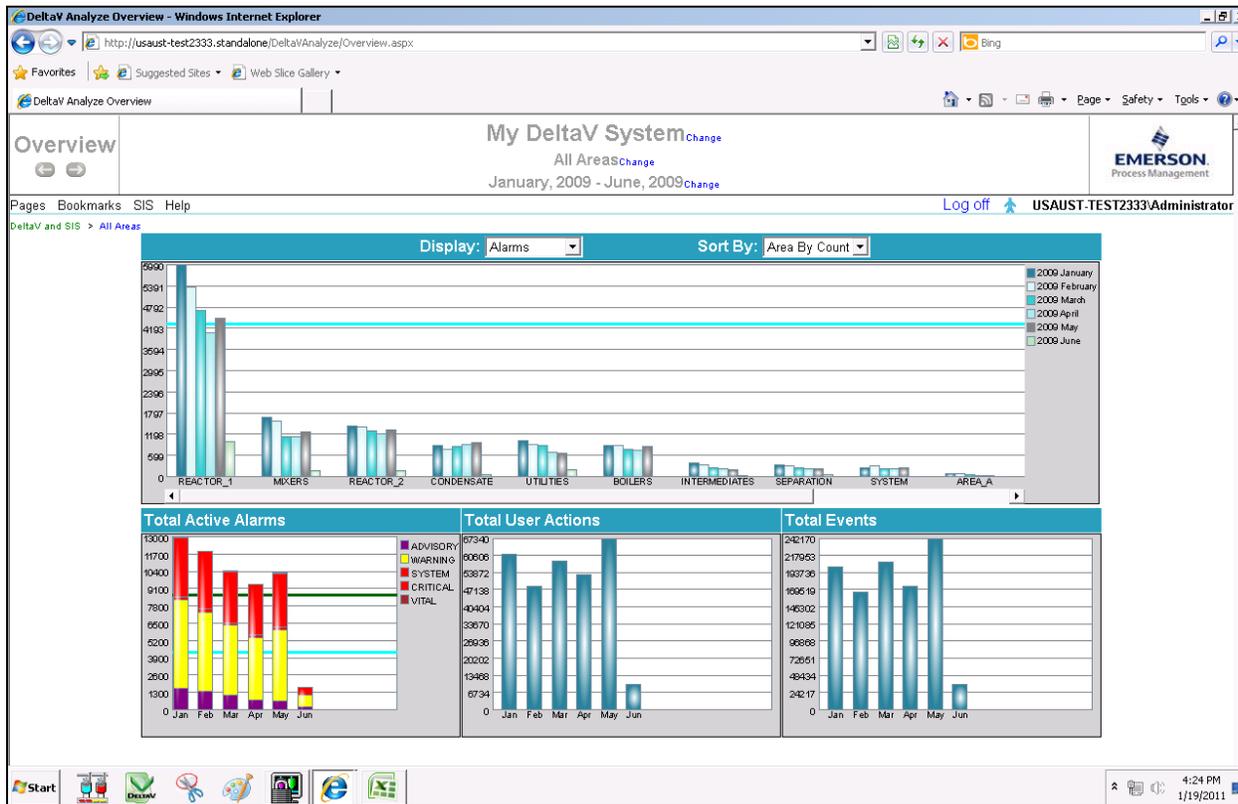


# DeltaV™ Analyze



The DeltaV™ Analyze Overview page summarizes your plant alarm and event performance.

- Continuous automated DeltaV System alarm system performance monitoring
- Trends of alarms, events and user actions
- Identification of control modules and devices causing nuisance alarms
- Configuration-free web page viewing
- Alarm System Key Performance Indicator Reports<sup>i</sup> per EEMUA-191<sup>ii</sup> and ISA-18.2<sup>iii</sup>

## Introduction

Are you concerned about alarm performance and its impact on your operator effectiveness? Often, fewer than 10 modules will cause 40% or more of the system's alarm activations. So by addressing just a few alarms you can significantly reduce operator alarm loading.

DeltaV Analyze makes it easy to find the alarms that occur most frequently, stale alarms, fleeting alarms, chattering alarms and those that are most often suppressed.

DeltaV Analyze is built-for-purpose, easy to install and ready out-of-the box to gather, organize and present information in point-and-click graphical webpages. Zoom from the big picture to details of interest, or schedule periodic KPI reports, all with no user query writing, report design or other burdensome configuration.

