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(54) Title: MICROCONTROLLER CONFIGURED FOR EXTERNAL MEMORY DECRYPTION

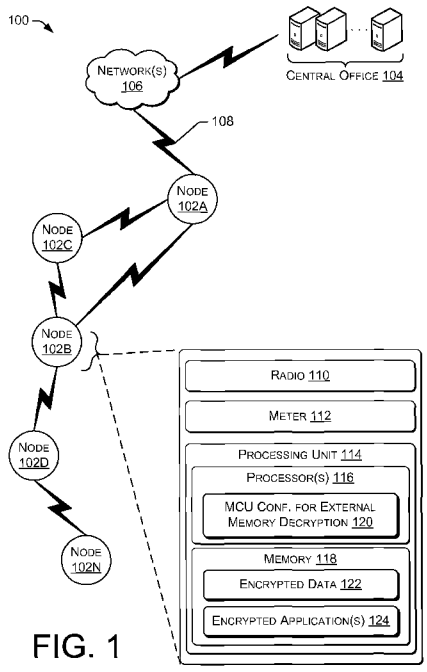

FIG. 1

(57) Abstract: In an advanced metering infrastructure environment, software program statements and/or data may be encrypted. A microcontroller unit may include a first cache configured to store a block of encrypted data obtained from an external memory device. A decryption engine may decrypt the block of encrypted data for storage in a second cache. An address alignment module may be configured to receive input from a program counter and to calculate an offset pointer. The offset pointer may indicate a particular word in the block of decrypted data within the second cache for transmission to an instruction register for use by an application program. An address generator may be configured to receive input from the address alignment module and to indicate a block of data in the external memory device to be loaded into the first cache, to thereby replacing the encrypted data sent to the decryption engine.

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