Phrazer **Kitsune**®

Harmonizing Patient, Staff and System Performance!

Technical Integration Guide

Prepared By:

GeaCom, Inc.

Prepared For:

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Executive Summary

The purpose and goal of this program is to access new Communication and Information Theory Empowered (CITE) engagement features for patients and staff offered by Phrazer/Kitsune. The benefits include complete equity across demographics, vastly improved privacy for patients, continuity of system performance, new efficiencies for staff and much more. Cost benefits and optimization of patient flow, staff utilization, interpretation, scribe reduction and more offer significant economic and ethical benefits for the Enterprise.

This technical integration guide is intended to provide an overview of the suggested technical aspects of the Phrazer/Kitsune implementation within a typical Health Enterprise departmental use. It defines the requirements, strategies, and recommendations that will result in successfully implementing Phrazer/Kitsunes at a Health Enterprise. As defined by the management team, "success" includes connecting multiple Phrazer/Kitsunes to Health Enterprise's wireless network and EMR's HL7 SIU message.

This is an exciting first step toward a broader implementation with EMR functionality throughout a Enterprise Health System.

Server Solutions

Below is a summary of two entry options that have been collaboratively developed by GeaCom and Redox for evaluation of a typical implementation. This does not include all options or optimizations.

Option 1: Cloud Based Solution

A VPN tunnel would be established to manage all traffic between the following systems: the health Enterprise, GeaCom's secure server and Redox's secure server. EMR Integration would be managed by BizTalk and Redox connecting the standard secure Phrazer/Kitsune central server and EMR.

Option 2: On Premises Solution

A secure connection will handle all traffic between Enterprise Health's infrastructure and GeaCom's secure server to be located on premises. This server will be managed via HTTPS connection from offsite. EMR Integration (initially scheduling messages only) would be managed by BizTalk connecting the Phrazer/Kitsune central server and EMR.

Integration Partner - Redox

Redox is known as the most reputable EMR integration provider. Our partnership is based on their high level of technical expertise and many hours of experience in working with EMRs. We place our full confidence in their EMR experience and ability to swiftly and effectively manage this complicated process. For more information, please visit their website: www.redoxengine.com

Local Network Connection / Printer Server

In general, Phrazer/Kitsune supports a wide range of network and printing options to meet client requirements. The following paragraphs outline the basic network / print setup that are uniform across all server options.

Local Network Connection

Phrazer/Kitsune supports most common WPA2 Enterprise (802.1x) authentication. Current focus on the use of PEAP as the encryption protocol, further details may be shared. An estimated timeline will be provided assuming a standard setup using accepted methods.

Print Server Setup

Upon receiving additional details of the Health Enterprise's network and print server settings, Phrazer/ Kitsune will be configured to properly communicate with the print server. GeaCom's recommendation is for Phrazer/Kitsune to send a PDF due to the optimization built into the software to handle PDF generation and adjustments with near zero processor or workflow impact.

Direct Print Setup

A secondary option is to direct print to a local network printer from Phrazer/Kitsune using the Line Printer Daemon (LPD) protocol on the standard port. The Page Description Language (PDL) preferred for this method is also a PDF, which requires the printer to be able to print the PDF format (supported by most business class and laser printers). This option is beneficial because it requires reduced setup time and is our common method.

Proposed Technical Integration Plans

Option 1: Cloud Based Solution

General Guidelines

This plan has been designed to accomplish an integration that meets the technical and security requirements.

Cloud Based Solution

Successful implementation can be accomplished through GeaCom Canada's local instance of its central server. By requiring that all traffic between Enterprise Health's infrastructure and GeaCom's server occur within a VPN tunnel we will be able to move quickly, securely, and efficiently toward the goal of having the system functioning prior to program Go-Live.

The anticipated growth of the partnership between Enterprise Health and GeaCom, includes expanded use cases, deployment to additional facilities, and further EMR integration. GeaCom will administer both the BC local central GeaCom server and via that mechanism, Phrazer/Kitsune devices. Integrating with cloud based infrastructure provides additional capabilities for multi health system support, which would allow for multi health system data and work flows (i.e., private practice to Enterprise Health).

Additional Considerations

- Establishment of an agreement that provisions the use of server setup, and data flow between Health Enterprise and GeaCom. This will set the start date of the project timeline.

- Identification of specific Technical Leads

    - Network Security Leads: Responsible for VPN setup and testing.

    - Integration Leads: Responsible for BizTalk interface and testing.

- Sample SIU message exchange *(GeaCom and Health Enterprise)*.

