

SkySweep Technologies

Global Solutions for High Speed
HF/VHF/UHF DATA RADIO



SkySweep Data Radio System

Military

System examples

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*„Are you searching for a high speed Military DATA RADIO solution...?
...or a special data application?“*

SkySweep Technologies can offer not only a simple data radio which are offered by many vendors without proper customer support. SkySweep can provide even more: unique high data rate and a high coverage data radio systems.

Each of the SkySweep DATA RADIO variants offers

- ➔ **Embedded Windows™ computer**
- ➔ **Unique software applications**
- ➔ **High speed modems**
- ➔ **Standard Protocols**
- ➔ **Transceiver**
- ➔ **All of these in one high integrated data radio device. No need of expensive computers or modems!**



Normally there is one of the four possible basic situations:

1. No existing radio system => choose SkySweep Data Radios.
2. Existing voice radio system => SkySweep will provide add on high speed Data Radios.
3. Existing voice radios which need data solutions => SkySweep will provide the SkyCR-1 controller unit for data.
4. No existing secure voice / no backup-voice / no secure data solutions => choose SkySweep Data Radios for secure data and voice.

What is your basic situation?

„Learn more about the many capabilities of the SkySweep Data Radio system. Build up your secure HF/VHF/UHF Military DATA RADIO network now. The possibilities will inspire you.“



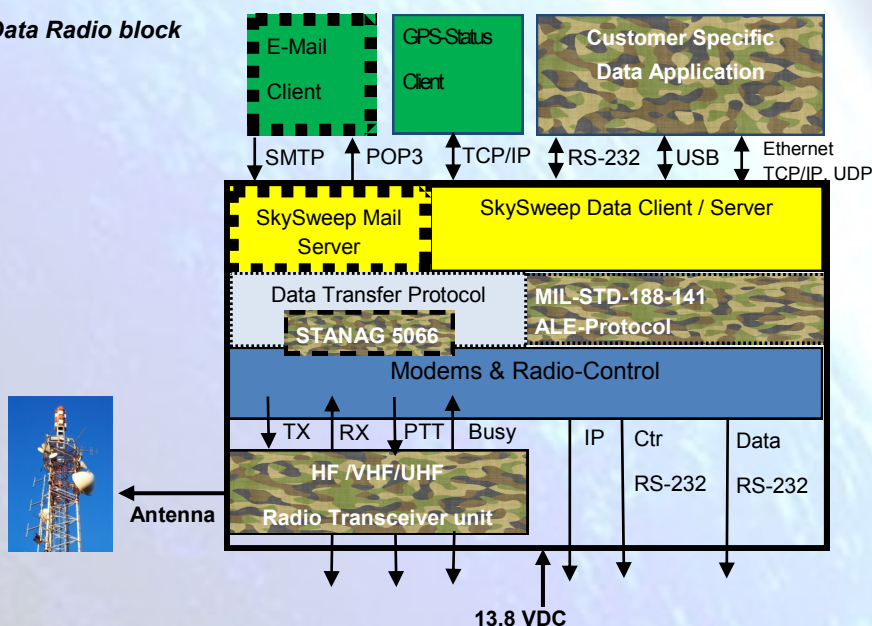
A simplified topview block diagram of a **SkySweep Data Radio** supporting one high speed data channel is shown below. SkySweep Data Radio consists of a Windows™ pc controller unit, system software, modems and a radio transceiver.

The **SkySweep Data Radio** provides several flexible and standardized interfaces.

The SkySweep Data Radio system provides several parallel transparent IP or RS-232 connections.

The system server or command center can have IP/RS-232 connections to several devices through one base station at the same time. It is very easy to install: Just connect the cables and start to operate.

SkySweep Data Radio block diagram:



„What are your requirements? Let's define your Data Radio system now.“

„In today's world a secure and independent reliable Data Radio network is valuable.“

The SkySweep Data Radio system is state-of-the-art OFDM modem based solution for high speed (up to 100 kbit/s) HF/VHF/UHF radio data communications.

Its main applications are: IP or RS-232 based data connection services, GPS based tracking, E-Mail, video, instant messaging (chat), and encrypted secure voice for HF/VHF/UHF (*). The contents of a product delivery may range from a software only delivery to complete customer specific turn-key system deliveries. (*Video, instant messaging (chat), secure voice: available in 2012)

The SkySweep Data Radio system adapts as well to a small few local stationary or mobile stations network as to systems of hundreds of stations.

