MySQL Enterprise Edition includes a set of encryption functions based on the OpenSSL library that expose OpenSSL capabilities at the SQL level. These functions enable Enterprise applications to perform the following operations:

- Implement added data protection using public-key asymmetric cryptography
- Create public and private keys and digital signatures
- Perform asymmetric encryption and decryption
- Use cryptographic hashing for digital signing and data verification and validation

MySQL Enterprise Encryption supports the RSA, DSA, and DH cryptographic algorithms.

MySQL Enterprise Encryption is supplied as a library of loadable functions, from which individual functions can be installed individually.

6.6.1 MySQL Enterprise Encryption Installation

MySQL Enterprise Encryption functions are located in a loadable function library file installed in the plugin directory (the directory named by the `plugin_dir` system variable). The function library base name is `openssl_udf` and the suffix is platform dependent. For example, the file name on Linux or Windows is `openssl_udf.so` or `openssl_udf.dll`, respectively.

To install functions from the library file, use the `CREATE FUNCTION` statement. To load all functions from the library, use this set of statements, adjusting the file name suffix as necessary:

```
CREATE FUNCTION asymmetric_decrypt RETURNS STRING
  SONAME 'openssl_udf.so';
CREATE FUNCTION asymmetric_derive RETURNS STRING
  SONAME 'openssl_udf.so';
CREATE FUNCTION asymmetric_encrypt RETURNS STRING
  SONAME 'openssl_udf.so';
CREATE FUNCTION asymmetric_sign RETURNS STRING
  SONAME 'openssl_udf.so';
CREATE FUNCTION asymmetric_verify RETURNS INTEGER
  SONAME 'openssl_udf.so';
CREATE FUNCTION create_asymmetric_priv_key RETURNS STRING
  SONAME 'openssl_udf.so';
CREATE FUNCTION create_asymmetric_pub_key RETURNS STRING
  SONAME 'openssl_udf.so';
CREATE FUNCTION create_dh_parameters RETURNS STRING
  SONAME 'openssl_udf.so';
CREATE FUNCTION create_digest RETURNS STRING
  SONAME 'openssl_udf.so';
```

Once installed, the functions remain installed across server restarts. To unload the functions, use the `DROP FUNCTION` statement:

```
DROP FUNCTION asymmetric_decrypt;
DROP FUNCTION asymmetric_derive;
DROP FUNCTION asymmetric_encrypt;
DROP FUNCTION asymmetric_sign;
DROP FUNCTION asymmetric_verify;
DROP FUNCTION create_asymmetric_priv_key;
DROP FUNCTION create_asymmetric_pub_key;
DROP FUNCTION create_dh_parameters;
DROP FUNCTION create_digest;
```

In the `CREATE FUNCTION` and `DROP FUNCTION` statements, the function names must be specified in lowercase. This differs from their use at function invocation time, for which you can use any lettercase.