GV STRATUS System Upgrades and Migrations

Alex Lakey, February 2020

Introduction

GV STRATUS has been available to customers since 2011 and has been deployed in over 300 customer sites worldwide.

Grass Valley provides Service Agreements (SA) to cover the hardware and software within these systems, which most customers purchase as part of the system sale. However, the hardware parts in the systems cannot be warrantied beyond five years in a standard SA agreement, meaning many customer systems will now require their hardware components to be replaced to extend the life of their systems (and to stay under a Support Agreement).

This document explains the Server Upgrade Package options which Grass Valley can offer to customers from GV STRATUS V6.0 onwards.

These packages are intended to support the following scenarios:

- Replacement of Hardware (HW) in customer systems reaching End of Support (EoS):
  – This may be from existing HW to new HW, **OR**
  – From existing HW to VMs, **OR**
  – To a mixture of HW and VM components.
- Upgrade of systems where the customer requires a newer version of the windows server OS on either Physical or VM systems.
- Upgrade of systems where the customer needs to deploy High Resolution clients on a StorNext SAN with Windows 10 or recent versions of OS X 10.x as the client OS.
- Upgrade of existing systems from one core server package type to another:
  – For example: a customer with a B1 system who wishes to upgrade to a C1 configuration, **OR**
  – A customer who wishes to migrate to a VM based system from their hardware-based system.

As of February 2020, Grass Valley will no longer provide hardware upgrade or VM "cross-grade" packages to allow StorNext (SNFS) 4.x SAN systems to be maintained for another support period. Microsoft has ended long-term support for Windows 7 OS on the desktop, which is mandatory for an SNFS 4.7 solution; therefore all hardware migrations and upgrades need to make use of current Grass Valley nomenclatures, based on Microsoft Windows Server 2016, SQL 2017 (on Core servers) and using SNFS 6 on SAN systems. Customers will need to migrate to SNFS6 based systems to maintain long term Support agreements on their systems.

This document also explains the other elements needed to scope and deliver a successful customer system upgrade. A key part of this process will be the migration of the data from the old system to the new; this is described at a high level, but further information regarding the scripts and upgrade procedure will be made available in separate documents.

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Server Upgrade Packages Overview

As of February 2020, Grass Valley offers standard product nomenclatures to support upgrades to Windows Server 2016, supporting SNFS 6.x filesystems.

Windows Server 2012 (and Server 2008 before it) cannot support the SNFS 6 filesystem, and hence cannot support High Resolution clients needing SNFS 6 support (those running Windows 10 or recent OS X versions).

Windows Server 2016 cannot support SNFS 4.7 filesystems, which at the time of writing is deployed in the majority of K2 SAN and GV STRATUS customer systems worldwide. Customers who require to upgrade to a Windows Server 2016 based system must upgrade their SNFS 4.7 SAN and clients to SNFS 6. This is the only migration path for SAN customers, if primary media storage is switched to Isilon the SNFS restriction is mitigated. However, we would still recommend upgraded systems are taken to Windows 2016 and SQL 2017 to maintain the best level of security patching from Microsoft.

SNFS 6 based K2 SANs do not support non-redundant SAN configurations, which are deployed in a small number of cases (especially very small systems). Any customers with existing non-redundant K2 SAN systems must upgrade their K2 SAN systems to include redundant servers and configuration.

Whether a SAN upgrade is possible or not will depend on the age of the SAN components and whether Grass Valley can still sell additional components

for the storage hardware used within that SAN. If additional components of the correct SAN Hardware type can no longer be sold, the storage will need to be replaced with either a new K2 Redundant SAN (of the latest type) or with GV ION AMS Pro (Isilon).

Note, a shared storage system cannot contain a mixture of SNFS 4.7 and 6.0 clients. If any part of an SNFS4.7 SAN is upgraded, then the whole SAN must be upgraded.

Standalone servers using SNFS 4.7 can be used with an SNFS 6 SAN, providing they can be supported at the application level (for example by a compatible version of GV STRATUS tested with a K2 9.x version supporting SNFS 4.7).

