

VBC Server

VBC SERVER

VBC SERVER & ELEMENT MANAGER

The VBC offers central management and status displays of all monitored services, providing a window into the performance of television distribution operations. The VBC gives unprecedented insight into network health and the flow of all types of media streams throughout the network, and is a server-side software application that allows multiple Bridge Technologies monitoring probes to be accessed from a single, web-based user interface.

Key elements in the VBC include: configuration management and stream performance comparison at multiple points, worst-performer identification, drill-down analysis, stream and service status monitoring, graphical alarm historical data-display with the Microtimeline™ technology, Visio™ map import with active alarm indication, trend graphing up to two years, SNMP multi-destination trap forwarding, alarm logging SLA report generation and aggregated alarm trend graphs. The VBC also has a built in MAP view, allowing the user to geotag probe locations.

RDW (Remote Data Wall) is a display technology controlled by the VBC, allowing you to create live data dashboards of network activity, enabling potential problems to be rapidly identified and appropriate corrective action taken.

The VBC server runs in a Linux Ubuntu-based environment that can be installed on standard server hardware, or in a cloud environment. The VBC client is simply a web browser pointed towards the VBC server, and can run on any client operating system.

When managing a large digital television system often consisting of hundreds of monitoring nodes there is a need to be able to aggregate information and monitor the overall system status from a central location, as well as offering features such as user login with access restrictions.

Deploying the VBC Controller as part of the system enables the user to view the system status at-a-glance and the VBC's drill-down functionality makes it easy to locate the problem source and examine details on the devices themselves. Through the VBC the user can perform tasks such as building a hierarchical equipment view, view aggregate alarm and status messages, get aggregate status per TV stream and compare measurements across devices. The VBC supports alarm export for integration into an NMS system.

Sites, Users and Nodes

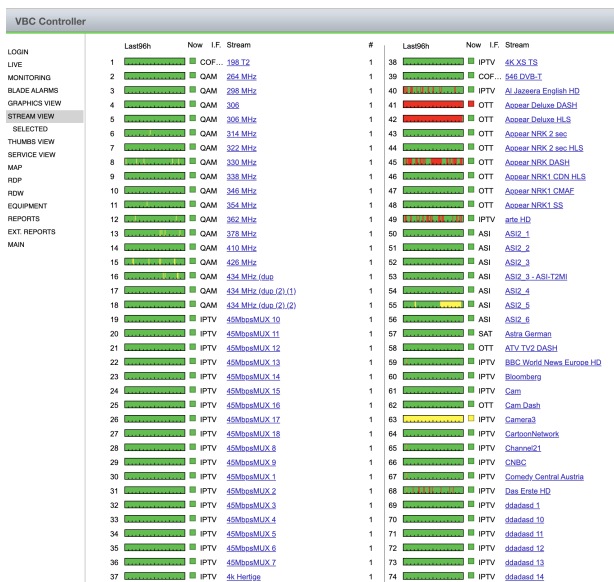
The Bridge probes offered in the VBC are VB120, VB220, VB330, VB440, NOMAD, MDC and QTT Manager.

The VBC is structured around the concept of Sites, Users and Nodes. A Site is often a geographical location (Paris) or a logical network demarcation structure (Head-End-Ingest). A User is a user role defined by the admin user and could be anything. Users are given access to Sites. In this manner it is possible to deploy a single VBC instance and have multiple commercially independent entities accessing the same system. Nodes – or probes – are the physical monitoring points in the network and are organized underneath Sites.

The VBC server may be accessed by several users simultaneously. An administrator manages users and their access rights, and a user can only view information concerning sites that he has access rights to. A user with read-only access can only view alarms whereas a user with read/write access can alter equipment settings at the sites he has access to.

Stream View

The Stream View in the VBC is one of the most powerful and versatile dashboards available to the operator. It offers a per-stream alarm status view over the last 96-hours for all the streams monitored by all the probes seen by the VBC using the patented microTimeline™ technology. A Stream is a media stream carrying audio and video and can be an IPTV multicast, an OTT ABR stream or an RF Transport Stream. The user can drill down into each stream if alarms are shown for further details and eventually reach the detailed user-interface of the individual probes measuring on the stream in question. Inside Stream View it is possible to sort on alarm severity, stream type and custom defined stream groups. A stream group is just a collection of streams that the operator has defined and could



be used to distinguish premium channels from other channels, as an example.

