The Challenge

Probably the single biggest barrier to more rapid adoption of Cloud Data Platforms is data privacy and security. For any organization collecting, processing, analyzing and retaining sensitive or regulated information, data privacy can quickly become a show-stopper.

Adoption of cloud services involving Personally Identifiable Information (PII), Private Health Information (PHI), other sensitive Non-Public Information (NPI) or any other government or industry regulated data usually requires implementation of a completely different trust model.

Organizations accustomed to traditional methods of protecting and controlling access to data where they managed all aspects of data security from physical data center security, to network security controls, to Role Based Access Controls coded into Databases and Applications require a paradigm shift in their thinking about data privacy.

Any cloud adoption initiative needs to take into consideration that the organization may only be left with control over a User's Identity, the Data itself and the Application(s) used to access the data. This demands a data-centric approach that is application, database and hosting location agnostic. The same data protection, fine-grained access controls, accountability, and audit trail need to be maintained even though the data may be hosted almost anywhere and accessed from almost anywhere.

The New Reality

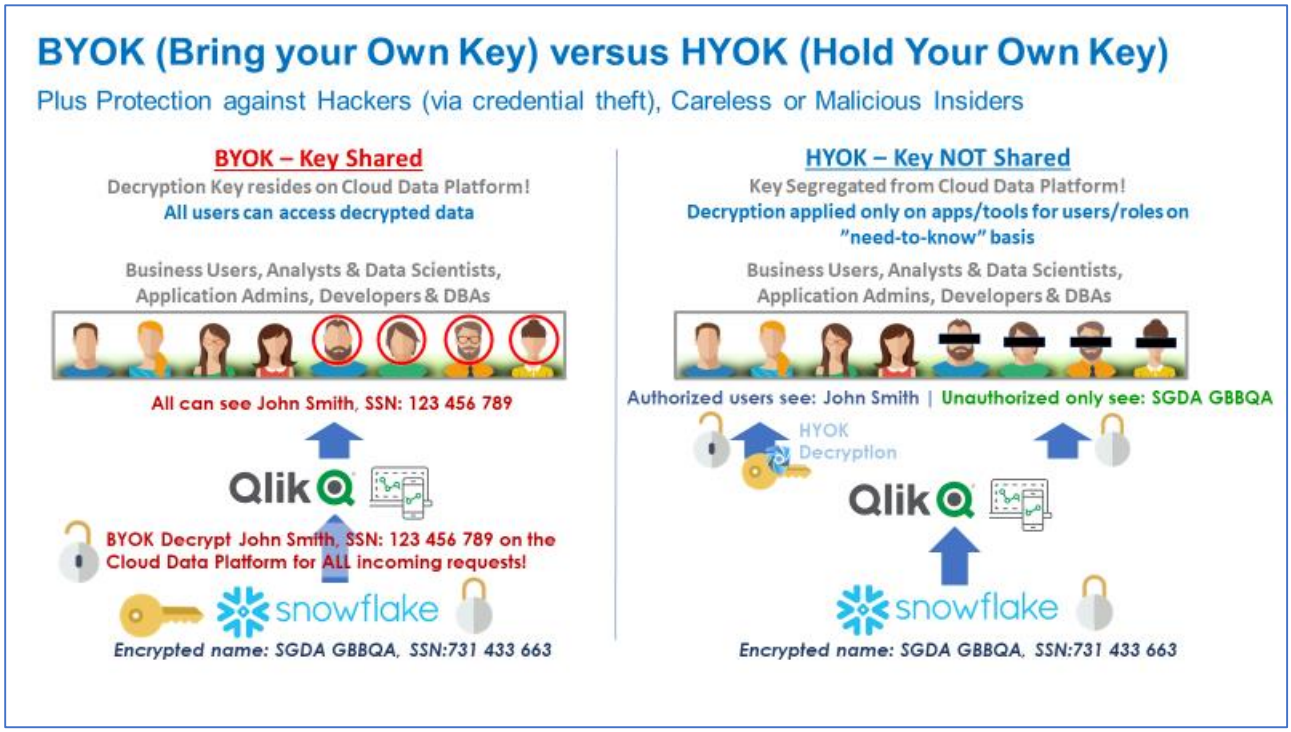
Cloud hosting providers along with the databases and applications that run on cloud hosted infrastructure do a great job of providing as good or better security controls as their prospective customers enjoy today on-premise. However, this is often not enough. Data privacy regulations mandate that organizations which collect the data remain responsible for its privacy and protection regardless of any contractual agreements or outsourcing.