If a SAN upgrade to SNFS 6 is made, **all High Resolution clients MUST be upgraded to SNFS 6**. This includes:
• Any GV STRATUS desktop High Resolution clients (with existing STRATUS-HRES licenses)
• Any SAN-connected editors (EDIUS Workgroup, Adobe Premiere, Avid or FCP clients with "K2-Connect" licenses)
• Any K2 clients (K2 Summit SAN clients, whether XDT1 or XDP2 type)
— XDP clients should be replaced with new XDP2 servers or GV I/O servers

Server Upgrades to Windows 2016 Server and SNFS 6

As of February 2019, Grass Valley has split the nomenclatures used to order GV STRATUS and K2 SAN systems of all sizes (whether non-redundant or fault tolerant) into separate Hardware (-HW) and Software (-SW) parts. This allows customer upgrades to be performed by purchasing only the relevant Hardware (-HW) parts needed to replace the aging hardware in your system.

These new packages will be deployed with Windows server 2016, and support an SNFS 6.x filesystem on K2 SANs. This combination does not support High Resolution clients (GV STRATUS or SAN-connected editors) on Windows 7 or some earlier versions of OS X (which cannot support SNGFS 6.x). If customers require support for these types of High Resolution clients they must either use the upgrades providing Windows 2012 and SNFS 4.7, or accept they need to replace their desktop client OS (which in some cases may require new client hardware). For the avoidance of doubt, all K2, GVRE and Desktop High Resolution clients (that were on an earlier version of SNFS) must be provided with an HRES upgrade license for SNFS 6.x in the upgrade "bill of materials" sold to the customer. This is to cover the higher license cost of SNFS 6.x.

Customers on existing physical systems who wish to "cross-grade" to a VM environment (allowing them to provide and manage their own hardware and hypervisor) can take advantage of the VM image options on the list below. Mixed VM and physical server systems can, in theory, be created on a server-by-server basis if the customer requires.

Note that there are currently no options to virtualize K2 Media or FTP servers. However, Storage Managers and Storage Gateways used with GV ION AMS Pro systems can be virtualized.

Migration Package	Description
STRATUS-CSEXP-HW	Dell Hardware Platform supporting a GV STRATUS Core Services Express package (Software & Licenses not included)
STRATUS-CSA1-HW	Dell Hardware Platform supporting a GV STRATUS Core Services A1 package (Software & Licenses not included)
STRATUS-CSB1-HW	Dell Hardware Platform supporting a GV STRATUS Core Services B1 package (Software & Licenses not included)
STRATUS-CSC1-HW	Dell Hardware Platform supporting a GV STRATUS Core Services C1 package (Software & Licenses not included)
STRATUS-CSA1-FT-HW	NEC Hardware Platform supporting a GV STRATUS Fault Tolerant Core Services A1 package (Software & Licenses not included)
STRATUS-CSB1-FT-HW	NEC Hardware Platform supporting a GV STRATUS Fault Tolerant Core Services B1 package (Software & Licenses not included)
STRATUS-CSC1-FT-HW	NEC Hardware Platform supporting a GV STRATUS Fault Tolerant Core Services C1 package (Software & Licenses not included)
STRAT-CS-UPG-FT-HW	GV STRATUS FT Core server only, Windows 2016 OS and SQL 2017. Does not include proxy storage or NAS head. For hardware refreshes and upgrades only. DO NOT USE FOR NEW SYSTEMS!
STRAT-CS-UPG-HW	GV STRATUS (non-FT) Core server only, Windows 2016 OS and SQL 2017. Does not include proxy storage or NAS head. For hardware refreshes and upgrades only.cDO NOT USE FOR NEW SYSTEMS!
STRATUS-CSGVRE-HW	Dell Hardware Platform supporting GV STRATUS Render Engine Server (Software & Licenses not included)
STRATUS-CSWFE-HW	Dell Hardware Platform supporting a GV STRATUS Workflow and Rule Engine Server (Software & Licenses not included)
STRAT-STRMGR-FT-HW	NEC Hardware Platform supporting a Fault Tolerant K2 Storage Manager for third-party storage (Software & Licenses not included)
STRAT-STRGWY-HW	Dell Hardware Platform supporting a K2 Storage Gateway for third-party storage (Software & Licenses not included)
STRAT-STRGWY-FT-HW	NEC Hardware Platform supporting a Fault Tolerant K2 Storage Gateway for third-party storage (Software & Licenses not included)
K2-SVR-OS-UPG	K2, SNFS and Windows Server 2016 OS software upgrade for existing K2 SAN (FSM and FTP) servers. Requires GV services to perform OS and software migration
STRATUS-CS-OS-UPG	Windows 2016 server and SQL server 2017 upgrade for existing GV STRATUS Core servers (incl FT and VM). Requires GV services to migrate database and software
STRATUS-RE-OS-UPG	Windows 2016 server and SNFS upgrade for existing GVRE servers (incl VM). Requires GV services to migrate software
STRAT-STOR-OS-UPG	K2, SNFS and Windows Server 2016 OS software upgrade for existing GV STRATUS Storage Manager and Gateway servers. Requires GV services to perform OS and software migration
STRATUS-VM-EXP	GV STRATUS Express License VM
STRATUS-VM-A1	GV STRATUS A1 License VM
STRATUS-VM-B1	GV STRATUS B1 License VM
STRATUS-VM-C1	GV STRATUS C1 License VM
STRATUS-VM-GVRE	GV STRATUS GVRE License VM
STRAT-VM-STRMGR	GV STRATUS Storage Manager VM
STRAT-VM-STRGWY	GV STRATUS Storage Gateway VM
STRATUS-VM-DME	GV STRATUS VM Data Mover engine
STRATUS-VM-PROXY	GV STRATUS VM Proxy NAS server image. Supports Proxy access for up to 120 concurrent users