The SkySweep Data Radio system can also be used with existing voice communications networks such as analog HF/ VHF/ UHF or digital (TETRA, P25, DMR, dPMR, TETRAPOL, etc) networks.

Why to choose a SkySweep Data Radio system?

One reason of many: Take data load away from voice systems.

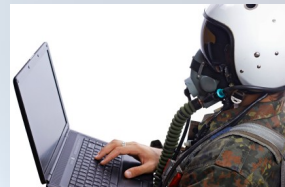
Most PMR radio systems are optimised for voice but typically don't have much extra capacity reserved for data. This means that, when the amount of data in the net increases, the quality of voice service decreases. Typically current voice systems don't offer any solutions for advanced state-of-the-art highspeed data or mobile data transmission.

The SkySweep Data Radio system and SkySweep application interfaces are based on international standards.

Additionally the SkySweep system is compatible with NATO communication systems and provides encrypted and secure transmissions. The SkySweep Data Radio HF-system is STANAG 5066 compliant. Customer's own applications and existing system interfaces can connect to these well known standards without any problems. This flexibility offers very cost efficient possibilities.

Just two examples of the system key benefits :

- **Cost efficient system.** The system is based on the IP network architecture and high coverage base stations. The SkySweep Data Radio can be used to run its own and customer specific applications => no extra computer is needed for applications.



- **Low power consumption.** The mobile and Base Station transmitters are switched on only, when there is something to send. The system can be powered independently by solar energy or a very small fuel cell. Long battery based operating times are ideal for emergency systems, etc. There are no control channels needing continuous transmit power.

The SkySweep Data Radio system provides high speed and very cost efficient data communication on VHF/UHF frequency bands. It is also possible to extend the coverage with SkySweep HF Data Radios.

The SkySweep Data Radio has different variants for:

- **VHF or UHF** for medium coverage with high data rate
- **or HF** for high coverage over long distances with a medium data rate
- **Frequency channel bandwidth**
- **System features**

The SkySweep Data Radio system can combine the benefits of VHF/UHF Data Radio systems to the benefits of HF Data Radio systems.

HF Data Radio system

Military HF DATA system example

The **SkySweep Data Radio system** provides a state-of-the-art **SkyOFDM** HF modem up to 9.6 kbit/s (net) with ultimate performance on the HF channel. The **SkySweep HF system** is an ALE (Automatic Link Establishment) compliant HF data system. Secure and encrypted communication can be based on a fixed channel or on optimum channel search with ALE.

There are typically two main HF system topologies based on the **SkySweep Data Radio system**:

- 1) **Base Station based systems.** These systems are typically based on one or few headquarters communicating with mobile units through HF base stations.
- 2) **Point-to-multipoint systems.** These systems are typically based on direct communication between local stationary or mobile HF stations.

The system can comprise **SkySweep Mobile Stations, SkySweep Base Stations and Servers.**

A SkySweep TRX HF Base Station consists of one Data Radio unit.