Organizations remain accountable even when they have almost no direct control over any of the infrastructure processing the data.

Data encryption applied at the disk or file (tablespace) level only protects data from someone walking out of the data center with a disk drive. It doesn't distinguish between privileged users who still have access to the infrastructure (DBAs, SysAdmins) but shouldn't see sensitive data, and those who may not have access to the infrastructure but are authorized to view the sensitive data. Decryption should only occur when authorized users interact with the sensitive data, irrespective of what tool they are using, and deny the Infrastructure providers any ability to see meaningful data.

The Solution

The easiest way for organzations to retain full control with virtually complete transitions to the Cloud is through Anonymization of data or rendering enough sensitive data fields inaccessible when in the Cloud and only accessible again when coming back on premise or back within your span of control. This is where Hold Your Own Key (HYOK) becomes essential. Encrypting data prior to sending to the Cloud and only decrypting once back on premise or when requested by an authorized user with legal basis/"need -to-know" is the only way to satisfy any more conservative trust models.



Full disk encryption, file level or tablespace encryption or Bring Your Own Key (BYOK) based Column level encryption do not meet any of these more stringent data protection requirements. These do not satisfy that fundamental trust model requirement of sharing only encrypted data (not the keys). The Hold Your Own Key (HYOK) concept is the desired trust model for any smart Data Controllers when their data flows to a Cloud Data Platform if they want to retain full control over access to their data.

HYOK is the KEY to Cloud Data Security and Data Governance

Regulated industries, such as financial services and healthcare, require keys be segregated from the cloud data platform compute (e.g., Snowflake). SecuPi HYOK enables companies to comply with this requirement with encryption applied to regulated columns, or applying dynamic masking or filtering access to other sensitive columns – balancing between compliance, analytics and usability of the data.

The Qlik Data Integration and Data Analytics platform integrates with SecuPi's data privacy and protection capabilities to provide a complementary, end-to-end solution for analytics involving sensitive or regulated data for Cloud data platforms like Snowflake.

The new integrated solution protects data from the source (mainframe, Oracle, DB2, Teradata and other on-prem data stores), during ingestion via Qlik Replicate (formerly Attunity and CDC), within hybrid cloud data platform (e.g., Snowflake) & Big Data (e.g., DataBricks) until analytics results are consumed by authorized users within Qlik Sense and QlikView.

Together Qlik and SecuPi enhance the security of data within Cloud data platforms like Snowflake by ensuring that sensitive data remains encrypted in the cloud at all times (without exposing encryption keys or sensitive data).

The SecuPi integration with QlikView or Qlik Sense Enterprise enable decryption as well as other governance and fine-grained access controls including geo-fencing, row filtering, logical deletion, dynamic masking, real-time sensitive activity monitoring, classification and user behavior analytics.

The Qlik and SecuPi partnership is an excellent fit for multicloud deployments where HYOK and consistent access controls, accountability and data privacy requirements must also be met on Snowflake.

One of the most important aspects of the Qlik | SecuPi partnership is security and implementation transparency. SecuPi enables fine-grained access control, data-at-rest protection with Hold Your Own Key (HYOK) – segregating keys from the compute. This satisfies challenging data privacy regulations (GDPR/CCPA) and provides full accountability for all access to sensitive or regulated data without changes to QlikView, Qlik Sense or the underlying data repository such as Snowflake. Scalability and ease of implementation are driven by SecuPi's ability to operate as a simple encrypt function call within Qlik Data Integration and as a transparent gateway ***between*** Qlik Sense or QlikView and the Cloud hosted data platform such as Snowflake.