- Additional Documentation: Any documents or forms necessary to meet requirements for deployment (i.e., STRA, PIA, Cloud Security Assessment)

- Considerations for administration access to the cloud solution.

Option 1 - Solution Architecture

The following is the solution architecture for the GeaCom Canada based cloud solution. It was generated based upon an example provided by HSSBC.
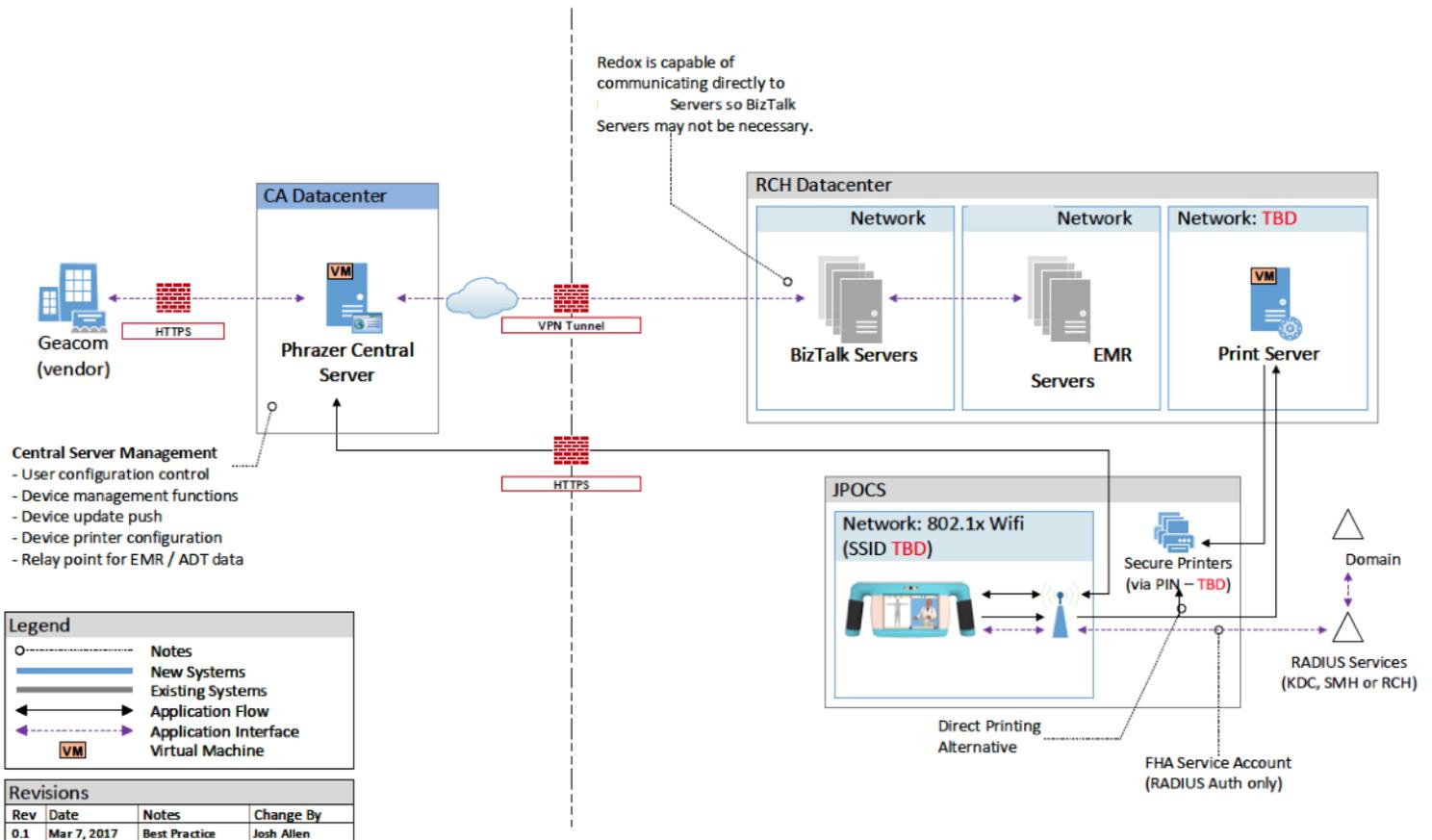
Option 1 - Project Outline/Timeline

The following graphic outlines the expected timeline for the technical integration. Note: both timelines are independent of each other and can run simultaneously.

