appointment scheduling system that will enable the VA to track patient throughput at every stage of the appointment and care process, and ensure that patients are scheduled in a timely manner with the appropriate resources. Cadence makes it easy for staff to schedule visits while providing advanced reporting tools, as well as a patient portal that help improves patient services, keeps appropriate slots open, and makes the most efficient use of staff and other resources.
* **MyChart:** MyChart is Epic’s browser based, iOS based, or Android based patient access portal. Its self-serve online functions can activate patients to improve their own health, reduce the cost of customer service and provide a vital communication links to support accountable care.
* **Identity:** Epic's ID and duplicate record management application. Can be used to prevent such issues as multiple records for the same patient or single records for multiple patients with identical names and similar data.
* **Cogito:** Epic's integrated analytics and reporting delivers current clinical intelligence and business intelligence based on role and workflow. "Intelligence" can mean something different to each user, so Epic provides a combination of flexible tools, content, data sources, distribution, training, and process to support decisions throughout the health system with the best information available.
  + **For the Clinician/User:** Cogito presents clinicians with information that can improve the care they give – and lets them see how well they are doing. Every physician, nurse, scheduler, or biller can start the day on a role-based Radar screen that provides a visual representation of what's important. As a user, the dashboard informs each day with trends, tasks, and messages pertinent to the user’s role and configurable to the user’s preferences. More than 500 roles are currently in the Cogito library, including more than 100 specialized physician roles alone. Physicians and other members of the care team, empowered by analytics, hold the potential to help create a learning healthcare organization.
  + **For the Manager:** Cogito provides insight into how departments are doing and provides tools to better departmental performance. Dashboards and benchmarking metrics help identify areas for improvement, whether the opportunity lies in personnel training, process redesign, or a change to the care model.
  + **For the Clinical Leader:** Embedded clinical intelligence can guide quality improvement with dashboards that aggregate and compare clinical performance across departments and facilities. Dashboards in development will provide visual comparisons to anonymized benchmarks of organizational key performance indicators (KPI), both clinical and financial.
* **Bridges:** The Bridges Interface Toolkit facilitates interface maintenance with a real-time interface monitor, a usage statistics utility, an error logging utility and an interactive error-analysis report. It enables customers to manage the interfaces purchased from Epic’s standard library of HL7, American National Standards Institute (ANSI) X12, and XML interfaces, and enables Epic to maintain flexibility in data mapping and formatting. Bridges also can be used to support interface transactions in a fixed format or other non-standard data formats.

#### Interfaces

Figure 3.3 depicts the conceptual MASS system interfaces. This diagram depicts the overall system interfaces and the conceptual path to those systems. Routing and transformation analysis is still ongoing.

Figure .3: MASS System Interfaces



The primary system interfaces that have been identified are described in Table 3.1 and specified as integration requirements in Table 2.2.

Table 3.1: System Interfaces

| ID | Name | Description | Interface Name | Interface System |
| --- | --- | --- | --- | --- |
| 1 | Epic | Epic pulls user information from IAM | Epic-IAM | IAM |
| 2 | Epic | Epic push scheduling data to VistA | Epic-VistA | VistA |
| 3 | Epic | VistA push scheduling data to Epic | VistA-Epic | VistA |
| 4 | Epic | E&E, Demographic, Contact information pushed to Epic | ADR-Epic | ADR |
| 5 | Epic | Contact information pushed to Epic | CIS-Epic | CIS |
| 6 | Epic | Epic pushes Contact History to the Enterprise Customer Interaction History Service | Epic-ECIHS | Enterprise Customer Interaction History Service |
| 7 | Epic | CRM pushed appointment Requests | CRM-Epic | CRM |
| 8 | Epic | Kiosk pushes appointment requests to Epic | VetLink-Epic | VetLink |
| 9 | Epic | Notice of death pushed to Epic | Enterprise Death Notification (EDN)-Epic | EDN |
| 10 | Epic | Patient creation, Patient identity pushed to Epic | MVI-Epic | MVI |
| 11 | Epic | Patient care team information pushed to Epic | PCMM-Epic | PCMM |

There are multiple system interfaces identified. With a system interface, there are multiple domains of information that have been identified along that interface. The domains are depicted in Table 2.2. A specific domain, communicating along an interface, may use a different communication method than other domains communicating along the same system interface. Analysis to determine the specific communication method per domain is ongoing.

The primary tenant of interfacing to the Epic system is to re-use the current interface mechanisms. These will be HL7v2 messages where applicable. Table 3.2 depicts the planned HL7v2 events that are planned to be used to communicate to the Epic system.

Table 3.2: Scheduling Events

| Scheduling Events | HL7 V2.x Event |
| --- | --- |
| Schedule | SIU S12 |
| Update | SIU S14 |
| Cancel | SIU S15 |
| Check in | SIU S14 |
| Sign in | SIU S14 |
| Check out | SIU S14 |
| Cancel check in | SIU S14 |
| Cancel check out | SIU S14 |
| Cancel sign in | SIU S14 |
| Notes update | SIU S14 |
| Reassign | SIU S14 or S15/S12 |
| Reschedule | SIU S15 followed by an SIU S12 |
| No Show | SIU S26 |
| Change appointment | SIU S14 or S15/S12 |
| Add provider resource | SIU S14 or S15/S12 |
| Remove provider resource | SIU S14 or S15/S12 |
| Add provider resource request | SIU S14 or S15/S12 |
| Remove provider resource request | SIU S14 or S15/S12 |
| Appointment edit statistics update x 2 | SIU S14 |
| Appointment edit statistics cancel | SIU S15 |
| Appointment edit statistics no show | SIU S26 |
| Appointment edit statistics complete | SIU S14 |
| End of day no show | SIU S26 |
| End of day cancel | SIU S15 |
| End of day complete | SIU S14 |
| End of day update | SIU S14 |
| Link order | SIU S14 or S15/S12 |
| **Consult Events** | **HL7 V2.x Event** |
| Create Consult in VistA | ORM^O01 |
| Update Consult in VistA | ORM^O01 |
| Cancel Consult in VistA | ORM^O01 |
| Link Consult to Appointment in Cadence | SIU S14 or S15/S12 |
| **Order Events** | **HL7 V2.x Event** |
| Create Order in VistA | ORM^O01 |
| Update Order in VistA | ORM^O01 |
| Cancel order in VistA | ORM^O01 |
| Link Order to Appointment in Cadence(Not a current need) | SIU S14 or S15/S12 |
| **Provider Events** | **HL7 V2.x Event** |
| Provider Add | MFN^M02 |
| Provider Update | MFN^M02 |
| Provider Delete | MFN^M02 |
| **User Events** | **HL7 V2.x Event** |
| User Add | PMU^B01 |
| User Update | PMU^B02 |
| User Delete | PMU^B03 |
| User Activate | PMU^B04 |
| User Deactivate | PMU^B05 |
| **Patient ID Events** | **HL7 V2.x Event** |
| Identifier add | ADT^A28 or ADT^A31 |
| Identifier update | ADT^A31 |
| Merge patients | ADT^A34 |
| Unmerge Patients | ADT^A37 (Caught in a workqueue for manual unmerge in Epic) |
| Identifier Move | ADT^A43 |
| **Demographic Events** | **HL7 V2.x Event** |
| Demographics Add | ADT^A31 |
| Demographics Update | ADT^A31 |
| **Contact Information Events** | **HL7 V2.x Event** |
| Contact Add | ADT^A31 |
| Contact Update | ADT^A31 |
| **Patient Flag Events** | **HL7 V2.x Event** |
| Patient flag Add | ADT^A31 |
| Patient Flag Update | ADT^A31 |

##### Interfaces External to OI&T

No external interfaces have been identified at this time.

