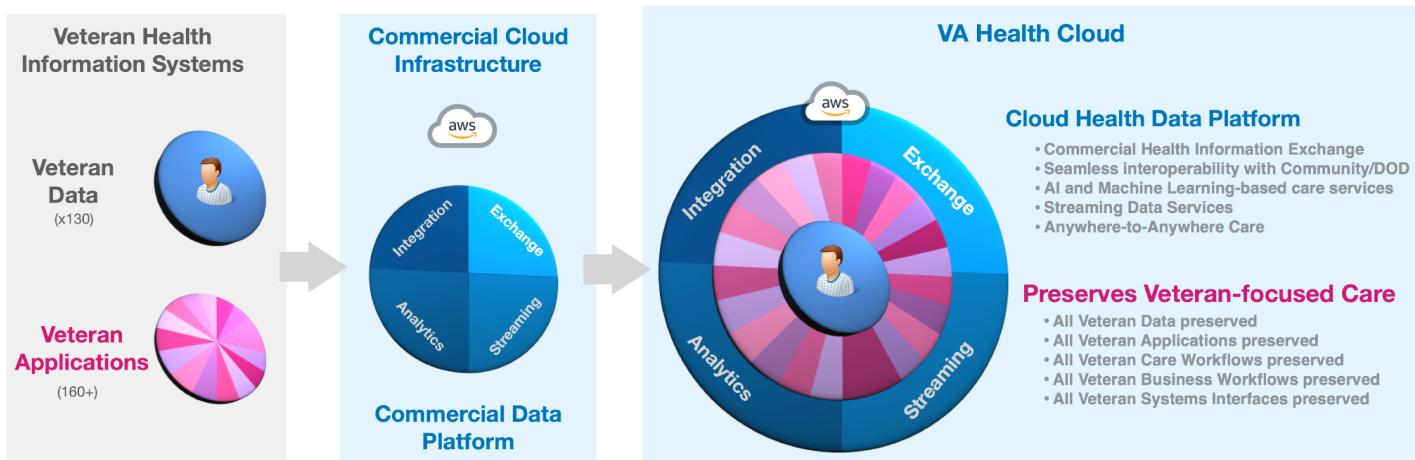


# VA Health Cloud

**Safe, proven, incremental migration of the VA health information systems to a modern maintainable commercial cloud architecture while preserving all veteran care workflows and data.**

U.S. Department of Veterans Affairs  
VA Enterprise Cloud Architecture  
Update: May 10, 2022



*More than 2/3 of the U.S. population has some component of their health record stored and managed in the same platform as the VA Health Cloud.*

## Migration Progress

	<b>Cloud Infrastructure</b>	<ul style="list-style-type: none"><li>Migration of VISTA to modern, mainstream, commercially-supported cloud infrastructure (Amazon Web Services and Microsoft Azure)</li><li>Provides immediate performance and scalability improvements.</li><li>Provides access to over 200 off-the-shelf commercial cloud services</li><li>Status: Proven for ten VISTA systems in full operation on AWS; ready for scale up.</li></ul>
	<b>Cloud Data Platform</b>	<ul style="list-style-type: none"><li>Migration of VISTA to a commercial healthcare data platform (Intersystems IRIS).</li><li>IRIS is the largest commercial healthcare platform in the USA, and stores and exchanges the health records of nearly 2/3 of the US population.</li><li>Major EHR vendors such as Epic are based on the IRIS data platform (*).</li><li>Status: Proven and in production for most VISTA systems.</li></ul>
	<b>Cloud Services</b>	<ul style="list-style-type: none"><li>Over 200 cloud services available in Amazon which can be leveraged immediately.</li><li>Example #1: Web Streaming of CPRS to web and mobile clients anywhere in the USA.</li><li>Example #2: Zero-Trust Security of all veteran data in VISTA.</li><li>Status: Proven and in production at pilot VA medical centers; ready for scale up</li></ul>

