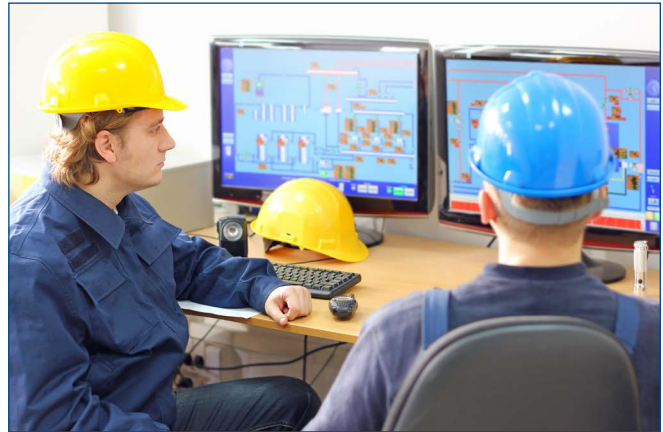# Backup and Recovery

- Best-in-class offering

- Easy-to-use Backup and Recovery solution

- Data protection and disaster recovery in a single solution

- Scalable architecture and functionality

- Centralized and remote management

Protect your plant data with the Backup and Recovery solution.

Introduction

Your plant produces many things, including the data required to operate, manage and document your plant processes. How do you go about protecting this data and ensuring a loss of data will not disrupt production? Emerson's Backup and Recovery solution gives you the ability to easily back up your DeltaV™ distributed control system (DCS), AMS asset management software (AMS Device Manager) and other critical files, folders and databases, all with the security of knowing you can recover this data as needed.

You have many things to worry about when operating your plant and the integrity of your plant data should not be one of them. With Backup and Recovery, you won't have to; you will be able to spend your time focusing on the issues that are important to your plant production. Backup and Recovery is easy-to-use and offers you one solution for data protection and disaster recovery, all with a single, user-friendly interface. If disaster strikes, you don't have to panic because you can recover quickly and easily as well.

Based on the industry-leading Acronis® Backup & Recovery™ software, Backup and Recovery is scalable from the smallest system with a single PC to the largest, multiple system facility with hundreds of PCs.

Benefits

Best-in-class offering: Backup and Recovery is based on the Acronis Backup & Recovery software. Emerson has partnered with Acronis to deliver a best-in-class offering for Backup and Recovery for the DeltaV DCS, AMS software, and DeltaV Logbooks. Acronis is a leading provider of easy-to-use disaster recovery and data protection solutions for physical, virtual and cloud environments. With Backup and Recovery, you can protect your digital information, maintain business continuity and reduce downtime.

Easy-to-use Backup and Recovery solution: Backup and Recovery is easy to install, use and manage. Backup plan templates are provided for the DeltaV DCS and AMS software so you can be assured that all the data required to back up these systems is known and easily accessible. The backup plan templates may also be modified to add your specific files, folders or databases that require backup. The backup plan templates may be imported directly into the application, modified, exported and imported into other PCs running Backup and Recovery.

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Data protection and disaster recovery in a single solution: Backup and Recovery addresses both your backup and disaster recovery needs in a single application. Many other backup solutions require separate applications for backup and disaster recovery, unnecessarily complicating the solution and doubling the effort to install, use and manage the solution. By providing data and full image backup in a single application, you can protect your operating system, applications and files from everyday occurrences such as individual file loss all the way up to entire system failure due to natural disaster, human error or theft. By using Acronis' easy-to-use, patented disk imaging technology, servers and workstations can be recovered in minutes, not hours or days helping to keep your plant up and running.

Scalable architecture and functionalit: Backup and Recovery will meet all of your data backup and disaster recovery needs. From the smallest system to the largest, multiple system facility, Backup and Recovery can scale from one to hundreds of PCs. And once you have installed Backup and Recovery in your plant, it is easy to add new workstations, servers or complete systems to your existing Backup and Recovery system architecture. Regardless of your system size, Backup and Recovery will grow with you with its integrated, easy-to-use software.

In addition to data backup and recovery, optional functionality is available to eliminate the dependency on a specific type of PC platform or PC hardware to recover your data, giving you the ability to replace a failed workstation or server with a later model. Backup and Recovery also includes an option to minimize data storage space and enhance backup performance by only storing the same piece of data one time.

Centralized and remote management: Backup and Recovery includes the ability to back up and manage multiple servers and workstations from a central location and from this same central location to deploy the backup agent software to the servers and workstations that require backup. With a central management server, you can simplify and control backup and recovery operations for hundreds of PCs.