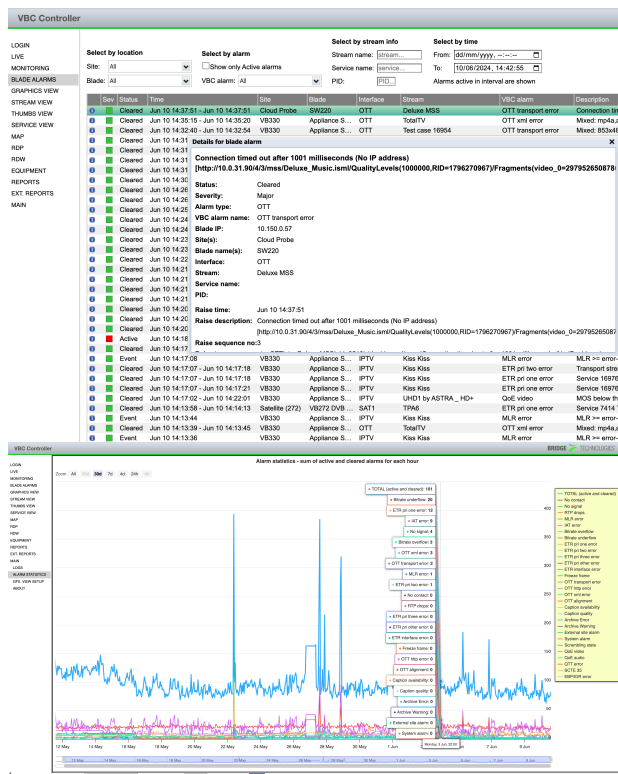
Thumbs View

The VBC contains a thumbnail view panel that presents all the available thumbnails extracted from all the probes presented together with a matching microTimeline™. The alarm state of each stream is indicated via a colored frame around the thumbnail. The thumbnail view allows sorting on alarm severity and filtering on stream group or individual stream name.



Alarming and alarm statistics

The VBC offers alarm filtering and integration to avoid alarm flooding and false positives. A Live alarm view shows the currently active alarms on all sites monitored by VBC. A powerful alarm trending graph available on a per-user basis offers statistics over up to 2 years back in time. For the ultimate in alarm resolution, it is possible to also access and search in the instant alarms from the individual probes via the Blade Alarms view. Filtered alarms can be further forwarded to 3rd party NMS style systems via a configurable SNMP Trap interface.

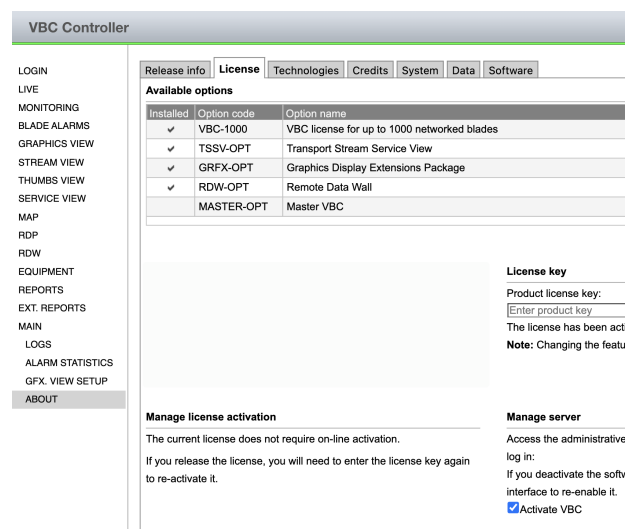


Software and Configuration Management

The VBC offers an Equipment dialogue that allows the operator to gain a centralized overview of systems related information such as product types, hardware versions, serial numbers, software versions, license keys, license maintenance expiry dates, probe uptimes, temperature, CPU usage, RAM usage, disk usage. The Equipment dialogue offers a centralized method of performing bulk software updates towards the probes being managed. It also allows configuration files to be replicated from one probe onto others, saving time during system setup and change.

Licensing

The VBC licensing scheme is flexible by nature and is based on how many unique probes are being operated under the control of the VBC. Each probe counts as a license item and licenses can be added with granularity in steps of 1 and 5, depending on how many probes the system has. A minimal VBC consists of 5 licensed nodes and can grow up to a VBC system managing 500 nodes. For higher node counts than this it is possible to operate multiple VBC instances in a hierarchical architecture to scale into the thousands. The Remote Data Wall (RDW) option is activated though a dedicated license key and as such is not included as standard. It is furthermore possible to operate a VBC system without any license at all activated. The system then defaults down to becoming a simple element manager used primarily for configuration management and centralized batch software and license updates of the probes under its control. Without the license key activated the VBC element manager has none of the advanced features such as alarm aggregating, reporting, graphics view and so forth.