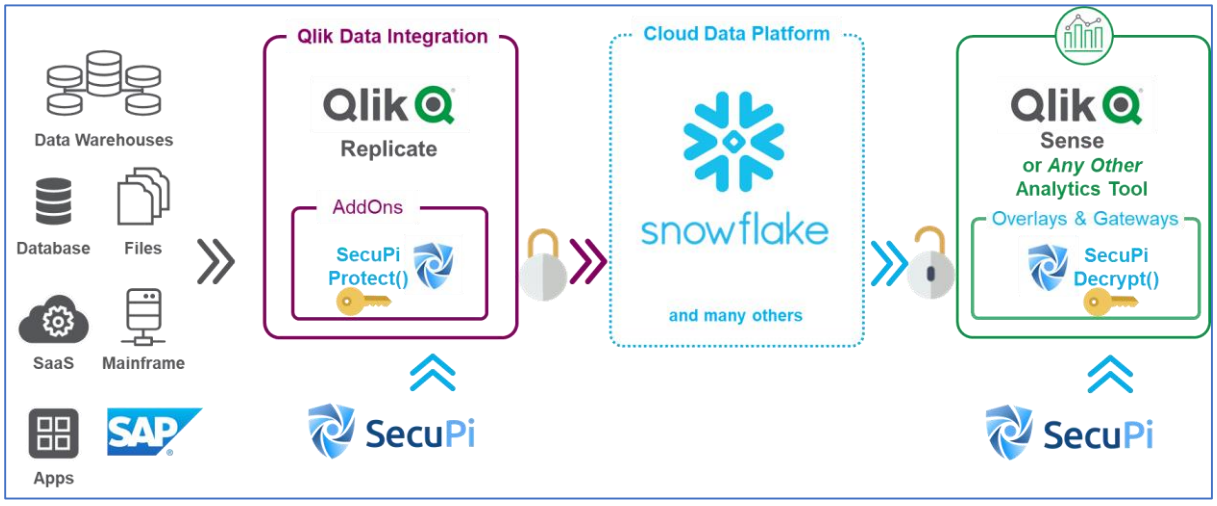
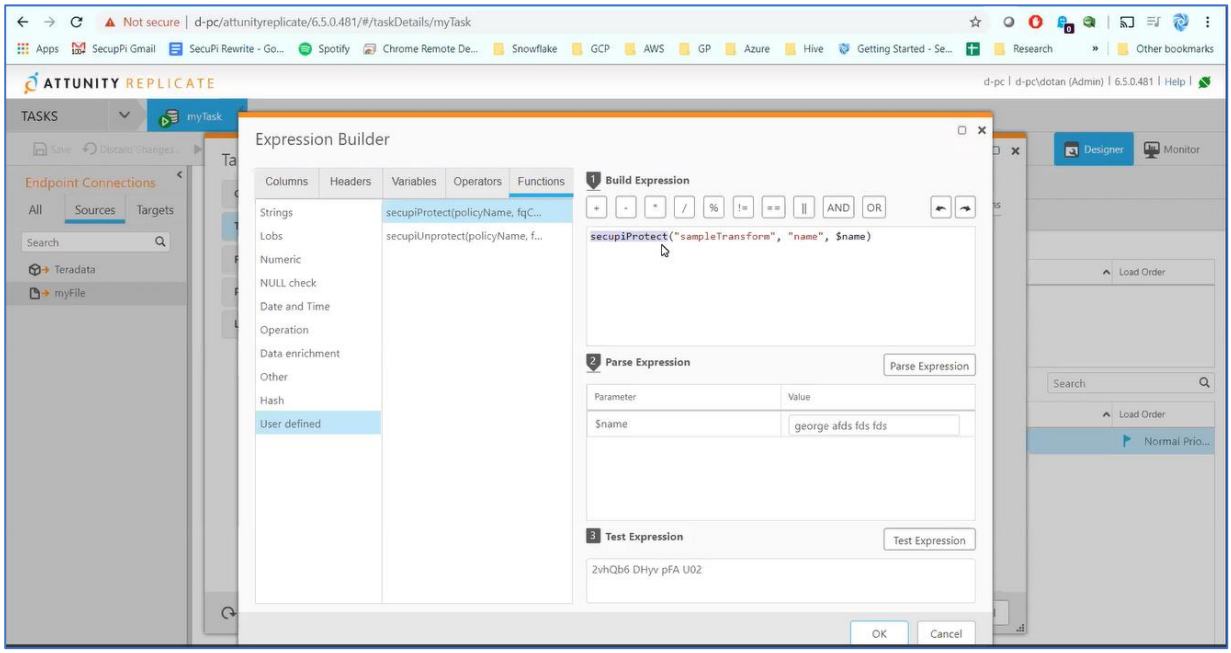