Product Description

Backup and Recovery is an easy-to-use, easy-to-manage enterprise class data backup and disaster recovery solution for your DeltaV DCS, AMS software, and other critical files, folders and databases. Sold and supported by Emerson, Backup and Recovery is based on the industry leading Acronis Backup & Recovery software. Backup and Recovery includes backup plan templates for the DeltaV DCS and the AMS software.

The backup plan templates include all the data files, folders and databases required to back up and recover DeltaV workstations and the AMS software applications.

Backup and Recovery includes many standard features that you would expect in a best in class data backup and recovery solution. Centralized software deployment and management, flexible data backup options to allow full or incremental backups, the granularity to backup individual files and folders, and a full image backup are just a few of the features available. The benefits of Backup and Recovery are equally numerous. Backup and Recovery may be deployed from a central location, easing the software installation process. The data being backed up from each server and workstation may be managed from a central location and/or from any number of remote locations, and any missing or corrupted data can be restored from the same central or remote locations, easing the backup management process. The backup plan templates can be imported into the application via the user interface, and once imported, the backup plan templates may be modified and exported for use on other systems, easing the backup configuration process.

Backup and Recovery Features

Backup and Recovery includes a number of features to enhance your backup and recovery functionality. One feature is *Universal Restore™*. Universal Restore allows you to recover all your data and applications onto a different make or model workstation or server than the one that was originally backed up. Universal Restore captures all your system parameters, so there's no need to reconfigure anything. Simply insert the required device drivers during the recovery process. Universal Restore will give you peace of mind knowing that data you back up on today's PC hardware can be recovered on tomorrow's PC hardware.

Any time you restore a backup image from one PC to another PC, you must ensure that the PC being restored has an appropriate operating system license. All DeltaV PCs purchased from Emerson have the appropriate operating system licenses, but the DeltaV PCs use two operating system licensing models. If you use Universal Restore, you can only restore a backup image to a PC that is licensed with the same operating system license model as the PC where the backup image was taken. For more information on the DeltaV system PCs and operating system licensing models, refer to the Emerson white paper "DeltaV workstation operating system licensing".

Deduplication is another feature of Backup and Recovery. When backing up DeltaV DCS workstations and servers, you may find a lot of duplicated data; for example, backing up multiple operator stations.

Over time, there might be huge amounts of duplicate files which can take up an enormous amount of storage space, not to mention the network bandwidth required to transfer all this duplicate data.

Deduplication allows you to store the same data only one time, regardless of how often the data is backed up across your workstations and servers. Deduplication may be applied at the workstation or server being backed up, at the storage node, or both. Apply deduplication at the PC being backed up to avoid unnecessary network traffic; apply deduplication at the storage node to increase the speed of the backup task.

Backup and Recovery includes the **Emerson Backup Plan Templates**, a library that you can import into the Management Server to create backup plans for conveniently organizing backups of DeltaV data. A backup plan contains a set of rules to specify what data to back up, the name and location of the archive, scheduling, and other options. The Emerson Backup Plan Templates are XML files, some of which have associated batch files. You can import and modify an Emerson Backup Plan Template which allows you to export a backup plan for future use, customized for your DeltaV network.
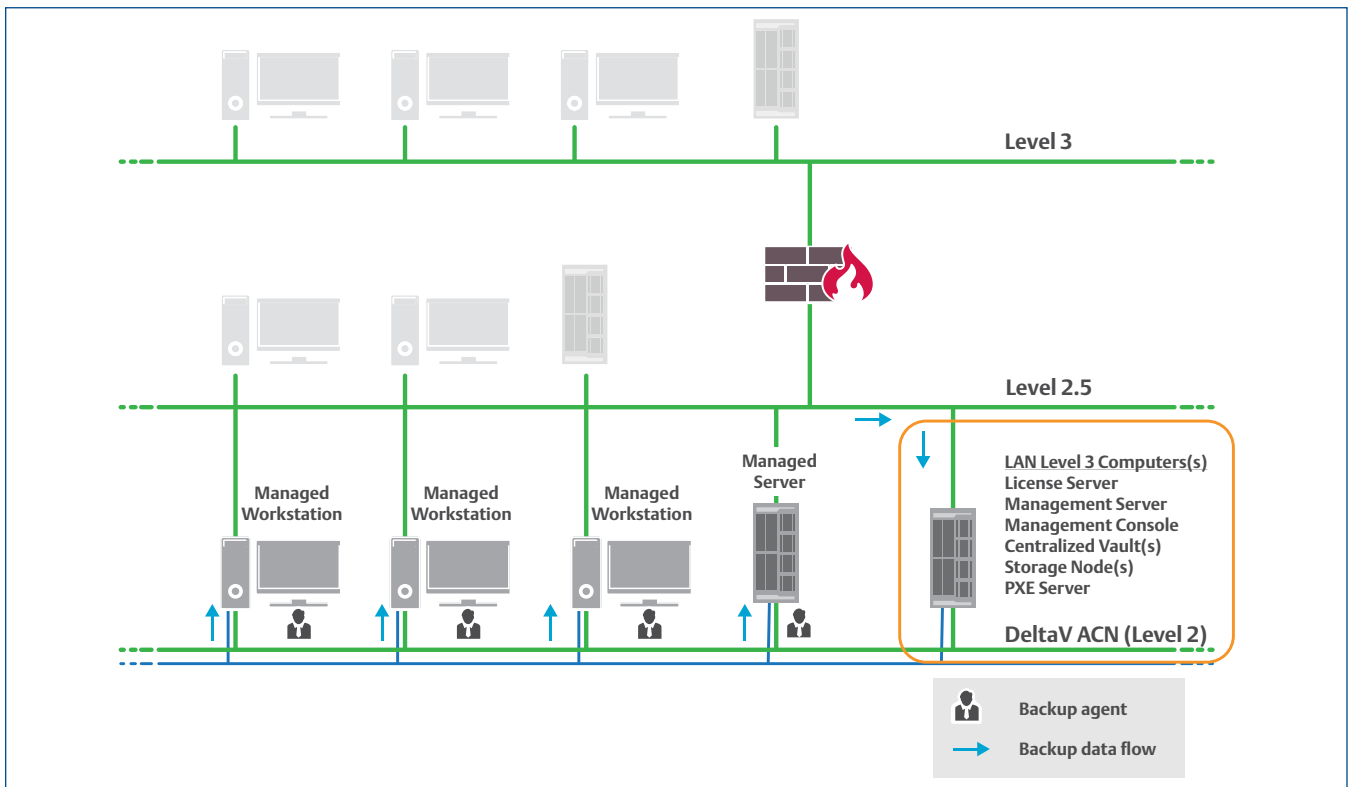

