How to Select Remote Monitoring System

- by Sujata Tilak

Introduction

Remote monitoring is an accepted and widely used concept these days. Satellites, space missions, factories, ATMs, patients in ICUs, oil rigs, networks, machines, security systems, even your home and appliances in it….you name it and there is a solution available for remote monitoring! So there cannot be a single magic wand for monitoring such diverse entities. This paper looks at some typical system topologies used for remote monitoring and comments on their characteristics and suitability.

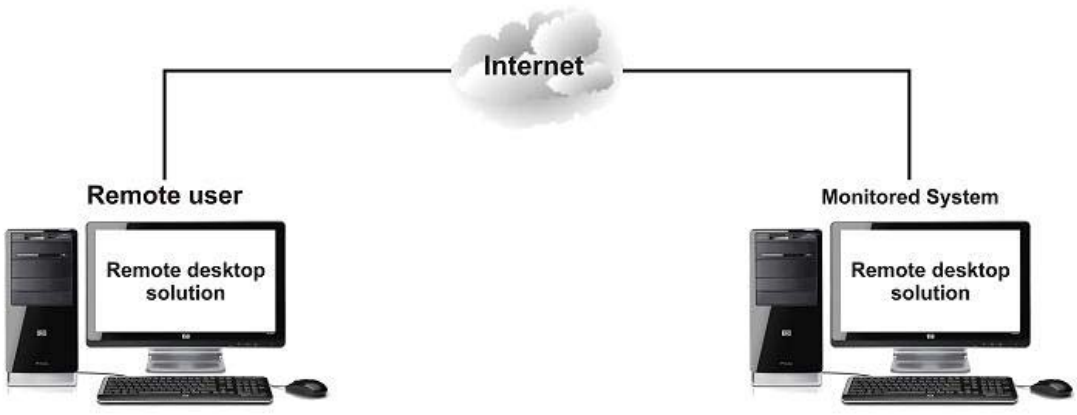
Must Have Features

Before we look at different topologies, let us first define bare bone 'Must Have' features for a remote ***monitoring*** system. And here I emphasize on the word 'monitoring'.

- Visualize system condition / status in real time
- Visualize system data in real time
- Get alerts for extraordinary conditions (alarms)
- Store historical data and alarms
- Anywhere, anytime access
- Do all of above for multiple systems from a single session

Remote Desktop

Here a user directly logs in / connects with the system to be monitored using some Remote Desktop Solution like VNC, Windows Remote Desktop, Team Viewer etc.



These solutions have become very popular for ad-hoc trouble shooting or doing one time tasks like installations etc.

Pros

- Complete control over the system being monitored. In fact remote user gets control of the computer on which system is running.

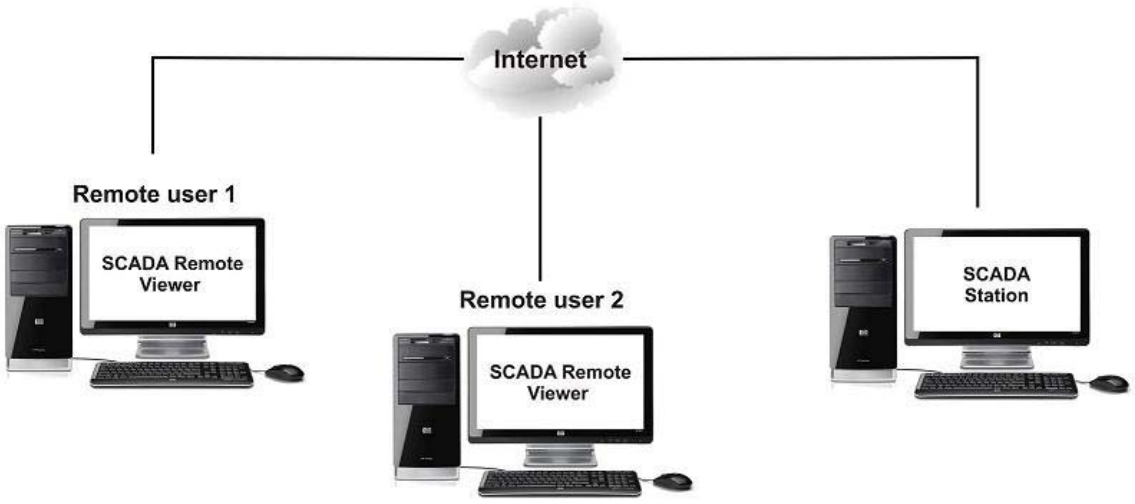
Cons

- Essentially a one-to-one solution
- No data collection at remote location
- No future reference possible after the session ends
- Cannot monitor multiple systems from a single session
- Need the specific remote desktop solution at both ends

Remote Workstation / Remote Viewer

Here a user connects with the system to be monitored and pulls data from that system on his own computer. For example, remote viewer of a SCADA.

