IFSS architecture.

IFSS (Internet File Streaming System) is a cloud based electronic files delivery web service. The primary objective of the service is to deliver files from one user to another in a way that is fast and secure.

Users invoke the functionality of the IFSS cloud through a specially designed client applications, known as "IFSS clients". They are available for Windows PC (XP/Vista/7/8) and Windows Mobile operating systems.
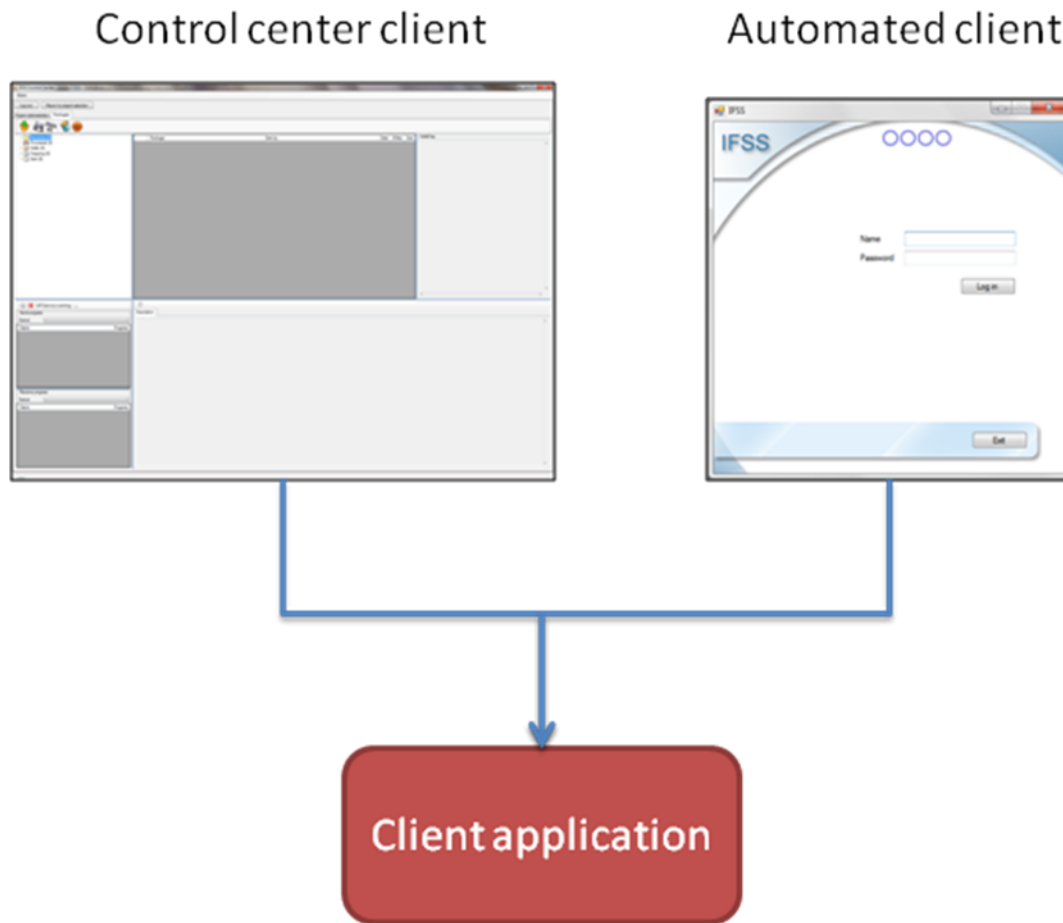

Figure 1: IFSS client applications.

