



Maximize the Impact of Your Environmental Data

A Guide for Providers

INTRODUCTION

Synoptic Data is a Public Benefit Corporation and Certified B Corp. As a purpose-driven company, our mission is to transform weather data collection and create a comprehensive, real-time source of information that anyone can access. Uniting people with data is our passion!

We're building the largest global real-time data platform, empowering users with timely and accurate information to better understand and mitigate the impacts of weather, water, and other environmental conditions. Synoptic facilitates the efficient exchange of data available from diverse sources to allow government agencies, businesses, individuals, and communities to rapidly and equitably access environmental information for use in their daily activities, operations, and decision making.

Synoptic fosters collaborative relationships to exchange environmental information, which helps data providers sustain their mission and offers data users real-time data for situational awareness, research, or operational decisions. Our data providers control whether they prefer their data to be available to all users (public), limited to specific user communities, or made available for resale. The guidelines outlined in this document provide details and expectations regarding the relationship between Synoptic and the data provider, how data is shared, where data is shared, and how to get started.

WHY OFFER A FREE AND OPEN DATA PLATFORM?

In order to fulfill our mission of providing access to publicly available weather and environmental data for all, Synoptic had to build a platform to allow data providers to share their information. Without a free and open platform, data providers would not be able to reach as many users with critical details that save lives and protect property. Synoptic created its platform to serve the public and bring data together in one place for users throughout the world.



BENEFITS OF SHARING DATA

Deciding to share your environmental network data, whether publicly or privately, is an important decision. Data providers need to understand their options and the benefits before they proceed bringing their network onto the Synoptic platform. More details are offered throughout this document, and these are the key benefits that a partnership between the data provider and Synoptic offer:

Data providers have full control over what data is shared publicly and what they keep private, and with whom data is shared (some providers only want certain organizations to have access to their data)

Create custom dashboards for network monitoring and get alerts when specific thresholds are met using our Dashboards & Notifications Service

Synoptic acts as a data broker, we do not own the data

Data providers always have direct access to their data using any of the Synoptic services/methods available

All data processed into the Synoptic platform is archived, providing a valuable backup source

Synoptic provides quality control by flagging data that is potentially inaccurate; but we do not alter the data itself

Data providers can view their stations alongside other networks within our Data Viewer

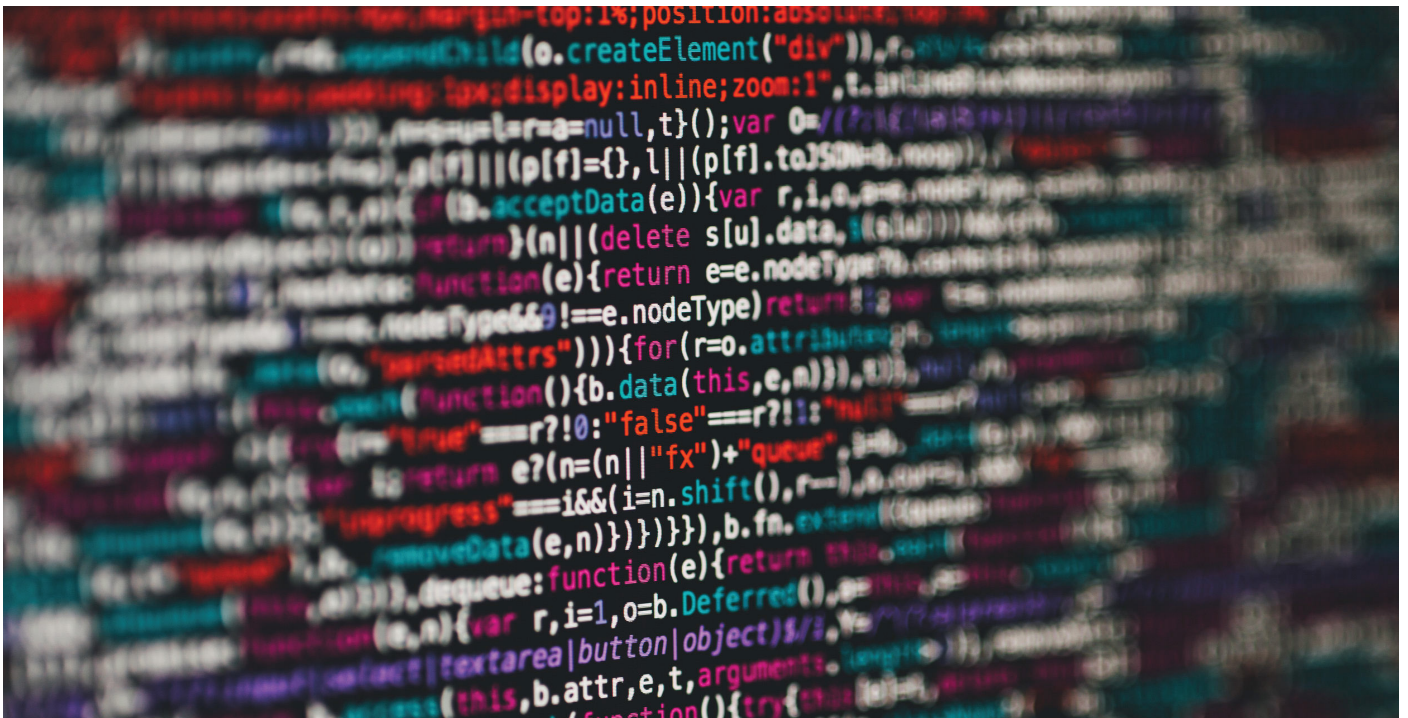
Data providers who choose to publicly share data are providing critical information for meteorologists around the world who are forecasting and delivering warning services that save lives and protect property