Note: STRATUS-CS-OS-UPG only provides the OS (and SQL) upgrades needed for a Core server, it does not provide an OS upgrade for the "Proxy NAS" head within the original Core server package. If that is required, please ensure K2-SVR-OS-UPG is quoted for the NAS head(s) within the core server package.

The hardware nomenclatures (-HW) and VM-based images are sold supplied with Microsoft OS (Server 2016) and where applicable MS SQL Server (to support the databases). Where physical hardware is required (for example

FC cards in K2 servers) they are included. Note, K2 FSM servers no longer utilize a "ToE" card as all systems are now using Direct LAN Connect (DLC) protocol over 10 GbE.

Servers (or images) will be provided installed with the latest shipping version of the K2 or GV STRATUS software, where the relevant "-SW" option is ordered at the same time. This may require update in the field. Any systems ordered as "HW" only will be shipped only with base GV STRATUS image and OS, no application software will be installed in the factory.

Supported Windows Server 2016/SNFS 6.x System Upgrade Scenarios

GV STRATUS systems can be configured for a wide range of customer requirements and system sizes. However, all systems are built from a standard set of components.

The following scenarios can be catered for during an upgrade:
- "Straight Swap" — this is a like-for-like upgrade from existing server hardware (or image) to the equivalent new server hardware (or image) — for example:
  – Dell for Dell, FT server for FT server
  – Same core server package configuration (Express to Express, A1 to A1, etc.)

Note that VM image-for-VM image migrations are supported, but will require new VM images to be purchased since Grass Valley must provide systems with Windows OS and SQL licenses. Grass Valley cannot sell or support systems with customer provided OS or SQL versions and licenses.

- "Architecture upgrade" or "cross-grade" — this is an upgrade where the customer wants to enhance their system as part of the upgrade — for example:
  – To add redundancy to a single ended system (mandatory in a Server 2016/SNFS 6 upgrade), **OR**
  – To migrate from a physical based system to one or more VM images in their system

Note that to create a redundant configuration from a single-ended system would require a detailed audit of the customer's system and some additional components in addition to the Server Upgrade package items. If the components needed to convert a customer system to redundant storage is no longer sold, the customer must consider a new SAN and use the Windows 2016/SNFS 6 upgrade path.

- "System type upgrade"— this is an upgrade where the scale of the system changes as part of the upgrade — for example:
  – Express or A1 to B1/C1

What Will Be Quoted Within a Windows Server 2016/SNFS 6.x System Upgrade?

