

# Most Common SCADA Topics from ACE 2016



# 5 Common SCADA Topics from AWWA ACE 2016

## Topics

1. Secure Thin Client Access
2. Improving Situational Awareness
3. Effective Alarms Management
4. Reporting and Data Analysis
5. Transparent SCADA Licensing



## 1. Secure Thin Client Access

### What are users concerned about?

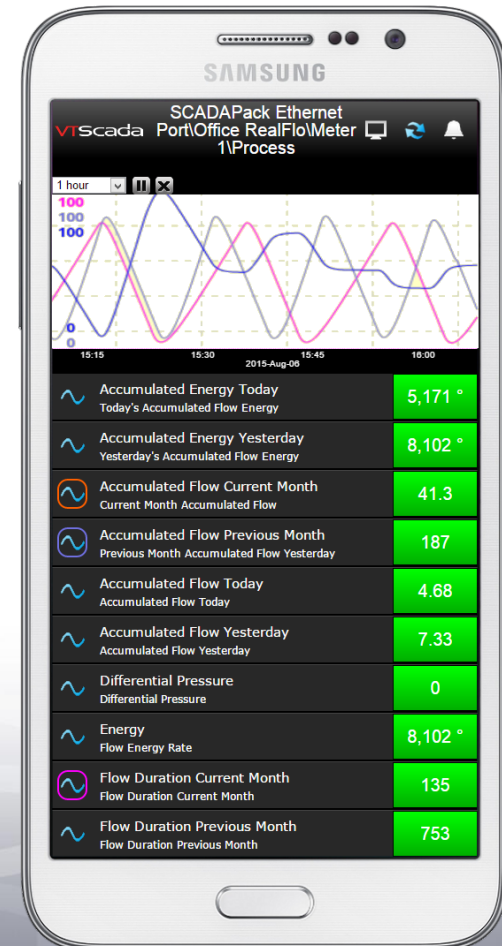
- My current system doesn't support remote user access
- BYOD - iOS/Android/Windows Surface
- Preventing unauthorized user access
- Limiting remote control
- Managing concurrent connections in a concurrent user environment



# 1. Secure Thin Client Access

## What is driving these concerns?

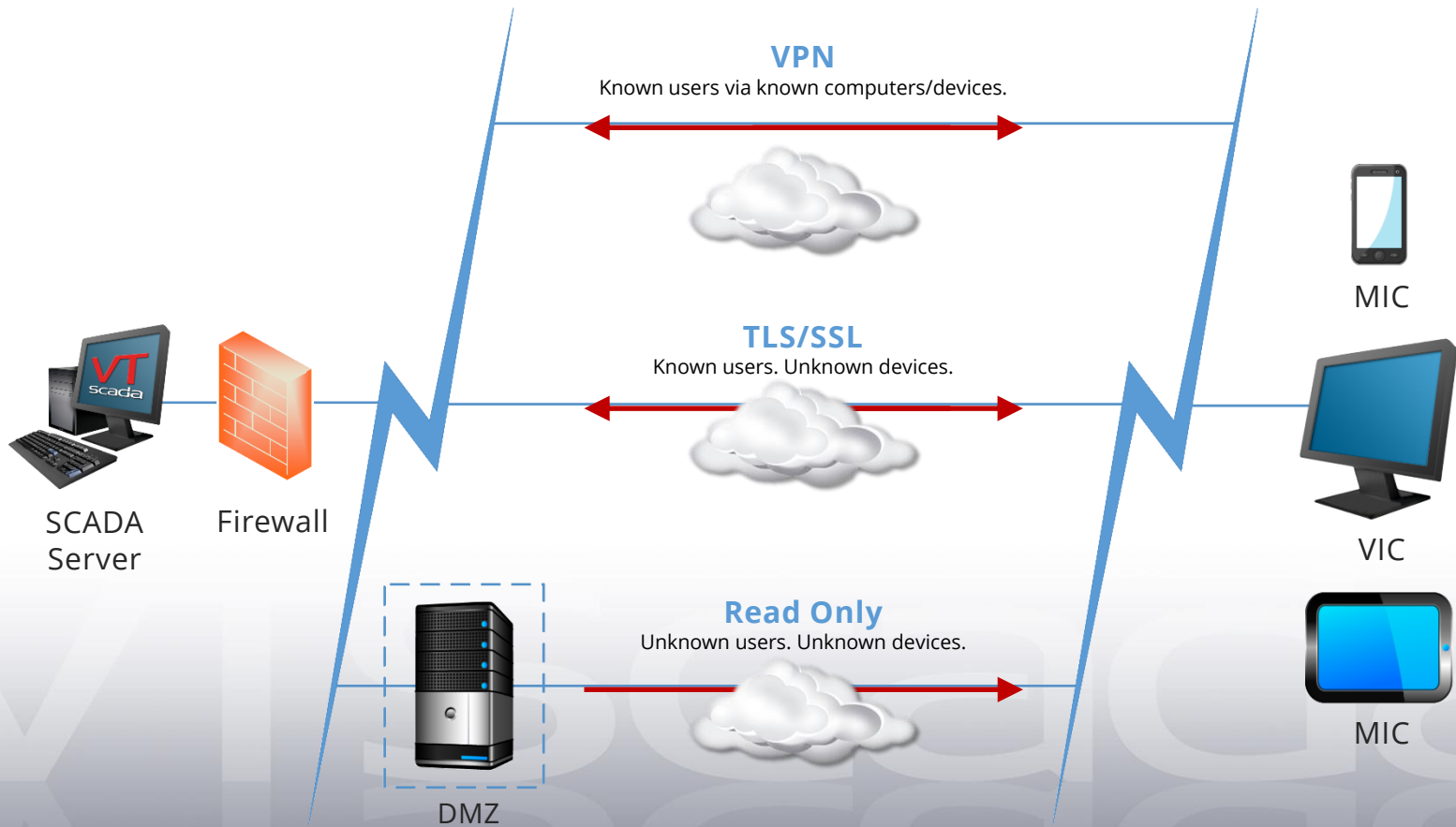
Mobile connectivity is a primary driver for security.