Figure 1: SecuPi encryption functions augment Qlik Replicate ETL process, while using SecuPi overlay when authorized users are retrieving encrypted data from Qlik Sense.

Step 1: Install SecuPi

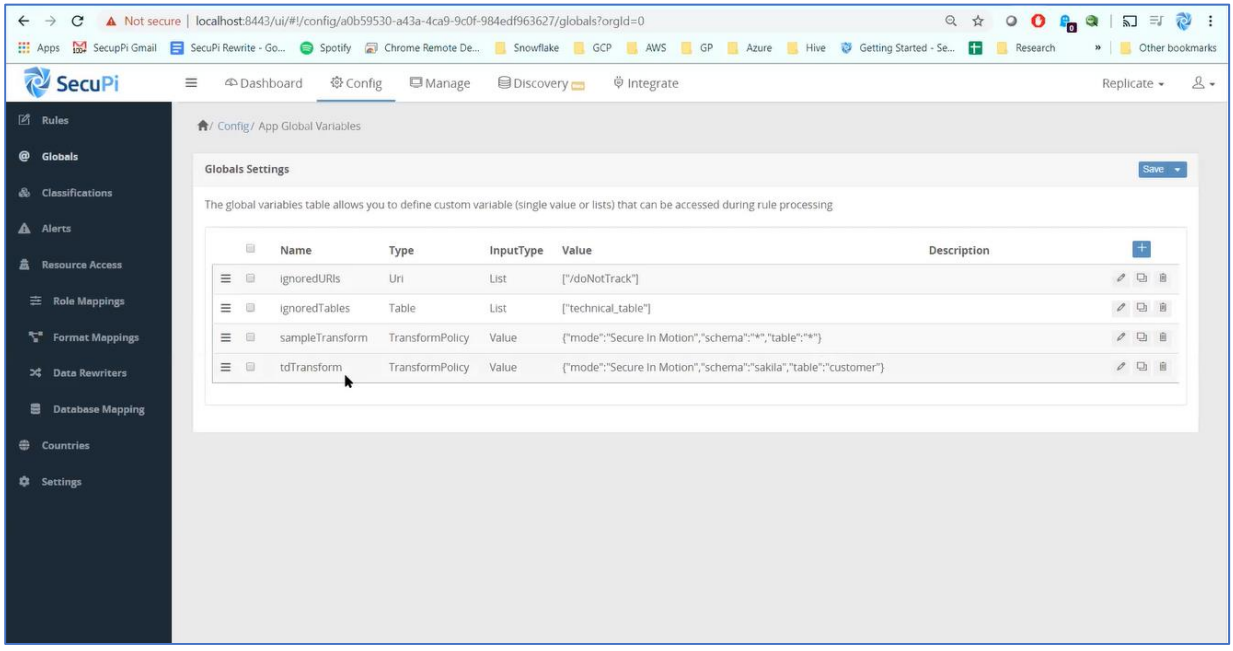
SecuPi Management Server and overlays come as a docker container, K8s. They can be installed either on-prem or cloud. The policies are configured centrally, and distributed to the self-contained overlays and gateways for enforcement.