##### Interfaces Internal to OI&T

Information will be provided in a future PMAS milestone update document release.

Table 3.3: Interfaces Internal to OI&T

| ID | Name | Related Object | Input Messages | Output Messages | External Party |
| --- | --- | --- | --- | --- | --- |
| TBD |  |  |  |  |  |

##### Externally Shared Data Stores

No external shared data stores have been identified at this time.

### High-Level Application Design

This section describes the high level design of the MASS project, indicating those items that will need to be built in order to achieve full operating capability (FOC) of the MASS solution.

The MASS system is comprised of three main components: the Epic scheduling system; MASS enterprise services; and VA system adapters for communicating with VA systems, such as VistA, MVI, and ADR.

Epic is an enterprise scheduling application for modern scheduling capabilities. The VA has purchased this commercial software as-is. Custom software development of this product suite is not in scope for the MASS program. Epic does provide many integration mechanisms. The primary integration mechanism to communicate with VA systems will be HL7v2 messages. Epic will be configured to use this interface mechanism. Section 3.1.1.2 explores these interfaces and the HL7v2 planned communication to Epic.

MASS enterprise services are exposed on the eMI, to enable the communication to and from Epic, via HL7v2. Table 3.1 defines the system interfaces. Table 3.4 defines the planned development in support of each of those interfaces.

Table 3.4: MASS Enterprise Services to be Built

| ID | Name | Description | Service or Legacy Code | External Interface Name | External Interface ID | Internal Interface Name | Internal Interface ID | SDP Sections 1&2 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | EPIC-IAM Routing | Route the communication between EPIC and IAM between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 2 | EPIC-IAM Transformation | Transform the communication format between EPIC and IAM | Service | TBD | TBD | TBD | TBD | TBD |
| 3 | EPIC-VistA Routing | Route the communication between EPIC and VistA between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 4 | EPIC-VistA Transformation | Transform the communication format between EPIC and VistA | Service | TBD | TBD | TBD | TBD | TBD |
| 5 | VistA-Epic Routing | Route the communication between VistA and Epic between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 6 | VistA-Epic Transformation | Transform the communication format between VistA and Epic | Service | TBD | TBD | TBD | TBD | TBD |
| 7 | ADR-Epic Routing | Route the communication between ADR and Epic between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 8 | ADR-Epic Transformation | Transform the communication format between ADR and Epic | Service | TBD | TBD | TBD | TBD | TBD |
| 9 | CIS-Epic Routing | Route the communication between CIS and Epic between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 10 | CIS-Epic Transformation | Transform the communication format between CIS and Epic | Service | TBD | TBD | TBD | TBD | TBD |
| 11 | EPIC-ECIHS Routing | Route the communication between EPIC and ECIHS between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 12 | EPIC-ECIHS Transformation | Transform the communication format between EPIC and ECIHS | Service | TBD | TBD | TBD | TBD | TBD |
| 13 | CRM-Epic Routing | Route the communication between CRM and Epic between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 14 | CRM-Epic Transformation | Transform the communication format between CRM and Epic | Service | TBD | TBD | TBD | TBD | TBD |
| 15 | VetLink-Epic Routing | Route the communication between VetLink and Epic between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 16 | VetLink-Epic Transformation | Transform the communication format between VetLink and Epic | Service | TBD | TBD | TBD | TBD | TBD |
| 17 | EDN-Epic Routing | Route the communication between EDN and Epic between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 18 | EDN-Epic Transformation | Transform the communication format between EDN and Epic | Service | TBD | TBD | TBD | TBD | TBD |
| 19 | MVI-Epic Routing | Route the communication between MVI and Epic between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 20 | MVI-Epic Transformation | Transform the communication format between MVI and Epic | Service | TBD | TBD | TBD | TBD | TBD |
| 21 | PCMM-Epic Routing | Route the communication between PCMM and Epic between their various endpoints | Service | TBD | TBD | TBD | TBD | TBD |
| 22 | PCMM-Epic Transformation | Transform the communication format between PCMM and Epic | Service | TBD | TBD | TBD | TBD | TBD |

VA system adapters are those services that standardize the interfaces to VA systems for reading and writing scheduling data. In some cases, these adapters exist today. In others, they are incomplete for use by MASS or do not exist. This analysis is still ongoing. Table 3.5 describes the MASS adapters to be built based on the interfaces described in Table 3.1.

Table 3.5: MASS adapters to be Built

| ID | Name | Description | Service or Legacy Code | External Interface Name | External Interface ID | Internal Interface Name | Internal Interface ID | SDP Sections 1&2 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | EPIC-VistA | Adapter to read and write scheduling and appointment request data to and from VistA | Legacy Code | TBD | TBD | TBD | TBD | TBD |
| 15 | VetLink-Epic | Adapter to read and write appointment request data to and from VetLink. | Legacy Code | TBD | TBD | TBD | TBD | TBD |
| 17 | EDN-Epic | Adapter to notice of death from EDN | Legacy Code | TBD | TBD | TBD | TBD | TBD |
| 22 | PCMM-Epic | Adapter to read care team data from PCMM. | Legacy Code | TBD | TBD | TBD | TBD | TBD |

### Application Locations

The application will reside in the data center as described in the *Initial Infrastructure Design Plan,* located in Appendix D.

All services related to MASS routing and transformation, are expected to be deployed to the eMI.

The location of adapter services is currently under analysis.

## Conceptual Data Design

The following subsections describe the MASS conceptual data design.

### Project Conceptual Data Model

The primary data for the MASS project is information and data that supports appointment creation (such as Patient, Locations, Providers, and Enrollment). Data will continue to reside in the VA databases. However, the authoritative source for some of the data will be switching to a new data store in Epic.

The existing conceptual data model for entities residing in VA databases will not be altered.

Near real-time data in motion between existing VA data centers and Epic will use REST complaint shared service data representations, such as JavaScript Object Notation (JSON) and HL7 messaging to follow the conceptual data model relationships inherit to those formats, as applicable.

Epic will become the authoritative source for the domains shown in Table 2.1 and 2.2 and will store non-authoritative copies of related supporting information. Also, Epic will store multiple domains, primarily appointment information, with supporting data. The conceptual data model for information stored in Epic does not apply.

### Database Information

Data will continue to reside in various VA databases; therefore, no data is being “replaced”. However, the authoritative source for some of the data will switch from VistA to Epic.

Table 3.6 lists databases relevant to the MASS project. A database in this context is simply defined as data at rest.

