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Meteorological Data Management System

MetMan for Multi-purpose Data Collection

Vaisala is launching a new generation of Meteorological Data Management System software – the MetMan product range. There are three versions of MetMan; MetMan Observation Console is for single point applications. MetMan Network 100 is the mid-range solution for a network of up to 100 weather stations. Lastly, MetMan Network 400 supports even the largest weather station networks. Through the new products, Vaisala is providing a meteorological data management solution to a wide range of meteorological users.

MetMan is a new data collection and network management system for our surface weather customers. It gathers data from automatic weather stations and intelligent sensors and runs on a PC with the Microsoft® Windows NT™ operating system. Through this product range Vaisala is providing a meteorological data management solution that can be scaled from a single weather station observation console to data collection and storage of comprehensive automatic weather stations networks.

There are three versions of MetMan:

- MetMan Observation Console is for single point applications.
- MetMan Network 100 is the mid-range solution for a network of up to 100 weather stations.
- Lastly, MetMan Network 400 supports even the largest weather station networks.

(See Table 1 for more specific information on the different versions).

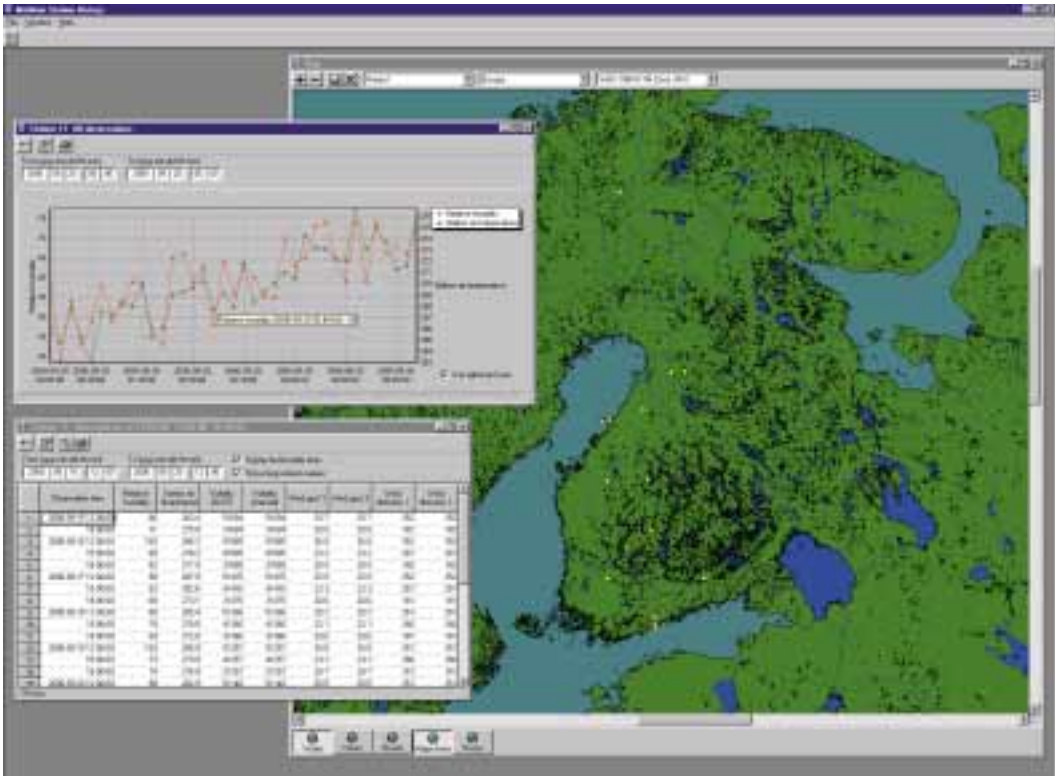

Figure 1. The map and data displays.

Map interface

Meteorological data is spatial data associated with a geographical location. The most natural way of handling the data is through a GIS (Geographical Information System) interface. We have selected ESRI Map Objects, the leading commercial GIS package, which the end-user can use to access the data.

At first, the user views a map on which the weather stations are visible as symbols, in their correct location. By clicking a symbol, the user can view the measurement data for the station in question, and the data history log, if he so desires.

The measurement data values can be displayed on a map that indicates, for example, the temperatures across the country. The powerful GIS engine can be used to create a statistical model of the area. It can be colored according to the temperature and the map that is produced as a result is very easy to publish. In short, with the latest GIS technology, the possibilities are endless.