WHY WORK WITH SYNOPTIC?

Data providers choose to work with Synoptic because we are a trusted partner, always keeping the integrity of the data as a top priority in the relationship. Synoptic does not own the data in our system, and it is our responsibility to ensure that we treat the data and our data providers with the utmost respect and care. This includes accuracy of raw data collection, quality control, dissemination, and working with the data provider during outages, should they occur.

Synoptic has over 20 years of experience in aggregating weather and environmental information, ensuring our customers and data providers have access to the data they need, when they need it. As a Public Benefit Corporation, Synoptic is purpose-driven, focusing on people and the planet first, and profits second. Our mission is to provide easy access to data for all, including sharing any publicly available data in our system with all users through our online Data Viewer tool.

In addition to our experience, data providers choose Synoptic for our comprehensive data coverage, quality control, low latency, value-added services, dedicated customer support, and a 99.99% uptime of our API. We're reliable, flexible, and easy to work with, and data providers trust that they and their data will receive the respect and attention they deserve.



WHAT IS THE COST TO ADD MY NETWORK TO THE SYNOPTIC PLATFORM?

For data providers who are sharing their real-time data publicly using well-established data formats (e.g., CSV, JSON, other standard meteorological formats), and can transmit their data using commonly-utilized data transfer protocols, there is no cost to add your network to the Synoptic platform. Most of our data providers fall into this category. There are only a few scenarios where Synoptic needs to charge for ingesting the data, and this is done simply to cover our costs. Examples include: 1. if Synoptic has to incur significant costs to collect or configure data, or 2. if we are ingesting the data for resale. In these types of instances, our team has to spend additional time, cost, and resources to bring the network onto the platform. 3. If an extensive backfill is required or if there is custom data aggregation that only benefits the data provider, Synoptic reserves the right to charge for these services.

HOW DO I PROVIDE DATA TO SYNOPTIC?

If you are interested in publicly sharing data from your personal weather station or a network, follow the procedure below that best matches your configuration. This will allow your real-time observation data to be available through the Synoptic platform.

Personal weather station(s)

Synoptic can most easily access personal weather stations if they are registered as part of the Citizen Weather Observing Program (CWOP). The National Weather Service El Paso, Texas, has put together very useful guides on how to select CWOP-compatible weather station equipment, site the equipment, and configure hardware and software so that the data are transmitted to the CWOP system. Once the real-time data are in the CWOP system, and the call-sign of the station and associated metadata are available, Synoptic has access to it with no additional work required.

If you have enabled a weather station in CWOP, and can see the data in the CWOP system but not in Synoptic, please contact us and we can investigate if there are any issues with getting the real-time data.

Multiple weather stations, mesonets, or larger data networks

While data can be shared in many different ways, it's best to simplify the data transmission process as much as possible. Start by sending Synoptic basic information about your assets and which transfer method(s) (see below) works best for your system. If your preferred method isn't listed below that doesn't mean you can't share data or have to change anything on your end. Synoptic will work with you to discuss and provide other methods to get your real-time observations flowing.