Figure 1 — *Backup and Recovery with Management Server located on a DeltaV Application Station.*

Backup and Recovery Architecture

Backup and Recovery includes several components: a management server, a license server, a management console, centralized vault(s), storage node(s), a PXE server, and the backup agents that run on the workstations and servers being backed up. The management server is used to manage the backup agents and the data storage. The license server manages the Backup and Recovery licenses for the backup agents deployed on each PC being backed up. The management console is the application user interface. The centralized vaults and storage nodes are where the backup data files are stored.

The PXE server is used in data recovery to boot PCs through the network. The backup agents are installed on the workstations and servers and execute the backup tasks.

With Backup and Recovery there are three supported architecture options available; the options are defined by the location of the management server. In the first option, the management server is installed on a DeltaV Application Station and used to back up workstations and servers within the same DeltaV DCS. In this option, all of the Backup and Recovery components are installed on the management server PC. The DeltaV workstations are connected to the Management Server using a separate "backup network" created by configuring the

third network interface card (NIC) in the DeltaV workstations and servers. This option may be desirable for small systems where only a few DeltaV workstations and/or the AMS software require backup and a dedicated management server is not required. See Figure 1.

In the second option, the management server is installed on a non-DeltaV PC located on the network level above the DeltaV area control network ("level 2.5"). The management server is located within the DeltaV system firewall and used to back up workstations and servers within a single DeltaV DCS or possibly multiple DeltaV systems that share the same level 2.5 network