Weeks from start:	1	2	3	4	5	6	7	8	9	10
Option 2 - Phrazer/Biztalk Integration										
Server Spin-up										
Discovery										
Connectivity										
Configurations										
Testing										
Go Live										

Option 2 - Phrazer Network Integration										
WIFI/Printer Details Received										
WIFI Pre-Configuration										
Printer Pre-Configuration										
On-Site Configuration/Testing (Variable)										
Go Live Support										

Option 1 - Cost Estimation

	Year 1				Year 2				Year 3			
	UM	Qty	Cost	Total	UM	Qty	Cost	Total	UM	Qty	Cost	Total
GeaCom System Costs												
Server Config	hr	40	$150	$6,000	hr	0	$150	$0	hr	0	$150	$0
System Administration (Remote)	mo	12	$1,000	$12,000	mo	12	$1,000	$12,000	mo	12	$1,000	$12,000
Server (AWS)	mo	12	$200	$2,400	mo	12	$500	$6,000	mo	12	$700	$8,400
Subtotal:				$20,400				$18,000				$20,400
Costs												
EMR Integration (BizTalk) (base cost)	mo	12	$0	$0	mo	12	$0	$0	mo	12	$0	$0
EMR Workflow Additions (new protocols)	ea	10	$500	$5,000	ea	50	$500	$25,000	ea	200	$500	$100,000
Subtotal:				$5,000				$25,000				$100,000
Total:				$25,400				$43,000				$120,400

Geacom Cost:	$58,800
Health Cost:	$130,000
Grand Total:	$188,800

Note: Having additional Health Enterprises using an AWS based solution would defer server and system admin costs. Above price points are based on Enterprise Health being the sole Health Enterprise.

Option 2: On Premises Solution

General Guidelines

This plan has been designed to accomplish an integration that meets the technical requirements.

On Premises Based Solution

Successful implementation can be accomplished through the use of an on premises instance of GeaCom Canada's central server. By requiring that all traffic between Enterprise Health's infrastructure and GeaCom's server occur within a VPN tunnel we will be able to move quickly, securely, and efficiently toward the goal of having the system functioning within short timelines. As part of this option, GeaCom will manage communication directly with BizTalk rather than its integration partner, Redox.

This plan accommodates scalability within the Enterprise Health system. The anticipated growth of the partnership between Enterprise Health and GeaCom, includes expanded use cases, deployment to additional facilities, and further EMR integration. GeaCom will administer both the on-premises central GeaCom server and via that mechanism, Phrazer/Kitsune devices.

Integrating with an on-premises server may limit capabilities for multi-health system support, in order to expand beyond initial Enterprise Health in CA, GeaCom will need to deploy and support additional instances of the server.

Additional Considerations

- Establishment of an agreement that provisions the use of server setup and data flow between Health Enterprise and GeaCom. This will set the start date of the project timeline.

- Identification of specific Technical Leads

    - Network Security Leads: Responsible for VPN setup and testing.

    - Integration Leads: Responsible for BizTalk interface and testing.

- Sample SIU message exchange *(GeaCom and Health Enterprise)*.

- Additional Documentation: Any documents or forms necessary to meet requirements for deployment (i.e., STRA, PIA, Cloud Security Assessment).

- Considerations for administration access to on premises server.

