Remote Plant Monitoring and Operations

Kevin Smith  Pigler Automation, LLC
Title: Remote Plant Monitoring and Operations: Are Smart Devices Ready for Process Control?
Track: Maintenance & Operations
Presenter: Kevin Smith
Company: Pigler Automation
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Pigler Automation is a SIEMENS certified Solution Partner with the most PCS7 certified engineers in North America.

Pigler Automation has 10 employees, 7 of which are PCS7 certified engineers.

Located in Longmont, Colorado, ~30 miles north of Denver.

Industries Served: Oil & Gas, Power, Chemical, Food & Beverage.

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About Me

Kevin Smith

• B.S. in Mechanical Engineering from Colorado School of Mines
• 4 years experience with emission controls solutions for the power generation industry
• 2 years experience programming Allen Bradley controls for mercury capture systems
• Lead Controls Engineer with Pigler Automation since April 2015
• PCS7 Certified Process Control Engineer
Challenge

Industry Trends

• Reduced operation and maintenance staff
• Available technology
• Increased productivity

Result

• Remote operations
• Integration of tablets or smart phones
Our First Step:

- Evaluate the following existing remote monitoring applications based on multiple criteria:
  - WinCC/WebNavigator
  - WinCC/WebUX
  - WinCC Sm@rtServer
  - RealVNC
  - Remote Desktop
  - ThinManager

- Criteria:
  - Engineering
  - Flexibility
  - Capabilities / Limitations
  - Security
WinCC/WebNavigator

Engineering
- Publish Picture Files for availability
- Assign WinCC user administration rights
- Configure WebServer using WinCC Web Configurator
- Configure Windows Firewall
- Configure client machines

Flexibility
- View Runtime from anywhere in network
Capabilities / Limitations

- Plant/Process overview
- Full control & nearly full functionality
- No mobile support
- Requires Internet Explorer and ActiveX extensions

Security

- WinCC user administration
- SSL
- VPN / firewall
- Network separation
- View only option
WinCC/WebNavigator

Advantages:
• Multi-session (license dependent)
• Integrated user authorization for security
• Server based licensing
• Ideal for dedicated remote operations or WAN configurations

Disadvantages:
• Additional engineering
• Dedicated hardware (OS-Client)
• Not available for mobile devices

Siemens Demo Access:
http://62.245.153.66:86/
User name: wincce
Password: winccpass
WinCC/WebUX

Engineering

• Set web-enabled property of selected pictures
• Design custom screens
• Assign WinCC user administration rights
• Configure WebServer using WinCC Web Configurator
• Configure security features ie. SSL, VPN, Windows Firewall

Flexibility

• Browser and platform independent
• HTML5 based
WinCC/WebUX

Capabilities / Limitations

- Screen resolution dependent
- Limited scripting functionality
- Non APL conforming

Security

- WinCC user administration
- SSL
- Firewall, VPN
- Network Separation
- View only
Advantages:
- Multi-session (license dependent)
- Integrated user authorization for security
- Server based licensing
- Ideal for mobile status report formats

Disadvantages:
- Non APL conforming
- Additional graphic design per screen resolution
- Small screen = small window into process
WinCC Sm@rtServer

**Engineering**
- Configuring user passwords

**Flexibility**
- Supports iOS, Android, and Microsoft Internet Explorer

**Capabilities / Limitations**
- Multiple clients
- Shared session

**Security**
- User Passwords, View only
- VPN, firewall, network separation
Advantages:
- Low cost
- Deployable on SIMATIC Panels or WinCC Advanced
- Ideal for smaller / spread out configurations

Disadvantages:
- Shared session
Engineering

• Installing server and client software
• Creating user accounts and configuring access

Flexibility

• VNC apps for iOS and Android
• Multiple monitor support
Capabilities / Limitations

- Shared session
- No audio

Security

- View only
- VPN, firewall
- IP filtering
- Network separation
Advantages:
- Low priced annual subscription per server
- No licensing necessary for viewers
- Ideal for remote engineering and troubleshooting

Disadvantages:
- No audible feature therefore not applicable for remote operation
Remote Desktop

Engineering
• Enable RDP in Windows
• Creating user accounts and configuring access

Flexibility
• Multiple monitor support

Capabilities / Limitations
• Single session
• Not compatible with some WinCC features
Security

• VPN
• Firewall
• Network Separation
Remote Desktop

Advantages:

• Free with Windows
• Mobile support
• Simple to configure
• Audio Support
• Ideal for remote operations

Disadvantages:

• Single session
• Not approved by Siemens to be used for OS-Servers, Engineering Stations, Batch Servers

Recommended procedure is to disable the RDP on these stations
Security: The Second Challenge

Wifi “in” Plant
- No physical boundaries

Mobile Device Access
- Lost cell phone or tablet

Controlled Area Access
- Preventing personnel from accessing certain areas or equipment
What is ThinManager?

A centralized manager for deployment of server based terminals that can be deployed on thin clients, PCs, or mobile devices

- Utilizes Remote Desktop Services (Terminal Services)
- Can be configured redundantly for high availability
- Can monitor all client activity
- Provides security based on additional user roles, geo-location, and thin clients without local data storage
ThinManager

Engineering
- ThinManager Server and client configuration
- Network configuration
- Security provisioning

Flexibility
- Platform independent
- Virtualized environment
- Unlimited client licensing available
Capabilities

- Relevance and Location delivery
- Ease of hardware replacement
- Central deployment

Security

- PXE boot
- Relevance and location-based
- VPN, Firewall
- Network Separation
Advantages

• Utilizes Terminal Server configuration
• Multi-user
• Multi-session
• Secure access based on relevance and location

Disadvantages

• Requires considerable engineering and plant design
The Next Step:

What to take away?

• Multiple products and solutions
• No single solution

Where do you see remote and mobile applications taking you?
• Please take a short survey and let us know how you would like to utilize this technology
Remote Plant Monitoring and Operations

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Please fill our your survey via the summit app.