Core Server Package Replacements

GV STRATUS systems are sold with Core Services supplied as a package, which depending upon the system scope can contain more than one server device. The -HW type contains multiple components where necessary, as part of a "Core Server Package," just as the legacy Grass Valley STRATUS-CS-XX Core server packages did.
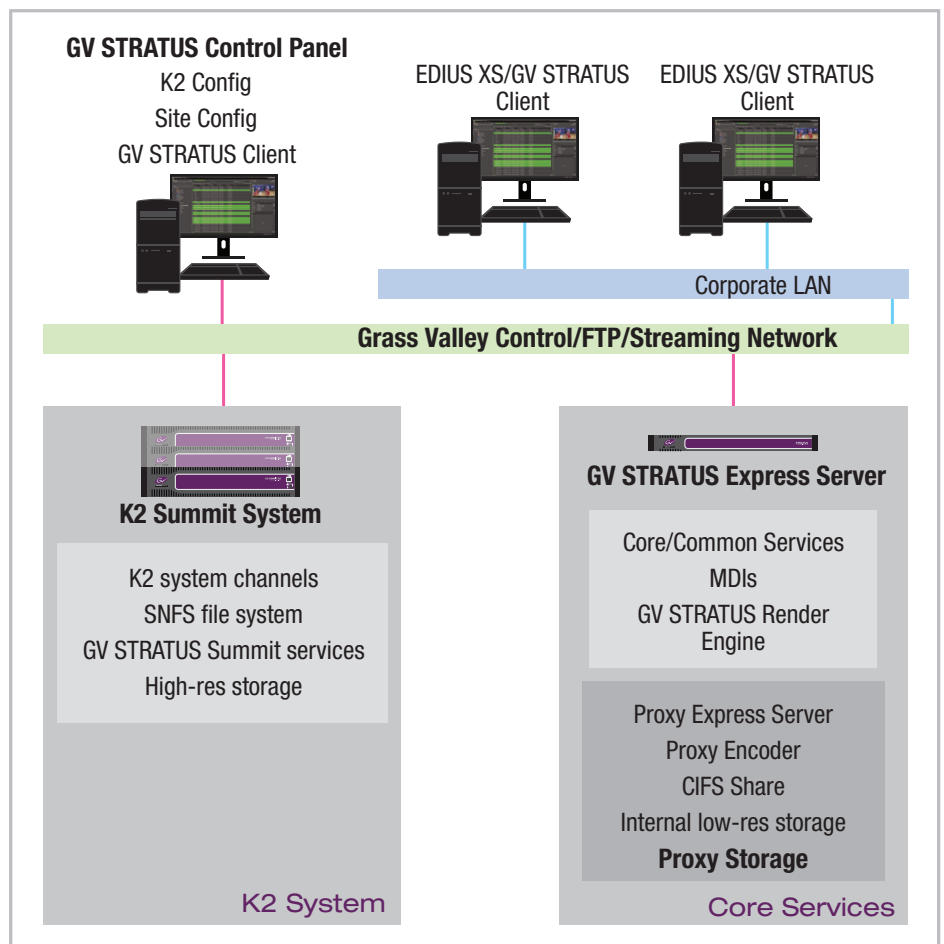
Core Express

Applies to Systems originally containing a STRATUS-CS-EXPRESS.

The Express Core server is a single device, containing the OS, Database and Proxy storage and running the Core Services (applications) plus one instance of the Render engine. Systems may be running Windows server 2008 or 2012 (depending upon their age).

This is replaced by:
- **1x STRATUS-CSEXP-HW** in physical systems, **OR**
- **1x STRATUS-VM-EXP** in VM systems

GV STRATUS Control Panel
K2 Config
Site Config
GV STRATUS Client

EDIUS XS/GV STRATUS Client

EDIUS XS/GV STRATUS Client

Corporate LAN

Grass Valley Control/FTP/Streaming Network

K2 Summit System

K2 system channels
SNFS file system
GV STRATUS Summit services
High-res storage

K2 System

GV STRATUS Express Server

Core/Common Services
MDIs
GV STRATUS Render Engine

Proxy Express Server
Proxy Encoder
CIFS Share
Internal low-res storage
Proxy Storage

Core Services

GV STRATUS System Upgrades and Migrations

Core A1 (and A1-FT)

Applies to systems originally containing a STRATUS-CS-A1 or STRATUS-CS-A1-FT.

The A1 Core server package comprises multiple devices. There is a GV STRATUS Core server (containing the OS and Database, plus the Core Services (applications)) and a separate GV STRATUS Proxy Server (NAS head).