Table 3.6: Database Inventory

| Database Name | Description | Type (Create / Replace / Interface / Modify) | Steward |
| --- | --- | --- | --- |
| Epic | Will contain appointment information with supporting data. | Create, Interface | Epic |
| VistA | The VistA Appointment module is called out separately as MASS will modify the VistA appointments table to add the schedule primary key from Epic. This primary key will be used as a reference to coordinate data synchronization between systems. | Modify, Interface | VA |
| VistA | All domains referenced by MASS, including Locations, Providers, Patient Flags, Kernel Package for Authorization, User Provisioning, Scheduling Preferences/Special Needs, Notification templates, Recall List, Registration, Stop Codes, Wait List, and CPRS. | Interface | VA |
| CDI | Patient contact information | Interface | VA |
| E&E (and/or CDI) | Secondary eligibility information and patient address information | Interface | VA |
| ADR | Patient demographics and primary patient eligibility | Interface | VA |
| Enterprise Death Notification | Enterprise wide notice of death | Interface | VA |
| MVI | Patient identifiers and creation | Interface | VA |
| PCMM | Providers assigned to teams for patient care | Interface | VA |
| IAM | Provision users as records in the MASS Authentication for Patients and Staff | Interface | VA |

### User Interface Data Mapping

The following subsections describe the MASS interface data mapping.

#### Application Screen Interface

All screen interfaces will be delivered as part of Cadence. The data in the screens will be mapped primarily into Epic storage, and in a few cases, from live data being pulled or embedded from services interfacing with VA databases. There are no new screens specifically built in Cadence for the MASS project.

Data mapping from VA databases to Epic storage and ultimately to applications screens will be further defined via the deliverables defined in the *Initial Data Mapping Plan*, as referenced in Appendix D.

#### Application Report interface

All report interfaces will be delivered as part of Epic; the data in the reports will be mapped from Epic storage. There are out-of-box reports that will be used in MASS, as applicable. Configuring new reports specific to MASS requirements also will likely occur, but is currently not defined.

#### Unmapped Data Element

The elements mapped to the services and databases are not complete; therefore, the unmapped data elements, if any, are not listed as part of this section.

## Conceptual Infrastructure Design

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### System Criticality and High Availability

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Special Technology

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Technology Locations

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Conceptual Infrastructure Diagram

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

#### Location of Environments and External Interfaces

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

#### Conceptual Production String Diagram

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

# System Architecture

The following subsections describe the MASS architecture.

## Hardware Architecture

The following subsystems describe the MASS hardware architecture.

### Physical Topology View

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Hardware Modules

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Distributed Processing

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Compute

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Epic Database Systems, Analytics and Service Machines

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Citrix XenApp Environment

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Management Systems

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Demilitarized Zone (DMZ) Environment

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Storage

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Epic Storage

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Management

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Backup

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Capacity Planning

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

## Software Architecture

Information will be provided in a future PMAS milestone update document release.

## Network Architecture

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Connectivity Diagram

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Storage Connectivity

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### WAN Connectivity

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Load Balancing

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

### Management

This is described in the *Initial Infrastructure Design Plan*, located in Appendix D.

## Service Oriented Architecture/ESS

The service oriented architectures to be used on the MASS effort include:

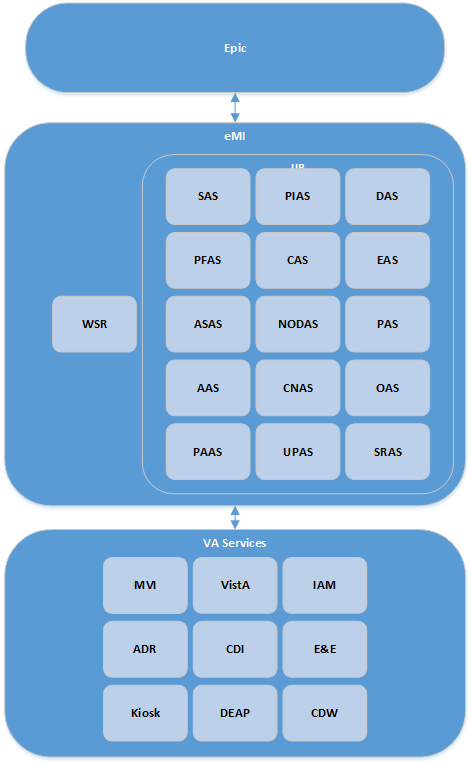
* **Scheduling Adapter Service (SAS):** MASS will use this service to communicate scheduling updates to VistA sites. This service transforms the HL7 v2 messages into JSON and invokes the appropriate VistA Adapter operations.
* **Patient Identity Adapter Service (PIAS):** MASS provides this service to keep the patient identity information in Epic synchronized with that in MVI.
* **Demographics Adapter Service (DAS):** MASS provides this service to keep patient demographics in Epic synchronized with that in MVI and ADR.
* **Patient Flags Adapter Service (PFAS):** MASS provides this service to keep patient flags information in Epic synchronized with that in VistA.
* **Contact Adapter Service (CAS):** Contact information from CDI is pushed to Epic to ensure that MASS has the most up-to-date contact information of patients.
* **Eligibility Adapter Service (EAS):** Eligibility information from E&E is pushed to Epic to ensure proper checks can be performed before patients can be scheduled for care.
* **Appointment Status Service (ASAS):** Kiosk will communicate check-in and check-out information to Epic, ensuring that these events can be used in reports.
* **Notice of Death Adapter Service (NODAS):** MASS provides this service to notify Epic when patients die.
* **Provider Adapter Service (PAS):** MASS provides this service to keep provider information in Epic synchronized with that in VistA Authentication Adapter Service (AAS). MASS provides this service to exchange authentication tokens with IAM.
* **Consults Adapter Service (CNAS):** MASS provides this service to keep consults information in Epic synchronized with that in VistA.
* **Order Adapter Service (OAS):** MASS provides this service to keep order information in Epic synchronize with that in VistA.
* **Patient Authentication Adapter Service (PAAS):** MASS provides this service to ensure Epic can use the IAM authentication services to authenticate users into Epic. This service also provides the additional capability to authorize MASS writes to VistA.
* **User Provisioning Adapter Service (UPAS):** MASS provides this service to keep user provisioning information in Epic synchronized with that in VistA.
* **Scheduling Reporting Adapter Service (SRAS):** MASS uses this service to push data extracts from Epic to the CDW for reporting purposes.

MASS consumes the following services:

* **Web Service Registry (WSR):** MASS uses the WSR to lookup services, such as MVI and VistA Adapter, which are exposed on the VA eMI.
* **MVI:** MASS performs patient searches using data obtained from MVI. For each VistA site, data will be initially loaded into the Cadence Master Patient Index (MPI) using an extract from MVI. Updates will be pushed to Cadence from MVI using MVI’s patient update functionality.
* **VistA Adapter:** MASS will perform create/read/update/delete (CRUD) operations of scheduling data in VistA using the VistA Adapter service.
* **IAM:** MASS will utilize functionality from IAM at multiple levels. In the Cadence application, IAM will provide the authoritative source of login information to both authenticate and authorize user access. In the service layer, IAM will be utilized to authenticate and authorize access to other VA systems, such as VistA and MVI.
* **CDW:** Data extracts from Epic are stored in the CDW for reporting purposes.

Services are listed in Figure 4.1.

Figure .1: Services



## Enterprise Architecture

MASS follows the VA enterprise architecture:

* MASS uses Epic Cadence as its scheduling application. The TeamSMS and MASS government team currently have efforts underway to add Epic to the VA Technical Reference Model (TRM).
* Uses eMI for public services. Standards compliant HL7 V2.x messaging and Representational State Transfer (RESTful) interfaces are exposed over the eMI.
* Plan to utilize IAM SSOi for user identification and user provisioning.
* VistA access through a VA-approved VistA Adapter.
* Utilize existing VA interfaces and systems, as described in Table 2.1.