# VA Health Cloud Platform

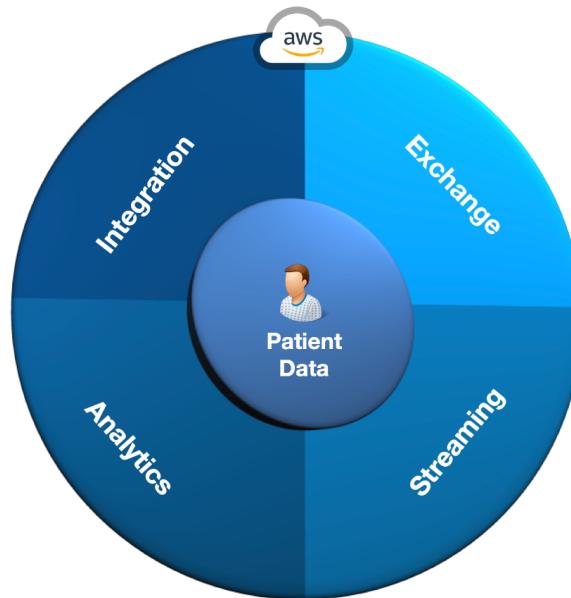
VA Health Cloud Platform is based on the largest healthcare platform in the USA (IRIS), which stores and exchanges the health records of nearly 2/3 of the US population. The largest healthcare systems in the US such as Epic are also based on the IRIS platform.

## Continuous Integration

Healthcare industry-leading enterprise data integration platform allows VA to continuously integrate the latest healthcare technologies and information systems to the VA healthcare system, maintaining continuous improvement, innovation, and state-of-the-art care for veterans.

## Analytics and AI-driven care

Real-time cloud-based Artificial Intelligence and Machine Learning (AI/ML) on operational data provides actionable information for veteran care, providing state-of-the-art veteran care and a continuous Learning Health System.



## Seamless Interoperability with DoD

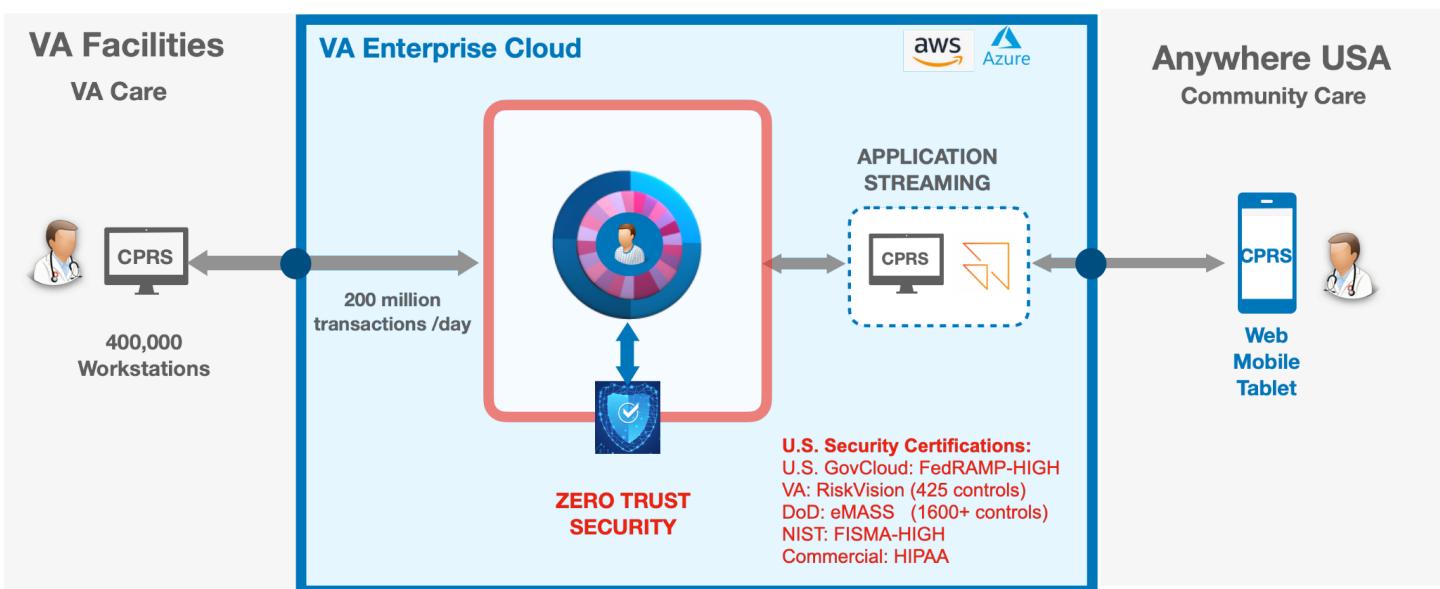
Proven, industry-leading commercially-supported Health Information Exchange provides real-time, bidirectional connectivity to all commercial EHR systems in the community and DOD "out of the box", improving coordination of Veteran care with the DoD and Community care providers.