Relational database

The fact that MetMan utilizes a standard relational database means all kinds of things for the end user. The data itself is a valuable asset, which is stored securely within the database. Standard administration utilities and security features can be used to manage the data. In the database, the data is easily available for customers' own applications, as it is with MetMan end user products. For example, it is very easy to transfer the data to your own web pages.

The user may use standard tools to analyze and display the data. Vaisala can recommend some of the best tools to use for the analysis. In many cases, it is possible to use tools that are already in use at the customer site.

All system parameters are stored within the same database, and this goes for the whole measurement network. Not only are the parameters for all the computers included, but the weather station parameters are in the database, too. For example, after installing a new physical sensor or a weather

station the user simply inputs the parameter information on the database and the system is ready to go.

BUFR is the WMO (World Meteorological Organization) standard for meteorological measurement definitions. Vaisala uses the BUFR codes as a basis for all the measurements. Numerous pre-defined measurements are installed on the database, saving a great deal of configuration work at the deployment phase.

Customer-specific applications

Even though Vaisala has extensive experience in meteorological products, MetMan cannot fulfill all the needs of potential users. Therefore, we have multiple built-in interfaces for customers' own applications.

Parsers are components that translate incoming messages into intelligent data. Many of our clients have defined their own message formats that they use when sending the measurement data from a weather station to the central station. MetMan is designed with an in-built slot into which customers may install their own parser and thus use their own message formats with MetMan.

The standard relational database offers a state-of-the-art interface for customer specific applications. Numerous commercial development tools can be used to build up new client-server or web-based applications.

Typically, various methods of communication are used in measurement applications. We have selected a communication library for MetMan that enables dozens of drivers to be used for different types of communication. The communication alternatives available are numerous and range from PSTN (Public Switching Telephone Network) and ISDN (Integrated Services Digital Network) to GSM short messages and email communications. Also, various methods of satellite communication are supported.

Often, customers want to tailor the data displays according to their specific needs. They may want to add their own logos or standard features to the user interface. We have taken all this into account in the design of the system. Standard data displays and editors, such as real-time and history data display or SYNOP editor are included in the MetMan product options. These applications can easily be modified using Visual Basic tools. Most of the pre-designed graphical elements (such as the wind rose) can be selected for the customer's own application.

We have only touched on MetMan's many features. MetMan has been available since autumn 2000, and the next release will be available during 2001. For further information please contact your Vaisala representative or the MetMan product manager Mr. Sami Leino (email sami.leino@vaisala.com). ■

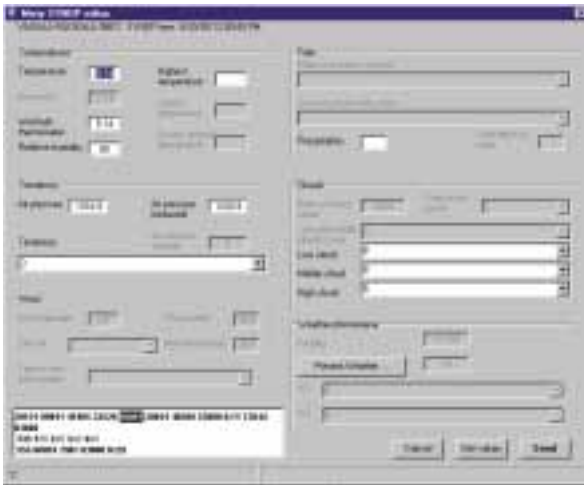

Figure 2. The SYNOP editor.

	MetMan Observation Console	MetMan Network 100	MetMan Network 400
Standard features			
Queuing system	NT4.0 Wkst + Vaisala Queues	NT4.0 Server + MSMQ	NT4.0 Server + MSMQ or NT4.0 Enterprise Edition
Station support	For one station	Basically for 25, up to 100	Basically for 100
Database support	Jet in Workstation	Jet in Server	Oracle Server PC with NT4.0 Wkst
Collects the data from stations	X	X	X
Data logging to database or ASCII file	X	X	X
Real time displays in table or graphics	X	X	X
Alarms	X	X	X
History data viewer	X	X	X
Configuration editors	X	X	X
Configuration checking tool	X	X	X
Terminal program	X	X	X
Multiple data transmission protocols		X	X
Multiple data message formats		X	X
Station group support		X	X
Automatic log file retrieval from AWS		X	X
Options			
SYNOP Editor with manual / automatic message transmission	X	X	X
GIS interface for history data viewer	X	X	X
Separate modem server PC		X	X
Server duplication		X	X
Support for user defined components			X

Table 1. Properties of MetMan versions (Changes possible without prior notice).