# Data Design

Per TO 0001 CLIN001AT, this section is not required for this document.

## Database Management System (DBMS) Files

Per TO 0001 CLIN001AT, this section is not required for this document.

## Non-DBMS Files

Per TO 0001 CLIN001AT, this section is not required for this document.

## Data View

Per TO 0001 CLIN001AT, this section is not required for this document.

# Detail Design

Per TO 0001 CLIN001AT, this section is not required for this document.

## Hardware Detailed Design

Per TO 0001 CLIN001AT, this section is not required for this document.

## Software Detailed Design

Per TO 0001 CLIN001AT, this section is not required for this document.

### Conceptual Design

Per TO 0001 CLIN001AT, this section is not required for this document.

#### Product Perspective

Per TO 0001 CLIN001AT, this section is not required for this document.

##### User Interfaces

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Hardware Interfaces

Per TO 0001 CLIN001AT, this section is not required for this document.

##### User Characteristics

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Software Interfaces

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Communications Interfaces

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Memory Constraints

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Special Operations

Per TO 0001 CLIN001AT, this section is not required for this document.

#### Product Features

Per TO 0001 CLIN001AT, this section is not required for this document.

#### Dependencies and Constraints

Per TO 0001 CLIN001AT, this section is not required for this document.

### Specific Requirements

Per TO 0001 CLIN001AT, this section is not required for this document.

#### Database Repository

Per TO 0001 CLIN001AT, this section is not required for this document.

#### System Features

Per TO 0001 CLIN001AT, this section is not required for this document.

#### Design Element Tables

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Routines (Entry Points)

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Templates

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Bulletins

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Data Entries Affected by the Design

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Unique Records

Per TO 0001 CLIN001AT, this section is not required for this document.

##### File or Global Size Changes

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Mail Groups

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Security Keys

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Options

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Protocols

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Remote Procedure Call (RPC)

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Constants Defined in Interface

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Variables Defined in Interface

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Types Defined in Interface

Per TO 0001 CLIN001AT, this section is not required for this document.

##### GUI

Per TO 0001 CLIN001AT, this section is not required for this document.

##### GUI Classes

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##### Current Form

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##### Modified Form

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Components on Form

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Events

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Methods

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##### Special References

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Class Events

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Class Methods

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Class Properties

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Use Clause

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Forms

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Functions

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##### Dialog

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Help Frame

Per TO 0001 CLIN001AT, this section is not required for this document.

##### HL7 Application Parameter

Per TO 0001 CLIN001AT, this section is not required for this document.

##### HL7 Logical Link

Per TO 0001 CLIN001AT, this section is not required for this document.

##### Epic Interface

Per TO 0001 CLIN001AT, this section is not required for this document.

## Network Detailed Design

Per TO 0001 CLIN001AT, this section is not required for this document.

## Security and Privacy

The following subsections describe the security and privacy design for MASS.

### Security

The MASS design will comply with specific security mechanisms across the infrastructure and application implementations in accordance with the NIST 800-53 Rev 4 Security Controls. The governing document for this shall be the MASS System Security Plan (SSP). A Security Risk Assessment was performed as part of the Assessment and Authorization (A&A) package. MASS is categorized as a FISMA “High” system.

Encryption of data at rest is protected using the Vormetric data encryption tool in the CenturyLink cloud. Data encryption will be performed at the storage area network (SAN) level for all data at rest.

The MASS design will employ the secure Transport Layer Security (TLS) protocol to protect the integrity of data in transit. TLS will establish FIPS-compliant, encrypted communications sessions on connections outside of the MASS environment. These connections will be established based upon VA-issued Digital Encryption Certificates installed on each of the MASS servers, and will protect the confidentiality and integrity of the data being transmitted.

Multifactor user authentication will be employed as PIV cards are implemented throughout the VA staff user population. The multifactor authentication will consist of something a user has (PIV card), and something they know (Personal Identification Number [PIN]). These factors will enhance the integrity controls by making it exponentially more difficult for a user account to be compromised. Once a user is identified and authenticated, his or her access to system resources and application functionality will be predicated upon role-based access controls.

The MASS production environment will be hosted within the Virtustream VA community cloud. The system access necessary to use and manage MASS resources will employ the following technical resources and methods to ensure the integrity of the production environment:

* Administrator access will require a user account that is authorized and granted administrator privileges for the MASS resources.
* Administrators will be limited to accessing only those resources necessary to accomplish their assigned tasks.
* Administrator access will be subject to auditing of all privileged actions to include logon, logoff, user account management, and administrative access to system servers and sensitive resources such as database access.
* Every system user must have a User Record defined in the underlying Epic database. Without this record, the user cannot log in to the Epic system. Authentication is done directly in Epic or through an external system such as the lightweight directory access protocol (LDAP). The IAM will provide the initial Authentication and Authorization used by the Epic system. Subsequent IAM interactions will be designed to ensure compliance with the VA’s IAM and security policies and procedures.
* Once a user is authenticated, Security Classifications act like keys that determine what actions a user can perform in the system and which functionality and screens the user can access.
* User Roles control the look and feel of the application and are customized for groups of users, typically by functional role. The User Role determines, generally, what parts of the application a user can see and how long he or she can stay in the system. If there are parts of the system that the user does not use, these features and screens can be hidden by the user role so that the user is not even aware of them.

A user who is assigned administrative duties will be required to authenticate via a VA-issued PIV. In order to establish an administrative connection with MASS, an administrator must be using the VA Citrix Access Gateway (CAG), VA Secure Mobility Client, or VA Rescue Virtual Private Network (VPN). Each administrator must complete the Enterprise Operations (EO) production access request process in order to gain administrative access to MASS. The Virtustream Cloud infrastructure would require a VPN concentrator in the Demilitarized Zone (DZ) Landing Zone (LZ). Once authenticated, traffic would be allowed into the Management Zone (MZ) to facilitate Cloud administrative / management functions. Internal Zone (IZ) server administration/management would traverse the core between the MZ and IZ.

Additional responses to these required items about security controls will be found in the MASS SSP. The entire list of security controls which MASS has been assessed and will be contained in the Inventory of Security Controls document, which also includes inherited controls provided by the VA infrastructure.

### Privacy

MASS is designed to hold patient protected health information (PHI) and patient personally identifiable information (PII). As a result, MASS will comply with all security and privacy controls as detailed appropriate for a FISMA high system as detailed in the *Privacy Act of 1974, 5 U.S.C. § 552a,* the Health Insurance Portability and Accountability Act (HIPAA) of 1996, NIST Special Publication 800-66 Revision 1, as well as the Federal Register 45 CFR Parts 160, 162, and 164 Health Insurance Reform: Security Standards; Final Rule.

MASS takes a defense in depth approach to protecting PII/PHI including the following mechanisms:

* MASS is in compliance with privacy controls per NIST 800-53 & 800-66 as documented in SSP.
* CenturyLink data center is only accessible from VA network.
* API protected by a policy enforcement/policy decision point.
* Data encryption at rest for any partition where PII/PHI will be contained.
* Data encryption in transit using TLS on any network traffic beyond the local enclave.
* Software security program will be built into the Software Development Lifecycle (SDLC) to ensure vulnerabilities are found and remediated during development.