Step 2: Encrypt Sensitive Ingestion Flows by calling SecuPi Encryption function calls



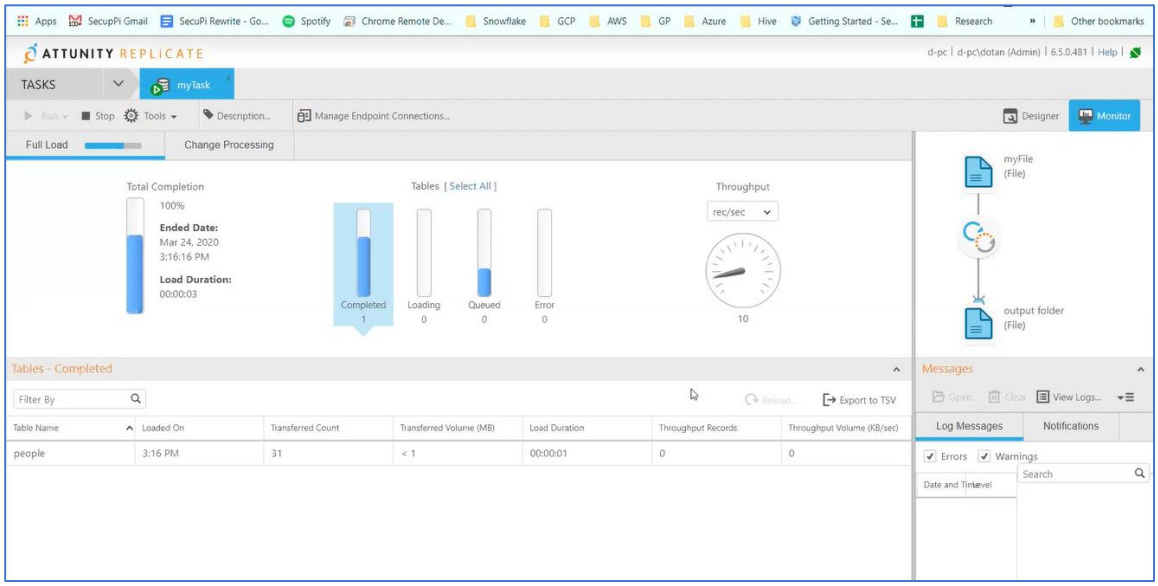
Expression Builder for applying SecuPi Format Preserving Encryption (FPE) on a Name field

Leverage SecuPi HYOK to encrypt enough sensitive fields to render customer records sufficiently anonymized prior to copying sensitive data to the Cloud, and only decrypted upon retrieval by authorized users in Qlik.



Configuring a Global rule that applies an FPE encryption transformation to specific Columns