**Benefits**

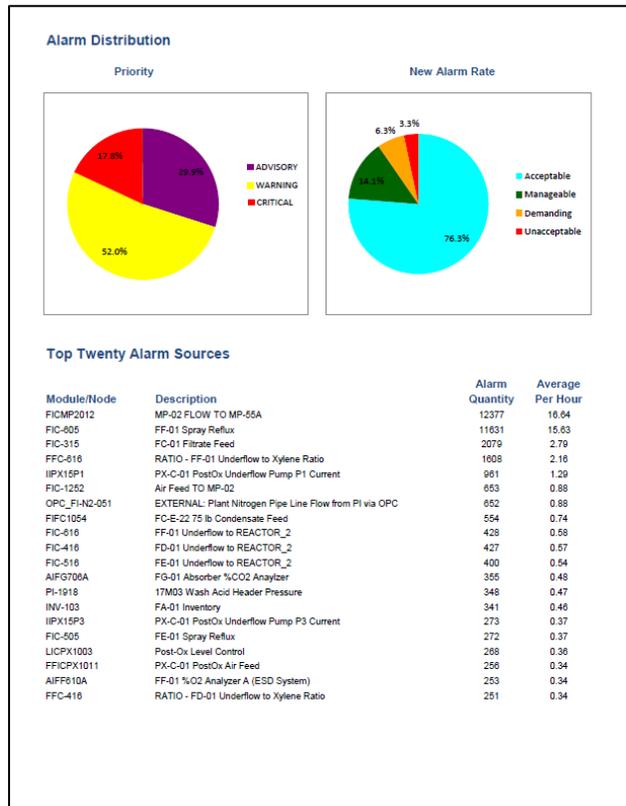
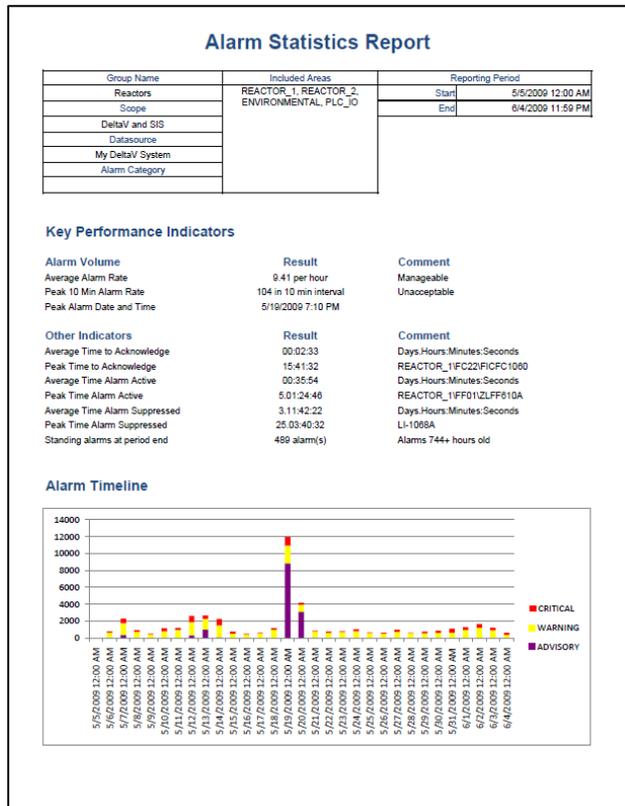
**Display up-to-date alarm performance.** DeltaV Analyze continuously processes your Event Chronicle or Plant-Wide Event Historian so that you have up-to-date performance information, whenever you need it.

**Display monthly trends of alarms, events and user actions.** You can compare any 12-month period to spot overall trends, by process area or for the whole system. At a glance, you can view any problems and see whether your plant is adhering to your alarm performance goals.

**Pinpoint control modules and devices causing excessive and nuisance alarming.** DeltaV Analyze identifies the modules and devices with the most frequently occurring alarms and presents them, in order of frequency. Thus, you can simply start at the top and work your way down the list of “noisy” tags.

**Configuration-free structured web page viewing throughout your enterprise.** Everything you need is laid out on DeltaV Analyze web pages. Simply select the page you want—Summary, Alarm Statistics, etc.—and the appropriate data is analyzed and presented. Drill in to evaluate a specific alarm priority or event type; further narrow your view to specific areas or units; or change the time span. With each choice, the whole page adjusts based on your selection.

**Alarm System KPI reports<sup>1</sup>.** Both EEMUA-191 and ISA-18.2 stress the importance of periodic measurement of Key Performance Indicators (KPIs). DeltaV Analyze provides a ready-to-use KPI report that can be scheduled or run on-demand and filtered by operator console position. The report contains ten KPI calculations, pie charts for alarm priority and rate distribution, timeline alarm activity charts for the report period and day with the most alarms, top-twenty lists of modules with frequent, fleeting, stale and often-suppressed alarms and a list of disabled alarms. Information sharing is simplified with the report’s Microsoft Excel format and user control over file naming and destination folder. Reports can be produced on demand or scheduled by shift, day, week or month.