In order to add assets to the Synoptic platform, the following minimum metadata is required:

1) Station Name

- Abbreviated and/or full name (ex. KHOU - Houston, Houston Hobby Airport)

2) Geographic Coordinates

- Latitude and Longitude
- Elevation above sea level

3) Optional Information

- Additional sensor metadata, such as brand or height above ground

NOTE: We will attempt to use station identifiers you define as long as they don't conflict with one of the other thousands of stations in our databases (to check our inventory yourself, use our Metadata Explorer tool).

We also need to know how the data are reported:

1) Variable Types

2) Units

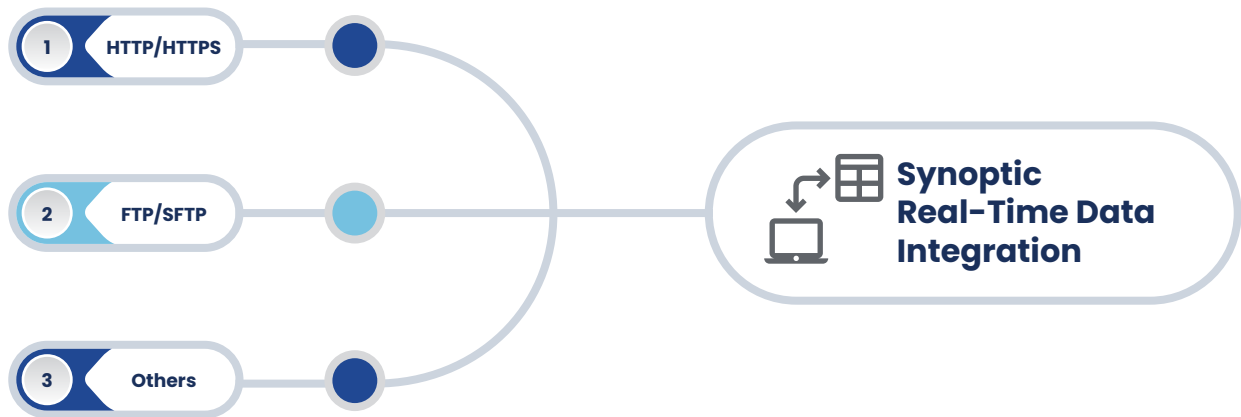
3) Reporting and Transmission Frequencies

- The interval the station records observations (e.g., one observation every 5 minutes, or hourly, or some other routine reporting interval).
- If the station reporting is "event-based" instead of routine intervals (e.g., a precipitation gauge that only reports frequently if precipitation is sensed).
- Some weather stations will transmit data less frequently than they report in order to save power and communications costs (e.g., station reports data every 5 minutes but only sends that data once an hour). If this is the case, knowing this information will help our team craft our data ingest protocols.

Types of transfer methods:

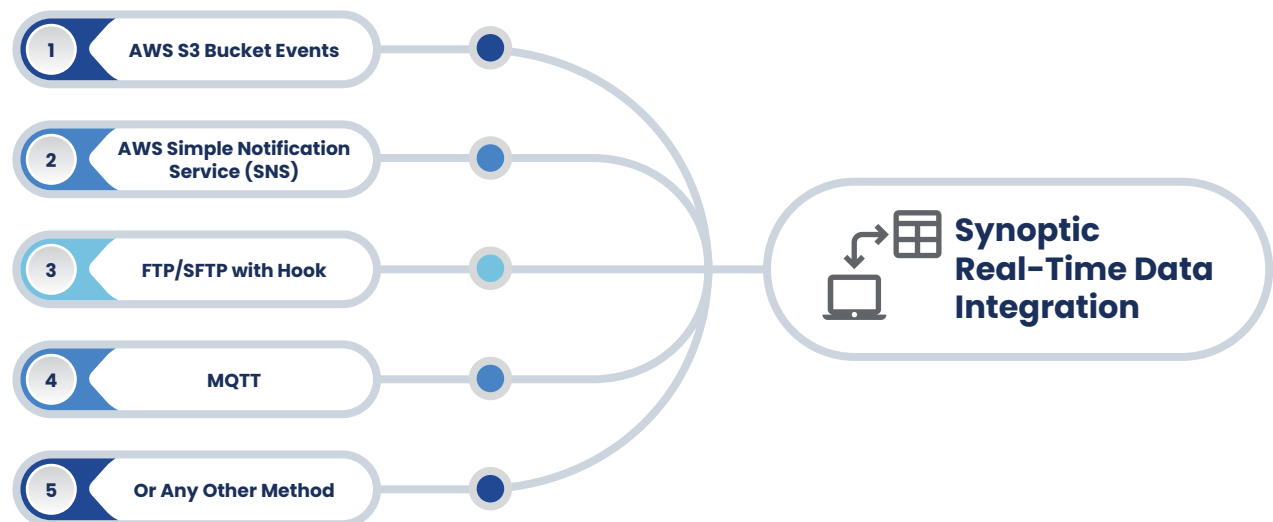
1. Standard Data Pull Protocols

Synoptic can develop scheduled pull mechanisms that query real-time data from accessible data repositories (HTTP, HTTPS, FTP, SFTP, etc.) that your organization might host or maintain. Synoptic can access the data files themselves, the output of developed API services, or other forms of data depending on what your organization may prefer.



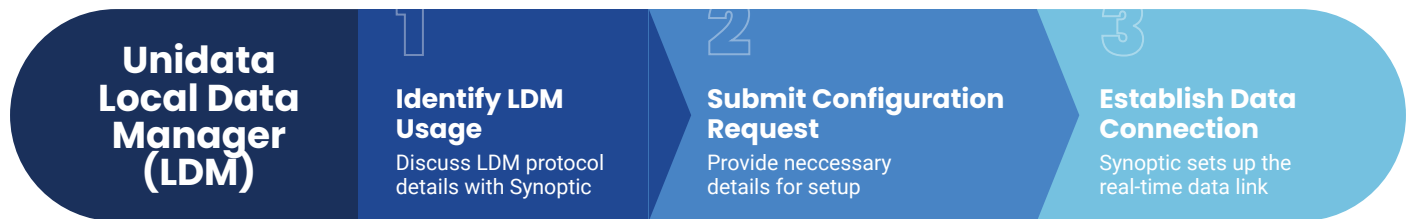
2. Standard Data Push Protocols

This method is used for organizations that prefer to send the real-time data to Synoptic. Synoptic utilizes Amazon Simple Storage Service (S3 Bucket) containers, and we can work with providers to set up a space to send data files using standard Amazon S3 Bucket connection and push approaches. Additionally, we have systems that can support SFTP/SCP approaches with user key authentication, and if required, standard FTP handling as well. To utilize one of these methods, Synoptic will need to create an account for you on one of the ingest servers.



3. Unidata Local Data Manager (LDM)

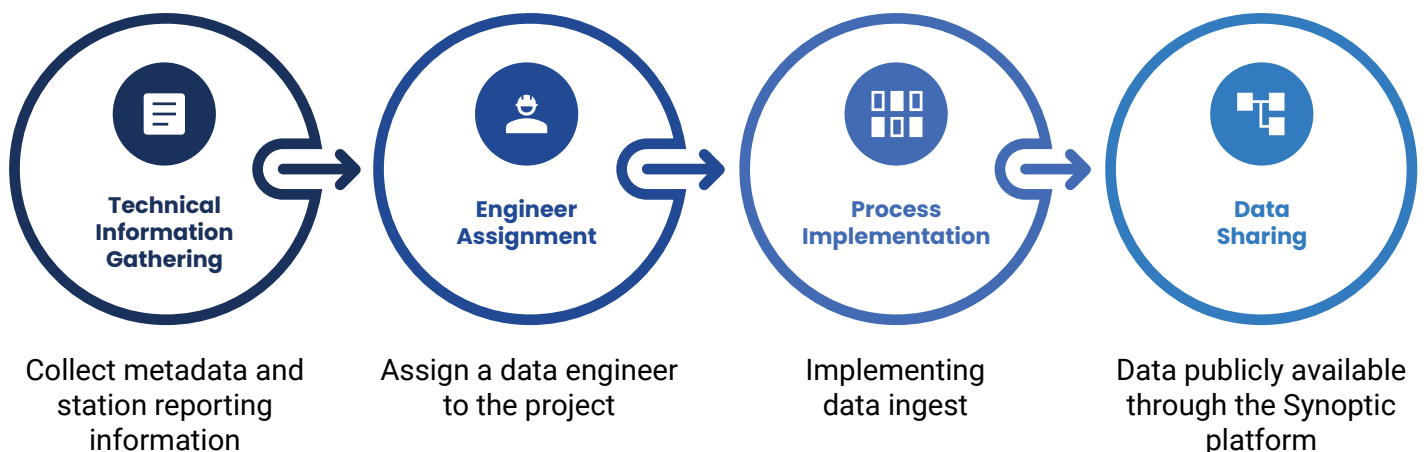
Synoptic also operates a system that runs Unidata's Local Data Manager (LDM) software, which is a software package used by entities in the atmospheric sciences to transmit data files. If your systems utilize LDM as a dissemination protocol, our team can work with you to establish the necessary configuration request and allow entries to establish a real-time data connection.