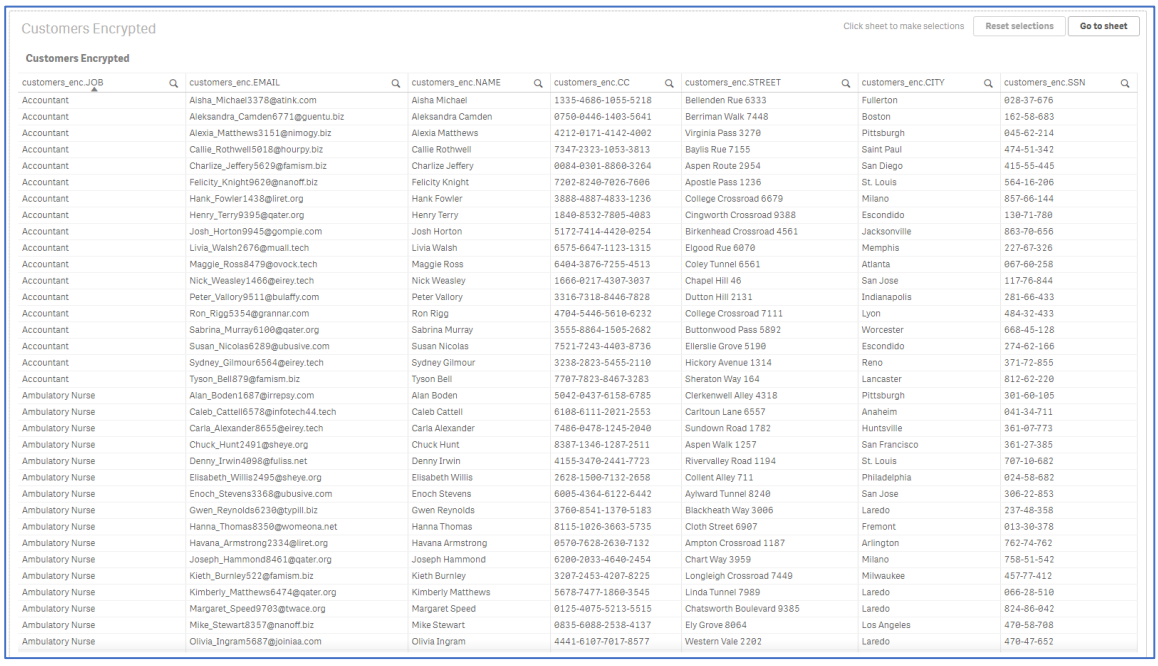
All data migrations, replication, “Lift & Shift”: ETL or ELT operations, native cloud applications and cloud analytics, are fully supported including Format Preserving Encryption (FPE) or Masking of data exported to QVD, CSV or other file formats. Only anonymized data is then stored in the cloud.



Selectively encrypting specific fields before writing to output file using Qlik Replicate

Step 3: Decrypt for authorized Qlik users

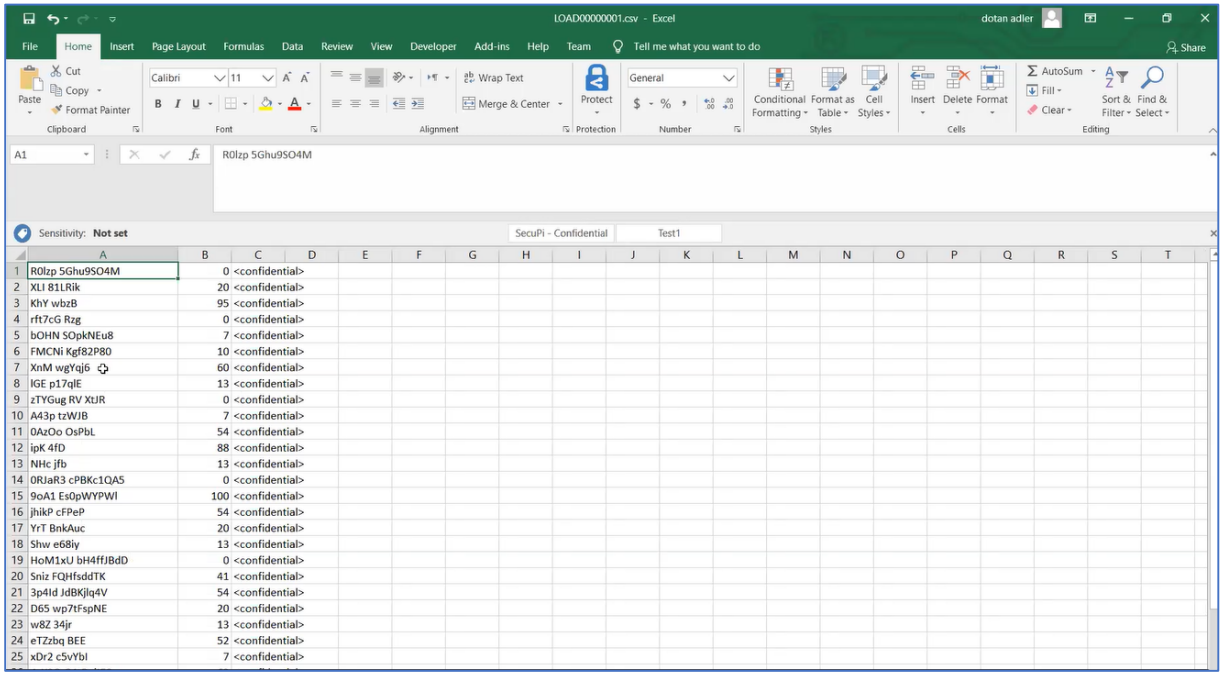
Anonymized data (encrypted Columns) are then decrypted on consumption with the keys to decrypt the selected data columns remaining On-Prem (HYOK).



