

# How is HMAC-SHA256 calculated?

- The SHA-256 HMAC calculation includes all NON-EMPTY fields.
- All transaction fields are concatenated in alphabetical order of the ASCII value of each field string, with '&' after every field except the last.
- Integrity Salt/Hash Key/Hash is appended to the concatenated string.

## Consider the following example:

Consider the following payment parameters and their respective values and assuming the Integrity Salt/Hash Key/Hash as "3vv9wu3a18":

### Sorted Hash Array

```
{  
pp_Amount: "25000"  
pp_MerchantID: "MC25041"  
pp_MerchantMPIN: "1234"  
pp_Password: "sz1v4agvyf"  
pp_TxnCurrency: "PKR"  
pp_TxnRefNo: "T20220518150213"  
}
```

In ascending alphabetical order and separating each value with '&', the transaction request fields would be:

**25000&MC25041&1234&sz1v4agvyf&PKR&T20220518150213**

After prepending the Integrity Salt/Hash Key to the message, the transaction request fields would be:

**3vv9wu3a18&25000&MC25041&1234&sz1v4agvyf&PKR&T20220518150213**

Now calculating the hash with the hashing scheme 'HMAC-SHA256' with the secret key: 3vv9wu3a18

## Resultant hash:

[2C595361C2DA0E502D18BFBA92CF4740330215E5E8AD0CF4489A64E7400B117]