## Anywhere-to-Anywhere Care across USA

Real-time, secure, streaming data services anywhere-to-anywhere across the United States allows any VA clinicians to access any existing VA health application anytime, anywhere, with any device (iPad, iPhone, web, mobile, or tablet) improving efficiency of clinical care and expanding veteran access to care from the safety and comfort of their homes.

## Security

The VA Health Cloud is certified to the highest security standards in the Federal government, making Veteran health data securely accessible for care across the USA.

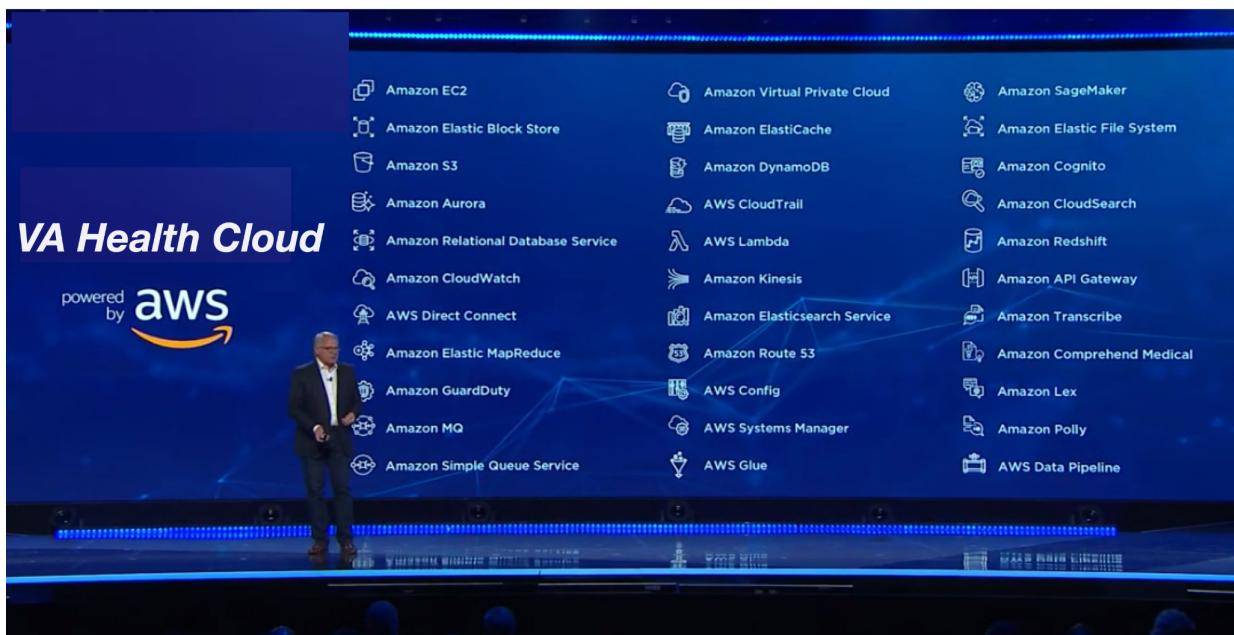


Security includes the most stringent U.S. government regulations, policies, and standards