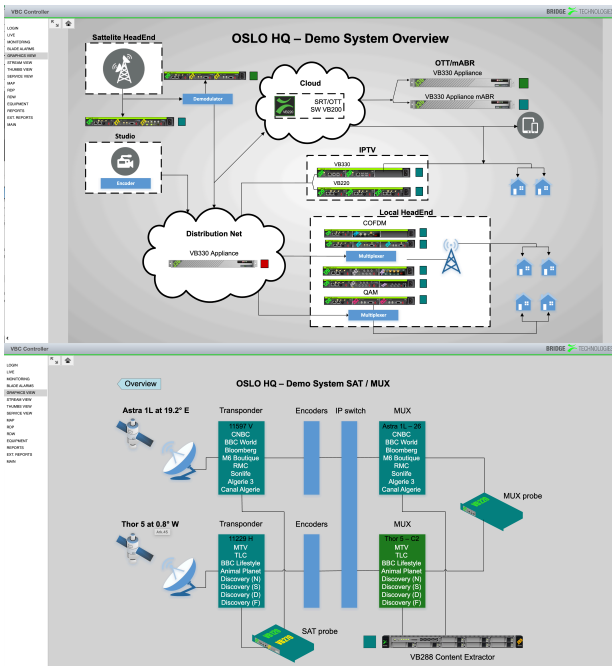


The screenshot shows the 'VBC Controller' interface with the 'License' tab selected. The interface includes a sidebar menu with options like LOGIN, LIVE, MONITORING, and ABOUT. The main content area displays 'Available options' in a table:

Installed	Option code	Option name
<input checked="" type="checkbox"/>	VBC-1000	VBC license for up to 1000 networked blades
<input checked="" type="checkbox"/>	TSSV-OPT	Transport Stream Service View
<input checked="" type="checkbox"/>	GRFX-OPT	Graphics Display Extensions Package
<input checked="" type="checkbox"/>	RDW-OPT	Remote Data Wall
<input type="checkbox"/>	MASTER-OPT	Master VBC

Below the table, there are sections for 'License key' (with a text input field for 'Product license key'), 'Manage license activation' (with instructions on on-line activation), and 'Manage server' (with a checkbox for 'Activate VBC').

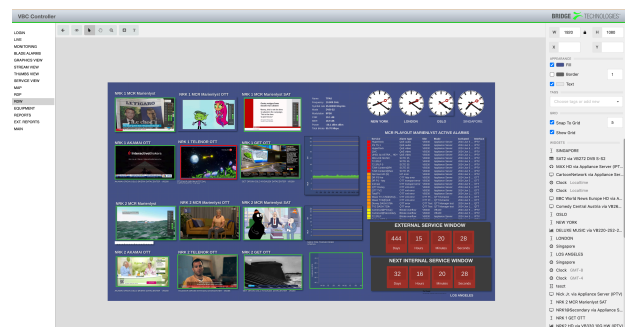
Graphics View



The VBC can import system diagrams in the Visio™ file format to have active objects defined. An active object is a graphical item in the diagram with an alarm source associated with it, making it possible to dynamically change colors to reflect the system health. Example usages include physical rack layout diagrams, logical signal flow charts, network diagrams or geographical map locations. The graphics view systems diagrams can be configured to be shown in a carousel manner to the operator to cycle through as much relevant information as possible. Each graphics diagram is recursive in nature, where the user can click on an object in one drawing and drill into another. Links can be made to tunnel straight into monitoring probes from the top-level graphical view.