- In an A1 system the Core server is a 1 RU Dell device
- In an A1-FT system the core server is a 4 RU Stratus Technologies FT server with two fault-tolerant "blades" in one overall chassis
- All A1 systems must use either the K2 SAN or an Isilon system for their Proxy storage (this requires an additional server acting as a GV STRATUS Proxy Server (NAS head), and connected to the SAN via fibre channel (or the Isilon system via a 10 GbE CIFS connection)

An **A1** system (non-redundant) is replaced by:
- **1x STRATUS-CSA1-HW** in physical systems, **OR**
- **1x STRAT-CS-UPG-HW** in physical systems where the Proxy NAS is not to be replaced, **OR**
- **1x STRATUS-VM-A1** in VM systems

STRATUS-CSA1-HW and **STRATUS-VM-A1** include the Proxy NAS head (hardware or VM image) needed for proxy operation on a K2 SAN.

An **A1-FT** system (fault tolerant redundancy) is replaced by:
- **1x STRATUS-CSA1-FT-HW** in physical systems
- **1x STRAT-CS-UPG-FT-HW** in physical systems where the Proxy NAS is not to be replaced, **OR 1x STRATUS-VM-A1** (Note: In VM systems the customer would use VMware HA to achieve redundancy where cross-grading from a physical FT server)

A1 systems will also require one or more render servers, please see the relevant section below.
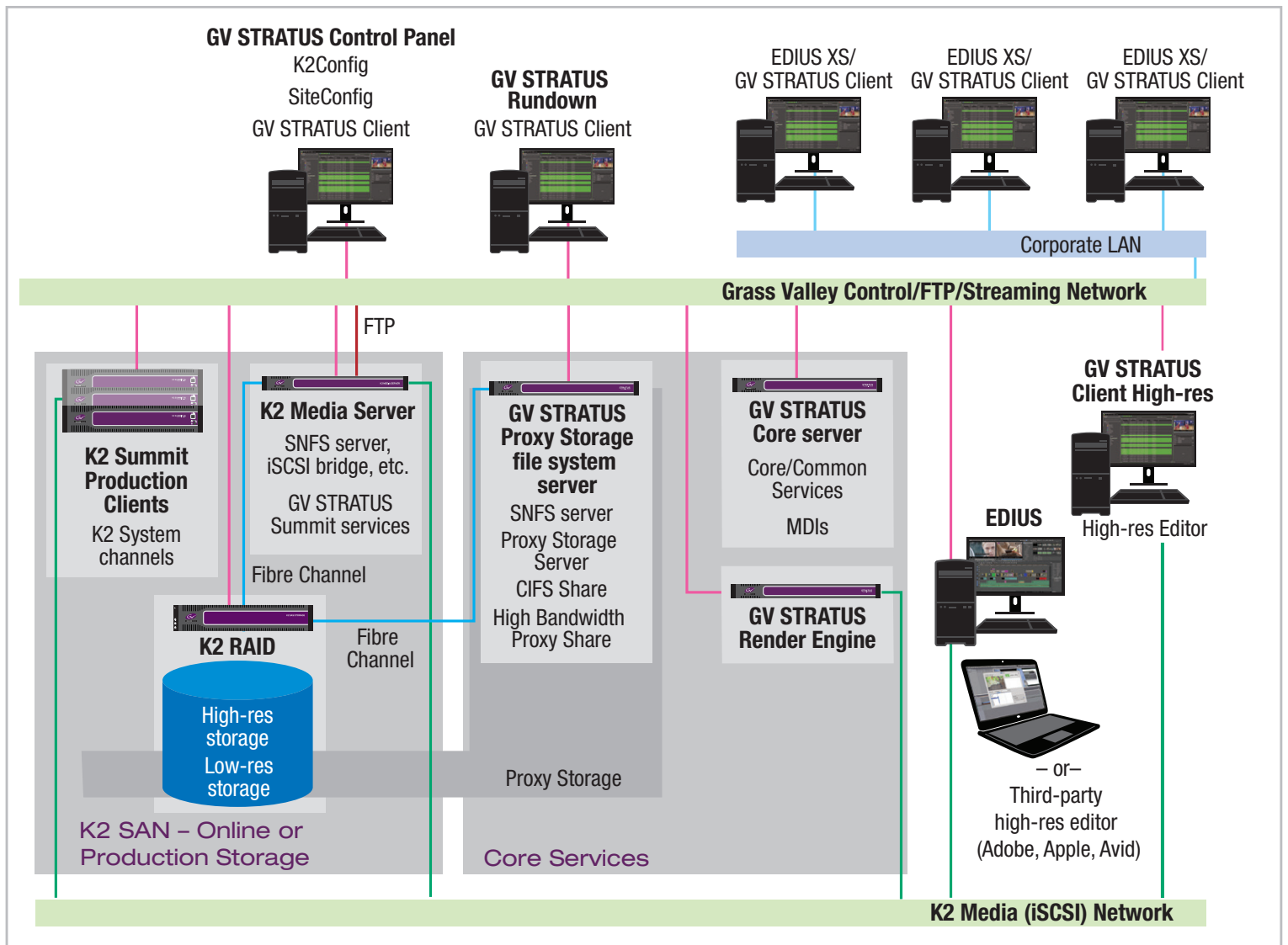
GV STRATUS System Upgrades and Migrations