and reside within the same system firewall. In this option, all of the Backup and Recovery components may be installed on the management server PC or for larger systems; there may be the need to install the centralized vault(s) or storage node(s) on a separate PC or network storage device. The DeltaV workstations and servers are connected to the management server via the level 2.5 network created by configuring the third NIC in the DeltaV workstations and servers. This option may be desirable for larger systems where several DeltaV workstations, AMS software, and/or third-party workstations and servers on level 2.5 require backup. See Figure 2.
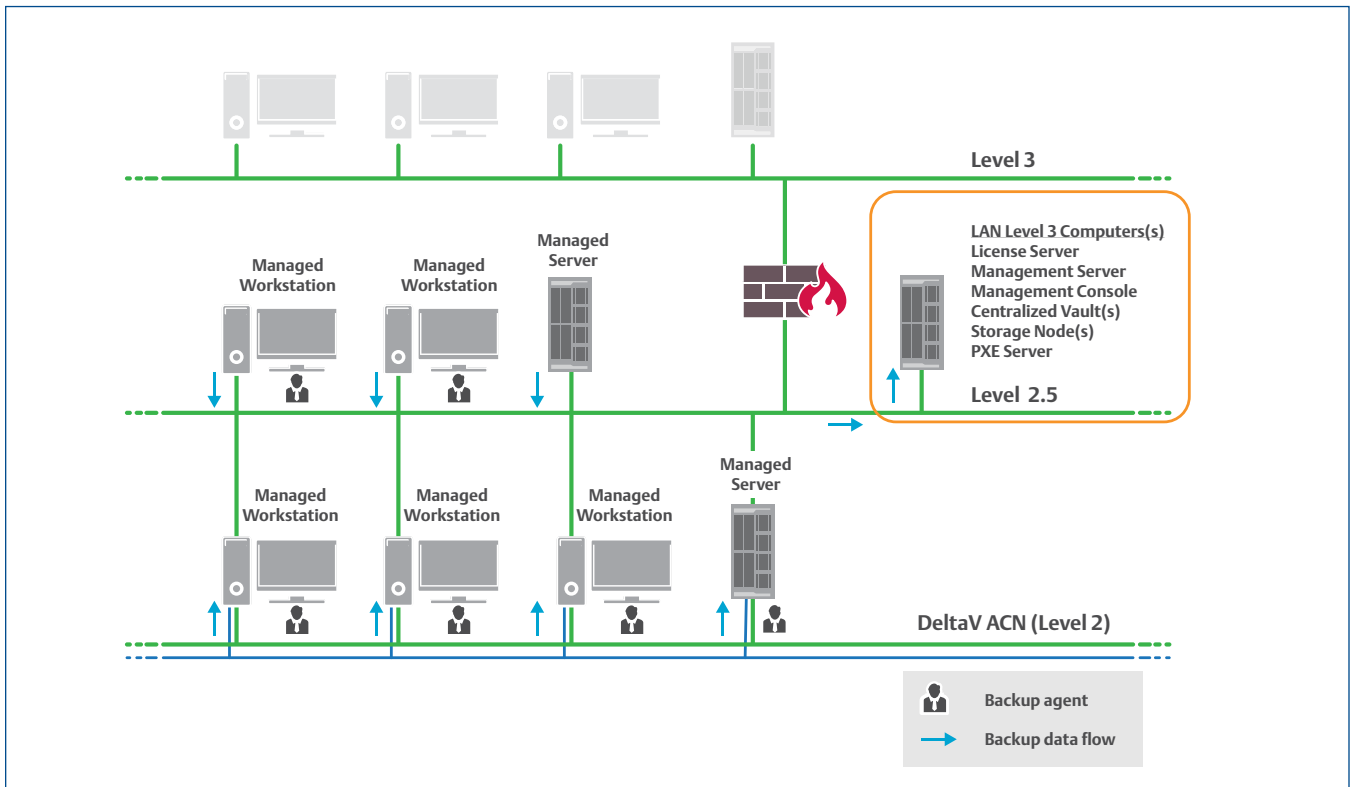

Figure 2 — *Backup and Recovery with Management Server located on a Level 2.5 data backup network.*

In the third option, the Management Server is installed on a non-DeltaV PC located on the plant LAN ("level 3"). The Management Server is located outside the DeltaV system firewall and used to back up workstations and servers within a single DeltaV system or multiple DeltaV systems that are connected to the same level 3 network and/or AMS Suite and/or non-DeltaV workstations and servers on the level 2.5 and level 3 networks. In this option, all of the Backup and Recovery components may be installed on the Management Server