customers_enc.JOB	customers_enc.EMAIL	customers_enc.NAME	customers_enc.CC	customers_enc.STREET	customers_enc.CITY	customers_enc.SSN
Accountant	Aisha_Michael3378@atink.com	Aisha Michael	1335-4686-1055-5218	Bellenden Rue 6333	Fullerton	028-37-676
Accountant	Aleksandra_Camden6771@guentu.biz	Aleksandra Camden	0750-0446-1403-5641	Berriman Walk 7448	Boston	162-58-683
Accountant	Alexia_Matthews3151@nimogy.biz	Alexia Matthews	4212-0171-4142-4002	Virginia Pass 3270	Pittsburgh	045-62-214
Accountant	Callie_Rothwell5018@hourpy.biz	Callie Rothwell	7347-2323-1053-3813	Baylis Rue 7155	Saint Paul	474-51-342
Accountant	Charlize_Jeffery5629@famism.biz	Charlize Jeffery	0084-0301-8860-3264	Aspen Route 2954	San Diego	415-55-445
Accountant	Felicity_Knight9620@nanoff.biz	Felicity Knight	7202-8240-7026-7606	Apostle Pass 1236	St. Louis	564-16-206
Accountant	Hank_Fowler1438@liret.org	Hank Fowler	3888-4887-4833-1236	College Crossroad 6679	Milano	857-66-144
Accountant	Henry_Terry9395@qater.org	Henry Terry	1840-8532-7805-4083	Cingworth Crossroad 9388	Escondido	130-71-780
Accountant	Josh_Horton9945@gompie.com	Josh Horton	5172-7414-4420-0254	Birkenhead Crossroad 4561	Jacksonville	863-70-656
Accountant	Livia_Walsh2676@muall.tech	Livia Walsh	6575-6647-1123-1315	Elgood Rue 6070	Memphis	227-67-326
Accountant	Maggie_Ross8479@ovock.tech	Maggie Ross	6404-3876-7255-4513	Coley Tunnel 6561	Atlanta	067-60-258
Accountant	Nick_Weasley1466@eirey.tech	Nick Weasley	1666-0217-4307-3037	Chapel Hill 46	San Jose	117-76-844
Accountant	Peter_Vallory9511@bulaffy.com	Peter Vallory	3316-7318-8446-7828	Dutton Hill 2131	Indianapolis	281-66-433
Accountant	Ron_Rigg5354@grannar.com	Ron Rigg	4704-5446-5610-6232	College Crossroad 7111	Lyon	484-32-433
Accountant	Sabrina_Murray6100@qater.org	Sabrina Murray	3555-8864-1505-2682	Buttonwood Pass 5892	Worcester	668-45-128
Accountant	Susan_Nicolas6289@ubusive.com	Susan Nicolas	7521-7243-4403-8736	Ellerslie Grove 5190	Escondido	274-62-166
Accountant	Sydney_Gilmour6564@eirey.tech	Sydney Gilmour	3238-2823-5455-2110	Hickory Avenue 1314	Reno	371-72-855
Accountant	Tyson_Bell879@famism.biz	Tyson Bell	7707-7823-8467-3283	Sheraton Way 164	Lancaster	812-62-220
Ambulatory Nurse	Alan_Boden1687@irrepsy.com	Alan Boden	5042-0437-6158-6785	Clerkenwell Alley 4318	Pittsburgh	301-60-105
Ambulatory Nurse	Caleb_Cattell6578@infotech44.tech	Caleb Cattell	6108-6111-2021-2553	Carltoun Lane 6557	Anaheim	041-34-711
Ambulatory Nurse	Carla_Alexander8655@eirey.tech	Carla Alexander	7486-0478-1245-2040	Sundown Road 1782	Huntsville	361-07-773
Ambulatory Nurse	Chuck_Hunt2491@sheye.org	Chuck Hunt	8387-1346-1287-2511	Aspen Walk 1257	San Francisco	361-27-385
Ambulatory Nurse	Denny_Irwin4098@fuliss.net	Denny Irwin	4155-3470-2441-7723	Rivervalley Road 1194	St. Louis	707-10-682
Ambulatory Nurse	Elisabeth_Willis2495@sheye.org	Elisabeth Willis	2628-1500-7132-2658	Collent Alley 711	Philadelphia	024-58-682