Option 2 - Solution Architecture

The following is the solution architecture for the on premises server solution. It was generated based upon an example provided by HSSBC.
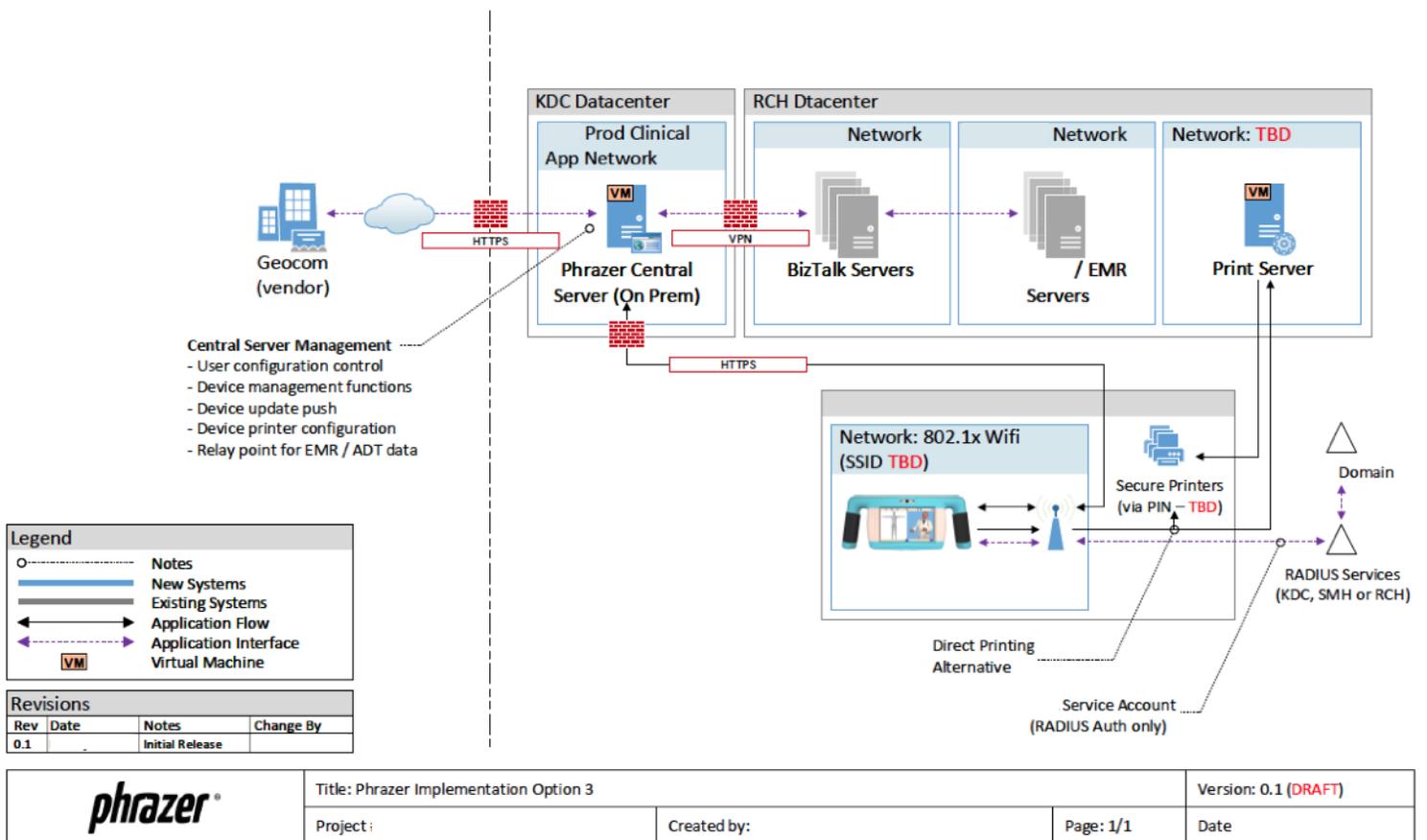
Option 2 - Project Outline/Timeline

The following graphic outlines the expected timeline for the technical integration. Note: both timelines are independent of each other and can run simultaneously.

	1	2	3	4	5	6	7	8	9	10	11	12
Option 3 - Phrazer/Biztalk Integration												
Server Spin-up												
Discovery												
Connectivity												
Configurations												
Testing												
Go Live												

Option 3 - Phrazer Network Integration						
WIFI/Printer Details Received						
WIFI Pre-Configuration						
Printer Pre-Configuration						
On-Site Configuration/Testing (Variable)						
Go Live Support						

Option 3 - Cost Estimate

	Year 1				Year 2				Year 3			
	UM	Qty	Cost	Total	UM	Qty	Cost	Total	UM	Qty	Cost	Total
GeaCom System Costs												
Server Config	hr	80	$150	$12,000	hr	0	$150	$0	hr	0	$150	$0
System Administration (Remote)	mo	12	$1,000	$12,000	mo	12	$1,000	$12,000	mo	12	$1,000	$12,000
Subtotal:				$24,000				$12,000				$12,000
JPOCSC Costs												
Server (On Prem)	mo	12	$500	$6,000	mo	12	$700	$8,400	mo	12	$900	$10,800
EMR Integration (BizTalk) (base cost)	mo	12	$0	$0	mo	12	$0	$0	mo	12	$0	$0
EMR Workflow Additions (new protocols)	ea	10	$500	$5,000	ea	50	$500	$25,000	ea	200	$500	$100,000
Subtotal:				$11,000				$33,400				$110,800
Total:				$35,000				$45,400				$134,800

Geacom Cost:	$48,000
Fraser Health Cost:	$155,200
Grand Total:	$203,200

Local Network Connection
& Printer Setup

Local Network Connection

Phrazer/Kitsune is capable of most modern WPA2 Enterprise (802.1x) network authentication/ encryption protocols. Our primary method is to utilize EAP-TLS authentication, due to the high level of security and control afforded. User certificates/keys are generated by the client and initial installation is handled by the GeaCom technicians. Once installed, updates to the Phrazer/Kitsune devices local network settings is managed through a secure connection to our Health Enterprise web portal, which allows access to local network configuration settings and certificate/key management tools (for updating/replacing certificates, etc.). If these expire GeaCom will support the installation of updated certificates/keys.