PC or for larger systems; there may be the need to install the centralized vault(s) and storage node(s) on a separate PC or network storage device. The DeltaV workstations and servers are connected to the Management Server through the system firewall by configuring the third NIC in the DeltaV workstations and servers. This option may be desirable for large systems where one or more DeltaV systems, AMS Suite, and/or third-party workstations and servers on level 2.5 and/or level 3 require backup. See Figure 3.
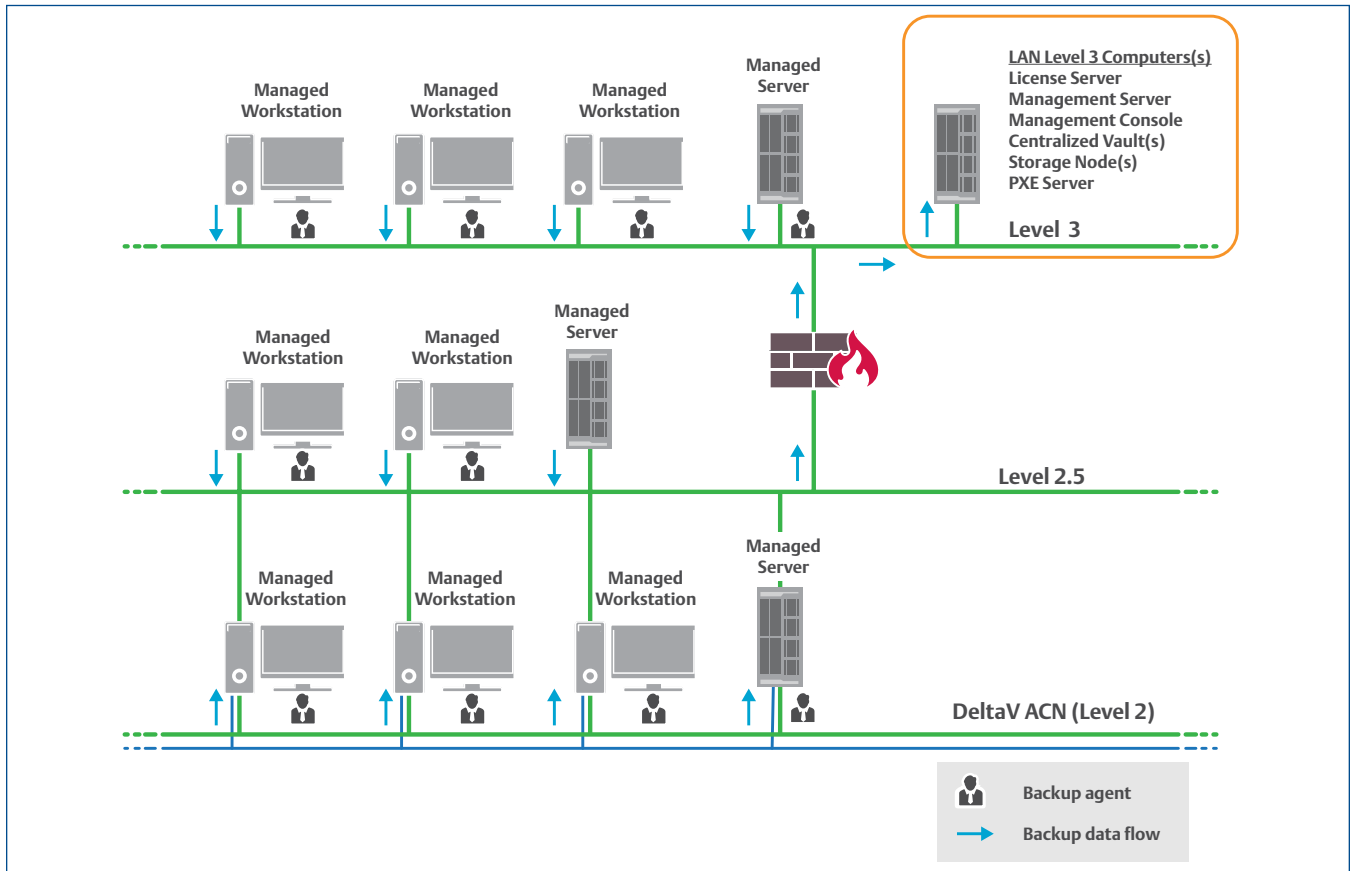

