

Getting Started with Skylark RTK



Document ID 8837

Revision 1.0

2022-11-15



Revision History

| Version | Date | Changes since Last Version |
|---------|------------|----------------------------|
| 1.0 | 2022-11-15 | Creation |

Table of Contents

| | |
|--|----------|
| Revision History | 2 |
| Table of Contents | 3 |
| Swift Navigation’s Skylark RTK Corrections Overview | 4 |
| What is NTRIP? | 4 |
| NTRIP Network Components | 4 |
| Configuring your NTRIP Client | 5 |
| What You Need from Swift for Your NTRIP Client | 5 |
| Configuring Your RTK Rover To Use Skylark RTK Corrections | 6 |
| Cellular Modem | 7 |
| NTRIP Client | 7 |

Swift Navigation's Skylark RTK Corrections Overview

This document provides details to assist you with setting up your RTK GNSS receiver to use Swift Navigation's Skylark RTK correction service. As the Skylark RTK correction service uses the "Networked Transport of RTCM via Internet Protocol" (NTRIP) standard, some background and details are provided about what NTRIP is and what makes up a complete NTRIP-based RTK correction service.

What is NTRIP?

To use any RTK correction service, an RTK GNSS receiver must receive the corrections wirelessly from the source of the corrections, typically done either via a radio or the internet. NTRIP is a protocol standard that defines how differential GNSS data in the Radio Technical Commission for Maritime Services (RTCM) format is streamed over the internet.

When you hear of a service supporting NTRIP, it means that the service supports internet-based delivery of RTCM-formatted differential corrections via the NTRIP protocol.

Using NTRIP to deliver corrections via the internet has one very clear advantage that you are not limited by the working range of a radio. All you need is a method of accessing the internet, which is usually via a cellular modem.

NTRIP Network Components

The main components that compose an NTRIP-based correction service include:

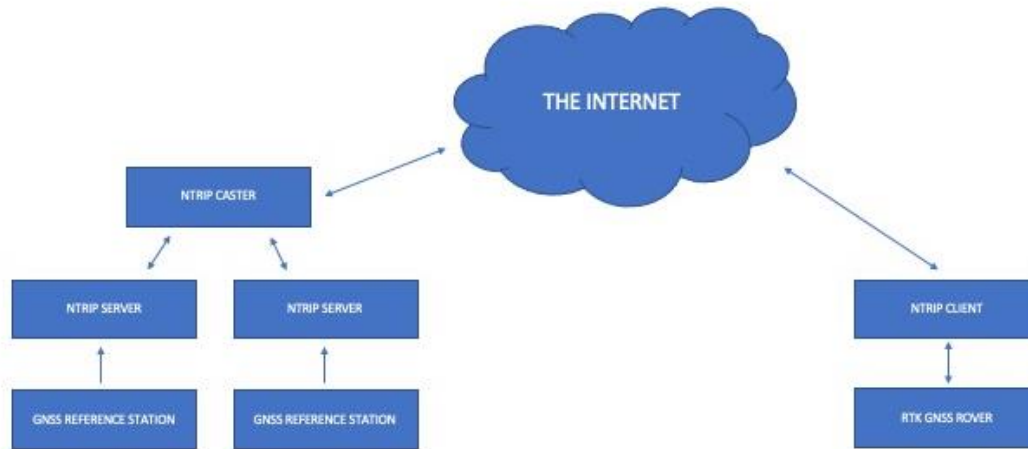
- **An NTRIP Server:** the software that effectively passes the GNSS data from the GNSS reference station to the NTRIP caster. This capability can be built into the GNSS reference station.
- **An NTRIP Caster:** the NTRIP caster is what takes the GNSS data from the NTRIP server and delivers the data to the NTRIP client or end user via the internet using the NTRIP protocol.
- **An NTRIP Client:** the piece of software used by the GNSS rover to connect to the NTRIP caster and receive the required differential corrections. The NTRIP client is also where all the credentials needed to access the correction service (username, password, URL, etc.) are entered by the users themselves.