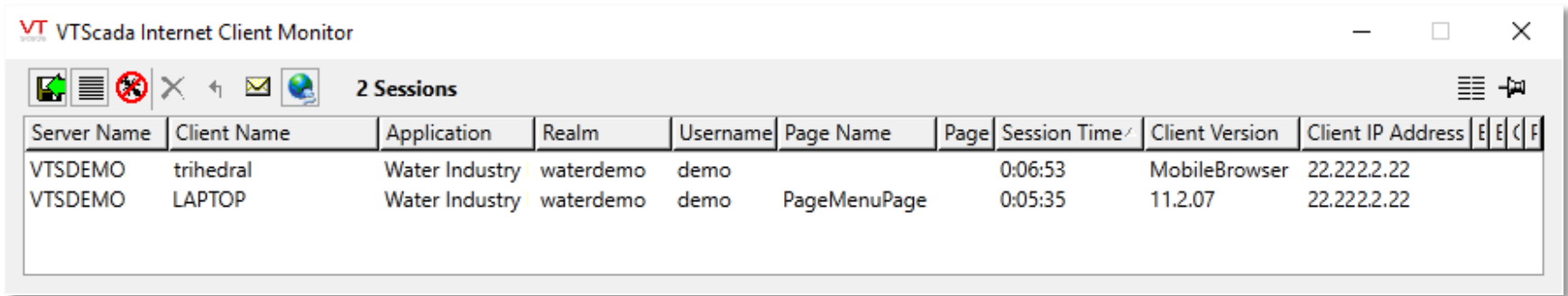
# 1. Secure Thin Client Access

## How does VTScada protect Thin Client connections?



# 1. Secure Thin Client Access

**How do I manage active Thin Client connections?**



The screenshot shows the 'VTScada Internet Client Monitor' window. The title bar includes the VT logo and the text 'VTScada Internet Client Monitor'. The window contains a toolbar with various icons and a table titled '2 Sessions'. The table has the following columns: Server Name, Client Name, Application, Realm, Username, Page Name, Page, Session Time, Client Version, and Client IP Address. There are also small icons for E, E, C, and F at the end of the table header.

Server Name	Client Name	Application	Realm	Username	Page Name	Page	Session Time	Client Version	Client IP Address	E	E	C	F
VTSDemo	trihedral	Water Industry	waterdemo	demo			0:06:53	MobileBrowser	22.222.2.22				
VTSDemo	LAPTOP	Water Industry	waterdemo	demo	PageMenuPage		0:05:35	11.2.07	22.222.2.22				

# 1. Secure Thin Client Access

## VTScada Thin Clients - Any device, Anywhere, Any time

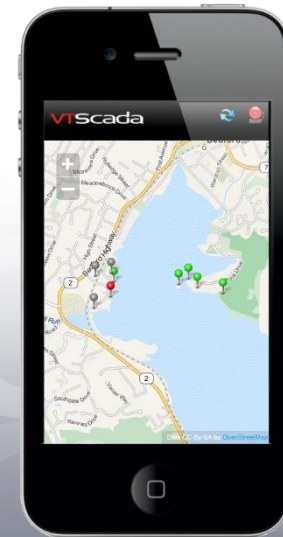
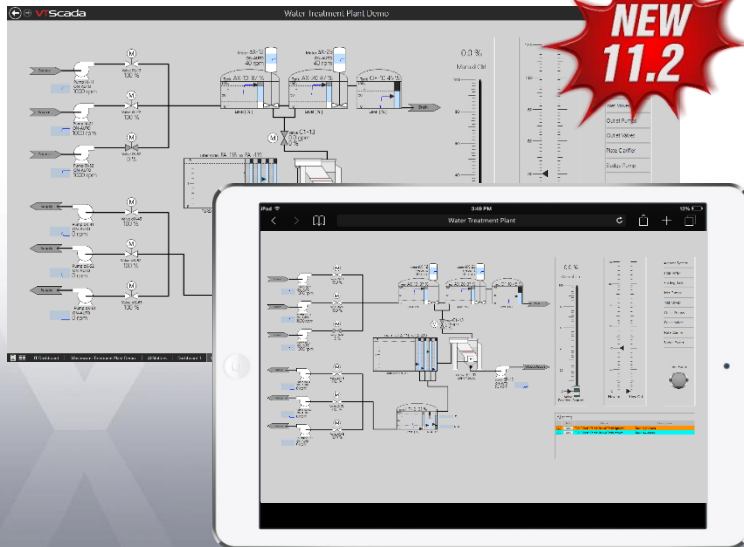
**VTScada supports multiple devices and screen sizes.**

### The Anywhere Client

- Use on any HTML5 compatible browser.
- Same interface as a fully installed (Thick) client.
- Automatic screen resolution.
- Event-driven updates. Push rather than pull.
- Automatic configuration change deployment.