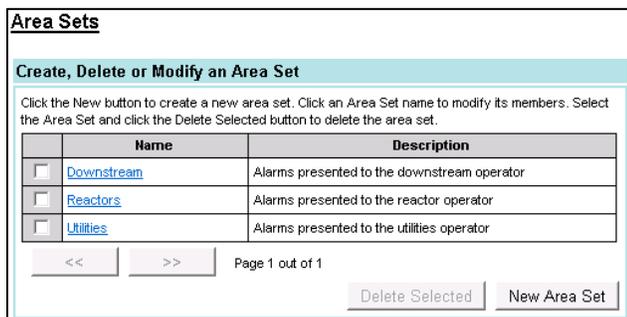
The Alarm Statistics Report provides Key Performance Indicators per EEMUA-191 and ISA-18.2 definitions in an easy to share Microsoft Excel format. Additional pages (not shown) identify the 20 modules with shortest activation, highest activation and highest suppression times, all alarms disabled in the period and a timeline of the day with the most alarms.

**Compare your plant’s incoming alarm rates to the EEMUA-191 benchmark, or to your own benchmarks.** The primary measure of alarm system performance is the incoming rate of alarms that require operator acknowledgement, measured per operator position.

Alarm Rate	Per 10 Minutes
Acceptable	0 – 1 alarms
Manageable	2 – 4 alarms
Demanding	5 – 9 alarms
Unacceptable	>= 10 alarms

*EEMUA-191 Alarm Rate Benchmark*

DeltaV Analyze allows you to edit or create new alarm rates and thresholds according to your local alarm philosophy, or use the default EEMUA-191 alarm rates.



*Process and SIS Area Assignments to Operator Positions*

Identify the DeltaV Process and SIS Areas assigned to each operator console position, then let DeltaV Analyze do the rest; presenting views and reports according to console position, applying your alarm rate benchmarks and KPI computations per EEMUA-191 and ISA-18.2.

## Product Description

DeltaV Analyze provides a comprehensive view of the DeltaV alarms, events, and user actions recorded in the Event Chronicle (active data set) of the system where it is installed or from multiple DeltaV system events that have been consolidated in a Plant Event Historian.

With the Off-System Processing option, analysis can be performed on Event Chronicle databases obtained from any number of other DeltaV V7.4 and higher systems.

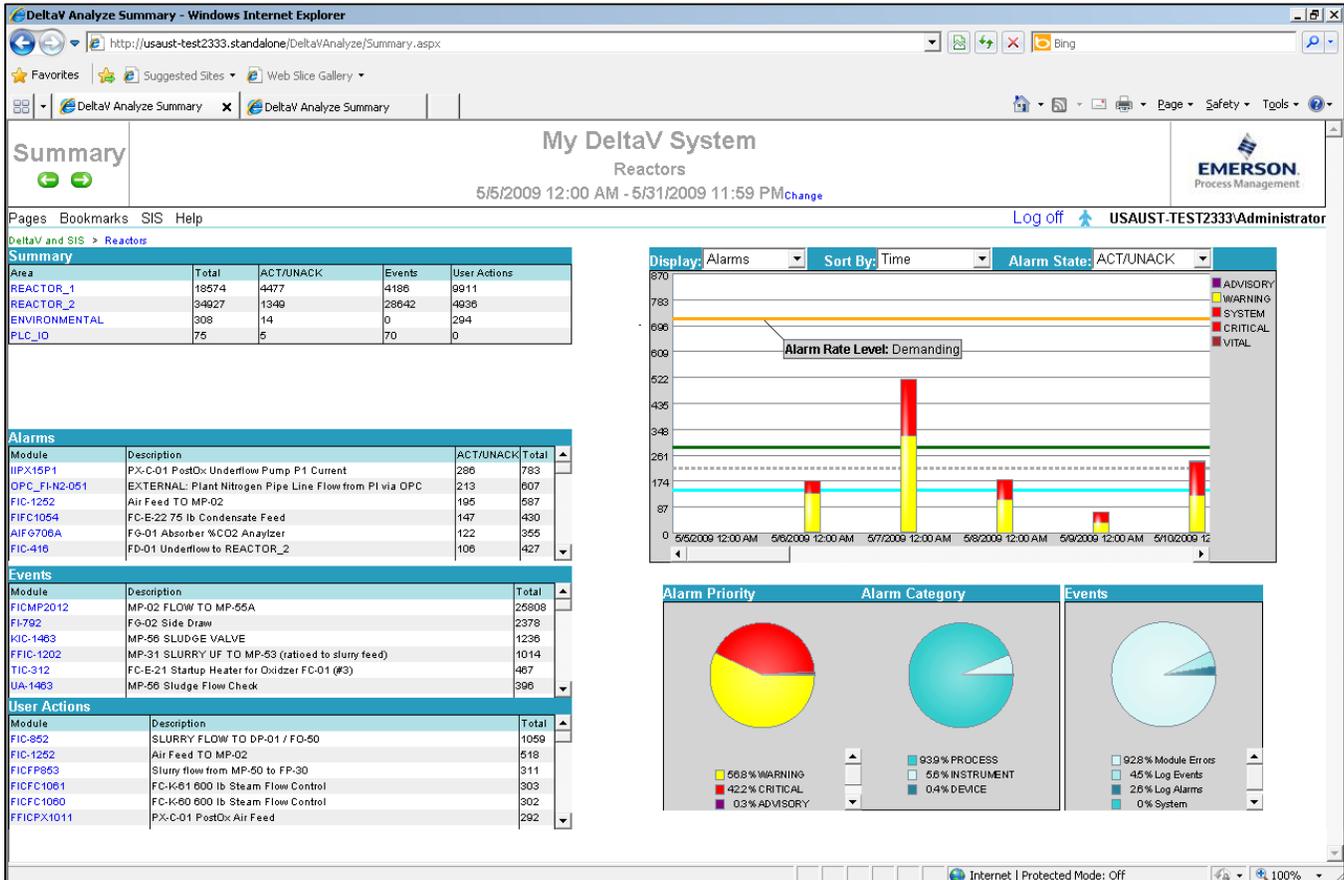
**The Overview page** is displayed when DeltaV Analyze is first accessed (see illustration on cover page). By default, the Overview page shows the monthly alarm, event and user actions accumulated for the past 12 months.