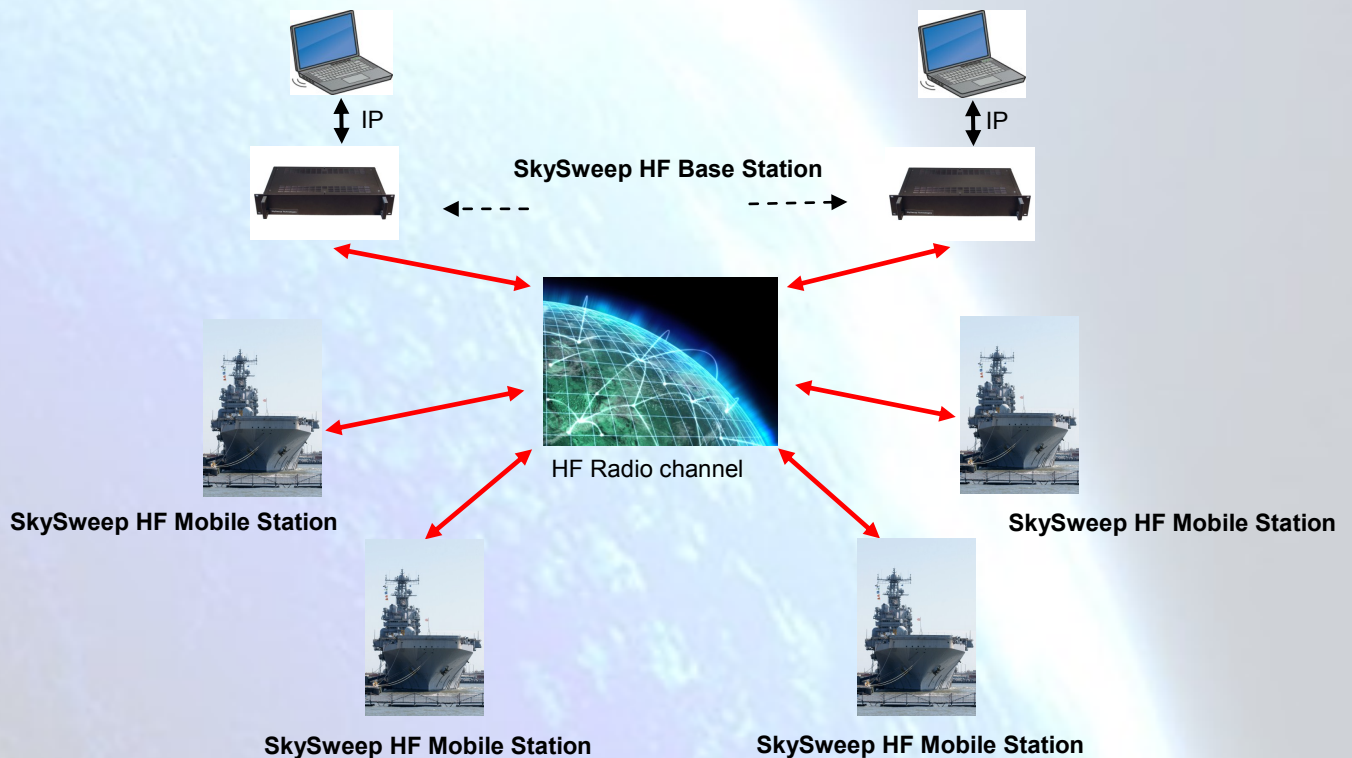
A SkySweep Mobile Station can be based on a SkySweep Data Radio or SkyCR-1 controller unit + customer radio depending on the case.

Example: The system can comprise **SkySweep HF/VHF/UHF Data Radio variants, SkyCR-1 controller unit** for local stationary or mobile station use with existing (*) HF-radios or combination of all of these. The SkySweep Data Radio HF-system is STANAG 5066 compliant.

* Compatible HF-radios and systems on request.

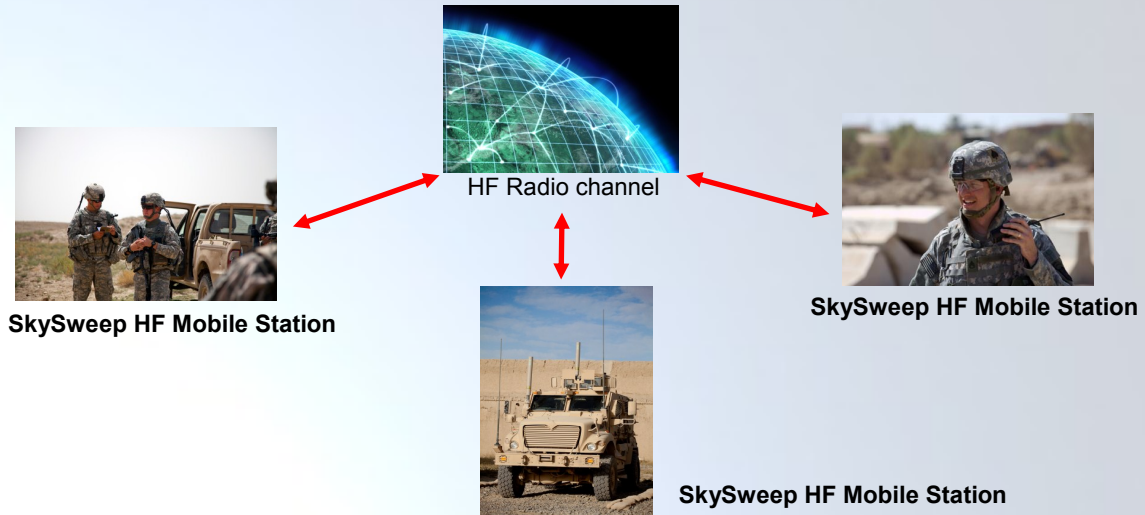
Long Range Base Station based HF systems