Figure 3 — *Backup and Recovery with Management Server located on a Level 3 plant network.*
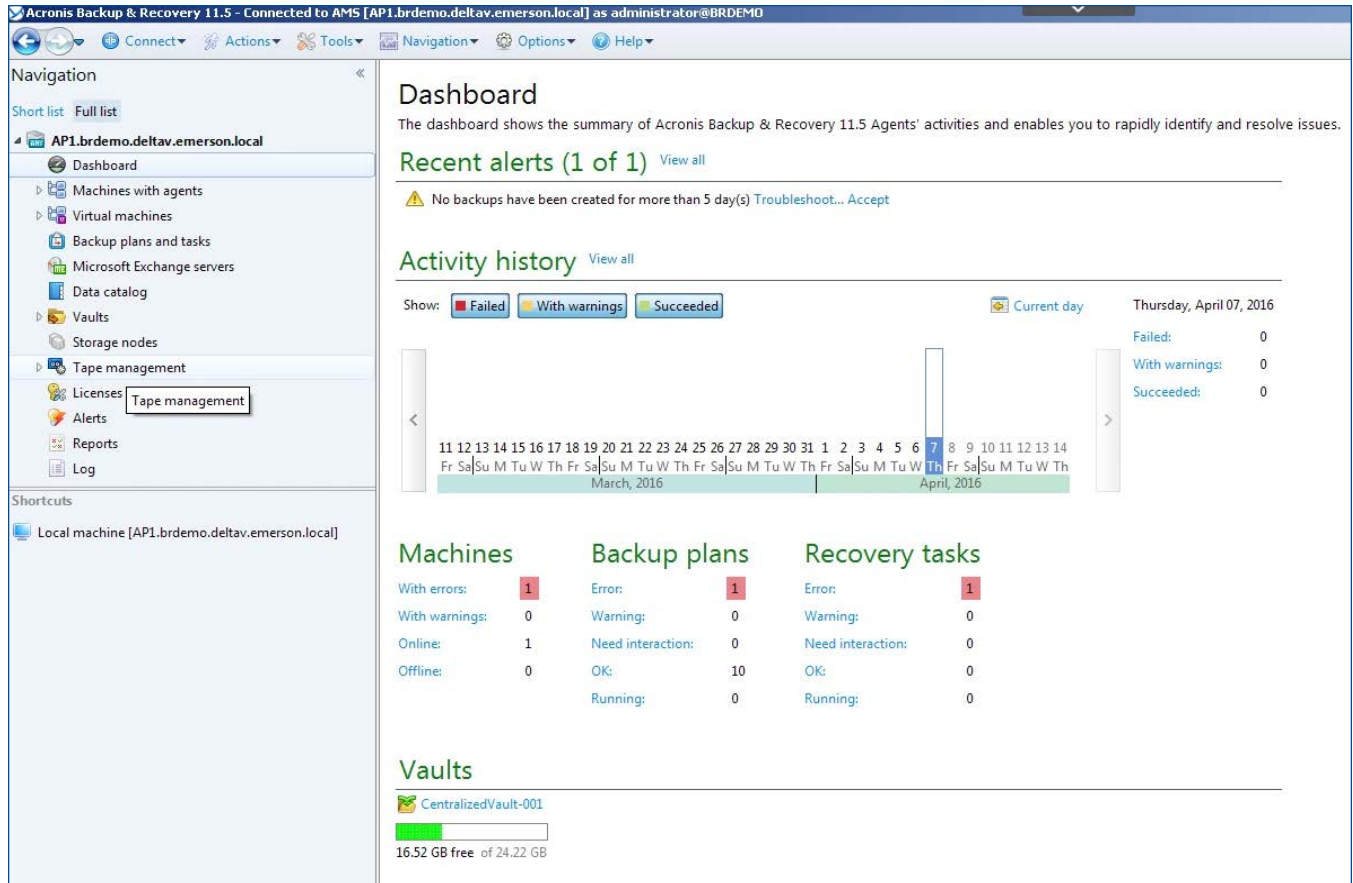
Figure 4 — *Backup and Recovery user interface Dashboard view.*

A single license server can be used to manage the licensing of all the backup agents. The license server can be installed on the same PC as the management server or the license server can be installed on a separate PC that has network connectivity to each PC being backed up.

A single management console can be used to manage all the backup agents, centralized vaults, and storage nodes in your system, providing centralized and remote management of your backup data. However, the management console can be installed on any number of PCs that have network connectivity to the management server and/or the backup agents. See Figure 4.

Backup and Recovery Licensing

Each backup agent requires a Backup and Recovery license. The license required is based on the operating system in use on the PC being backed up. Thus, to properly license Backup and Recovery, you need to determine the number of workstations and server class PCs you want to back up. Backup agents may be used in the same system and managed by a single license server, as needed.

Please note that Backup and Recovery now comes in 2 versions. V2.3.1 is applicable for DeltaV v10.3.1 through DeltaV v13.3 and DeltaV v13.3.1 when supported by Server 2008R2 and Windows 7 operating systems. V2.3.2 is specifically for DeltaV v13.3.1 when supported by Server 2016 and Windows 10 operating systems. Both versions have version specific licensing and media so it is important that the correct part numbers are obtained to avoid any functionality issues.

Please note that Backup and Recovery v2.3.1 and v2.3.2 licenses are not backwards compatible to previous versions. Customers on Backup and Recovery v2.3 or earlier and wish to add more machines to their Backup and Recovery installation will first need to upgrade their installation to v2.3.1 and then appropriate additional v2.3.1 licenses.

A Backup and Recovery version upgrade license is required when upgrading from Backup and Recovery v1.1/v1.2 to v2.3.1. The version upgrade license must match the previous version license to retain the functionality of the previous version. The version upgrade license and the previous version license are used together to license the later version. When upgrading to a later version, a media pack for the later version is also required.

v2.3.1 Ordering Information

Description	Model Number
Backup and Recovery v2.3.1, Media Pack Only	VF1048M
Backup and Recovery Workstation with Universal Restore and Deduplication, License Only	VF1048W
Backup and Recovery Server with Universal Restore and Deduplication, License Pack Only	VF1048S
Backup and Recovery Workstation with Universal Restore and Deduplication - 2 Version Upgrade, License Pack Only	VF21UPG013
Backup and Recovery Server with Universal Restore and Deduplication - 2 Version Upgrade, License Pack Only	VF21UPG012
Backup and Recovery Server Evaluation; includes Backup and Recovery v2.3.1 Media Pack	VF1048E

