

# Project Midnight

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Project Midnight is an ambitious and fill project to bridge Enthereon Cipher Projects to its peaks. It uses a full set of character symbols cipher key generated and/or user-defined to encrypt/decrypt any string. It is the first in the series to be user-oriented as well as fully symbolic.

## The Problem

Enthereon Cipher Projects, with Project Sunset, faced that the cipher methods derived from simple substitution-based cipher would generally be a weak and would easily be broken. With this, a system that would be the next step needs to be not as simple as a substitution-based cipher, a variation among users should be the key to answer this. Moreover this brings to light the amount of characters that cannot be encrypted with the cipher set, if being limited to visually recognizable symbols.

The new system must implement user-based encryption, first and foremost, this would bring the variability that a good cipher requires. In light of this the system must keep track of users, store their information somewhere and somehow securely. A storage method and site should be secure enough to prevent the leaking of key information.

Control characters characters cannot be visually recognized, while complex symbols are not found in the ASCII table, by thus, a full support of Unicode must be implemented. However, the whole library of Unicode characters is more than a million in total, therefore, a containment method within the system must be reliable enough to process the amount of symbols. The superceding to Project Sunset must solve both this problems.

## The Generational Leap

Project Midnight is designed to be a leap in both discipline and technology of the Enthereon Cipher Projects, it offers user-oriented cipher sets as well as the full symbolic dream. It utilizes a database to keep track of all the information that is used in both generating and using a cipher, from user information to symbols and their equivalents. It is designed to bring a the theoretical engine that handles the user-oriented symbolic crypton technology to life.

Project Midnight keeps user information safe and neatly organized through IDs and usernames, while offering multiple cipher sets per user. Also, it has made possible to

store the vast Unicode codec without any problems with memory or heap/stack overflow or any runtime problems. The amount of variability that Midnight is open for is beyond expectations.

## The Theoretical Engine Implemented

Project Midnight primarily uses a database, through InnoDB database storage engine, powered by MySQL; on this database is stored all the cipher sets of an user. Through mathematical derivation and algorithm, this database can be initialized, and later the user can manually alter the cipher set to make the set more strong and unique. The process of either encrypting/decrypting, initialization and configuration are respectively packed neatly in their own functional algorithm.