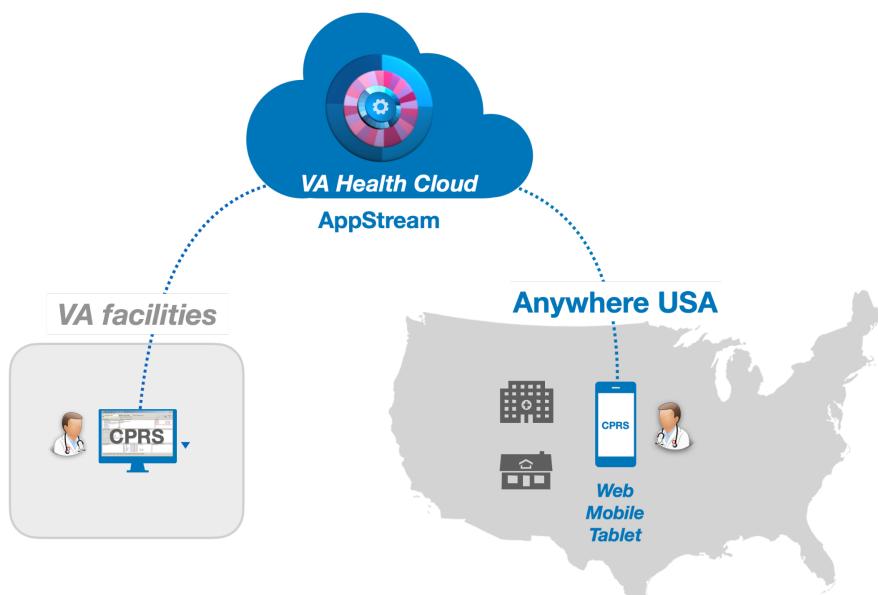
# VA Health Cloud Services

Over two hundred commercial off-the-shelf cloud services are immediately accessible within the VA Health Cloud, and can be leveraged to improve access, efficiency, and quality of veteran care. These include Artificial Intelligence, Machine Learning, Natural Language Processing, and Web Streaming services.



## AppStream Service

App Streaming from VA Health Cloud securely streams CPRS anytime, anywhere, to any web or mobile device, expanding real-time access to veteran care via Community Care providers anywhere in the USA.



# VA Health Cloud Comparison

May 10, 2022

System	VISTA [1]	Cerner [2]	VA Health Cloud
Year Created (age)	1979 (43 years)	1979 (43 years)	2021 (1 year)
Platform Technology	MUMPS [3]	Oracle [4]	Intersystems IRIS [5][6] (same as Epic)
Client	CPRS (+47 other)	Powerchart (+10 other)	WebCPRS
Client Access	Thick client	Citrix	Amazon AppStream
Client technology	Delphi [7][8] Last release: 2022 (current active)	Visual Basic [9] Last release: 1998 (discontinued; no support or updates for 24 years)	Web (Chrome, Edge, Firefox)
U.S. National User Satisfaction Rating [12]	#1 (easiest to use)	#10 (moderate challenges)	#1 (easiest to use)
Data Centers [13][14]	4 (regional)	1 (Kansas)	38 Worldwide 2 U.S. GovCloud
Reliability / Uptime	99.95%	< 95% [15] (52 platform outages in past 15 months)	>99.99% [16]
Implementation strategy	Safe, proven, incremental	Disruptive Rip-and replace	Safe, proven Incremental
Training requirements	none	30+ hours per person	none
Preserves VA data	100%	< 2% (5 years)	100% 400 million veteran-years
Data ownership	VA (open standard)	Cerner / Oracle (proprietary)	VA (open standard)
Preserves VA workflows	Yes	No	Yes
Cloud-native	No	No	Yes
Cloud services	No	No	Yes (>300 services) [17]
Infrastructure requirements	NA	Yes; requires \$6 billion on-premises upgrades	No; infrastructure migrated to the cloud
Cost estimate		\$16 billion	\$200 million
Timeline for full implementation		10 years (2032)	24 months (2024)

## **System**

- [1] <https://en.wikipedia.org/wiki/VistA>
- [2] <https://en.wikipedia.org/wiki/Cerner>

## **Platform**

- [3] <https://en.wikipedia.org/wiki/MUMPS>
- [4] [https://en.wikipedia.org/wiki/Oracle\\_Database](https://en.wikipedia.org/wiki/Oracle_Database)
- [5] <https://www.intersystems.com/data-platform>
- [6] <https://www.healthcareitnews.com/news/epic-use-intersystems-data-foundation-latest-ehr-release>

## **Client Technology**

- [7] [https://en.wikipedia.org/wiki/Delphi\\_\(software\)](https://en.wikipedia.org/wiki/Delphi_(software))
- [8] <https://www.embarcadero.com/products/delphi>
- [9] [https://en.wikipedia.org/wiki/Visual\\_Basic\\_\(classic\)](https://en.wikipedia.org/wiki/Visual_Basic_(classic))

## **Client Access**

- [10] [https://en.wikipedia.org/wiki/Citrix\\_Virtual/Desktops](https://en.wikipedia.org/wiki/Citrix_Virtual/Desktops)
- [11] <https://aws.amazon.com/appstream2/>

## **National User Satisfaction Rating**

- [12] <https://www.medscape.com/features/slideshow/public/ehr2016#page=8>

## **Data Centers**

- [13] <https://www.datacenters.com/amazon-aws-data-center-locations>
- [14] <https://aws.amazon.com/govcloud-us>

## **Reliability / Uptime**

- [15] <https://ehrintelligence.com/news/cerner-falls-short-of-va-ehr-system-uptime-obligation>
- [16] <https://www.logicata.com/blog/aws-service-level-agreement/>

## **Cloud Services**

- [17] <https://medium.com/cloudpegboard/how-many-aws-services-are-there-51dda44fa946>