Remote Data Wall (RDW)

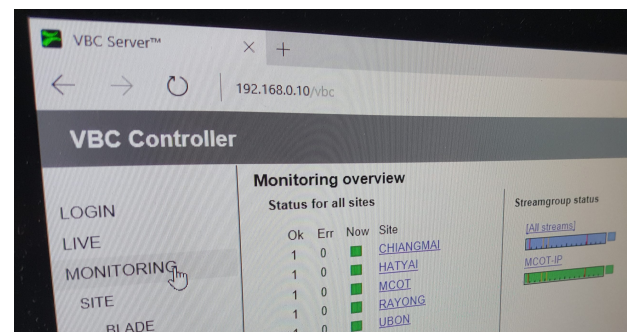
Remote Data Wall (RDW) gives the operator the capability of having multiple autonomous browser-based viewing stations accessing customized data panels in a distributed manner. The operator builds the data panel dashboards, and these are then made accessible from any browser instance. Typical data primitives making up a dashboard include alarm lists, thumbnail views, graphical Visio elements, RF signal graphs, constellation diagrams, redundancy switch status, wall clock, countdown to event, audio loudness graphs, VBC stream view, VBC graphics view, OTT status, maps, as well as many others. The client



browsers are pointed towards the VBC and can then be remotely controlled and refreshed. Applications include headless data visualization in network operations centers, or in distributed work environments.

Redundancy

A second VBC instance called VBC-R is offered at a heavily discounted rate for those systems in need of 1+1 style redundancy, either on-prem or in cloud environments. Two VBC instances are then run side by side, accessing the same underlying probe units. Using the DNS setup to point to either one or the other instance it becomes possible to have a transparent and powerful redundancy scheme in place. This has advantages in terms of achieving a high up time as well as catering for a stepped systems maintenance process with minimal to no system downtime.



Integration interface

The VBC offers a set of northbound integration interfaces. These include SNMP TRAP forwarding of filtered VBC alarms to a third-party overlying NMS system. Up to 4 different TRAP destinations can be configured. It is also possible to configure e-mail groups to receive VBC alarms with a user-selected batch processing time. SLA reports generated by the VBC can also be forwarded automatically as e-mail attachments.

VBC Controller

Alarms | SNMP traps | Email setup

#	Alarm message	Forward	Email group	Severity	Origin	Description
1	No contact	<input checked="" type="checkbox"/>	Do not forward	Fatal	VBC	Activated if probe cannot be reached by VBC
2	No signal	<input checked="" type="checkbox"/>	Do not forward	Major	Probe	Activated if too much signal loss
3	RTP drops	<input checked="" type="checkbox"/>	Do not forward	Error	Probe	Activated if too much RTP drops
4	MLR error	<input checked="" type="checkbox"/>	Do not forward	Error	Probe	Activated if too much transport stream packet loss
5	IAT error	<input checked="" type="checkbox"/>	Do not forward	Error	Probe	Activated if too much IP packet jitter
6	Bitrate overflow	<input checked="" type="checkbox"/>	Do not forward	Warning	Probe	Activated if bitrate is too high
7	Bitrate underflow	<input checked="" type="checkbox"/>	Do not forward	Warning	Probe	Activated if bitrate is too low
8	ETR pri one error	<input checked="" type="checkbox"/>	Do not forward	Warning	Probe	Activated if too much ETR priority 1 errors
9	ETR pri two error	<input checked="" type="checkbox"/>	Do not forward	Warning	Probe	Activated if too much ETR priority 2 errors
10	ETR pri three error	<input checked="" type="checkbox"/>	Do not forward	Warning	Probe	Activated if too much ETR priority 3 errors
11	ETR pri other error	<input checked="" type="checkbox"/>	Do not forward	Warning	Probe	Activated if too much ETR extended tests errors
12	ETR interface error	<input checked="" type="checkbox"/>	Do not forward	Warning	Probe	Activated if too much ETR interface errors
13	Freeze frame	<input checked="" type="checkbox"/>	Do not forward	Error	Extractor	Video has been detected as frozen
14	OTT transport error	<input checked="" type="checkbox"/>	Do not forward	Error	Probe	Activated if OTT transport fails
15	OTT http error	<input checked="" type="checkbox"/>	Do not forward	Error	Probe	Activated if OTT HTTP connection errors
16	OTT ext error	<input checked="" type="checkbox"/>	Do not forward	Error	Probe	Activated if errors in manifest files etc
17	OTT alignment	<input checked="" type="checkbox"/>	Do not forward	Error	Extractor	OTT profiles are unaligned
18	Archive Error	<input checked="" type="checkbox"/>	Do not forward	Major	Archive	Archive server error
19	Archive Warning	<input checked="" type="checkbox"/>	Do not forward	Error	Archive	Archive server warning
20	External site alarm	<input checked="" type="checkbox"/>	Do not forward	Major	VBC	CHD VBC has active alarm for site
21	Systems alarm	<input checked="" type="checkbox"/>	Do not forward	Major	Probe	A device is experiencing an active system alarm
22	Scrambling state	<input checked="" type="checkbox"/>	Do not forward	Error	Extractor	A stream has an unexpected clear/scrambled status
23	QoE video	<input checked="" type="checkbox"/>	Do not forward	Major	Probe	One or more video content alarms are active
24	QoE audio	<input checked="" type="checkbox"/>	Do not forward	Major	Probe	One or more audio content alarms are active
25	SCITE 3S	<input checked="" type="checkbox"/>	Do not forward	Major	Probe	One or more SCITE 3S content alarms are active
26	QTT error	<input checked="" type="checkbox"/>	Do not forward	Error	QTT manager	The QTT manager has detected an error
27	Caption availability	<input checked="" type="checkbox"/>	Do not forward	Error	Probe	Caption data not available
28	Caption quality	<input checked="" type="checkbox"/>	Do not forward	Error	Probe	Caption data contain errors
29	EBP/IDR error	<input checked="" type="checkbox"/>	Do not forward	Warning	Probe	One or more EBP or IDR alarms are active