In this setup the dispatcher computers are communicating with mobile stations through **SkySweep HF Base Stations**. All base stations are able to communicate with all mobile stations in the system. The system example is shown in the picture below.



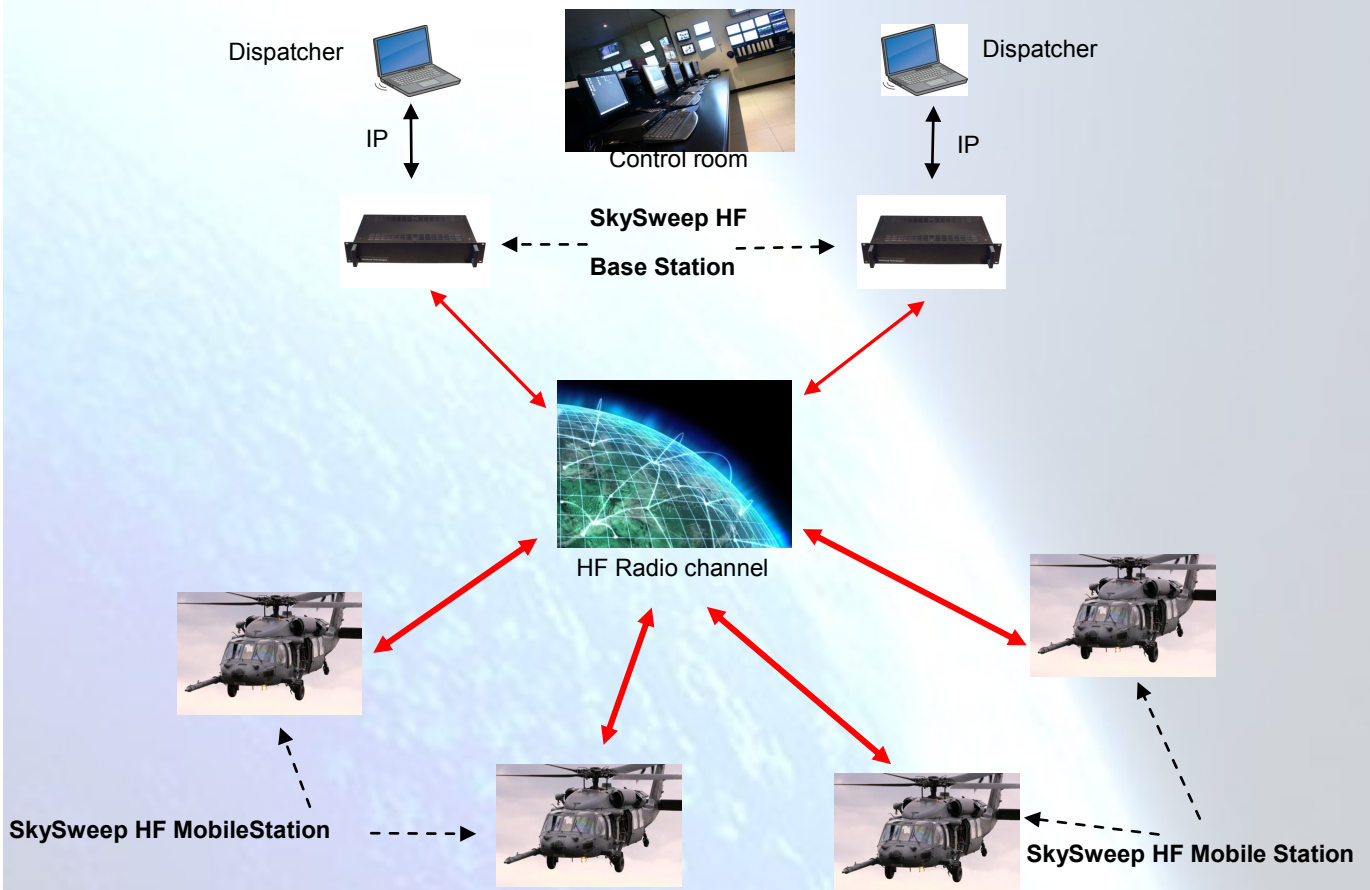
Long Range Point-to-multipoint HF systems

In this setup the mobile stations are communicating with other mobile stations without base stations. The system example is shown below.