Core B1 (and B1-FT)

Applies to systems originally containing a STRATUS-CS-B1 or STRATUS-CS-B1-FT.

The B1 Core server package comprises multiple devices:

There is a GV STRATUS Core server, containing the OS and Database, plus the Core Services (applications). In addition, there is a Workflow server, and dedicated Proxy storage (which comprises a GV STRATUS Proxy Storage Server and storage chassis).

- In a B1 system the Core server is a 1 RU Dell device
- In a B1-FT system the core server is a 4 RU Stratus Technologies FT server with two fault-tolerant "blades" in one overall chassis
- B1 systems typically include a Workflow server (a 1 RU Dell device) to allow the offload of Rules, Workflow and Transcode (XCE) engine tasks from the core
- All B1 systems use a K2 Nearline storage system for their Proxy storage, comprising one K2 NH10 type NAS head and one or more K2 Nearline storage chassis (a primary plus necessary expansion units). As explained in section *"GV STRATUS Proxy Storage" (note that this will be quoted from new stock when required)*

A **B1** system (non-redundant) is replaced by:

- **1x STRATUS-CSB1-HW** in physical systems, **OR**
- **1x STRAT-CS-UPG-HW** in physical systems where the Proxy NAS is not to be replaced, **OR**
- **1x STRATUS-VM-B1** in VM systems.

STRATUS-CSB1-HW and **STRATUS-VM-B1** include the Proxy NAS head (hardware or VM image) needed for proxy operation. STRATUS-CSB1-HW also includes a single primary chassis of K2 Nearline proxy storage (to which expansion chassis may be added as required).

Where a dedicated Workflow engine server is present (or required) in physical systems, please additionally quote the following:

- **1x STRATUS-CSWFE-HW**

A **B1-FT** system (fault tolerant redundancy) is replaced by:

- **1x STRATUS-CSB1-FT-HW** in physical systems, **OR**
- **1x STRAT-CS-UPG-FT-HW** in physical systems where the Proxy NAS is not to be replaced, **OR 1x STRATUS-VM-B1** (NB, in VM systems the customer would use VMware HA to achieve redundancy)