Health Enterprise Local Network Connection

Initial discussions have mentioned use of PEAP device network authentication using Active Directory (AD) for device management. The details of the network will need to be verified before additional details on this solution can be provided, however, the timeline should not be significantly affected.

Printing Setup

Our preferred method for printing is accomplished through a direct message to a network printer using the Line Printer Daemon (LPD) protocol on standard ports. The Page Description Language (PDL) preferred is a PDF due to the optimization built into the software to handle PDF generation and adjustments with near zero processor or workflow impact. The use of a PDF as the document format also allows the addition of PDF archiving (additional network setup required).

There are a few reasons why we suggest direct printing. The first is data security. Direct messages are held within the local network only, which helps to ensure patient information is kept within a single location. This allows us to work within many systems, regardless of network size/complexity. Second, it reduces the overhead on the caregiver by avoiding interfaces for printer selection on the device and simplifying the process. Third, by directly sending a PDF, the level of processing on the Phrazer/Kitsune device itself is reduced by removing the need to convert document formats to a different PDL, resulting in improved user experience.

Health Enterprise Print Server

Initial discussions have identified a local print server, details of which are in process. We can set up Phrazer/Kitsune to communicate with the print server if this is the preferred method. As a result there will be limited impacts to existing timelines, but further details will be required before a final timeline can be put forward.

Option Comparison Chart

The following chart reflects the difference is all 3 integration options.

	3 Year Cost GeaCom	3 Year Cost	Datacenter Location	Patient Consent Required	Admin Access Required	Implementation Time (weeks from start)	New Use Case Lead Time (weeks)	Multi-Health System Capable
Option CA Cloud Based Solution	$58,800	$130,000	CA	No?	Yes	10	4	Yes
Option On Premises Solution	$48,000	$155,200	CA	No?	Yes	12	4	No?

Cost Analysis: The 3 year costs are based upon the cost estimation provided with each solution and are calculated based upon current information. More accurate calculations can be provided with assistance from the Enterprise Health implementation team.

Implementation Time: Lead times are based on the provided timelines with each solution and are calculated with current information.

Additional Use Case Lead Time: The number of weeks it takes to implement a new use case including EMR messaging. Numbers are based upon previous deployments and estimated effort for staging new EMR messages.

Multi-Health System Capable: The cloud based solutions offer multi-health system capability. This allows for more flexibility and expansion of the initiative and can reduce server related costs.

Admin Access: GeaCom's administrative access is important to the functionality of the Phrazer/Kitsune system in all deployments, including both presented options.

Patient Consent: GeaCom understands that public healthcare organizations in British Columbia and Nova Scotia have specific restrictions in place around how health data may be managed.

Project Roles

The following team members will make up the technical integration team for the upcoming Phrazer/Kitsune implementation within the Enterprise Health network.

Executive Sponsors

Has ultimate authority and responsibility for a project, provides approvals for changes to scope, allocates additional funds for scope changes, and approves final project deliverables.

Executive Director Clinical Quality and Strategic Priorities, Enterprise Health
Office: +1 604-xxxx-xxxx
Email:

Mat Johnson, Chief Executive Officer, GeaCom
Office: +1 218-740-4704
Email: Mat.johnson@geacom.net

Technical Project Directors

Responsible for overseeing the technical aspects of Phrazer/Kitsune integration, managing team and project resources, and defining final project details.

Katja Kressmann, General Manager, GeaCom
Mobile: +1 612-232-8109
Email: Katja.hansey@geacom.net

Project Team Lead

Responsible for managing the Phrazer/Kitsune implementation, facilitating communication between GeaCom and Enterprise Health, and tracking overall integration progress.

, Sr. Account Manager, GeaCom
Mobile: +1 612-xxx-xxx
Email:

Technical Project Leads

The technical project leads are responsible for ensuring the completion of their respective technical implementations, the development of their respective project plans with the team and managing the project tasks. They are responsible for serving as the main point of contact for the technical implementation.

Project Engineer, GeaCom
Office: +1 218-xxx-xxxx
Email:

Lead Corporate and eHealth Services Planning, Informatics & Analytics,
Office: +1 604-xxx-xxxx ext xxxxxx
Email:

Business Systems Analyst, Corporate Information Services Corporate and eHealth Services
Email:
Office:

Additional Project Support

These individuals provide additional support and technical knowledge to assist the project directors and leads meet the defined goals and integration timeline.

- Solution Architect
- Quality Engineer, GeaCom
- Business Systems Analyst
- Corporate Information Services
- Corporate and eHealth Services

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