Only selected alarms are forwarded as SNMP traps.
 To update the SNMP alarm list based on new selections, select **Clear alarm lists** in the **General** menu.

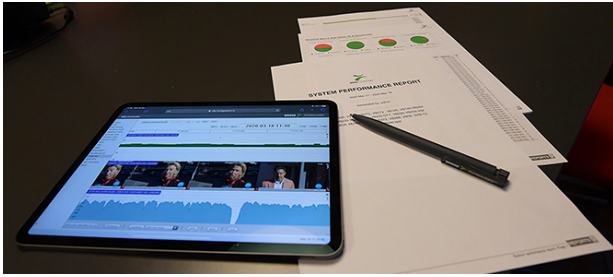
Skyline Communications - Dataminer

We give you data, your way. Whether it be through the entirely customisable Remote Data Wall or through partnership with other network control providers, one brilliant example being Skyline Communications' DataMiner, we allow you the flexibility to access data that matters to you, in a way that is meaningful and accessible to you. Bridge Technologies works closely with the technical team at Skyline Communications, ensuring drivers for probes are kept optimized and up to date.



Reporting / Extended Reporting

The Reporting feature of the VBC makes it possible to generate SLA-style reports that are built up either manually or automatically at specific



EXTENDED SYSTEM REPORT

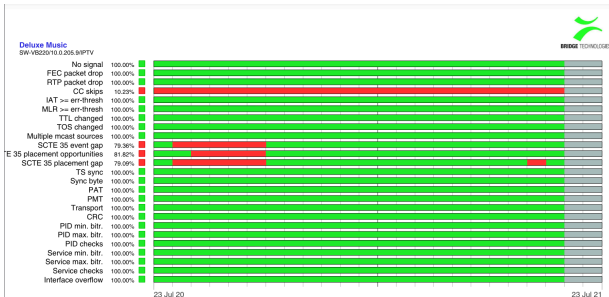
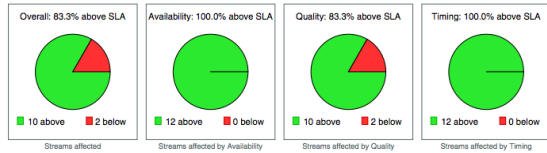
2023 Jul 20 - 2023 Jul 21

Generated by: demo

VB330, VB220-VB272, VB273, VB120-VB262, VB220-VB242-243
Terrestrial+ASI, MicroVB-MDC, DVB-T2, SW-VB220

Streams above and below SLA thresholds

The error-seconds are summed for each stream and compared against SLA



points in time. Each report can span anything from a day and up to 2 years. For multicast-type streams the streams are scored in terms of Availability, Quality and Timing with calculated percentages for each. In this manner, an SLA can be put in place and reported against. The Extended Reporting feature of the VBC takes this to the next step to include SLA percentage measurements for all types of streams and alarms – not only those for IP multicast. Reports can be configured to be automatically emailed to a distribution list once complete.

Security — Tacacs+

Bridge Technologies uses best practices from the IT industry to ensure continued operational stability and the highest level of protection against attack. The VBC ensures continued operational stability using HTTPS to secure and encrypt the communications channels, thus practically eliminating the possibility of man-in-the-middle attached. This provides broadcast facilities with the ability to architect and use IP broadcast capabilities with confidence and ease.