HOW LONG DOES THE PROCESS TAKE?

Synoptic's process for ingesting and sharing public (or restricted) data involves doing some basic coordination as described above to determine what the technical solution should look like, and then one of our ingest data engineers will be directly assigned to implement a robust and efficient ingest process, customized to your data source, and we will complete the ingest.

Depending on a number of factors, such as the size of the network, number of variables, and station type, this process can be completed in less than 30 days.



Data ingest process overview

WILL I HAVE ACCESS TO MY DATA?

Yes, as a data provider you always have access to your data and can make requests at any time for raw data, historical, quality control flags, and any other information from your station or network in our Data Viewer system. This can be done through the Weather API or through other methods, such as our Data Download tool or other interactive data access tools, where we can adjust/remove the limits for data providers. In other words, data providers would not have the same restrictions to their data as the public.

We will also indefinitely archive your data, perform automated quality control, and if measured, we will compute integrated and consistent precipitation representations for all of your precipitation measurements.



WHO ELSE WILL HAVE ACCESS TO MY DATA?

By providing data to Synoptic, it can be made globally accessible to the public via our data applications (such as the Data Viewer and Data Download tools) as well as accessible to thousands of users across academia, government, and private enterprise via our Weather API data services. If requested, we can also distribute your data in real time to NOAA via MADIS (as well as other options like NCEP), where it can be accessed for broader usage purposes.

The decision to share data publicly, restrict data sharing, or keep it fully private is the decision of the data provider. Synoptic will honor the decision of the data provider.

HOW IS MY DATA SHARED AND ACCESSED BY OTHERS?

Your data is only accessed by others if you agree to share it publicly. Below are the guidelines followed for providing your station or network data to others.

Publicly available data

If you are sharing your data publicly, Synoptic will make it available in the following ways:

1. Data Viewer - a publicly available website with a subset of variables
2. Data Download tool - users can access up to 3 days of data for free, with 3 requests of data per day. Data downloads are only available for a single station at a time.

Restricted or private data

For restricted or private networks, Synoptic will only make the data available to the data provider through our Weather API services.

ADDITIONAL SERVICES FROM SYNOPTIC

Synoptic has a suite of tools for assisting data providers in operating and understanding their data and networks. These include customizable dashboards and notification tools with SMS and email alerts, as well as value-added services for our Weather API. Links to these services are provided below. Once we have completed ingesting your data, we can arrange for members of your organization to trial these features to see if they are a good fit, or have one of our experts demonstrate the tools for a more in-depth conversation of how they can benefit your organization.

Data Viewer Dashboards & Notifications

Data Engineering

Value-added Services

National Mesonet Program

Data Aggregation

WIS 2.0 Services

Weather API

NEXT STEPS / GET STARTED

The next step to move forward on ingesting your data will be to gather the information outlined in above in the “How do I provide data to Synoptic?” section, and contact us at service@synopticdata.com to begin collaborating with our team of experts. We can coordinate the details via email, or schedule a call(s) to further engage in the planning and implementation process.

We encourage you to create an account as well, which will make it easier for you to access and manage your settings and information. Sign up for an account at <https://customer.synopticdata.com>.

We look forward to working with you!

LEARN MORE ABOUT SYNOPTIC

Visit our website to learn more about our products and services, and explore our Data Viewer platform where you can view global observations:



Website QR



Data Viewer QR

HOW TO REACH US

Product demos and pricing: sales@synopticdata.com
For customer support: support@synopticdata.com

CONNECT WITH US