### Mobile Internet Client (MIC)

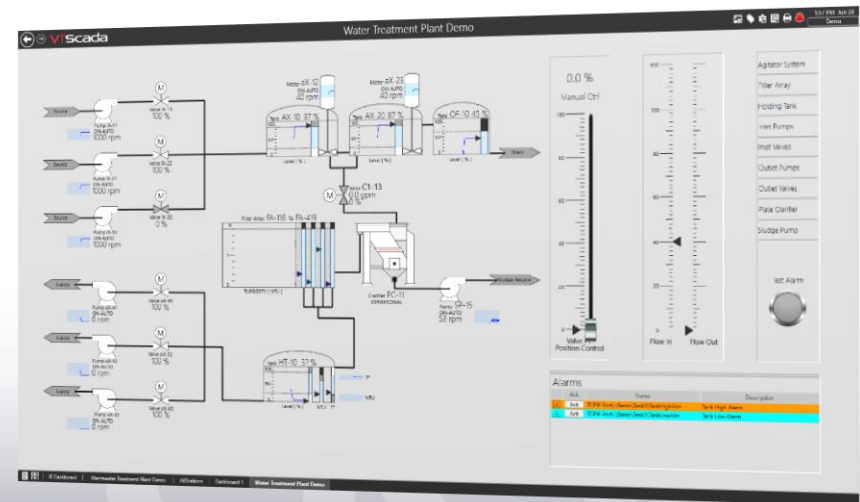
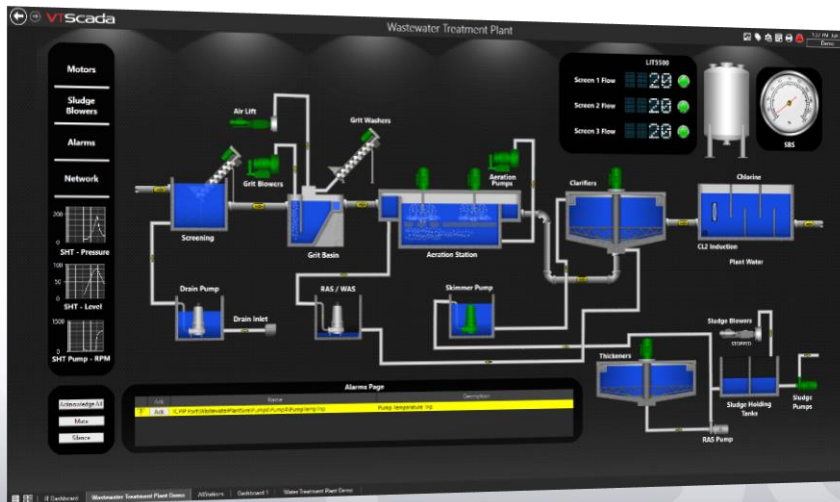
- Use on any HTML5 compatible browser.
- Tactile easy-to-read text-and-trend interface.
- Perfect for even the smallest screens and data plans.
- Refresh data manually or set a refresh rate.
- Full Graphics on demand.



## 2. Situational Awareness

### What are users concerned about?

- What is it?
- Why is it important?



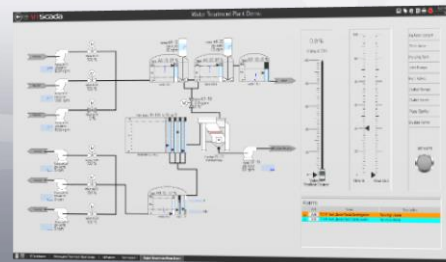
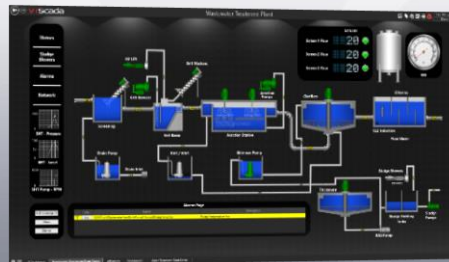


## 2. Situational Awareness

### High Performance vs. High Impact graphics.

**You decide.**

High Impact	High Performance
High resolution graphics (2D images, 3D images, digital photographs, video feeds) assist visual recognition.	Low resolution indicators minimize graphical distractions.
Overviews include key process indicators with graphical context representing process flow.	Overviews provide key process indicators in easy to read format without graphical context.
Select equipment to see details, trends, etc.	Select equipment to see details, trends, etc.
Alarm conditions displayed in easy to read summary lists on overview pages. May also be shown via equipment color changes.	Alarm conditions integrated with indicators. Indicators organized for alarm and anomaly recognition.
Alarm colour and text descriptions provide context.	Alarm indicator colour, shape and numeric value provide context.



## 2. Situational Awareness

### High Performance vs. High Impact graphics.

#### Our Recommendations:

- Pick the best option for your situation. Each approach has merit. A mixture of both methods may be applied.
- Too many changes can lead to confusion and a lack of acceptance among users.

## 2. Situational Awareness

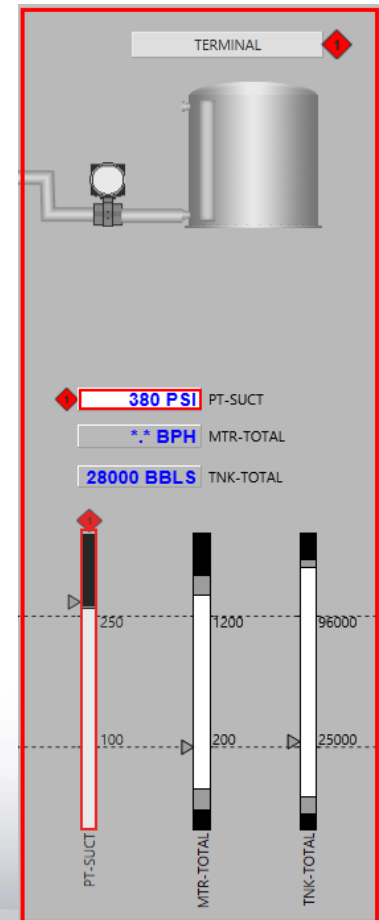
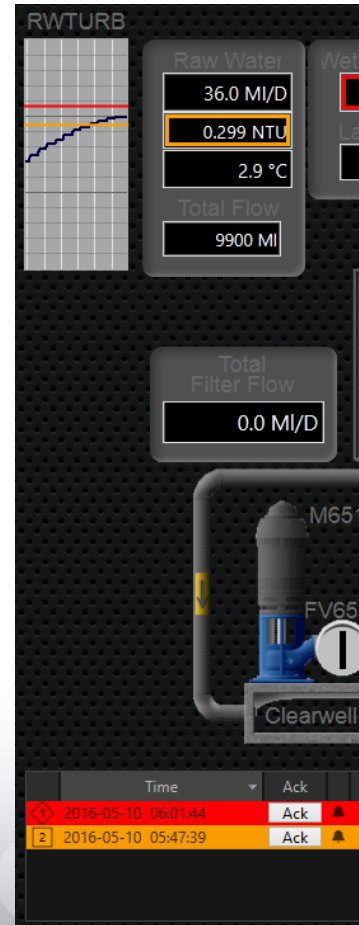
### VTScada Situational Awareness Features

#### ▪ High impact widgets and graphics

- Enhanced Alarms lists
- Grey scale equipment status graphic widgets
- More photorealistic meters
- Enhanced meter parts to build custom widgets