Alarm rate thresholds (either the default EEMUA-191 benchmarks or your own) are also displayed on the Overview screen and other relevant pages. A casual look at the Overview page may be all that is needed to know that alarm system performance meets your plant criteria.

If you want more detail, select the month and operator console (or individual area) of interest. Several pages are provided to highlight various specific alarm and event issues. So it is simple to find the tags causing the most problems. A common approach in plants is to target the top 10 high-frequency tags for alarm review each month.

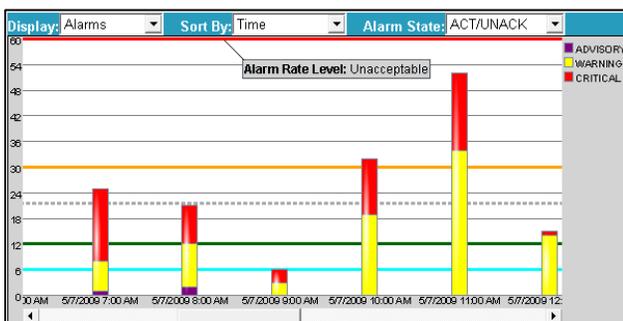
**The Summary page** provides module or device activity for alarms, events and user actions for up to 31 days (see illustration on following page). The modules or devices with the most alarms, events and user actions are displayed in scrollable tables. Data in these and other tables can be selected and copied into other applications such as Microsoft Excel.

EEMUA-191 and ISA-18.2 provide benchmark targets for the percentage distribution of alarms by priority; where the highest priority alarms should constitute no more than 5% of all alarms. Mouse hover over each segment of the alarm priority pie chart to see the alarm quantity for each priority, or click on one to filter the page for that priority. Note that pie charts and graphs on this and other pages are aware of your system’s priority names and alarm classifications.



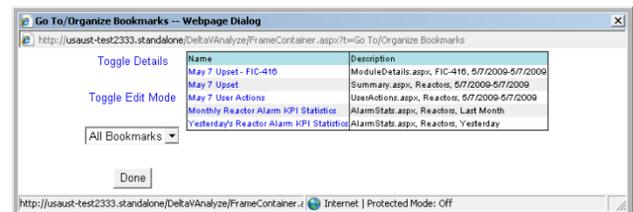
The Summary page shows modules with the most alarm annunciations, events and user actions.

Although the alarm average over a month may be considered manageable, there may have been days or hours where the alarm rate was much higher. In the Summary page above note that the alarm rate on May 7 approached the demanding level. With a simple mouse click on the May 7 column, the chart zooms to a per-hour view where it can be observed that the alarm rate exceeded the demanding level and came very close to the Unacceptable level.



