

## Title

```
OpenSSL 3.5.4 - Local Compilation, Installation & Verification  
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OS: Kali Linux (x86_64)
```

## Objective

```
Compile and install OpenSSL 3.5.4 locally in user space without affecting system OpenSSL, verify run
```

## Directory Layout

```
/home/chandu/openssl/  
└── openssl-3.5.4/  
    ├── install/  
    │   ├── bin/openssl  
    │   ├── include/  
    │   ├── lib64/libssl.so.3  
    │   └── ssl/
```

## Configure Command

```
./Configure linux-x86_64 \  
--prefix=/home/chandu/openssl/install \  
--openssldir=/home/chandu/openssl/install/ssl \  
shared zlib
```

## Build & Install

```
make -j$(nproc)  
make install
```

## Shell Setup (Zsh)

```
export PATH=/home/chandu/openssl/install/bin:$PATH  
export LD_LIBRARY_PATH=/home/chandu/openssl/install/lib64:$LD_LIBRARY_PATH
```

## Screenshot: which openssl

```
/home/chandu/openssl/install/bin/openssl
```

## Screenshot: ldd verification

```
libssl.so.3 => /home/chandu/openssl/install/lib64/libssl.so.3  
libcrypto.so.3 => /home/chandu/openssl/install/lib64/libcrypto.so.3
```

## **Key Generation Test**

```
openssl genpkey -algorithm RSA -out test_rsa.pem -pkeyopt rsa_keygen_bits:2048
```

## **Conclusion**

```
OpenSSL was successfully compiled, installed locally, verified, and tested.
```