The IFSS cloud is hosted as an ASP.NET web service on a dedicated Windows IIS web server. All transactions management is done through an SQL database server. The general scenario of a client/server connection is illustrated in Figure 2. Client application automatically detects an internet connection on a user's machine and attempts to log into the cloud with unique user ID, virtual project ID and password provided by the user. Any number of registered users can be connected to the cloud at any point in time (Figure 3). Once connected, users of the same virtual project are able to exchange data in the form of electronic files using one of the client applications.
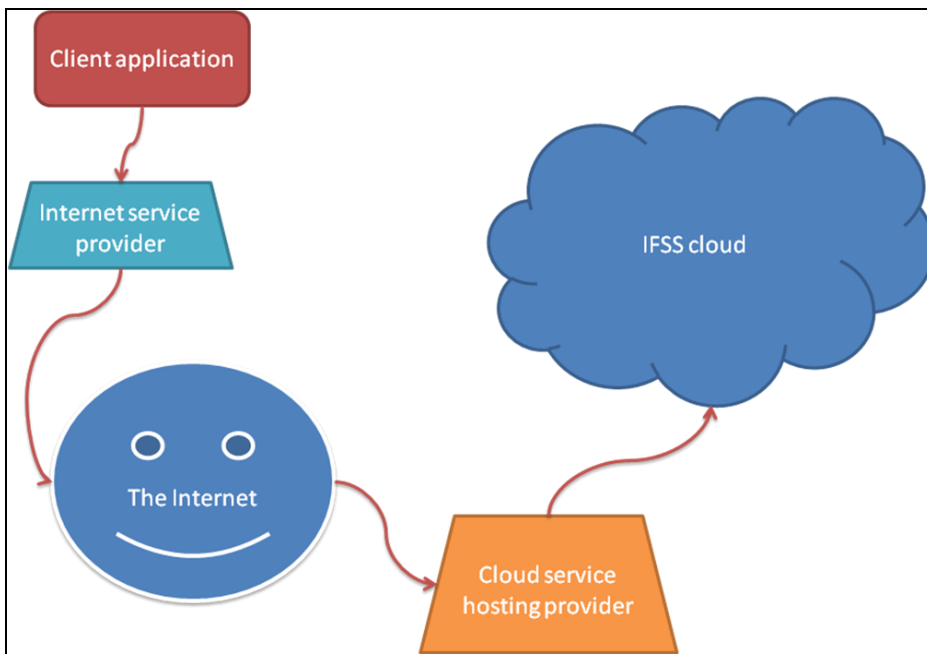
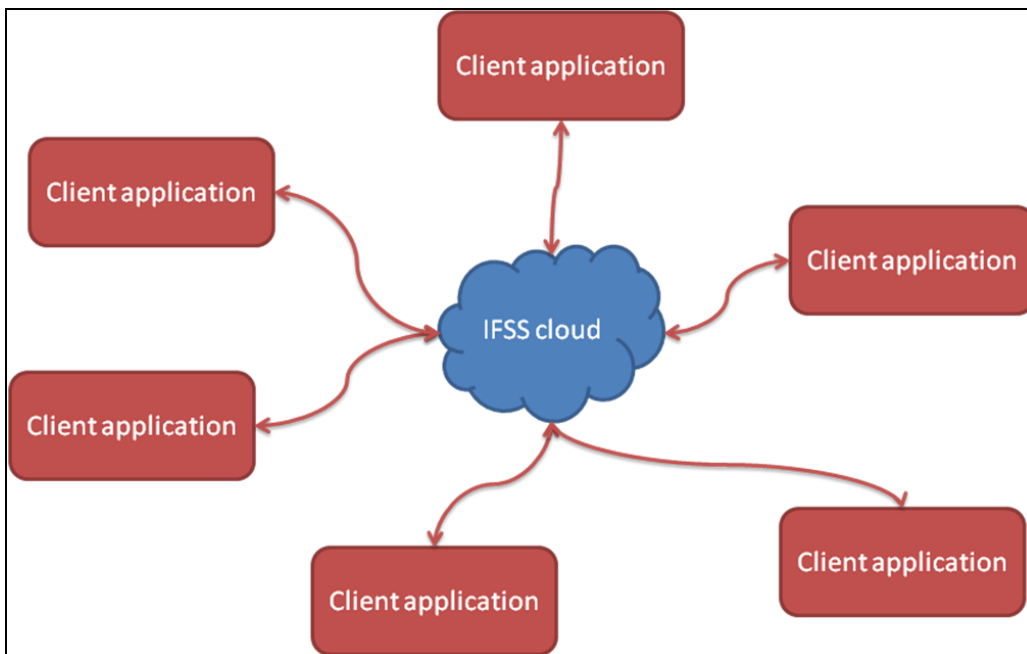Figure 2. Connecting client to the IFSS cloud.

Figure 3. Connecting multiple clients.

Users don't have to be connected at the same time to send/receive files. The system works similar to E-mail. Every package sent over the IFSS has a sender and a recipient (or multiple recipients). The server temporarily stores the transmitted files, until the recipient logs in and the files are downloaded by their clients.

It is important to say, that all files sent over the IFSS are compressed and encrypted with 128 bit encryption. The encryption key is available to the client applications, but not to the server which temporarily stores the files in transit. This way, even in the unlikely event of the server being compromised, there is no way to decrypt the data without the key, which is not present on the server.

The decision on which files and to what users the IFSS should deliver the data lays with the sending user. The transaction can only be initiated by the said sending user. That is there is no way for user to request the IFSS to extract files from another user's computer and deliver them to you. Only the sending user decides which files should be transferred to which users. The process of packing files for delivery is managed by the client applications, which give both manual and automated way of dealing with this task.