Click to zoom to a per hour, 10 minute or one minute view.

It is easy to bookmark a favorite page and filter combination so that you can quickly return to the same date and information, or to always look at a relative time for specific data. For example, a bookmark might show alarm information for the last week for each shift.



Bookmark pages for easy recall.

One measure of operator loading is the quantity and type of operator intervention required on control modules. While some modules may require too much manual intervention, some may be left in manual, or they may be candidates for more sophisticated control algorithms.

The **User Actions page** summarizes all user changes and categorizes them by alarm acknowledgements, mode changes and value changes. You can view which modules had the most user actions, which users made the changes and drill into the changes.

Acknowledgements		
Module	Description	Total
FIC-416	FD-01 Underflow to REACTOR_2	98
FFC-416	RATIO - FD-01 Underflow to Xylene Ratio	25
PIC-1978	WVA TO MP-12 PRESS CONTROL	18
FIC-400	FD-01 Air Feed	17
FI-416	FD-01 Underflow	14
FIC-1252	Air Feed TO MP-02	14

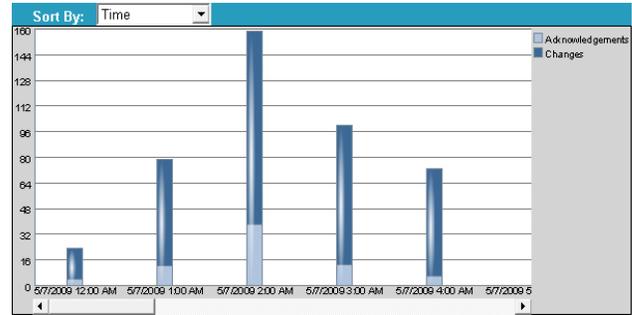
Changes			
Module	Value	Mode	Total
FIC-416	29	29	58
FIC-405	30	16	46
FIC-852	37	4	41
FIC-1151	11	29	40
LIC-1280	18	21	39
LIC-242	15	18	33

User			
User	Acknowledgements	Changes	Total
OPERATOR	453	776	1229

View user activity by module.

Also, the user activity can be examined by time for a more complete picture.



View user activity by time.

The **Alarm Statistic page** gives instant access to alarm system KPIs as defined in EEMUA-191 and ISA-18.2.

You can view and drill into alarm statistics to determine which alarms were active for long (or short) periods of time, as well as alarms that have been repeatedly suppressed or disabled. Or, create an on-demand Alarm Statistics report for top-twenty lists of the modules with bad-actor alarms. Operator acknowledgement times are shown and can be a good indicator of overall operator loading.

**Alarm Statistics** My DeltaV System Reactors  
5/1/2009 12:00 AM - 5/31/2009 11:59 PM Change

**Summary**

Area	Suppressed Alarms	Disabled Alarms	Average Acknowledgement Time	Average Activation Time	Total Activation Time
REACTOR_1	102	8221	00:02:38	00:38:59	122:07:48:50
REACTOR_2	9	5687	00:02:40	00:44:38	41:21:19:28
ENVIRONMENTAL	0	0	00:00:22	09:19:47	5:10:37:05
PLC_IO	0	0	00:00:00	00:00:10	00:00:50

**Key Performance Indicators**

Average Alarm Rate	7.86 per hour	Manageable
Peak 10 Min Alarm Rate	104	Unacceptable
Peak Alarm Date and Time	19-May-2009 07:10 PM	Investigate
Average Time to Acknowledge	00:02:38	
Peak Time to Acknowledge	15:41:32	
Average Time Alarm Active	00:41:29	
Peak Time Alarm Active	5:01:24:46	
Average Time Alarm Suppressed	3:10:36:56	
Peak Time Alarm Suppressed	12:07:52:45	

**Alarm Rates**

- 80% Acceptable
- 11% Manageable
- 4% Demanding
- 2% Unacceptable

**Alarm Category**

- 94% PROCESS
- 4% INSTRUMENT
- 1% DEVICE
- 49% WARNING
- 33% ADVISORY
- 16% CRITICAL

**Activation and Acknowledgement Times**

Module	Description	Average Acknowledgement Time	Average Activation Time	Total Activation Time
HVPX1010	PX-C-01 PostOx N2 Block Valve	00:00:13	00:00:02	00:00:06
HVPX1008B	PX-C-01 PostOx Offgas to FH-01 Block Valve	00:00:13	00:00:02	00:00:06
PITFC1064A	Thermocompressor Discharge Pressure Transmitter	00:00:14	00:00:44	

**Suppressed and Disabled Counts**

Module	Description	Total Suppressed Time	Average Suppressed Time	Total Suppressed	Total Disabled
FFC-416	RATIO - FD-01 Underflow to Xylene Ratio	24:15:45:28	12:07:52:43	2	70
FFC-616	RATIO - FF-01 Underflow to Xylene Ratio	21:18:45:38	7:06:15:12	3	709
FIC-616	FF-01 Underflow to REACTOR_2	14:10:31:28	3:14:37:51	4	113
FIC-605	FF-01 Spray Reflux	13:19:16:40	3:10:49:09	4	5769

Rapid access to alarm system Key Performance Indicators.

