Security

Plan and implement specific security measures to protect the application and the data it manages, especially when you deploy IBM StoredIQ into sensitive environments. IBM StoredIQ keeps your data secure through encryption, security hardening, and auditing.

Federal Information Processing Standard (FIPS)

FIPS is a standard recommended by the National Institute of Standards and Technology (NIST) and the US Federal Government. It ensures certain security standards are met for software or hardware components deployed at US government sites. Enabling FIPS ensures that the SSL/TLS engine that is compliant with the US Government recommendation is used. IBM StoredIQ supports FIPS Level 1.

Secure gateway communication can be enabled without FIPS. If FIPS is enabled, IBM StoredIQ uses FIPS compliant versions of OpenSSL.

Secure communication and encryption of data in motion

In a production environment, you should configure or install certificates on the AppStack to enable HTTPS communication and to enable encryption of data in motion between the browser and the AppStack. You can to this during installation and initial configuration or at any time afterward. For details, see the instructions for configuring certificates.

The gateway handles the communication between the data servers and the application stack. By default, the communication between the gateway, any data servers, and the AppStack is in plain text and is not encrypted. If your enterprise security policy mandates encryption of data in motion, enable secure gateway communication. In this case, secure gateway communication must be configured on all three IBM StoredIQ components. You can enable secure gateway communication during installation and initial configuration or at any time afterward. For details, see “Managing the status of secure gateway communication” on page 54.

IBM StoredIQ then uses stunnel to ensure secure communication between the components. If your environment includes data servers of the type DataServer - Distributed, stunnel can also be used to encrypt the communication between the nodes within the Elasticsearch cluster but not for encrypting the communication between the data server and the Elasticsearch cluster.

To secure the communication between the data server and the Elasticsearch cluster and the communication within the Elasticsearch cluster likewise, you can enable Search Guard. For more information, see “Securing Elasticsearch cluster communication with Search Guard” on page 51. If you don't want to do that but still want to restrict client access to port 9200 on the Elasticsearch nodes, you can set up the firewall accordingly. For more information, see “Restricting access to port 9200 on Elasticsearch nodes” on page 52.

If FIPS is not enabled, the following cipher suites and encryption algorithm are used for data at rest:

LS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256

TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256

You can configure these cipher suites in the configuration files listed in the list of key and certificate files. However, if you run the utilities for enabling stunnel, you might need to make the respective configuration changes again.

Encryption of data at rest

Starting with IBM StoredIQ version 7.6.0.15, the disk volume on which the Elasticsearch indexes are stored is encrypted by default. IBM StoredIQ uses Linux Unified Key Setup (LUKS) for disk encryption. For details about key management, see “Key and certificate management” on page 41.

Optionally, you can encrypt the application data on the IBM StoredIQ application stack. For more information, see “Enabling encryption of IBM StoredIQ AppStack application data” on page 50.

Network isolation

If full-text harvesting and Step-up Analytics actions (cartridges) are applied, Elasticsearch indexes can contain potentially sensitive content. Therefore, you should deploy the Elasticsearch nodes in an isolated location on the network (for example, as an enclave or behind a firewall) that is properly secured according to the sensitivity of the data being harvested. Only the IBM StoredIQ application stack and data servers should be allowed to communicate with the Elasticsearch nodes.

Also, any data servers and the gateway should be deployed in an isolated network location to allow for communication with authorized clients only.

Access control

The following administrative accounts are required. The builder and siqadmin accounts are IBM StoredIQ-specific accounts. For more information about these accounts, see

root and builder accounts on the Elasticsearch cluster nodes

Remote login for root can be disabled. However, local root login is required, either log in as root or use the su command to obtain root permissions temporarily.