Mass will work with the VA Privacy Office to establish annual Privacy Threshold Analysis (PTA) requirements and submit them to the VA through the VA’s Governance, Risk Management, and Compliance (GRC) tool, Risk Vision.

## Service Oriented Architecture/ESS Detailed Design

The following sections provide details about the services that are produced and consumed by MASS.

### Service Description for WSR

Information will be provided in a future PMAS milestone update document release.

### Service Description for MVI

A service description for MVI will be provided in the [*Service Description Document*](http://your_srver.domain.ext/warboard/anotebk.asp?proj=1385&Type=Active).

### Service Description for VistA Adapter

Information will be provided in a future PMAS milestone update document release.

### Service Description for IAM

A service description for MVI will be provided in the [*Service Description Document*](http://your_srver.domain.ext/warboard/anotebk.asp?proj=1385&Type=Active).

### Service Design for Scheduling Adapter Service

The following subsections provide service design information for the Scheduling Adapter service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Scheduling Adapter service.

##### Purpose and Scope of Service

This service provides the ability to receive HL7 v 2 messages from the Epic scheduling application to write into VistA Scheduling for maintaining the data integrity of a patient and clinic schedule within VistA Scheduling.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Scheduling Adapter Service identification, service versions, design, service-oriented architecture (SOA) patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.1. The Scheduling Adapter Service will be made available as an ESS in the eMI to create, cancel, and update appointments from an HL7 v 2 message in VistA Scheduling.

Table 6.1: Service Identification Information for the Scheduling Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in Table 6.2.

Table 6.2: Service Versions

| Version Number | Current Status of Version | Brief Description of the Change Implemented in the Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM Integration Bus Product (IIB) Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* VistA
* VistA Scheduling Adapter
* eMI Service Deployment
* SSOi

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from Enterprise Logical Data Model (ELDM) to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Patient Identity Adapter Service

The following subsections provide service design information for the Patient Identity Adapter service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Patient Identity Adapter service.

##### Purpose and Scope of Service

The service provides the capability to receive patient identity update messages from the VA MVI, transform them into HL7 v2 and forward transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Patient Identity Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.3. The Patient Identity Adapter Service will be made available as an ESS in the eMI to create, merge, and unmerge patients and add, update, and move identifiers as an HL7 v 2 message in Epic.

Table 6.3: Service Identification Information for the Patient Identity Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in table 6.4.

Table 6.4: Service Versions

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

The following subsections provide details related to the Patient Identity Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* VistA
* VistA Scheduling Adapter
* eMI Service Deployment
* SSOi

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Demographics Adapter Service

The following subsections provide service design information for the Demographics Adapter service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Demographics Adapter Service.

##### Purpose and Scope of Service

The service provides the capability to receive demographic update messages from the VA ADR or E&E Services, transform them into HL7 v2 and forward transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Demographics Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in table 6-5. The Demographics Adapter Service will be made available as an ESS in the eMI to add or update demographics as a HL7 v 2 message in Epic.

Table 6.5: Service Identification Information for the Demographic Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in Table 6.6.

Table 6.6: Service Versions

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM Integration Bus Product Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* ADR
* eMI Service Deployment
* SSOi

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Patient Flags Service

The following subsections provide service design information for the Patient Flags Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Patient Flags Service.

##### Purpose and Scope of Service

The service provides the capability to receive patient flag update messages from VistA, transform them into HL7 v2 and forward transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Patient Flags Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in table 6.7. The Patient Flags Service will be made available as an ESS in the eMI to update patient flags as a HL7 v 2 message in Epic.

Table 6.7: Service Identification Information for the Patient Flags Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Patient Flags |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in table 6.8.

Table 6.8: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* VistA
* VistA Registration Adapter
* eMI Service Deployment

### Service Design for Contact Adapter Service

The following subsections provide service design information for the Contact Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Contact Adapter Service.

##### Purpose and Scope of Service

This service provides the capability to receive messages from the VA CDI service, transform the messages into HL7 v2 and forward the transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Contact Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.9. The Contact Adapter Service will be made available as an ESS in the eMI to add or update contact information as HL7 v 2 messages in Epic.

Table 6.9: Service Identification Information for the Contact Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in Table 6.10.

Table 6.10: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM Integration Bus Product Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* CDI
* eMI Service Deployment

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Eligibility Adapter Service

The following subsections provide service design information for the Eligibility Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Eligibility Adapter Service.

##### Purpose and Scope of Service

This service provides the capability to receive messages from the VA E&E application, transform the messages into HL7 v2 and forward the transformed messages to Cadence.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Eligibility Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.11. The Eligibility Adapter Service will be made available as an ESS in the eMI to add, update, and delete eligibility information as HL7 v 2 messages in Epic.

Table 6.11: Service Identification Information for the Eligibility Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in table 6.12.

Table 6.12: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM Integration Bus Product Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* Enrollment and Eligibility
* Eligibility Adapter
* eMI Service Deployment

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Appointment Status Adapter Service

The following subsections provide service design information for the Appointment Status Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Appointment Status Adapter Service.

##### Purpose and Scope of Service

This service provides the capability to receive messages from the Vetlink and Audiocare applications, transform the messages into HL7 v2 and forward the transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Appointment Status Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.13. The Appointment Status Adapter Service will be made available as an ESS in the eMI to check in, check out, and cancel appointments as HL7 v 2 messages in Epic.

Table 6.13: Service Identification Information for the Appointment Status Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in Table 6.14.

Table 6.14: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* Vetlink
* Audiocare
* eMI Service Deployment
* VistA
* VistA Adapter

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Notice of Death Adapter Service

The following subsections provide service design information for the Notice of Death Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Notice of Death Adapter Service.

##### Purpose and Scope of Service

This service provides the capability to receive notice of death messages from VistA, transform the messages into HL7 v2 and forward the transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Notice of Death Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.15. The Notice of Death Service will be made available as an ESS in the eMI to create, and delete notifications of patient death as an HL7 v 2 message in Epic.

Table 6.15 Service Identification Information for the Notice of Death Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in table 6.16.

Table 6.16: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* VistA
* VistA Scheduling Adapter
* eMI Service Deployment
* SSOi

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Provider Adapter Service

The following subsections provide service design information for the Provider Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Provider Adapter Service.

##### Purpose and Scope of Service

The service provides the capability to receive Provider creation, deletion, activation, deactivation, and update messages from VistA, transform them into HL7 v2 and forward transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Provider Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in table 6.17. The Provider Adapter Service will be made available as an ESS in the eMI to create, delete, and update Provider Records.

Table 6.17: Service Identification Information for the Provider Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in Table 6.18.

Table 6.18: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* VistA
* VistA Provider Adapter
* eMI Service Deployment

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Authentication Adapter Service

The following subsections provide service design information for the Authentication Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Authentication Adapter Service.

##### Purpose and Scope of Service

The service provides the capability to exchange authentication tokens on service calls to and from the VA eMI.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Authentication Adapter service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.19. The Authentication Adapter Service will be made available as an ESS in the eMI to exchange authentication tokens.

Table 6.19: Service Identification Information for the Authentication Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in Table 6.20.