### Security

DeltaV Analyze user access is based on Windows security. Simply select the Windows users who have permission to view DeltaV Analyze web pages. They log in with the same Windows user name and password.

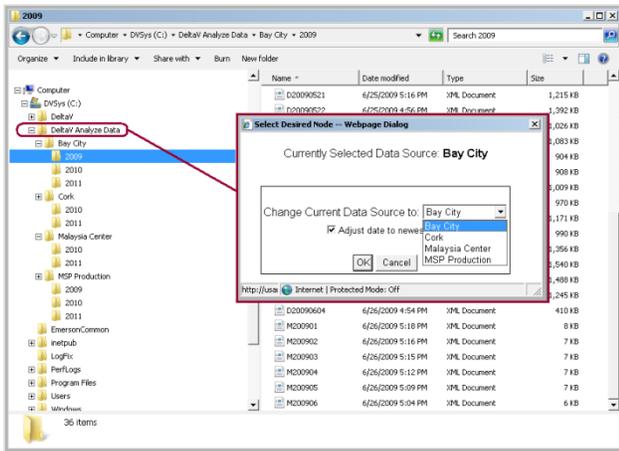
### Automatic Processing

DeltaV Analyze automatically processes events from the DeltaV Event Chronicle active data set or PEH on a scheduled basis.



Schedule the frequency of event record processing.

DeltaV Analyze extracts relevant alarm, event and user action information from the event file, reducing it to a collection of XML files for each day and month, organized as one folder per system with yearly subfolders. DeltaV Analyze webpages access this optimized data, independent of the original event database.



Processed Analyze XML data allows information transfer between sites that have DeltaV Analyze.

### Off-System Processing

With the off-system processing option, event processing (the creation of the XML data) can be performed on-demand on Event Chronicle files in Access (MDB) format, including files from other DeltaV systems. Files in SQL (MDF) format can be converted to the Access file format using the Export data set function in the Event Chronicle Administrator. The processed XML files can be shared with other sites that have DeltaV Analyze, even if they don't have the off-system processing option.

Processing an entire Event Chronicle may be resource-intensive, and a dedicated computer should be considered when selecting this option. Off-system processing is not available when DeltaV Analyze is used with PEH on a non-DeltaV computer. Processing of Event Chronicle text archives is not supported.

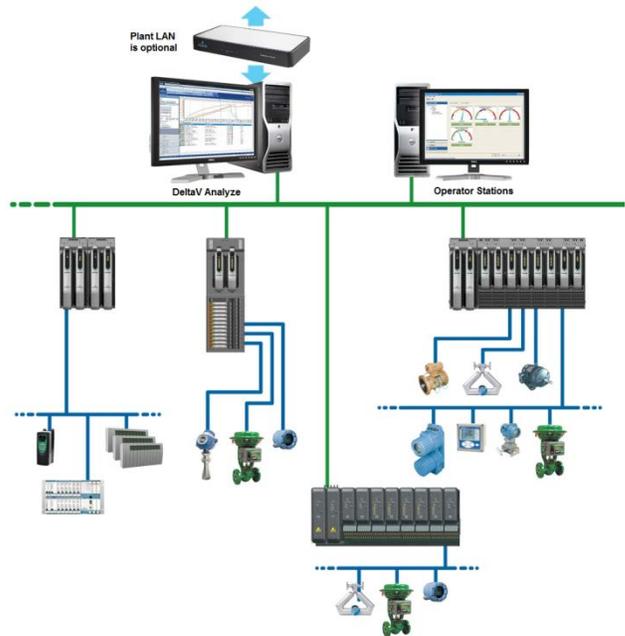
### Installation

DeltaV Analyze must be installed on the same workstation with the event database to be analyzed.

Either Microsoft Excel 2007 or Excel 2010 must also be installed on the workstation to support creation of Alarm Statistics reports.

When using the DeltaV Event Chronicle, DeltaV Analyze is installed on either the ProfessionalPlus or Application Station. Typically the Application Station is selected because its Event Chronicle is configured to capture all of the alarms and events system-wide.

