Provides Encryption on OpenStack Block Storage Resources

**Goal:** Automatically encrypt VM volume. Encryption is transparent to VM, and is a similar concept to self-encrypting drives.

**Steps for block encryption:**
1) Nova API call creates VM image with ephemeral storage specified
2) Instantiate ephemeral storage with data path that includes transparent encryption
3) Launch and run VM
4) Ephemeral volume appears as unencrypted storage device
5) Retrieve volume’s encryption key
6) Transparent encryption maps decrypted version of ephemeral volume
7) Decrypted ephemeral device passed to VM

Nova API call for VM image creation w/ ephemeral storage
Nova

User VM

Virtualization Host

Hypervisor

Key Management Appliance

Key (via KMIP [SSL/TLS connection])

Ephemeral Disk

Transparent Encryption

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5. Retrieve volume’s encryption key.
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= plug-in point

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