

## Guide to NZ ENC Permits

ENCs are controlled by permits that determine how long they can be used for and by whom.

The majority of ENC publishers encrypt their ENCs using the International Hydrographic Organization (IHO) S-63 data protection standard. All ENCs covering New Zealand waters published by the New Zealand Hydrographic Authority (NZHA) are protected using the S-63 standard. This includes New Zealand ENCs released and incorporated into the IC-ENC service.

### What is the IHO S-63 standard?

The IHO S-63 standard has two main components: encryption and authentication.

Encryption is a way to make electronic data readable only to those who are authorised to use them, by means of an electronic 'key' called a 'cell permit'. A data server encrypts the data using a mathematical algorithm called a cipher. The recipient's key decrypts or 'unlocks' the data and making it readable again.

Authentication is the process of verifying, that data has not been tampered with in transit between the data server and the recipient.

### How does the IHO S-63 encryption work?

In accordance with the IHO S-63 standard, the NZHA provides encrypted NZ ENCs to the mariner with a unique encrypted key for each ENC cell they have subscribed to. These keys are known as a 'cell permit' and are unique to each IHO S-63 compliant navigation system. Cell permits also contain information about the duration of each subscription. The mariner loads the cell permits into the navigation system and the system then uses the cell permits to unlock subscribed ENC data to permit access and viewing.

Before the cell permits are created, the mariner must supply NZHA with another encrypted key called a 'S-63 user permit'. The user permit is allocated by the system manufacturer and is an encrypted key which is unique to each navigation system sold. This is usually supplied with documentation accompanying the navigation system when purchased. On receipt of a valid S-63 user permit, the user permit can be decrypted, identify the manufacturer of the system and generate encrypted cell permits that will only work on the mariner's navigation system.

### How does the NZ ENC Service work?

At the NZ ENC Service website, customers can obtain NZ ENCs free of charge by registering and subscribing to the Service.

Most importantly, prior to registering with the NZ ENC Service you must check that your navigation system is configured for and compatible with IHO S-63. When subscribing to NZ ENC Service, you

must supply your S-63 user permit (as provided by your navigation system manufacturer) and your contact details. The NZ ENC Service will then process the order and make the cell permits available via download from the personalised account at the website, once you have logged in. The ENC data can also be downloaded from the website. The customer will receive fortnightly notifications of chart updates and will be advised if new cell permits are available.

### **How do I determine if my navigation system is IHO S-63 / NZ ENC compatible?**

To use NZ ENCs, your navigation system will need to be IHO S-63 compatible. If your system is compatible, your system distributor/system manufacturer will be able to provide you with an 'S-63 user permit'. If not, your system is not compatible.

In addition, your navigation system should be configured for use with the 'IHO S-63 Scheme Administrator certificate'. (<https://iho.int/en/enc-data-protection>) This certificate relates to the ENC authentication process – see below. Systems configured for use with non IHO S-63 Scheme Administrator certificates may have difficulty loading NZ ENCs. If this occurs, you should contact the NZHA at [ENCservice@linz.govt.nz](mailto:ENCservice@linz.govt.nz) for assistance.

### **If I have several separate navigation systems, will I need multiple subscriptions?**

A separate S-63 user permit is required for each separate navigation system installation/site. For example, a shipping company wishing to use ENCs on five vessels will require (at least) five ENC subscriptions and therefore at least five S-63 user permits.

### **What happens if I load the wrong cell permits on my navigation system?**

Since ENC cell permits will only work with the navigation system installation with the matching S-63 user permit, it is important for mariners with multiple navigation systems to be able to distinguish systems easily, so that cell permits can be loaded on the correct system. If the wrong user permits are loaded, the navigation system will report an error.

### **When will I receive ENC cell permits?**

On first subscribing to an NZ ENC data pack the NZHA will make the NZ ENC cell permits available for download within two to five working days of receipt of your system information and contact details.