#### ▪ High performance

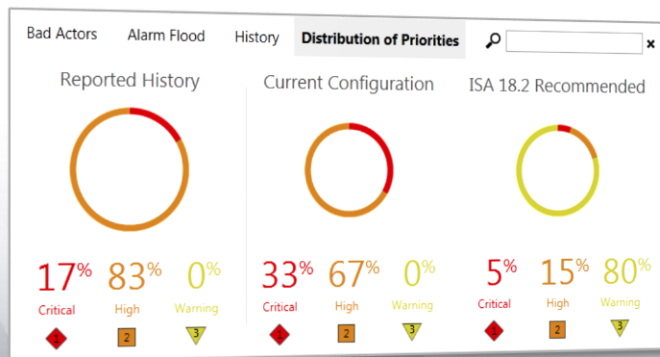
- Alarm priority configuration (standard colour, shape, label, sound)
- Alarm priority icons and hotboxes
- Style tags for application-wide colour standardization
- Simple on-screen trends (existing)
- 5000 graphics tools, widgets and images to build any indicator required



## 3. Effective Alarms Management

### What are users concerned about?

- How can we best manage a growing number of alarms?
- How can we track how operators manage alarms?
- Nuisance alarms are killing us



The screenshot shows the vscada Alarm Page interface. The top navigation bar includes 'vscada', 'Alarm Page', and a search bar. Below the navigation bar, there are tabs for 'All', 'Active', 'Unacked', 'Current', 'Shelved', 'Disabled', and 'Configured'. The main area displays a table of alarms with columns for 'Time', 'Event', 'Status', 'System', 'Name', 'Description', and 'Value'. The table lists various alarms, including 'Application Started', 'Poll Driver Backup Alarm', and 'Pre-Mix Raw Water Turbidity Hi Warning'. The status of each alarm is indicated by a colored icon (red for active, yellow for warning, green for disabled).

# 3. Effective Alarms Management

## What is driving these questions?

Centralized applications for distributed sub-systems have become commonplace.

Central management provides a single point for administrative functions.

- Alarms configuration
- Security management
- Single interface for report data
- Network and computer resource monitoring
- System-wide data, alarms and configuration backup

Distributed systems must function autonomously when disconnected from the Central management network.

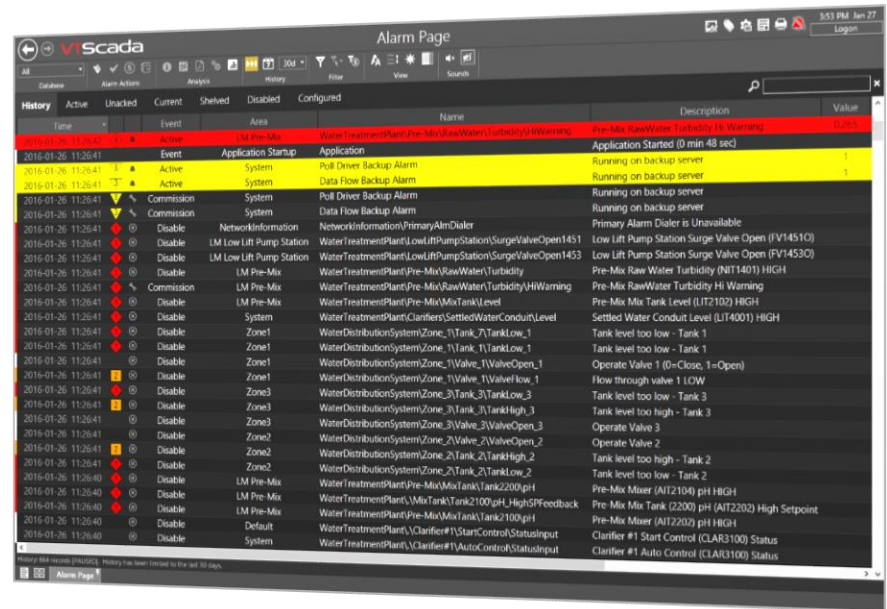




# 3. Effective Alarms Management

## VTScada Alarms Management Interface

- Compliant with strategies defined in ISA 18.2-2009 and API 1167 alarms management best practices
- Fast switching between real-time status displays (context) and alarm history
- Improved diagnostics through enhanced historical information access
- Simple tools to minimize distractions
- Multi-plant alarms filtering



# 3. Effective Alarms Management

## VTScada Display Enhancement Tools

- Alarm priority icons matching process views
- Acknowledge buttons and status indicators
- Day/night view toggle
- On-demand addition of columns with current values and comparative setpoints
- Notes indicator
- New historical events for alarm 'commission' and 'modification' actions

The image displays two screenshots of the VTScada Alarm Page interface. The left screenshot shows a standard alarm history table with columns for Time, Event, Area, Name, and Description. The right screenshot shows an enhanced version of the same table with additional columns for Value, Setpoint, Units, and User, and a red highlight on the active alarm row.

Time	Event	Area	Name	Description
2016-05-10 05:47:39	Active	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater
2016-05-10 05:47:39	Enable	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Tu
2016-05-10 05:47:21	Disable	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Tu
2016-05-10 05:46:40	Acknowledge	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Tu
2016-05-10 05:18:36	Active	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Tu
2016-05-10 05:18:36	Enable	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Tu
2016-05-10 05:18:02	Disable	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Tu

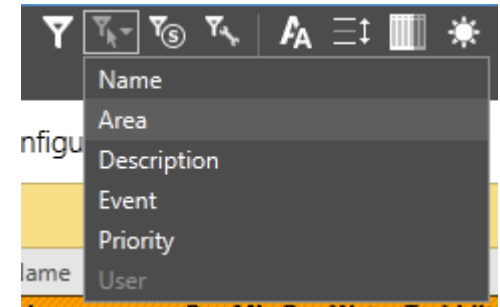
  

Time	Event	Area	Name	Description	Value	Setpoint	Units	User
2016-05-10 05:47:39	Active	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Turbidity	0.258	0	NTU	
2016-05-10 05:47:39	Enable	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Turbidity Hi	0	0	NTU	
2016-05-10 05:47:21	Disable	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Turbidity Hi	0	0	NTU	
2016-05-10 05:46:40	Acknowledge	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Turbidity Hi	0	0	NTU	
2016-05-10 05:18:36	Active	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Turbidity Hi	0.243	0	NTU	
2016-05-10 05:18:36	Enable	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Turbidity Hi	0	0	NTU	
2016-05-10 05:18:02	Disable	LM Pre-Mix	...\\HiWarning	Pre-Mix RawWater Turbidity Hi	0	0	NTU	