Notes:

1. *The trial evaluation media provides a fully functional, 30-day time limited version of Backup and Recovery server and can be used to evaluate the Backup and Recovery software on a PC running any of the supported Windows operating systems. To upgrade to the full version of Backup and Recovery, simply order the appropriate licenses and apply the new licenses to the license server. Evaluation media is purchased from Emerson.*

2. *A Backup and Recovery media pack is required for a new installation of the Backup and Recovery software or to upgrade to a later version. The media pack includes the Backup and Recovery installation DVD and product documentation. New version and version upgrade media packs are purchased from Emerson.*

3. *A Backup and Recovery version upgrade license is required when upgrading from Backup and Recovery v1.1/v1.2 to v2.3.1. The version upgrade license must match the previous version license to retain the functionality of the previous version. Version upgrade licenses are purchased from Emerson. Those upgrading from v2.3 to v2.3.1 only require the Backup and Recovery upgrade media which can be downloaded from the Guardian site or obtained through the Backup and Recovery media Pack.*

v2.3.2 Ordering Information

Description	Model Number
Backup and Recovery v2.3.2, Media Pack Only	VF1060M
Backup and Recovery Workstation with Universal Restore and Deduplication v2.3.2, License Pack Only	VF1060W
Backup and Recovery Server with Universal Restore and Deduplication v2.3.2, License Pack Only	VF1060S
Backup and Recovery Server Evaluation; includes Backup and Recovery v2.3.2 Media Pack	VF1060E

Notes:

1. *1. The trial evaluation media provides a fully functional, 30-day time limited version of Backup and Recovery server and can be used to evaluate the Backup and Recovery software on a PC running any of the supported Windows operating systems. To upgrade to the full version of Backup and Recovery, simply order the appropriate licenses and apply the new licenses to the license server. Evaluation media is purchased from Emerson.*

2. *2. A Backup and Recovery media pack is required for a new installation of the Backup and Recovery software or to upgrade to a later version. The media pack includes the Backup and Recovery installation DVD and product documentation. New version and version upgrade media packs are purchased from Emerson.*

3. *3. Those upgrading from v2.3.1 to v2.3.2 only require the version specific Backup and Recovery upgrade media which can be downloaded from the Guardian site or obtained through the Backup and Recovery Media Pack.*

Ordering Process

The Backup and Recovery ordering process occurs in two steps. The process is the same for ordering new version software and licenses or 2 version upgrade (v1.1/1.2 to v2.3.1) software and licenses.

Upgrading from v2.3 to v2.3.1 or v2.3.1 to v2.3.2 requires the version specific Backup and Recovery upgrade media which can be downloaded from the Guardian site or obtained through the Backup and Recovery Media Pack.

The first step is to place an order for the Backup and Recovery software and licenses. The second step is to provide information to Emerson for generation of your license keys.

For the first step, order the media pack and the number of workstations and servers that require backup, using the model numbers shown above. You will receive the Backup and Recovery media pack and a license certificate for each workstation and server license ordered. The media pack is required for installation of the Backup and Recovery software. For each Backup and Recovery order, it is expected that at least one copy of the media pack is ordered along with the licenses for the workstations and servers that require backup. Only one copy of the media pack is required, however, multiple copies of the media pack may be ordered as needed.

For the second step, using the media pack, install the Backup License Utility on the PC where you want to manage your Backup and Recovery licenses. Run the Backup License Utility to generate a license order code that is unique to the license server PC. Email the following information to Emerson at **emailregistrationsystems@emerson.com** to receive your license keys:

- The license order code

- The Emerson sales order number

- The DeltaV system ID

- The serial number of each license ordered as found on the license certificate

Within the next business day, you will receive by return email an encrypted license file containing your Backup and Recovery license keys. Copy the license file to the license server PC and re-run the Backup License Utility to export a decrypted license key text file to the license server PC. See below for backup system installation examples to help clarify the licensing process.

Detailed instructions on the Backup and Recovery software installation and licensing process are provided in the installation guide included in the Backup and Recovery media pack.

Backup system licensing examples

1. A single DeltaV distributed control system requires backup and recovery for the Professional Plus station and two Application Stations. You want a single license server due to the system size and you want the license server to reside on an Application Station. Order the Backup and Recovery media pack and three Backup and Recovery licenses, one for each DeltaV workstation, using the operating system in use by each DeltaV workstation. Install the Backup License Utility on the Application Station and run the Backup License Utility to obtain the license order code. Email the license order code, the Emerson sales order number, the DeltaV system ID, and the three license serial numbers to Emerson to receive an encrypted license file containing three Backup and Recovery license keys. To perform a 2 version upgrade (v1.1/1.2 to v2.3.1) version of Backup and Recovery on this system, follow the same process but order the Backup and Recovery media pack and three Backup and Recovery version upgrade licenses for the newer version.