Base Station based HF systems example for Long Range Telemetry

In this setup the dispatcher computers are communicating with world wide located stationary power and pump stations which generate telemetry data. The data is transmitted through **SkySweep HF Base Stations**. All base stations are able to communicate with all stations in the system. The system example is shown in the picture below.



SkySweep HF Mobile Stations = SkyDR-1HRM Data Radio + Display:



VHF/ UHF DATA system

System examples

The **SkySweep Data Radio system** provides high speed and very cost efficient encrypted secure data communication on VHF/ UHF bands. A state-of-the-art **SkyOFDM modem** (up to 100 kbit/s) and many applications are provided. There are typically two main VHF/UHF system topologies based on the **SkySweep Data Radio system**:

1. **Base Station based systems.** These systems are typically based on a dispatcher and servers communicating with local stationary or mobile units through VHF/UHF base stations.
2. **Point-to-multipoint systems.** These systems are typically based on direct communication between local stationary or mobile stations.

The system can comprise SkySweep VHF/UHF Mobile Stations, Base Stations and Servers.

- One SkySweep Base Station consists of one Data Radio unit.
- An SkySweep Base Station can also consists of SkyMRX units.

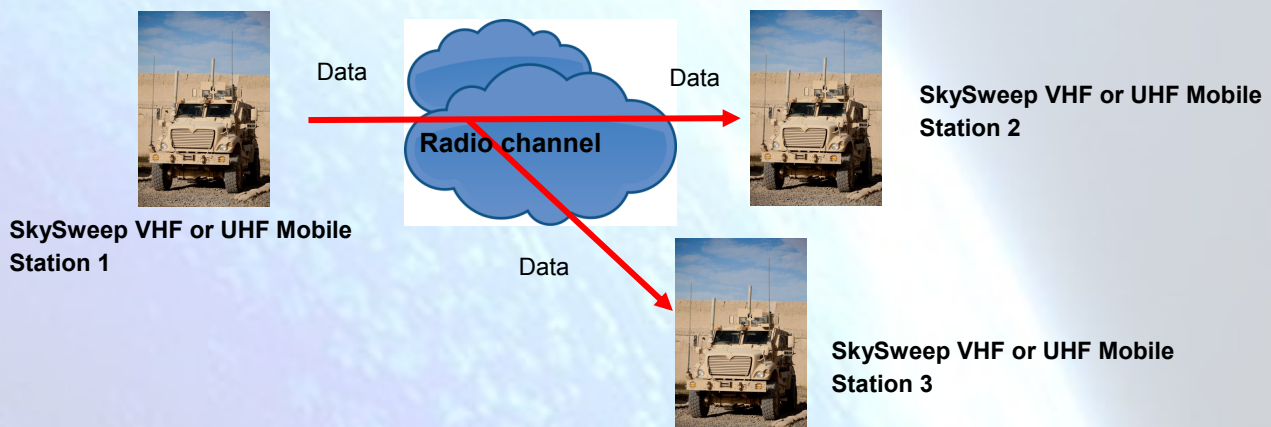
The MRX (MultiChannelReceiver) receives signals which are transmitted from SkySweep VHF/UHF Data Radio Mobile Stations. MRX Base Stations are capable to combine and handle huge data load uplinks from the system participants.



MRX rack installation

Point-to-multipoint VHF/UHF systems

In this setup SkySweep VHF/UHF Mobile Station units are communicating with other SkySweep VHF/UHF Mobile Stations without base stations. The system example is shown in the picture below.