Table 6.20: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* eMI Service Deployment
* IAM - SSOi

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Consults Adapter Service

The following subsections provide service design information for the Consults Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Consults Adapter Service.

##### Purpose and Scope of Service

The service provides the capability to receive consult creation, deletion, and update messages from VistA and transform them into HL7 v2 and forward transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Consults Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.21. The Consult Adapter Service will be made available as an ESS in the eMI to create, delete, and update consults and their statuses.

Table 6.21: Service Identification Information for the Consult Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Consults |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling Clerks |

##### Service Versions

MASS service version information is shown in Table 6.22.

Table 6.22: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* VistA
* VistA Consult Adapter
* eMI Service Deployment

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Orders Adapter Service

The following subsections provide service design information for the Orders Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Orders Adapter Service.

##### Purpose and Scope of Service

The service provides the capability to receive Order creation, deletion, and update messages from VistA and transform them into HL7 v2 and forward transformed messages to Epic

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Orders Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.23. The Orders Adapter Service will be made available as an ESS in the eMI to create, delete, and update schedulable orders.

Table 6.23: Service Identification Information for the Orders Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in table 6.24.

Table 6.24: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### COTS Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* VistA
* VistA Orders Adapter

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Patient Authentication Adapter Service

The following subsections provide service design information for the Patient Authentication Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Patient Authentication Adapter Service.

##### Purpose and Scope of Service

The service provides the capability to receive Patient Authentication messages from IAM and transform them into calls for Epic Patient Authentication.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Patient Authentication Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in table 6.25. The Patient Authentication Adapter Service will be made available as an ESS in the eMI to create, delete, and update user authentications.

Table 6.25: Service Identification Information for the Patient Authentication Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in table 6.26.

Table 6.26: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* IAM
* eMI Service Deployment

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for User Provisioning Adapter Service

The following subsections provide service design information for the User Provisioning Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the User Provisioning Adapter Service.

##### Purpose and Scope of Service

The service provides the capability to receive User creation, deletion, activation, deactivation, and update messages from the VA IAM service, transform them into HL7 v2 and forward transformed messages to Epic.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the User Provisioning Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in Table 6.27. The User Provisioning Adapter Service will be made available as an ESS in the eMI to create, delete, activate, deactivate, and update user authorization.

Table 6.27: Service Identification Information for the User Provisioning Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in Table 6.28.

Table 6.28: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* IAM
* VistA
* VistA Provisioning Adapter
* eMI Service Deployment

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

### Service Design for Scheduling Reporting Adapter Service

The following subsections provide service design information for the Scheduling Reporting Adapter Service.

#### Introduction

The following subsections details the purpose and scope, and provides links to other documents for the Scheduling Reporting Adapter Service.

##### Purpose and Scope of Service

This service provides the ability to send data extracts from Epic to CDW for the purposes of maintaining the data reporting sent previously from VistA Scheduling.

##### Links to Other Documents

Information will be provided in a future PMAS milestone update document release.

#### Service Details

The following subsections provide details related to the Scheduling Reporting Adapter Service identification, service versions, design, SOA patterns, and platforms.

##### Service Identification

Service identification information is provided in table 6.29. The Scheduling Reporting Adapter Service will be made available as an ESS in the eMI to send reports as flat files to CDW.

Table 6.29: Service Identification Information for the Scheduling Reporting Adapter Service

| Service Attribute | Value |
| --- | --- |
| Latest Version | V 0.1 |
| Service Type | Business Application |
| Architecture Layer | Application Services |
| Business Domain | VHA |
| Service Domains | Appointments |
| Business Organization and Owner | Dr. |
| Technical Organization and Owner |  |
| Development Organization and Owner |  |
| Support Organization and Owner |  |
| Target Consumer Organization(s) and Owner(s) | Scheduling clerks |

##### Service Versions

MASS service version information is shown in table 6.30.

Table 6.30: Service Version Information

| Version Numbers | Current Status of Version | Brief Description of the Change Implemented in that Version |
| --- | --- | --- |
| Version 0.1 | Currently in Analysis | Initial version |

##### Summary of Design and Platform Details

Information will be provided in a future PMAS milestone update document release.

##### SOA Pattern(s) Implemented

The SOA pattern in use is application/data services composite service.

##### Platform Vendor Names and Versions for Hosting Platform

The hosting platform will use eMI based on the IBM IIB Suite.

#### Dependencies

The following list of applications and services are used to complete the process flow.

* VistA
* VistA Scheduling Adapter
* eMI Service Deployment
* SSOi

#### Service Design Details

Information will be provided in a future PMAS milestone update document release.

##### Interface Technical Specifications

Information will be provided in a future PMAS milestone update document release.

**Service Invocation Type**

Information will be provided in a future PMAS milestone update document release.

**Service Interface Type**

Information will be provided in a future PMAS milestone update document release.

**Service Name**

Information will be provided in a future PMAS milestone update document release.

**Interface**

Information will be provided in a future PMAS milestone update document release.

**End Points**

Information will be provided in a future PMAS milestone update document release.

**Operations or Methods**

Information will be provided in a future PMAS milestone update document release.

**Message Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Information Model

Information will be provided in a future PMAS milestone update document release.

**Class Diagram and Description of Entities Involved**

Information will be provided in a future PMAS milestone update document release.

**Mappings from ELDM to Standards-Based Schemas**

Information will be provided in a future PMAS milestone update document release.

##### Behavior Model (AKA Use Case Realization)

Information will be provided in a future PMAS milestone update document release.

**Use Cases (Use Case Model)**

Information will be provided in a future PMAS milestone update document release.

**Interaction Diagrams**

Information will be provided in a future PMAS milestone update document release.

#### Gap Analysis

Information will be provided in a future PMAS milestone update document release.

##### Variances from Enterprise Target Architecture

Information will be provided in a future PMAS milestone update document release.

##### Variances from SLDs

Information will be provided in a future PMAS milestone update document release.

##### Variances from Standards and Policies

Information will be provided in a future PMAS milestone update document release.

##### Justification for Exceptions and Mitigation

Information will be provided in a future PMAS milestone update document release.

# External System Interface Design

Per TO 0001 CLIN001AT, this section is not required for this document.

## Interface Architecture

Per TO 0001 CLIN001AT, this section is not required for this document.

## Interface Detailed Design

Per TO 0001 CLIN001AT, this section is not required for this document.

# Human-Machine Interface

Per TO 0001 CLIN001AT, this section is not required for this document.

## Interface Design Rules

Per TO 0001 CLIN001AT, this section is not required for this document.

## Inputs

Per TO 0001 CLIN001AT, this section is not required for this document.

## Outputs

Per TO 0001 CLIN001AT, this section is not required for this document.

## Navigation Hierarchy

Per TO 0001 CLIN001AT, this section is not required for this document.

### Screen [x.1]

Per TO 0001 CLIN001AT, this section is not required for this document.

### Screen [x.2]

Per TO 0001 CLIN001AT, this section is not required for this document.

### Screen [x.3]

Per TO 0001 CLIN001AT, this section is not required for this document.

# Attachment A – Approval Signatures

This section is used to document the approval of the Initial Software Design Document. The review should be conducted face to face where signatures can be obtained ‘live’ during the review. If unable to conduct a face-to-face meeting then it should be held via LiveMeeting and concurrence captured during the meeting. The Scribe should add /es/name by each position cited. Example provided below.