2. To perform a 2 version upgrade (v1.1/1.2 to v2.3.1) version of Backup and Recovery on this system, follow the same process but order the Backup and Recovery media pack and three Backup and Recovery version upgrade licenses for the newer version.

   Those upgrading from v2.3 to v2.3.1 or v2.3.1 to v2.3.2 only require the version specific Backup and Recovery upgrade media which can be downloaded from the Guardian site or obtained through the Backup and Recovery Media Pack.

3. Two DeltaV distributed control systems require backup for the Professional Plus station, three Operator Stations, and one Application Station on each system and one central AMS software server. You want a single license server for both DeltaV systems to enable centralized license management and you want the license server to reside on a non-DeltaV workstation at level 2.5. Order the Backup and Recovery media pack and 11 Backup and Recovery licenses, one for each DeltaV workstation in each system and one for the AMS software server, using the appropriate operating system in use by each DeltaV workstation and AMS server. Install the Backup License Utility on the non-DeltaV workstation and run the Backup License Utility to obtain the license order code. Email the license order code, the Emerson sales order number, the DeltaV system ID of whichever system you wish to associate Backup and Recovery technical support, and the 11 license serial numbers to Emerson to receive an encrypted license file containing 11 Backup and Recovery license keys.

4. To perform a 2 version upgrade (v1.1/1.2 to v2.3.1) version of Backup and Recovery on this system, follow the same process but order the Backup and Recovery media pack and 11 Backup and Recovery version upgrade licenses for the newer version.

Those upgrading from v2.3 to v2.3.1 or v2.3.1 to v2.3.2 only require the version specific Backup and Recovery upgrade media which can be downloaded from the Guardian site or obtained through the Backup and Recovery Media Pack.

DeltaV Distributed Control System Version and Operating System Compatibility

DeltaV DCS Backup and Recovery v2.3.1	DeltaV v10.3.1		DeltaV v11.3.1 & later		Non-DeltaV Install	
	Win XP	Server 2003	Win 7	Server 2008 Server 2008R2	Win XP Win 7 Win 10	Server 2003 Server 2008 Server 2008 R2 Server 2012 Server 2012 R2
Advanced Workstation	YES	NO	YES	NO	YES	NO
Advanced Server	NO	YES	NO	YES	NO	YES

Notes: The backup agents and management server are supported for use on the DeltaV DCS versions running the operating systems as listed in the table above. The backup agents and management server are supported for use on non-DeltaV workstations and servers running the same versions of the operating systems listed in the table above.

DeltaV DCS Backup and Recovery v2.3.2	DeltaV v13.3.1		Non-DeltaV Install	
	Win 10	Server 2016	Win 7 Win 10	Server 2008 Server2008R2 Server 2012 Server 2012R2 Server 2016
Advanced Workstation	YES	NO	YES	NO
Advanced Server	NO	YES	NO	YES

Notes: The backup agents and management server are supported for use on the DeltaV DCS versions running the operating systems as listed in the table above. The backup agents and management server are supported for use on non-DeltaV workstations and servers running the same versions of the operating systems listed in the table above.

Management Server Requirements

Software: See the DeltaV System Version and Operating System Compatibility chart for the operating system requirements for using Backup and Recovery on DeltaV and non-DeltaV PCs.

Hardware: A Dell R720 or later model server with the following specifications is recommended for installing the Backup and Recovery management server on a DeltaV or non-DeltaV PC.

CPU: Intel Xeon, 2.0 GHz (minimum)

RAM: 4 GB (minimum), 1333MHz UDIMM

Hard disk drive: 6 x 600 GB 15K RPM SCSI, RAID 10

Related Products

- DeltaV Distributed Control System
- AMS Device Manager
- DeltaV Logbooks

Prerequisites

- The Backup and Recovery media pack is required for installation of the Backup and Recovery software.

- Backup and Recovery v2.3.1 is available for use with DeltaV v10.3.1, v11.3.1, v12.3.1, and v13.3 systems.

- Backup and Recovery v2.3.1 is also available for use with DeltaV v13.3.1 when supported by Windows 7 and Server 2008R2 operating systems.

- Backup and Recovery v2.3.2 is available for use with only DeltaV v13.3.1 when supported by Windows 10 and Server 2016 operating systems.

- A DeltaV Application Station if installing the management server in a DeltaV system.

- A Dell R720 or later model server is recommended for use as the management server PC.

- Backup and Recovery server may require additional storage for the backup data. The additional storage is provided by others.

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