# 3. Effective Alarms Management

## VTScada Alarms Filtering (Decluttering)

- Shelve a selected alarm for a period, until a specific time, or indefinitely
- Select any alarm and filter the view based on any the alarm's attributes
- Hide/show Shelved alarms from the list (decluttering)
- Hide/show alarm commissioning and configuration events
- Select all alarms or filter to show a single alarms or events database



Set advanced filter criteria by;

- Description
- Name
- Area
- Priority
- User
- Date/range
- Event type

A screenshot of the 'Advanced Filtering' dialog box in VTScada. The dialog has a blue title bar with the VT logo and a close button. The main content area is titled 'Find Alarms and Events' and contains several filter criteria:

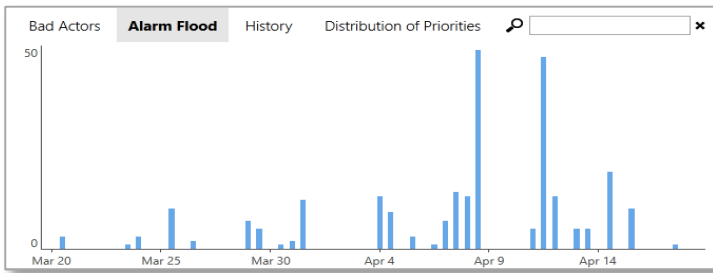
- 'with this description:' followed by a text input field and a close button.
- 'with this name:' followed by a text input field containing 'WaterTreatmentPlant\Pre-Mix\RawWater\Turb' and a close button.
- 'in this area:' followed by a dropdown menu and a close button.
- 'with this priority:' followed by a dropdown menu and a close button.
- 'by this user:' followed by a text input field and a close button.
- 'as this event:' followed by a dropdown menu and a close button.
- 'in this month:' followed by a dropdown menu and a close button.
- 'in this date range:' followed by two date pickers (both showing '31') and a range separator '----/--/-- to ----/--/--'.

At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Apply'.

# 3. Effective Alarms Management

## VTScada Alarms Tuning Reports

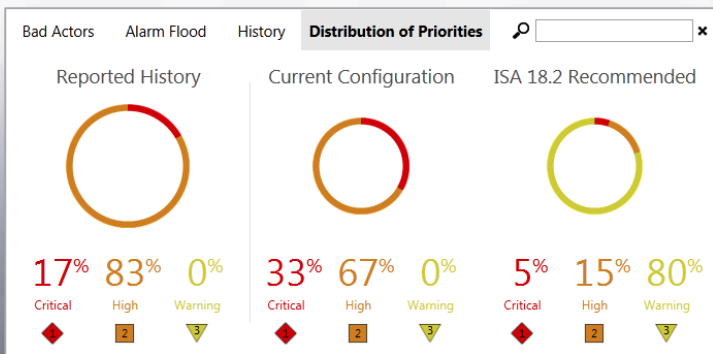
**Bad Actors Report** – Summary of alarm occurrences within a specific period, sorted by the number of activations.



Bad Actors		Area	Name	Description	Count	Percent
1	2	Zone 1	Local TCP Port\PLCSim\Tank 1\Tank Level	Monitor tank level HIGH	14	66.7 %
2	1	Zone 2	Local TCP Port\PLCSim\Tank 2\Tank Level	Monitor tank level HIGH	5	23.8 %
3	2	Zone 3	Local TCP Port\PLCSim\Tank 3\Tank Level	Monitor tank level HIGH	2	9.5 %

**Alarm Flood Report** – Count of alarms tripped within equal time slices. Click a bar to zoom into that period.

**History Report**– All active and trip alarm events within a specific period.



Date Time	Event	Area	Name	User
2016-04-07 12:03:29	Active	Zone 1	Local TCP Port\PLCSim\Tank 1\Tank Level Monitor tank level HIGH	
2016-04-07 11:00:50	Active	Zone 1	Local TCP Port\PLCSim\Tank 1\Tank Level Monitor tank level HIGH	
2016-04-07 10:55:36	Active	Zone 2	Local TCP Port\PLCSim\Tank 2\Tank Level Monitor tank level HIGH	
2016-04-07 10:54:05	Active	Zone 1	Local TCP Port\PLCSim\Tank 1\Tank Level Monitor tank level HIGH	

**Priority Distribution Report** – Compares priority of configured alarms and actual alarm occurrences against recommended best practices.

## 4. Reporting and Data Analysis

### **What are users concerned about?**

- Data storage and replication
- Interconnectivity of disparate systems
- What data sources are out there and what can each provide?
- How can I leverage data to improve my process?



# 4. Reporting and Data Analysis

## What is driving this? Efficiency.

- **Leak detection**
  - Water metering vs treatment and distribution
  - Anomaly recognition in nighttime flow trends
- **Efficient pumping**
  - Current pump curve data compared against data at time of installation
  - Off peak pumping
- **Manufacturers are looking for summary data from equipment installed at many facilities**
  - Fault details for maintenance interval tuning
  - Usage data for misuse identification