The Business Sponsor and Project Manager are required to sign.

<Signature> <Date>

Signed: Date

<Business Sponsor>

<Signature> <Date>

Signed: Date

<Business Sponsor>

###### Acronyms

| Acronym | Description |
| --- | --- |
| A&A | Assessment and Authorization |
| AAS | Authentication Adapter Service |
| ACAP | Access and Clinic Administrative Program |
| AD | Active Directory |
| ADR | Administrative Data Repository |
| ANSI | American National Standards Institute |
| API | Application Programming Interface |
| ASAS | Appointment Status Service |
| BRD | Business Requirements Document |
| C&P | Compensation and Pension |
| CAG | Citrix Access Gateway |
| CAS | Contact Adapter Service |
| CBOC | Community Based Outpatient Center |
| CCOW | Clinical Context Object Workgroup |
| CDC | Center for Disease Control |
| CDI | Customer Data Integration Initiative |
| CDW | Corporate Data Warehouse |
| CIS | Contact Information Service |
| CNAS | Consults Adapter Service |
| CPRS | Computerized Patient Record System |
| CRM | Customer Relationship Management |
| CRUD | Create/Read/Update/Delete |
| CVT | Clinical Video Telehealth |
| DAS | Demographic Adapter Service |
| DB | Database |
| DBMS | Database Management System |
| DEAP | Disability Examination and Assessment Program |
| DMZ/DZ | Demilitarized Zone |
| DoD | Department of Defense |
| DSS | Decision Support System |
| E&E | Eligibility and Enrollment |
| EAS | Eligibility Adapter Service |
| EDN | Enterprise Death Notice |
| ELDM | Enterprise Logical Data Model |
| eMI | Enterprise Messaging Infrastructure |
| EO | Enterprise Operations |
| EPS | Epic Print Service |
| ESS | Enterprise Scheduler Service |
| ETL | Extract, Transform, Load |
| FIPS | Federal Information Processing Standard |
| FISMA | Federal Information Security Management Act |
| FOC | Full Operating Capability |
| FY | Fiscal Year |
| GAO | Government Accountability Office |
| GRC | Governance, Risk Management, and Compliance |
| GUI | Graphical User Interface |
| HHS | Health and Human Services |
| HIPAA | Health Insurance Portability and Accountability Act |
| HL7 | Health Level 7 |
| IaaS | Infrastructure as a Service |
| IAM | Identity and Access Management |
| IHS | Indian Health Services |
| IBM | International Business Machines |
| IIB | IBM Integration Bus |
| IDES | Integrated Disability Evaluation System |
| IVR | Interactive Voice Response |
| IZ | Internal Zone |
| JSON | JavaScript Object Notation |
| KPI | Key Performance Indicator |
| LDAP | Lightweight Directory Access Protocol |
| LUNS | Logical Unit Numbers |
| LZ | Landing Zone |
| MASS | Medical Appointment Scheduling |
| MPI | Master Patient Index |
| MRT | Mapped Record Testing |
| MVI | Master Veteran Index |
| MZ | Management Zone |
| NIST | National Institute of Standards and Technology |
| NODAS | Notice of Death Adapter Service |
| OAS | Order Adapter Service |
| OI&T | Office of Information and Technology |
| OIG | Office of Inspector General |
| OLAP | Online Analytical Processing |
| OLTP | Online Transaction Processing |
| PAAS | Patient Authentication Adapter Service |
| PACT | Patient Aligned Care Teams |
| PAS | Provider Adapter Service |
| PCE | Patient Care Encounter |
| PCMM | Primary Care Management Module |
| PFAS | Patient Flags Adapter Service |
| PHI | Protected Health Information |
| PIAS | Patient Identity Adapter Service |
| PII | Personally Identifiable Information |
| PIN | Personal Identification Number |
| PIV | Personal Identity Verification |
| PMAS | Project Management Accountability System |
| PTA | Pass-Through Authentication |
| PWS | Performance Work Statement |
| QFR | Questions for the Record |
| REST | Representational State Transfer |
| RPC | Remote Procedure Call |
| RTT | Response Time Tracking |
| SAML | Security Assertion Markup Language |
| SAN | Storage Area Network |
| SAS | Scheduling Adapter Service |
| SDD | Software Design Document |
| SDLC | Software Development Lifecycle |
| SEP | Stakeholder Enterprise Portal |
| SM | Secure Messaging |
| SMS | Short Messaging System |
| SMTP | Simple Mail Transfer Protocol |
| SOA | Service Oriented Architecture |
| SP | Special Publication |
| SRAS | Scheduling Reporting Adapter Service |
| SSO | Single Sign-On |
| SSOi | Single Sign-On Integration |
| SSP | System Security Plan |
| TBD | To Be Determined |
| TLS | Transport Layer Security |
| TO | Task Order |
| TRM | Technical Reference Model |
| TSS | Telehealth Scheduling System |
| UPAS | User Provisioning Adapter Service |
| VA | Department of Veterans Affairs |
| VAAFI | VA Authentication Federation Infrastructure |
| VACAA | Veterans Access, Choice, and Accountability Act |
| VAMC | VA Medical Centers |
| VAR | Veteran Appointment Request |
| VHA | Veterans Health Administration |
| VISN | Veterans Integrated Service Network |
| VistA | Veterans Health Information Systems and Technology Architecture |
| VPN | Virtual Private Network |
| WAN | Wide Area Network |
| WSR | Web Service Registry |
| XML | Extensible Markup Language |

###### Additional Information

Per TO 0001 CLIN001AT, this section is not required for this document.

Identification of Technology and Standards

Per TO 0001 CLIN001AT, this section is not required for this document.

Constraining Policies, Directives, and Procedures

Per TO 0001 CLIN001AT, this section is not required for this document.

Requirements Traceability Matrix

Per TO 0001 CLIN001AT, this section is not required for this document.

Packaging and Installation

Per TO 0001 CLIN001AT, this section is not required for this document.

Design Metrics

Per TO 0001 CLIN001AT, this section is not required for this document.

###### Reference Materials

In addition to constraining policies, directives, procedures, requirements and design specifications within this document, development of MASS shall follow all VA regulations, mandates, security requirements, and standard operating procedures (SOPs) for software development and all other applicable Federal regulations. Applicable documents include:

* VA procedures such as PMAS and ProPath
* Federal mandates such as the Health Insurance Portability and Accountability Act (HIPAA)
* VA DIRECTIVE 6508 - [Privacy Impact Assessments](http://vaww.privacy.domain/PIA.asp)
* VA Directive 6500 – [Information Security Program](http://www1.domain/vapubs/viewpublication.asp?pubid=50&ftype=2)
* VACA (Veterans Access to Care Act)
* [VA Directive 0735](http://www.domain/vapubs/viewPublication.asp?Pub_ID=534&FType=2), Homeland Security Presidential Directive 12 (HSPD-12) Program, February 17, 2011
* [VA Handbook 0735](http://www.domain/vapubs/viewPublication.asp?Pub_ID=758&FType=2), Homeland Security Presidential Directive 12 (HSPD-12) Program, March 20, 2014
* [OMB Memorandum M-06-18](https://www.whitehouse.gov/sites/default/files/omb/assets/omb/memoranda/fy2006/m06-18.pdf), Acquisition of Products and Services for Implementation of HSPD-12, June 30, 2006
* [OMB Memorandum 05-24](https://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2005/m05-24.pdf), Implementation of Homeland Security Presidential Directive (HSPD) 12 – Policy for a Common Identification Standard for Federal Employees and Contractors, August 5, 2005
* [OMB memorandum M-11-11](https://www.whitehouse.gov/sites/default/files/omb/memoranda/2011/m11-11.pdf), “Continued Implementation of Homeland Security Presidential Directive (HSPD) 12 – Policy for a Common Identification Standard for Federal Employees and Contractors, February 3, 2011
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* [Federal Identity, Credential, and Access Management (FICAM) Roadmap and Implementation Guidance](http://www.idmanagement.gov/sites/default/files/documents/FICAM_Roadmap_and_Implementation_Guidance_v2%200_20111202_0.pdf), December 2, 2011
* [NIST SP 800-116](http://csrc.nist.gov/publications/nistpubs/800-116/SP800-116.pdf), A Recommendation for the Use of Personal Identity Verification (PIV) Credentials in Physical Access Control Systems, November 20, 2008
* [OMB Memorandum M-07-16](https://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2007/m07-16.pdf), Safeguarding Against and Responding to the Breach of Personally Identifiable Information, May 22, 2007
* [NIST SP 800-63-2](http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-63-2.pdf), Electronic Authentication Guideline, August 2013
* [Draft NIST Special Publication 800-157](http://csrc.nist.gov/publications/drafts/800-157/sp800_157_draft.pdf), Guidelines for Derived PIV Credentials, March 2014
* [NIST Special Publication 800-164](http://csrc.nist.gov/publications/drafts/800-164/sp800_164_draft.pdf), Guidelines on Hardware-Rooted Security in Mobile Devices (Draft), October 2012
* [Draft National Institute of Standards and Technology Interagency Report (NISTIR) 7981 Mobile, PIV, and Authentication](http://csrc.nist.gov/publications/drafts/nistir-7981/nistir7981_draft.pdf), March 2014
* [VA Memorandum, VAIQ #7100147](https://www.voa.domain/documentlistpublic.aspx?NodeID=514), Continued Implementation of Homeland Security Presidential Directive 12 (HSPD-12), April 29, 2011
* [VA Memorandum, VAIQ # 7011145](https://www.voa.domain/documentlistpublic.aspx?NodeID=514), VA Identity Management Policy, June 28, 2010 (reference Enterprise Architecture Section, PIV/IAM
* [IAM Identity Management Business Requirements Guidance](https://www.voa.domain/documentlistpublic.aspx?NodeID=514) document, May 2013, (reference Enterprise Architecture Section, PIV/IAM
* [Trusted Internet Connections (TIC) Reference Architecture Document](https://www.fedramp.gov/files/2015/04/TIC_Ref_Arch_v2-0_2013.pdf), Version 2.0, Federal Interagency Technical Reference Architectures, Department of Homeland Security, October 1, 2013
* [OMB Memorandum M-08-05](https://www.whitehouse.gov/sites/default/files/omb/assets/omb/memoranda/fy2008/m08-05.pdf), “Implementation of Trusted Internet Connections (TIC), November 20, 2007
* [OMB Memorandum M-08-23](https://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2008/m08-23.pdf), Securing the Federal Government’s Domain Name System Infrastructure, August 22, 2008
* [VA Memorandum, VAIQ #7497987](https://www.voa.domain/documentlistpublic.aspx?NodeID=552), Compliance – Electronic Product Environmental Assessment Tool (EPEAT) – IT Electronic Equipment, August 11, 2014 (reference Document Libraries, EPEAT/Green Purchasing Section
* [Sections 524 and 525 of the Energy Independence and Security Act of 2007](http://www.gpo.gov/fdsys/pkg/PLAW-110publ140/html/PLAW-110publ140.htm), (Public Law 110–140), December 19, 2007
* [Section 104 of the Energy Policy Act of 2005](http://energy.gov/sites/prod/files/2013/10/f3/epact_2005.pdf), (Public Law 109–58), August 8, 2005
* [Executive Order 13514](https://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf), “Federal Leadership in Environmental, Energy, and Economic Performance,” October 5, 2009
* [Executive Order 13423](http://www.gpo.gov/fdsys/pkg/FR-2007-01-26/pdf/07-374.pdf), “Strengthening Federal Environmental, Energy, and Transportation Management,” January 24, 2007
* [Executive Order 13221](http://www.gpo.gov/fdsys/pkg/WCPD-2001-08-06/pdf/WCPD-2001-08-06-Pg1123.pdf), “Energy-Efficient Standby Power Devices,” August 2, 2001
* [VA Directive 0058](http://www1.domain/vapubs/viewPublication.asp?Pub_ID=699&FType=2), “VA Green Purchasing Program”, July 19, 2013
* [VA Handbook 0058](http://www1.domain/vapubs/viewPublication.asp?Pub_ID=699&FType=2), “VA Green Purchasing Program”, July 19, 2013
* [Office of Information Security (OIS) VAIQ #7424808 Memorandum](https://www.voa.domain/DocumentListPublic.aspx?NodeId=28), “Remote Access”, January 15, 2014
* [Clinger-Cohen Act of 1996](http://www.gpo.gov/fdsys/pkg/USCODE-2011-title40/pdf/USCODE-2011-title40-subtitleIII.pdf), 40 U.S.C. §11101 and §11103
* [VA Directive 6071](http://www.domain/vapubs/viewPublication.asp?Pub_ID=651&FType=2), Project Management Accountability System (PMAS), February 20, 2013

[[10]](#footnote-11)

###### Embedded Documents

The following documents are referenced throughout this SDD and are embedded below:

* *Business Need Matrix, version 3*, 10 Nov 2015

* *Initial Infrastructure Analysis Plan, version 1.1*, 25 Nov 2015

* *Initial Infrastructure Design Plan, version 1.1*, 25 Nov 2015

* *Initial Pilot Site Success Criteria and Evaluation Plan, version 1.1*, 25 Nov 2015, including:
  + *Critical Success Factors Matrix, v1.1, 25 Nov 2015*

1. VHA Business Blueprint Document [↑](#footnote-ref-2)
2. VHA Business Blueprint section 3.1.1 [↑](#footnote-ref-3)
3. BRD section 2 Overview [↑](#footnote-ref-4)
4. VHA Business blueprint section 3.3.1 [↑](#footnote-ref-5)
5. Att 010 MASS BRD 2014 section 7.1 Project MASS Business Needs Table, BN4 [↑](#footnote-ref-6)
6. Att 010 MASS BRD 2014 section 7.1 Project MASS Business Needs Table, BN5 [↑](#footnote-ref-7)
7. Att 010 MASS BRD 2014 section 7.1 Project MASS Business Needs Table, BN6 [↑](#footnote-ref-8)
8. Att 010 MASS BRD 2014 section 7.1 Project MASS Business Needs Table, BN7 [↑](#footnote-ref-9)
9. Att 010 MASS BRD 2014 section 7.1 Project MASS Business Needs Table, BN8 [↑](#footnote-ref-10)
10. New regulatory requirements for contract v2 [↑](#footnote-ref-11)