In most cases, system being monitored has a web server which presents a set of web pages to the remote user through which the remote user can monitor.



Pros

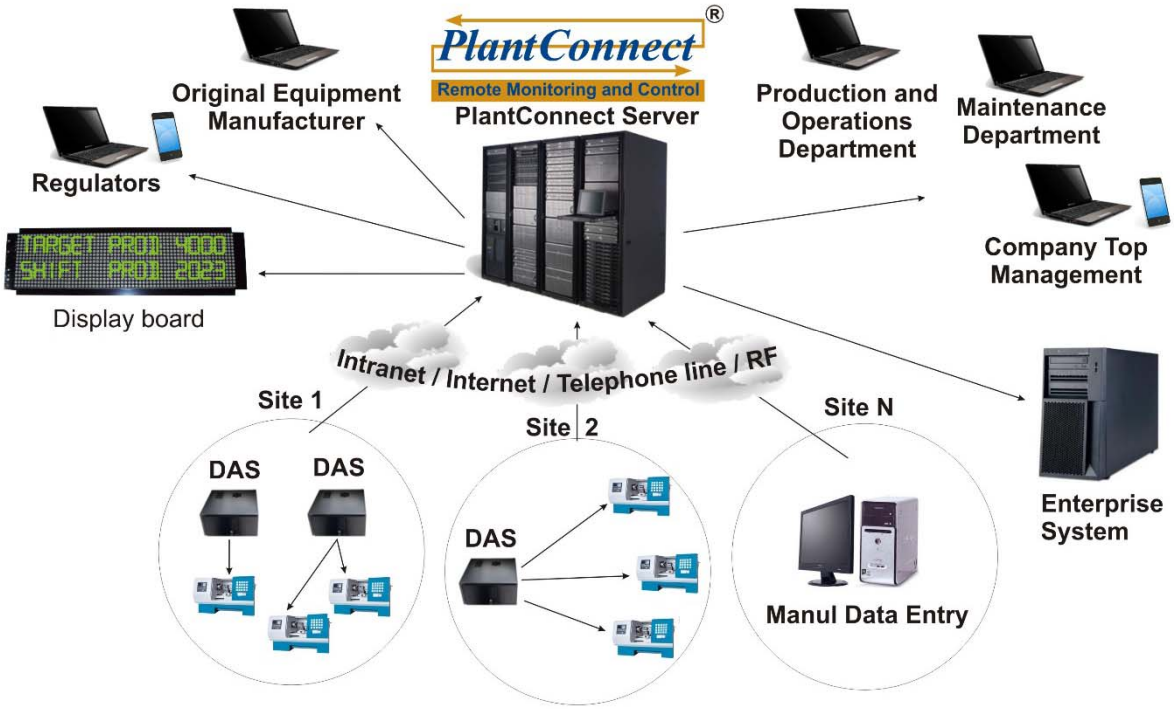
- Normally presents a sub-set of SCADA mimic pages to remote user which is very convenient for a user familiar with the system being monitored
- Allows for historical data export on remote system, but is normally a user initiated action and not automated.
- Multiple remote users can connect to one system

Cons

- Cannot monitor multiple systems from a single session
- Each remote user needs to store own copy of data. Thus data duplication happens.

Server based System

Here a server is setup (typically on internet). All systems to be monitored push data to this server. All users who want to monitor these systems connect to server and pull data from the server. For example PlantConnect, PI Server etc.



Pros

- An enterprise level system where many users can simultaneously monitor many devices
- Normally provides dashboards with system overview and important analytics
- Historical data and alarms are stored on server
- Can monitor multiple systems from a single session

Cons

- Need IT infrastructure for server

Feature Comparison

Feature	Remote desktop	Remote workstation / viewer	Server based system
Visualize system condition / status in real time	√	√	√
Visualize system data in real time	√	√	√
Get alerts for extraordinary conditions (alarms)	Only if remote user is connected to system	Only if remote user is connected to system	√ Usually thru email / SMS
Store historical data and alarms	X	Data export via user action	√
Anywhere, anytime access	Partially only if remote desktop solution is installed	√ Browser based	√ Browser based
Do all of above for multiple systems from a single session	X	X	√

About the author:

Sujata has over 22 years of experience in software industry, in various positions and roles. An Instrumentation and Control engineer, Sujata is a recognized expert in Industrial Automation domain and an accomplished System Architect. Under her guidance, AIPL has built PlantConnect AQMS, a web-based air quality monitoring solution. Sujata is associated with various State Pollution Control Boards as IT expert and is involved in ETS project as an IT Expert.