Refer to Knowledgebase Article NK-1100-1100 *Addendum to DeltaV Analyze v2.0 Release Notes* for additional information, or to article AK-1000-0019 for V1.3.



DeltaV Analyze installed on the same DeltaV workstation as the Event Chronicle.

Microsoft's Internet Information Services (IIS) must be enabled on the workstation, making it the DeltaV Analyze web page server. The release notes provided detailed instructions for IIS setup. Note that Microsoft IIS does not support workstation names containing an underscore ( \_ ) where a DeltaV workstation otherwise allows it.

DeltaV Analyze can be set up as a standalone system (webpages can only be viewed from that workstation) but IIS is still required. The release notes provide details for this type of installation.

After installation, use the DeltaV Analyze Administrator to specify the event database, how long to keep the summary records and disk space usage.

Optional additional setup includes changing the processing frequency, customizing alarm priority colors, defining plant shifts, modifying alarm rate bands (set to EEMUA-191 benchmarks by default), relating alarm areas to operator console positions and scheduling reports.

Certain Internet Explorer security settings are required on client computers to allow the DeltaV Analyze webpages to work properly and are documented in the release notes.

Several approaches can be taken to accommodate multiple DeltaV systems, with various tradeoffs.



DeltaV Analyze installed on Plant LAN.

Strategy	Considerations
One DeltaV Analyze System per DeltaV system.	Fully automatic event processing for local system alarm analysts. To compare multi-system performance, corporate analysts would need to receive the Excel Alarm Statistics reports or XML files from each system (typically monthly), or alternately if WAN system connectivity permits, switch between webpages hosted by each system.
Just one of the multiple DeltaV systems has DeltaV Analyze (could be a Simulate System) with the off-system processing option.	Manual recurring effort (typically monthly) to harvest and process event chronicle files from the non-Analyze systems. A lower-cost solution.
Each DeltaV system has an OPC A&E Server and PEH single-client connection, to transfer information to a central Plantwide Event Historian (PEH) with a single DeltaV Analyze system for PEH.	Fully automated event processing for local and corporate system alarm analysts. Needs multiple OPC connections to transport raw alarm and event information to a central PEH database. Potential sorting/reporting conflicts if systems have like-named areas.

### Disk Space Usage

Disk space usage varies based on the amount and type of events processed. Typical disk space usage is estimated at 1Mbyte/day/system. Disk space used can be up to 20 Mbyte/day for facilities with hundreds of thousands of events/day.

Disk Space Usage	Typical	Maximum
Application	680 Mbyte	700 Mbyte
Processed files	1Mbyte/day	20Mbyte/day

### System Compatibility

Webpage clients may be any workstation with Windows Internet Explorer version 7 or later. Recommended client memory is 500 Mbytes. Concurrent user timeout is 20 minutes. For best results, the resolution of the client display should be 1280 x 1024 or greater.

Standard DeltaV workstation hardware specifications are suitable for DeltaV Analyze.

DeltaV Analyze may be used on DeltaV systems configured as either domains or workgroups.

Remote access of DeltaV Analyze web pages on other workstations requires a DNS server (domain name service). DeltaV domains have a DNS server defined. DeltaV workgroups may need to have a DNS server defined for remote access.

When DeltaV Analyze is applied to the Plantwide Event Historian, both are installed on the same computer, which may be either a DeltaV Application Station or a non-DeltaV computer.

DeltaV Analyze may be installed on DeltaV Simulate and System Integrator DeltaV systems.

### DeltaV Analyze Version Compatibility

There are two available versions of DeltaV Analyze:

DeltaV Analyze	DeltaV	Operating System	Plant Event Historian
v1.3*	v7.3 – v9	XP / Server 2003	v3.2
v2.0	v10	XP / Server 2003 / Server 2008	v3.3
v2.0	v11	Windows 7 / Server 2008	v3.3

\* Note: DeltaV Analyze v2.0 can present webpages and produce alarm statistic reports using XML files previously created with v1.3 including those from systems prior to DeltaV v10.

#### New Features in v2.0

- The Alarm Statistics report, providing pre-calculated KPIs and bad actor-lists.
- Modifications to the Alarm Summary webpage to present KPIs and launch an on-demand Alarm Statistics report.
- Area grouping to filter views (and the KPI report) by operator console position.