# 4. Reporting and Data Analysis

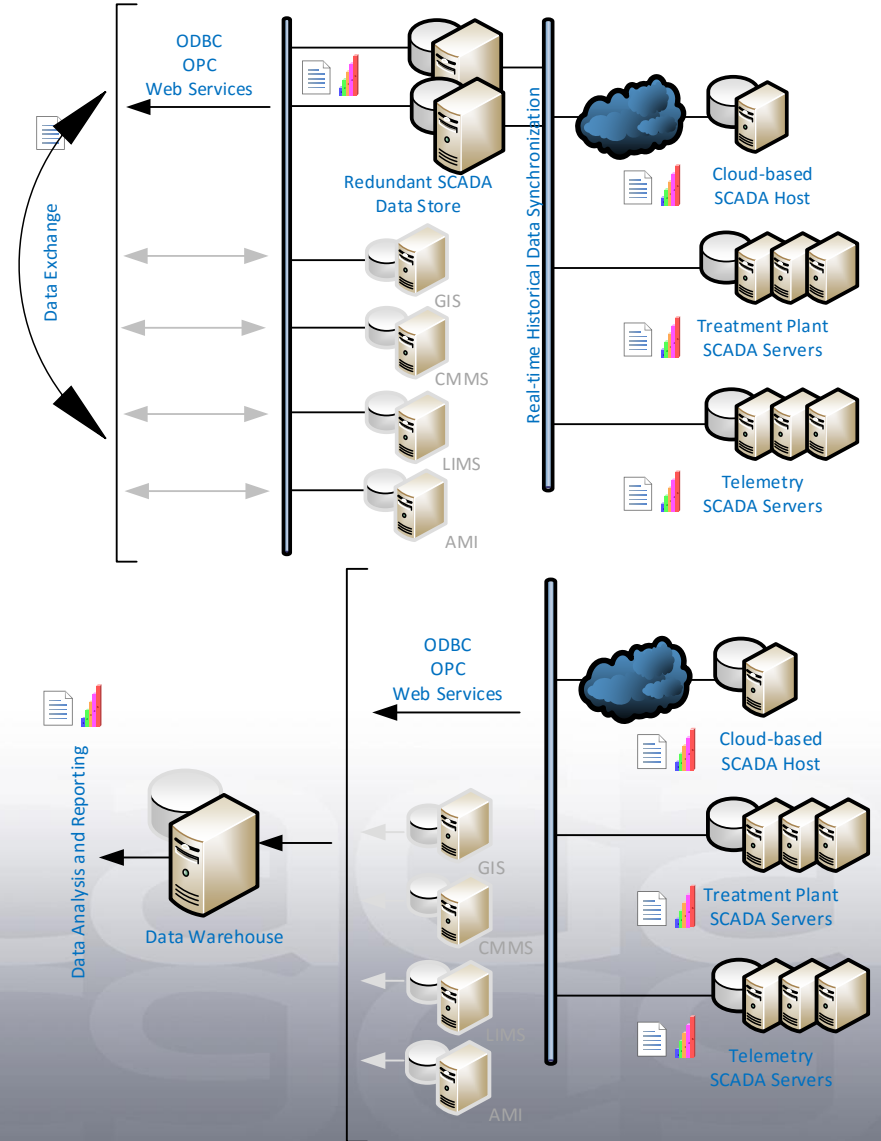
## VTScada Architecture Concepts for Multi-location Reporting and Data Analysis

### Centralized SCADA Solutions

- Allows data exchange between software systems
- Summary reporting and analysis of utility's SCADA operations
- Local reporting and analysis at each SCADA location

### Decentralized SCADA Solutions

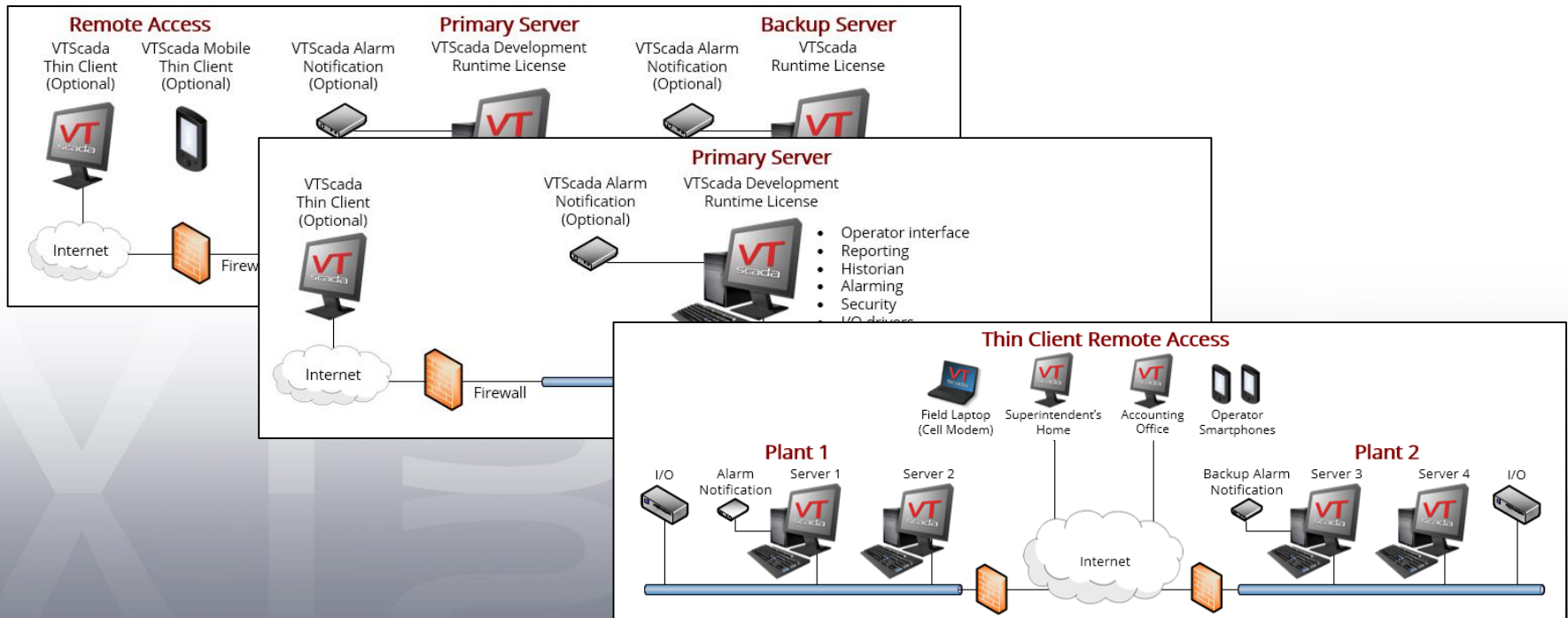
- SCADA systems contribute to data warehouse
- Summary reporting and analysis of utility-wide operations
- Local reporting and analysis at each SCADA location



## 5. Transparent SCADA Licensing

### What are users concerned about?

- What do I have?
- I need to do XYZ. I don't understand the licensing.
- What are the ongoing fees?