Technical specifications

VBC SERVER

VBC SERVER & ELEMENT MANAGER FEATURES

- HTTP/HTTPS web-based client access on any platform
- Configurable access control / support for different user roles
- Password protected login for web browser clients
- Framework for organizing probes into sites
- Group TV channels into stream groups for easy problem identification
- Highly scalable system allowing up to 500 monitoring probes through licensing
- Higher probe node count possible through hierarchical VBC design
- Easy integration and data export for 3rd party NMS systems through XML and SNMP traps
- Central element management of all monitoring probes in the network through HTTP/HTTPS
- Configuration file copy/paste functionality between probes
- Perform centralized bulk software upgrades
- Copy/Paste parts of configuration files between probes from central equipment view
- Central alarm aggregation of all monitoring probes in the network
- Alarm aggregation on a per-site and per-channel scope
- Trend graphs over multiple days of OTT, IPTV and RF parameters
- Graphical timeline view for several days for comparison between sites
- Graphical Transport Stream aggregated alarm view for several days
- Alarm logging with readout as HTML or XML
- Thumbnail and meta data view
- Alarm Scheduling capabilities to filter alarms during specific times during week
- Alarm filtering for avoiding alarm floods
- Define turn-on time and turn-off time to limit alarm floods
- Define window of time over which alarms are disabled
- General system health status panel
- MICROTIMELINE™ view of last 96 hours of operation for individual streams and configurable stream groups
- MICROTIMELINE™ stream view allowing easy identification of worst-performers
- Thumbnail and meta data view
- Hierarchical equipment view with bulk edit functionality
- Framework for centrally controlling the Return Data Path video relay functionality in

probes

- Support for adding QTT Manager for active and continuous OTT monitoring
- Linux-based server platform for stable on-prem or cloud deployments

REPORTS and EXTENDED REPORTS FEATURES

FUNCTIONALITY

- Comparison of measurements with SLA agreements
- Automatic SLA trend reporting in PDF format for IP multicasts monitored
- Automatic SLA trend reporting in PDF format summarizing TR 101 290 analysis results for all transport streams monitored
- Automatic SLA trend reporting in PDF format for OTT/ABR streams monitored
- Report time period selectable from 1 day to 2 years
- Selection of sites and streams to be included in report
- Upload your own logos to personalize report
- Automatically set up regular email distribution of reports at predefined points in time

REPORTS and EXT REPORTS are now included as standard in the VBC

TRANSPORT STREAM SERVICE VIEW

FUNCTIONALITY

- View alarm state of all services inside transport streams based information in PSI/SI
- 4-day microTimeline™ alarm view of all services monitored

TSSV-OPT is now included as standard in the VBC

GRAPHICS VIEW

FUNCTIONALITY

- Active system maps with alarm highlighting based on VISIO™ import
- Alarm indication for individual graphic icons
- Logical system diagram showing signal flow
- TV channel signal flow diagram with issue highlighting

GRFX-OPT is now included as standard in the VBC

REMOTE DATA WALL (RDW)

FUNCTIONALITY

- Rich graphical data wall display from diverse sources of data
- Screen based configuration paradigm, multiple TVs or computer screens
- HTML5 based, no special hardware required
- Multi-Browser linking
- Adaptable notification modes
- Easy and elegant control plane application

Widgets included: Web (iframe), Textbox, Thumbnails (with audio bars), Loudness (freestanding audio bars and graphs), MediaWindow™, VBC Alarms, RF Graphs, Clock, Slideshow, Countdown, GraphicsView, Stream View, Weather, Redundancy, Switch status, MicroTimeline™, MircroETR™, OTT Graph

OTT Status overview, RF Constellation graph, RF Data and Map

ORDERING CODES

VBC-SERVER WITH REPORTS

VBC-BASE-5 – TSSV-OPT and GRFX-OPT included – supports 5 probes

VBC ELEMENT MANAGER – VBC Element Manager up to 250 probes

VBC OPTIONS

VBC-ADD1 – Adds 1 probe to base system

VBC-ADD5 – Adds 5 probe to base system

VBC-R – One-time license for a second redundant VBC installation

RDW-OPT – Remote Data Wall requires v5.4

REPORTS, TSSV-OPT and GRFX-OPT are now included as standard in the VBC

DOCUMENTATION

MANUALS

VBC User Manual – [DOWNLOAD](#)

Click below to learn more about compatible technology options:

[Eii™](#)

[MediaWindow™](#)

Environmental

[Euroenvironment](#)

[RoHS](#)

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