Ambulatory Nurse	Enoch_Stevens3368@ubusive.com	Enoch Stevens	6005-4364-6122-6442	Aylward Tunnel 8240	San Jose	306-22-853
Ambulatory Nurse	Gwen_Reynolds6230@typill.biz	Gwen Reynolds	3760-8541-1370-5183	Blackheath Way 3006	Laredo	237-48-358
Ambulatory Nurse	Hanna_Thomas8350@womeona.net	Hanna Thomas	8115-1026-3663-5735	Cloth Street 6907	Fremont	013-30-378
Ambulatory Nurse	Havana_Armstrong2334@liret.org	Havana Armstrong	0570-7628-2630-7132	Ampton Crossroad 1187	Arlington	762-74-762
Ambulatory Nurse	Joseph_Hammond8461@qater.org	Joseph Hammond	6200-2033-4640-2454	Chart Way 3959	Milano	758-51-542
Ambulatory Nurse	Kieth_Burnley522@famism.biz	Kieth Burnley	3207-2453-4207-8225	Longleigh Crossroad 7449	Milwaukee	457-77-412
Ambulatory Nurse	Kimberly_Matthews6474@qater.org	Kimberly Matthews	5678-7477-1860-3545	Linda Tunnel 7989	Laredo	066-28-510
Ambulatory Nurse	Margaret_Speed9703@ttwace.org	Margaret Speed	0125-4075-5213-5515	Chatsworth Boulevard 9385	Laredo	824-86-042
Ambulatory Nurse	Mike_Stewart8357@nanoff.biz	Mike Stewart	0835-6088-2538-4137	Ely Grove 8064	Los Angeles	470-58-708
Ambulatory Nurse	Olivia_Ingram5687@joiniaa.com	Olivia Ingram	4441-6107-7017-8577	Western Vale 2202	Laredo	470-47-652

Authorized Users see all fields in the clear with transparent Decryption on Consumption

Unauthorized users or unauthorized data extraction or access methods see only Anonymized or Encrypted data. User attempting to download protected data into Excel.



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Name Column in output file (opened in Excel) protected using SecuPi FPE Encryption

Data encryption, decryption, dynamic masking, filtering, geo-fencing or obfuscation operations are all managed by policy from a single central Policy Server. Only authorized users are granted the right to access protected data elements in the clear.

SecuPi is the preferred data security partner for Snowflake and a top tier security solution partner for Microsoft Azure and Amazon AWS. This validates SecuPi's ability to easily solve some of the most challenging data privacy compliance requirements faced by any prospective Cloud Services customer. SecuPi is frequently the enabler of expanded use of Cloud Services and Hosting where sensitive or regulated data is involved and compliance with GDPR, CCPA, HIPAA and more are required.

You can outsource everything but common sense and security

Any large or complex Qlik implementations on Snowflake or other DBaaS platforms involving multiple data sources and/or migrating to the cloud can introduce a lot of risk and be expensive to implement when PII or PHI is involved. SecuPi together with Qlik eliminates most of this risk, freeing Data Analytics teams to analyze data, not spend most of their time designing, testing and implementing essential data security controls.

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