# 5. Transparent SCADA Licensing

**The VTScada Pricelist**  
[www.trihedral.com/pricing](http://www.trihedral.com/pricing)



**US Pricing**  
**Small to Medium Systems**

I/O Tags	Development Runtime	Runtime	Alarm Notification (Email, SMS, Voice)	Connectivity Package (ODBC Server, OPC Server, WEB Services)	Thin Clients (concurrent PC and Mobile connections)		
					Single	5-Pack	Unlimited
1,000	5,095	2,595	1,095	1,495	2,095	6,495	7,095
5,000	6,595	3,395	2,095	1,995	2,595	8,895	13,295
10,000	8,195	4,095	2,095	2,095	3,295	10,195	19,395
25,000	9,795	4,895	3,295	2,495	4,095	13,295	30,595
Up to 2,500,000	Please refer to Enterprise Pricing Sheet						



# 5. Transparent SCADA Licensing

## The VTScada Pricelist

Integrated Components Included (single installation)		Development Runtime	Runtime
Run and Operate	<b>Application Server</b> - Primary or redundant event-driven execution for any scale	✓	✓
	<b>Runtime Client</b> - Can function as a complete or partial back-up for system operations	✓	✓
	<b>Widgets and Graphics Library</b> - 1,000's for many industries and applications	✓	✓
	<b>Historian</b> - High performance with zero set-up time needed	✓	✓
	<b>Security</b> - Integrated and extensible by both privilege and role-based models	✓	✓
	<b>Network and Computer Resource Monitoring With SNMP Agent</b> - A total system view	✓	✓
	<b>Alarms and Events</b> - Unlimited logging of all user and system actions	✓	✓
	<b>Trending</b> - Automatic and available with no additional set-up	✓	✓
	<b>Reporting</b> - Manual or automatic report creation with extensible options	✓	✓
	<b>Slippy Maps Integration</b> - Available either on-line or off-line with full pan and zoom	✓	✓
	<b>Electronic Operator Logbooks</b> - Tamperproof recording of noteworthy events	✓	✓
I/O Drivers	<b>Common</b> (e.g. Modbus, DF1, CIP/ENIP, Siemens S7, Omron Host Link, OPC)	✓	✓
	<b>Advanced</b> (e.g. DNP3, SNMP, Motorola ACE, CalAmp and MDS radio diagnostics)	✓	✓
	<b>Proprietary</b> (e.g. DataFlow Systems and others)	✓	✓
	<b>DataLogger</b> (e.g. DF1, SCADAPack)	✓	✓
Develop	<b>Automatic Version Control</b> - System-wide disaster recovery and audit tools	✓	
	<b>Idea Studio™</b> - Efficient development environment online, offline and multi-developer	✓	
	<b>Change Deployment</b> - Remotely update all computers with a single click	✓	
	<b>Scripting and Debugging Tools</b> - Powerful event-driven language of 700+ functions	✓	
	<b>ODBC Server, OPC Server, Web Services</b> - Connectivity Package to other systems	✓	

# 5. Transparent SCADA Licensing

## Recurring Support Fees

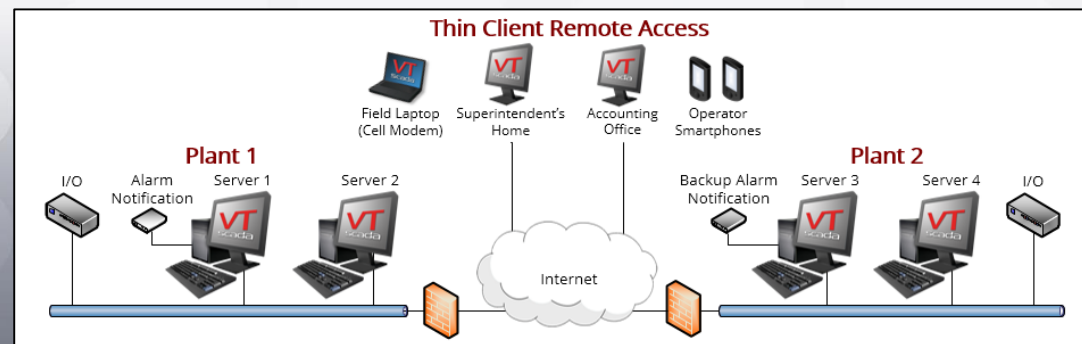
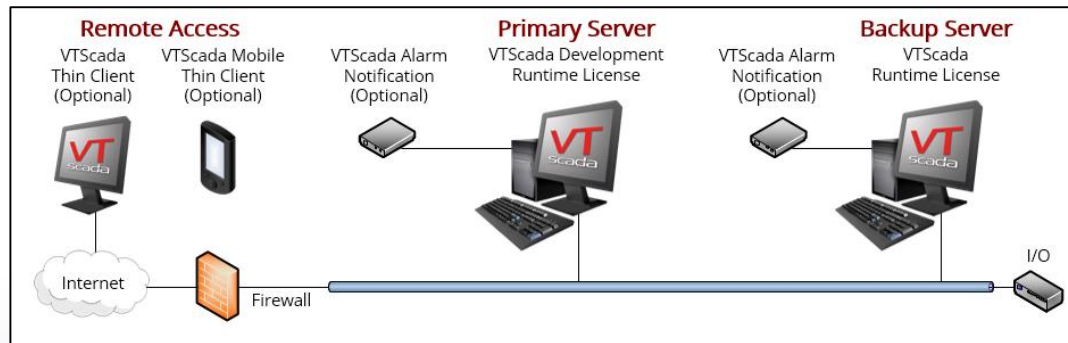
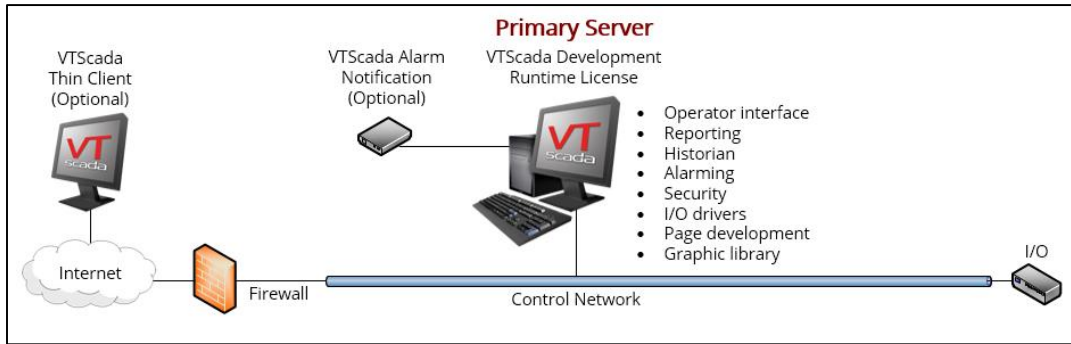
### Support Options - Single Vendor