- User-configurable alarm rate bands (in v1.3 these are fixed at the EEMUA-191 benchmarks)

#### Licensing Differences Between v1.3 and v2.0

- v2.0 has a new set of license numbers. However v2.0 recognizes the original v1.3 license number. No new licenses are required to upgrade.
- v2.0 does not restrict the number of concurrent users when installed on a Windows Server OS (v1.3 requires license purchases for more than one user).
- A new license is available for v2.0 to enable off-system processing in a Simulate Multi-Node System.
- v2.0 allows licensing off-system processing in a standalone Simulate system.
- v2.0 enables off-system processing in systems running on an SI dongle. Emerson sales offices and business partners may order VEANALYZEDEM to acquire the media for demonstration of the product using customer Event Chronicle databases.
- v2.0 will be provided to DeltaV system Foundation and Guardian Support subscribers.

### Ordering Information

V1.3 DeltaV Analyze for Event Chronicle	Model Number
<i>DeltaV Analyze, single client connection (works with XP or Windows Server 2003)</i>	VE2131
<b>V1.3 Concurrent Clients (Event Chronicle or Plant-Wide Event Historian)</b>	
<i>7 concurrent client connection (works with Windows Server 2003)</i>	VE2132S07
<i>15 concurrent client connection (works with Windows Server 2003)</i>	VE2132S15
<i>50 concurrent client connection (works with Windows Server 2003)</i>	VE2132S50
<i>Scale-up options available on Windows 2003 Server:</i>	
<ul style="list-style-type: none"> <li>• 2 concurrent client scale-up</li> </ul>	VE21UPS051
<ul style="list-style-type: none"> <li>• 35 concurrent client scale-up (scale-up available only with 15 concurrent client licenses. The 15 concurrent client licenses may be any combination.)</li> </ul>	VE21UPS052
<b>V1.3 Option for Off-System Data Processing</b>	
<i>Off-system processing (only available for DeltaV Analyze VE License)</i>	VE21UPG003

<b>V1.3 DeltaV Analyze for non-DeltaV Workstations</b>	
DeltaV Analyze, single client connection for V3.2 Plant-Wide Event Historian (works with Windows Server 2003)	VF1005
<b>V1.3 Concurrent Clients for non-DeltaV Workstations</b>	
7 concurrent client connection (works with Windows Server 2003)	VF1006S07
15 concurrent client connection (works with Windows Server 2003)	VF1006S15
50 concurrent client connection (works with Windows Server 2003)	VF1006S50
Scale-up options available on Windows Server 2003:	
<ul style="list-style-type: none"> <li>2 concurrent client scale-up</li> </ul>	VF1006UPS02
<ul style="list-style-type: none"> <li>35 concurrent client scale-up (scale-up is available only with 15 concurrent client licenses.) The 15 Concurrent client licenses may be any combination.</li> </ul>	VF1006UPS35

<b>V2.0 DeltaV Analyze for Event Chronicle</b>	<b>Model Number</b>
DeltaV Analyze (works with XP SP3, Windows 7, Windows Server 2003 SP2 and Windows Server 2008 SP1 and SP2)	VE2133
<b>V2.0 Option for Off-System Data Processing</b>	
<i>Off-system processing for DeltaV Analyze Standard (VE) License</i>	VE21UPG008
<i>Off-system processing for Multi-Node Simulate Systems</i>	VX21UPG008
<b>V2.0 DeltaV Analyze for non-DeltaV Workstations</b>	
DeltaV Analyze, for V3.3 Plant-Wide Event Historian (works with Windows Server 2008)	VF1008

Related Products

- **Alarm Reporting Service.** An annual subscription service providing periodic reports and remote use of DeltaV Analyze based on periodic upload of Event Chronicle data to a secure Emerson server.
- **DeltaV Event Chronicle.** Captures process, system and user alarms and events and stores them in a Microsoft SQL Server database.
- **Plantwide Event Historian.** Captures process, system and user alarms and events and stores them in a Microsoft SQL Server database.
- **OPC Events Server.** Exposes all DeltaV alarm and event information using the industry standard OPC Alarms and Events interface.
- **Alarm Help.** Provides Operators with in-context access to approved alarm response procedures and Control Engineers with native system configuration capability to administer alarm rationalization data per ISA-18.2 - Management of Alarm Systems for the Process Industries.

Footnotes

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<sup>i</sup> Reports and several other features and licensing options described in this datasheet are only available in v2.0 of DeltaV Analyze. See Page 8 for more information.  
<sup>ii</sup> EEMUA Publication 191 – Alarm Systems: A Guide to Design, Management and Procurement – Second edition, published by the Engineering Equipment and Materials Users Association in 2007. ISBN 0 85931 155 4  
<sup>iii</sup> ANSI/ISA-18.2-2009 — Management of Alarm Systems for the Process Industries – approved June 23, 2009. ISBN: 978-1-936007-19-6.

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