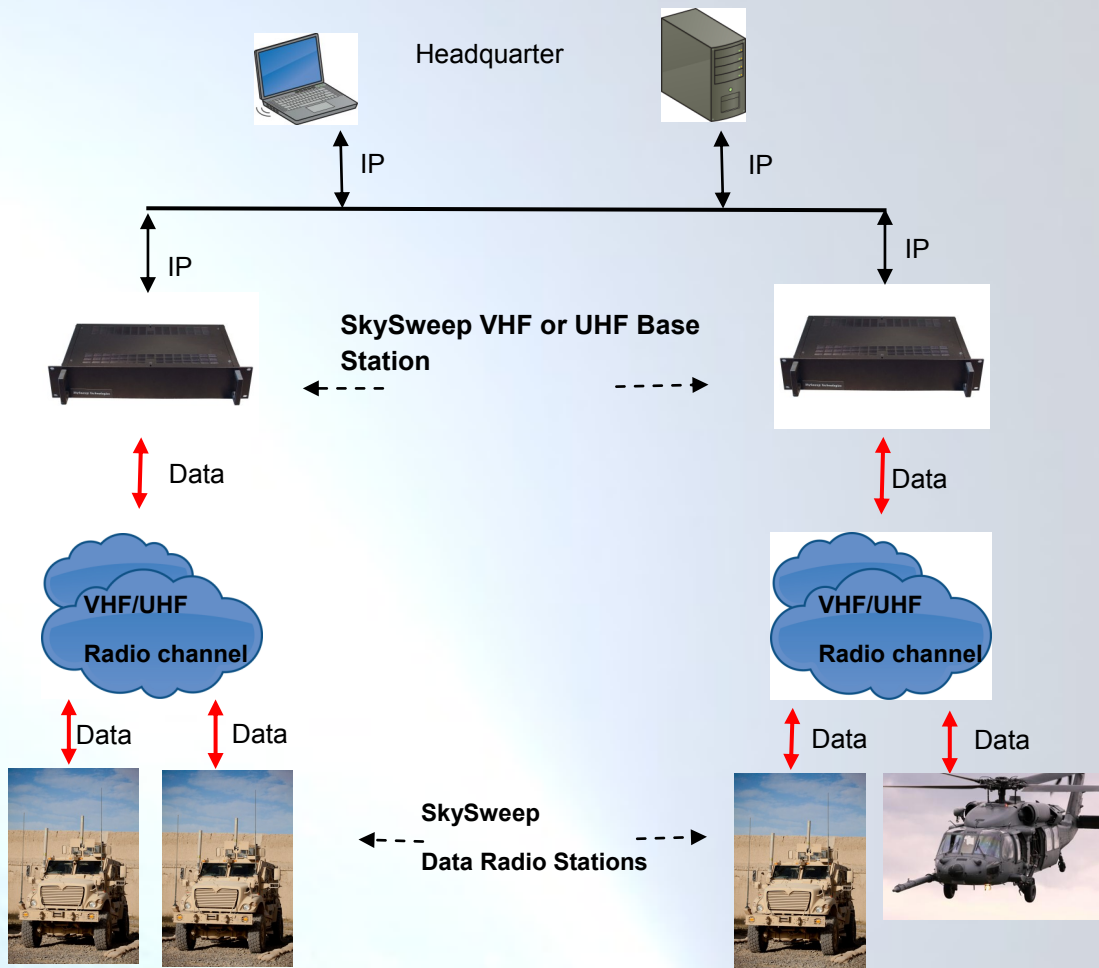


SkySweep VHF/UHF Mobile Stations = SkyDR-1V/U RM Data Radio + Display:

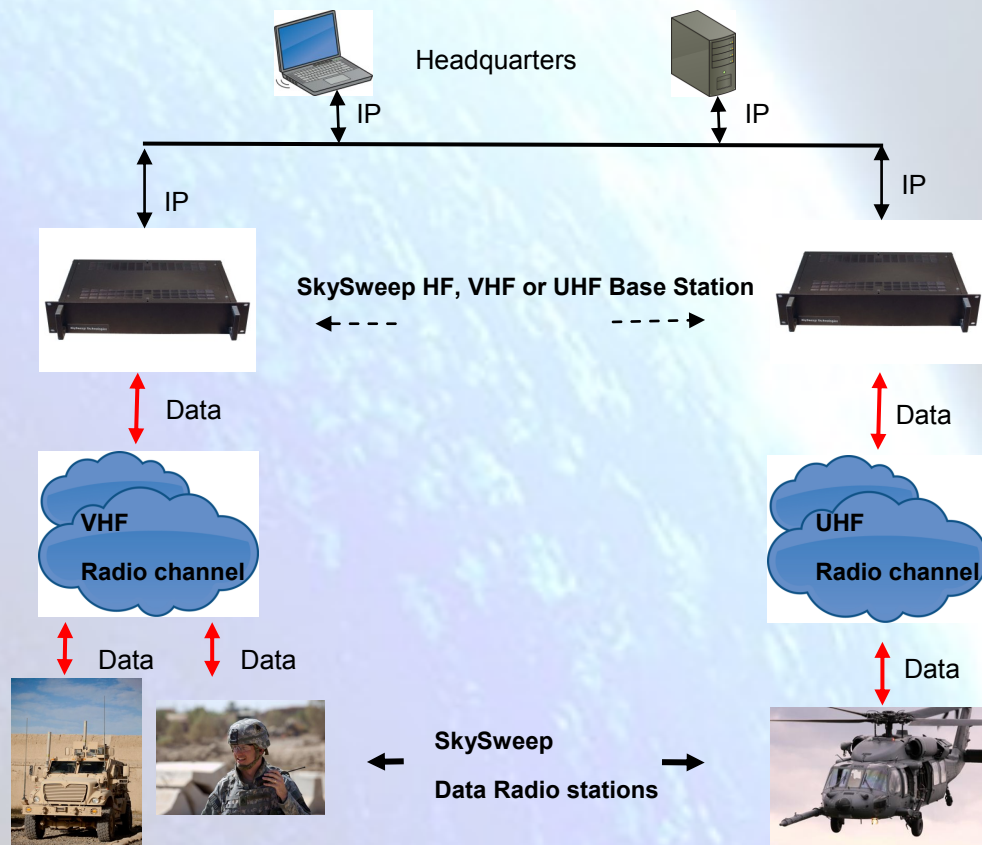


Base Station based VHF/UHF systems

In this setup the SkySweep VHF/UHF Mobile stations are communicating through base stations with servers and desktops. The system supports Base Station handover. The system example is shown in the picture below.



System example:

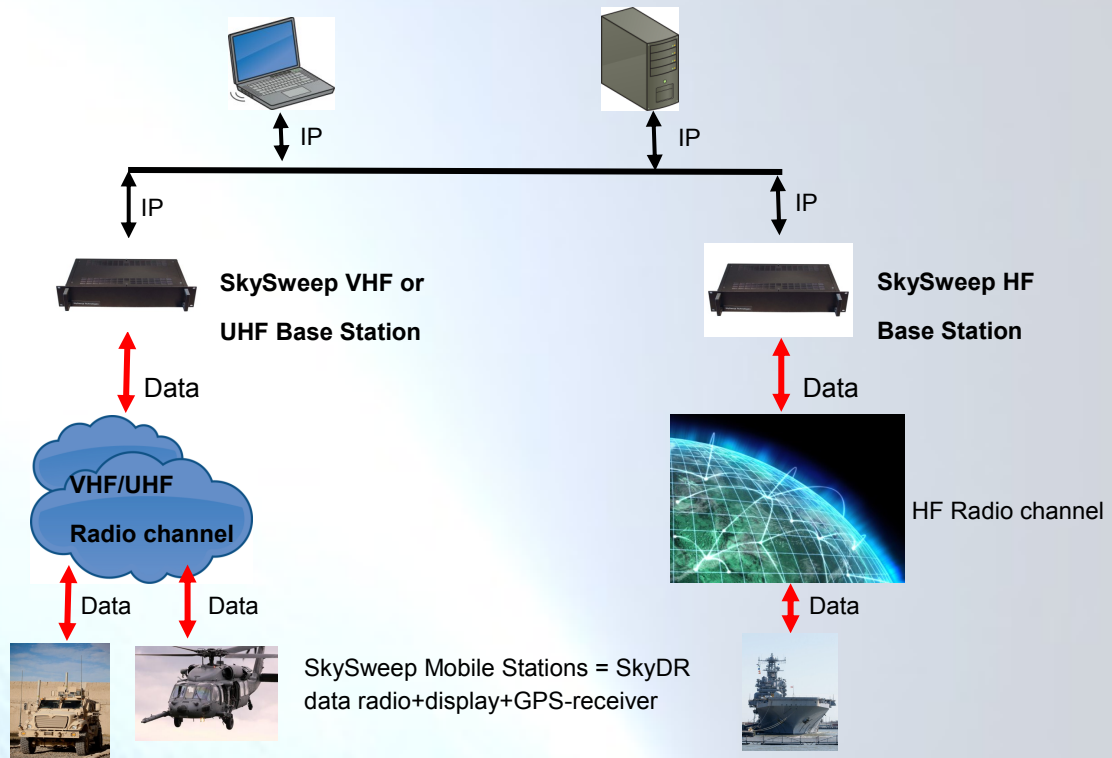


HF / VHF / UHF combined system

HF / VHF / UHF combined system example

The **SkySweep Data Radio system** provides a very cost effective high speed encrypted secure data solution to HF/ VHF/ UHF systems. In many cases there is a requirement for high data rate and high coverage in the same system. In those cases a very efficient solution is to combine the benefits of VHF/UHF systems (high data rate up to 100 kbit/s) to the benefits of HF systems (high coverage). **The same applications can be used both on VHF/ UHF and HF.**

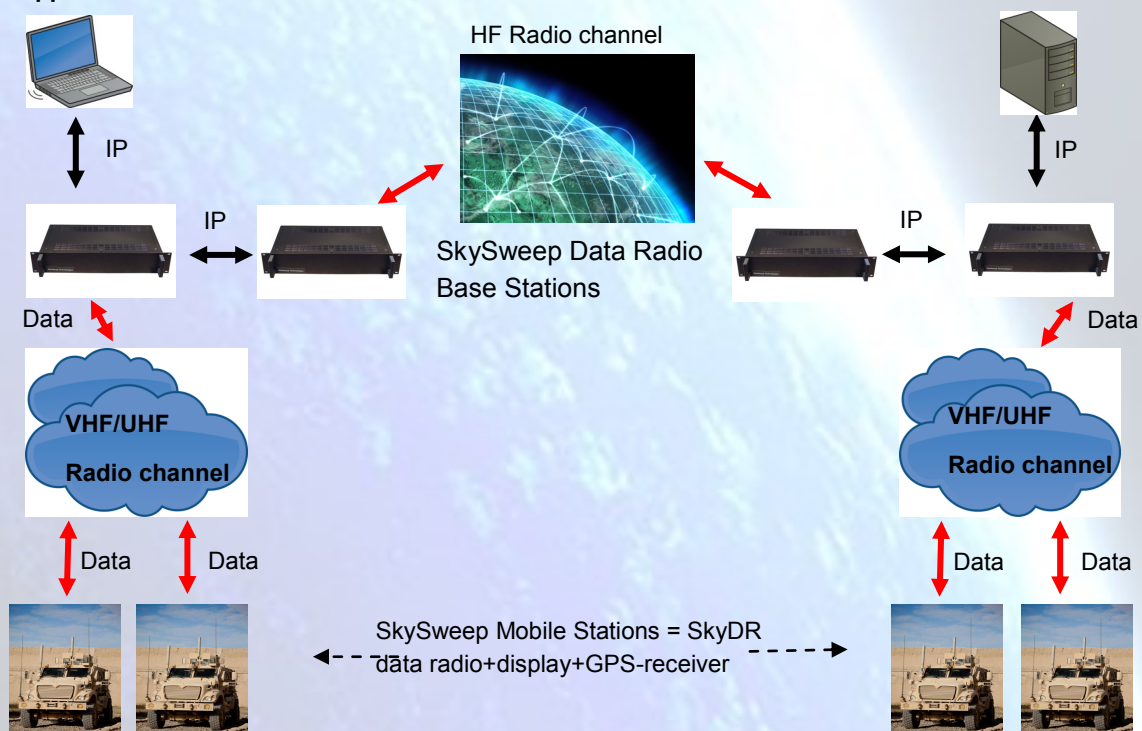
In many systems also the core network (between base stations) needs to be based on radio connections instead of normal fixed connections. Below is the typical setup of combined an HF and VHF/UHF data system.



Radio based core network

In the picture below a system connecting high speed VHF base station zones are connected with a HF radio connection. The HF radio connection can also be used as backup to the primary fixed IP connection.

The same applications can be used both on VHF/ UHF and HF.



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