The NZ ENC Service includes a fortnightly update service for the duration of the 12-month subscription. In some instances, the magnitude of the update to an ENC requires that it is published as a new ENC edition. Occasionally a new ENC cell will be added in a particular area to improve coverage or provide significantly greater detail. If a new ENC edition, a new ENC cell has been published within the areas covered by your subscribed NZ ENC pack, then a new cell permit will

automatically be issued to you via download from the NZ ENC Service website. This information can be obtained from your fortnightly ENC Service report, which will include the information about your ENC data packs you have subscribed to.

### **What do I load first, the cell permits or the ENC data?**

To determine whether cell permits or ENC data should be loaded first, you should consult your navigation system manual. Once this has been ascertained, you should remember that NZ ENC cell permits are specific to a particular fortnightly update. It is important to not load new cell permits until you have received or downloaded the corresponding ENC update data. Failure to follow this advice may remove access to previously installed ENC cells. NZ ENC installation instructions are supplied via email at initial subscription and when the subsequent six-monthly base data is released. They can also be accessed any time from the download page: [www.nzencservice.govt.nz/download](http://www.nzencservice.govt.nz/download)

### **What happens when my cell permits are about to expire?**

IHO S-63 compliant navigation systems should issue warnings prior to ENC cell permit expiry to provide sufficient lead time for you to obtain new subscriptions. It is important to renew your subscription before it expires to guarantee continued access to your ENC data. Once cell permits have expired, it will not be possible to load updates.

### **How do I extend the duration of my subscription?**

The NZ ENC Service offers 12-month subscription for every ENC data pack. When you wish to extend your subscription, you will need to login to the NZ ENC Service website and renew it.

### **Can I use NZ ENC Service if I have ENCs from other services installed on my system?**

You can use NZ ENCs if you have ENCs from other services installed. However, your navigation system may behave unpredictably if ENCs with identical file names have been loaded from two or more ENC services. All ENCs covering New Zealand waters are published by the New Zealand Hydrographic Authority. They are included in the NZ ENC Service as well as in a number of services offered by the IC-ENC distribution network (such as AVCS). ENCs covering New Zealand waters will have exactly the same file names, regardless of the ENC service. They will start with 'NZ' and have the same coverage and scale. However, because most ENC services sell ENCs in packs, you may not be aware that your ENC packs contain NZ cells.

If you are intending to use the NZ ENC Service in combination with other ENC services, we recommend that you identify the NZ cells that you will receive as part of your subscription and remove any matching NZ cells from other services from your system. This should be done prior to

loading NZ ENCs. However, before taking this step you should ensure that you have backup copies of your other service's ENC data and cell permits.

### **How does S-63 authentication work?**

The IHO S-63 data authentication process relies on your navigation system having access to a particular 'certificate' which contains a list of S-63 data servers. When you load ENC data (including ENC updates) on to an IHO S-63 compliant navigation system, the system will check that the ENC data is authentic and coded correctly for a particular data server by referring to the certificate. If not, the system will issue a warning that the authentication check has failed.

To use NZ ENCs, a navigation system must have access to the certificate called the 'IHO S-63 Scheme Administrator certificate' (IHO.crt). Some manufacturers supply the 'IHO S-63 Scheme Administrator certificate' with their software or provide a website link to the certificate in their system documentation. If you wish to independently download the IHO S-63 Scheme Administrator (SA) certificate, the URL is: <https://iho.int/en/enc-data-protection>.

### **Why is data authentication important?**

Mariners using authenticated ENCs can navigate safe in the knowledge that their ECDIS or ECS contains ENC information from an authorised data server and is as the data publisher intended.

### **What happens if the S-63 authentication check fails?**

If the S-63 authentication check fails, your navigation system will issue a warning that you will be required to acknowledge. This will occur prior to loading any ENC data (including updates) into the navigation system's internal system ENC (SENC) database. At this stage you can choose to halt the loading process or continue. If the authentication check fails, the NZHA encourages mariners to contact their ENC distributor. However, if you choose to load the ENC data, the warning will not be re-issued because the navigation system will then convert the ENC data into its own proprietary or SENC format. Once loaded into the SENC, the data that failed the authentication check will be undistinguishable from the other ENC data viewable in the navigation system. Adding non-authenticated data to the SENC is potentially dangerous. The decision to do so should only be made after risks are thoroughly assessed as its quality and integrity cannot be assured.