The users of IFSS are partitioned in groups called "virtual projects" (Figure 4). The absolute IFSS restriction is that no data transfer can be done between users of different virtual projects. This further contributes to system efficiency and security.
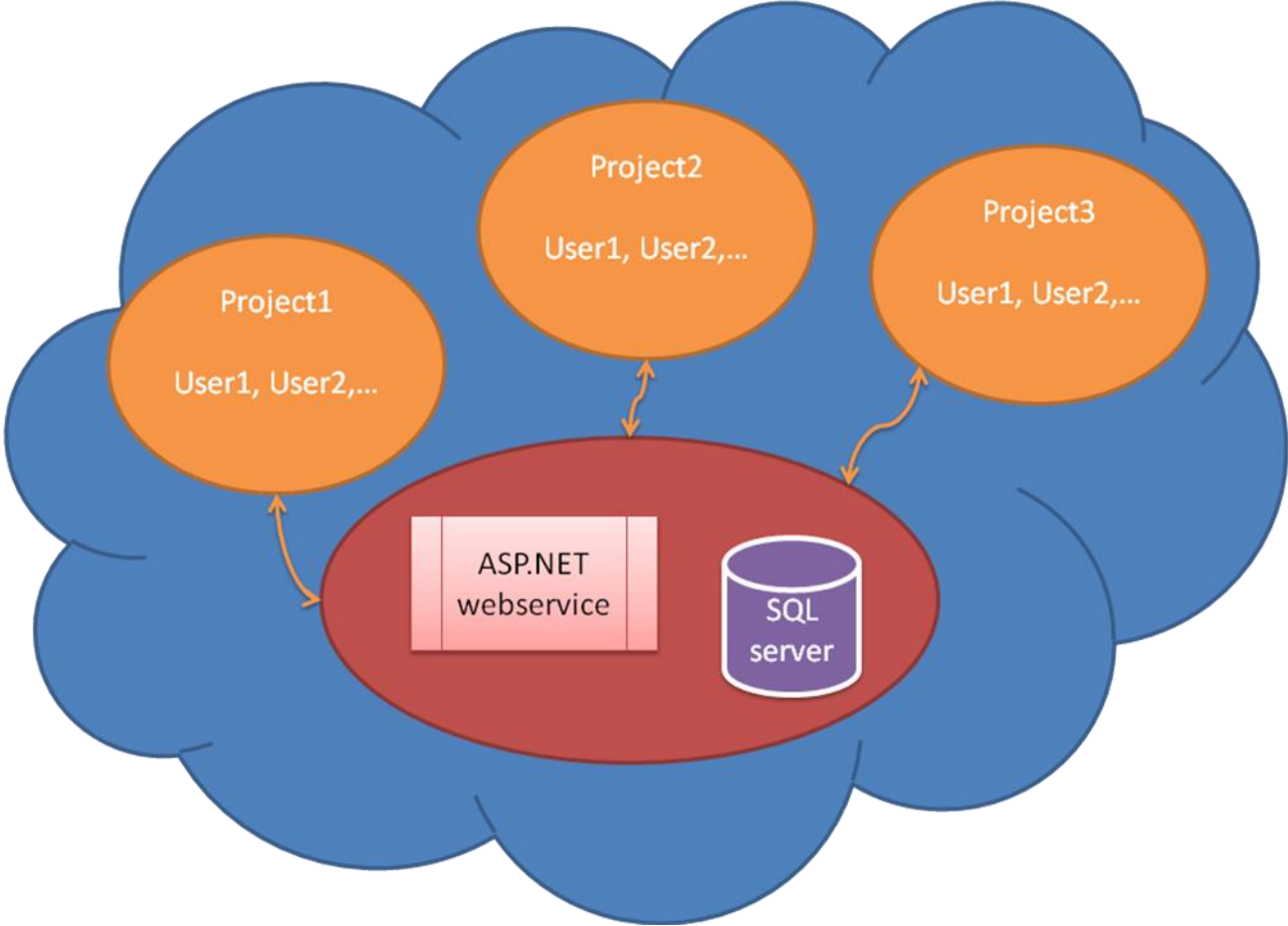

Figgure 4. Virtual structure of IFSS service

Typical scenario of survey field work utilizing IFSS:

During data collection for a CAPI survey, provided that field supervisors have relatively regular internet access, it is possible to set up an automated data delivery to the survey central office. In this scenario an automated client is installed on supervisor's mobile devices, which will require them to transmit collected data to a user at the central office. A designated computer (or several computers) at the central office then becomes a sort of server, to which the data from the field is delivered, accumulated and processed. The IFSS cloud, like mentioned earlier, is not aware of the content of this data, and is just a transaction mechanism designed to deliver the data to the central office. It is up to the survey management to designate the receiving server computer and assign a user responsible for monitoring data delivery and processing at the central office.