In addition to the NTRIP-specific aspects of a correction service, the other major components include:

- **A GNSS Reference or Base Station:** the GNSS receiver that provides the required GNSS data from which the corrections are generated. In any typical networked-RTK setup, there are numerous reference stations contributing to the overall correction service.
- **An RTK GNSS Receiver or Rover:** the RTK GNSS receiver in the field and used by the end user in whatever application is needed.
- **A Cellular Modem:** as any NTRIP correction service is internet based, the rover must have access to the internet, typically accomplished by a 4G or 5G cellular data modem.

When combining the above components, the GNSS reference receiver collects GNSS data, and the NTRIP server passes this data to the NTRIP caster. The NTRIP caster then sends GNSS correction details to the RTK GNSS rover via the internet. The RTK GNSS rover then receives the corrections by using a cellular modem to access the internet.

The following diagram shows each of the components of an NTRIP service and their relationship to each other.



Configuring your NTRIP Client

The following sections explain what you need to configure your NTRIP Client in order to use Skylark RTK's correction data.

What You Need from Swift for Your NTRIP Client

When you purchase a Skylark RTK subscription from Swift, you are provided with various pieces of information. The information provided is needed to configure the NTRIP client being used with the RTK GNSS rover.

The information provided include the following:

- **Login Credentials:** standard basic account login details that consist of a username and a password.
- **An NTRIP End Point:** a URL address that points to the service provider's NTRIP caster
- **A Port Number:** a communication end point that identifies the network service.
- **An NTRIP Mount Point:** sometimes known as a "stream", it identifies the type of data that is delivered.

When you create an account through the Swift Portal and sign up for a Swift Skylark correction service subscription, all the required NTRIP details are provided as shown in the screenshot below.

NTRIP Credentials ✕

NTRIP Username
rtk1+klaus-staging 📄

NTRIP Password
..... NEW

NTRIP Passwords are automatically generated and not stored in a retrievable form. In order to view the password, you will have to generate a new password.

Region/Frequency
▼ caster.conus-dev-01.ce.swiftnav.com 📄

Security/Port
▼ 2101 📄

Mountpoint
▼ RTK 📄

Caster URL
caster.conus-dev-01.ce.swiftnav.com:2101/RTK 📄

[Need help?](#)

Configuring Your RTK Rover To Use Skylark RTK Corrections

To connect your RTK-capable GNSS receiver to the Swift RTK NTRIP correction service, you need a cellular modem and an NTRIP client. Both are addressed in the subsections below.

Cellular Modem

As previously mentioned, NTRIP is an internet-based corrections solution. For your rover to receive Swift RTK NTRIP-based corrections, it must access the internet. The most common method of doing so is via a cellular modem with data capabilities. Some RTK GNSS receivers have a cellular modem already built in for this purpose.

NTRIP Client

The NTRIP Client is software used to configure the rover to access the Swift RTK correction service and to provide the necessary credentials to do so. In many cases, the rover may have a native or internal NTRIP client with a graphical interface used to configure the needed settings. In other cases, the NTRIP client may be external, like an phone application. The rover may have an internal NTRIP client, but an external interface and means of communication is needed – often this may be a command-based terminal application.

In each case, what is available and how to use it is very dependent on your exact product. To assist with this, Swift has made available [setup instructions for the more common and popular RTK GNSS receivers](#).

The NTRIP client that your rover uses may require you to enter different credential elements in different ways. This also includes entering the username and password. Examples are provided in the subsections below for clarification.

Example 1: Entering Individual Elements

This scenario is common when a graphical interface is available to configure the NTRIP client. When possible, each of the elements required are entered individually, including:

- Username
- Password
- End point
- Port
- Mount point

Example 2: Total URL

Some NTRIP clients require you to enter the complete URL. This is common with NTRIP clients with a basic interface requiring command line entry. A complete URL looks similar to this:

```
na.l1l2.skylark.swiftnav.com:2101/RTK-MSM5
```

Example 3: Username and Password as Part of the URL

In some cases, an NTRIP client requires you to include your username and password as part of the total NTRIP URL. This is common with NTRIP clients with a basic interface requiring command line entry. A complete URL including username and password looks similar to this:

Username:password@ na.l1l2.skylark.swiftnav.com:2101/RTK-MSM5