90 days SupportPlus Technical Support and Product Updates	Included with software purchase
Annual SupportPlus Technical Support and Product Updates. Includes enrollment in the VTScada™ Rewards Program which offers credits towards future upgrades, system trade-in allowance, training seats and value protection.	15% of total software purchase price
Annual 24/7 Emergency Product Support. Available as extension of annual SupportPlus.	5% (minimum \$1,200)



# 5. Transparent SCADA Licensing

## Common VTScada Redundancy Configurations



# 5. Transparent SCADA Licensing

## VTScada Bundles

[www.trihedral.com/pricing](http://www.trihedral.com/pricing)

US Pricing

Popular Bundles  
Small and Medium Systems

	Single Server Lite	Single Server Basic	Single Server Complete	Dual Server Redundant	Dual Server Config	Dual Server Premium
<b>Internet Client (PC or Mobile)</b>			One	Two	Two	Unlimited
Historian	✓	✓	✓	✓	✓	✓
Security	✓	✓	✓	✓	✓	✓
Trending	✓	✓	✓	✓	✓	✓
Reporting	✓	✓	✓	✓	✓	✓
Slippy Maps Integration	✓	✓	✓	✓	✓	✓
Electronic Operator Logbooks	✓	✓	✓	✓	✓	✓
Widgets and Graphics Library	✓	✓	✓	✓	✓	✓
Network and Computer Resource Monitoring	✓	✓	✓	✓	✓	✓
<b>IO Drivers</b>						
ContinuIC e.g. Modbus, DFI, CP/ENP, Siemens S7, Omron Host Link, OPC	✓	✓	✓	✓	✓	✓
Advanced e.g. DNP3, IEC60870, Motorola ACU, Catena, M33 radio diagnostics	✓	✓	✓	✓	✓	✓
Proprietary e.g. Datalow Systems and others	✓	✓	✓	✓	✓	✓
DataLogger e.g. DFI, SCADAflex	✓	✓	✓	✓	✓	✓
<b>Support/Value Added</b>						
1 <sup>st</sup> Year: Seamless Version Compatibility and Value Protection	✓	✓	✓	✓	✓	✓
1 <sup>st</sup> Year: Unlimited Support and Upgrades	✓	✓	✓	✓	✓	✓
VTScada Rewards Program	✓	✓	✓	✓	✓	✓
<b>Alarms and Events Logging</b>	✓	✓	✓	✓	✓	✓
Email, SMS, Pager, Voice (text-to-speech) Dial-out/Dial-in	✓	✓	✓	✓	✓	✓
<b>Configuration</b>						
Automatic Version Control	✓	✓	✓	✓	✓	✓
Idea Studio™ Development Environment	✓	✓	✓	✓	✓	✓
Change Deployment	✓	✓	✓	✓	✓	✓
Scripting and Debugging Tools	✓	✓	✓	✓	✓	✓
OOBC Server, OPC Server, Web Services	✓	✓	✓	✓	✓	✓
Multiple-plant Support	✓	✓	✓	✓	✓	✓
<b>Redundancy</b>						
Back-up Historian	✓	✓	✓	✓	✓	✓
Back-up Alarms and Events Logging	✓	✓	✓	✓	✓	✓
Back-up OOBC Server, OPC Server, Web Services	✓	✓	✓	✓	✓	✓
Back-up Automatic Version Control	✓	✓	✓	✓	✓	✓
Secondary Idea Studio™ Development Environment	✓	✓	✓	✓	✓	✓
Back-up Change Deployment	✓	✓	✓	✓	✓	✓
Multi-user Scripting and Debugging Tools	✓	✓	✓	✓	✓	✓
<b>Bonus: One training seat included at a regularly scheduled course</b>	✓	✓	✓	✓	✓	✓
<b>Bonus: 1<sup>st</sup> Year: 24/7 Emergency Support</b>	✓	✓	✓	✓	✓	✓

Tag Ranges	1,000 I/O	5,000 I/O	10,000 I/O	25,000 I/O	100,000 - 2,500,000 (unlimited) I/O
<b>SPECIAL OFFER</b>	2,887	6,886	9,217	17,316	18,434
SAVE				12,595	13,595
				27%	30%
<b>SPECIAL OFFER</b>	3,777	9,668	12,555	23,768	26,468
SAVE				16,595	18,595
				30%	29%
<b>SPECIAL OFFER</b>	4,556	11,448	15,113	29,996	31,623
SAVE				19,595	22,595
				30%	36%
<b>SPECIAL OFFER</b>	5,446	14,563	19,118	36,864	38,333
SAVE				24,595	28,595
				31%	27%

100,000 - 2,500,000 (unlimited) I/O Please call for Enterprise Pricing

Prices in effect as of January 1, 2015. Subject to change without notice.

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# See you at WEFTEC!