B1 systems will also require one or more render servers, please see the relevant section below.
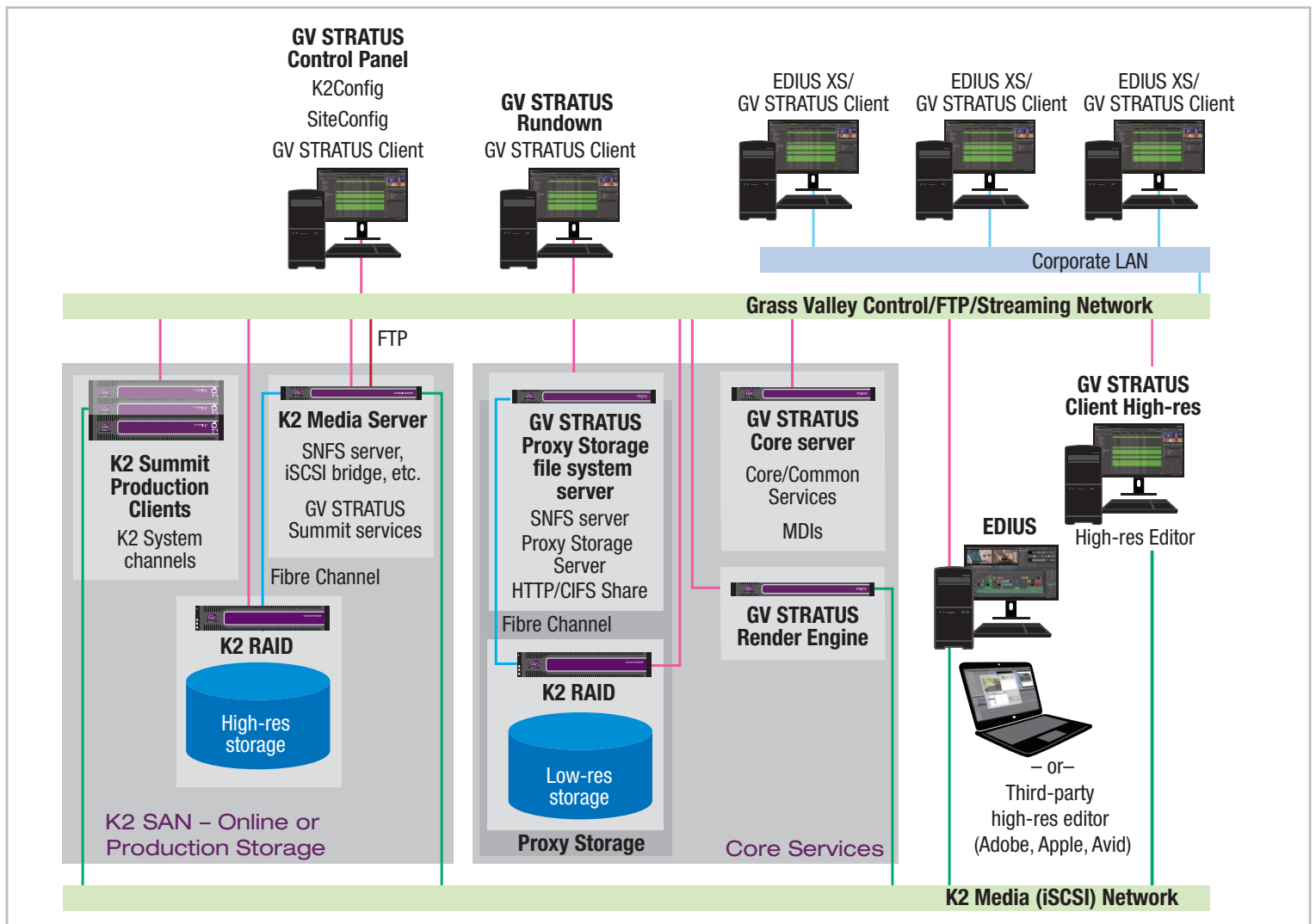
GV STRATUS System Upgrades and Migrations

Core C1 (and C1-FT)

Applies to systems originally containing a STRATUS-CS-C1 or STRATUS-CS-C1-FT.

The C1 Core server package comprises multiple devices:

There are 2 (two) GV STRATUS Core servers, containing the OS and Data-bases, plus the Core Services (applications). Databases are run on the first Core, with Services split across these cores. The Workflow engine is typically run on Core 2.

- In addition, there is dedicated Proxy storage (which comprises a GV STRA-TUS Proxy Storage Server and storage chassis)
- In a C1 system, each Core server is a 1 RU Dell device. There are two such servers in each system
- In a C1-FT system, each core server is a 4 RU Stratus Technologies FT server with two fault-tolerant "blades" in one overall chassis. There are two such servers in each system
- All C1 systems use a K2 Nearline storage system for their Proxy storage, comprising one K2 NH10 type NAS head and two or more K2 Nearline storage chassis (a primary plus necessary expansion units). *As explained in section "GV STRATUS Proxy Storage" (note that this will be quoted from new stock where required)*

A **C1** system (non-redundant) is replaced by:
- **1x STRATUS-CSC1-HW** in physical systems, **OR**
- **2x STRAT-CS-UPG-HW** in physical systems where the Proxy NAS is not to be replaced, **OR**
- **1x STRATUS-VM-C1** in VM systems

Note: STRAT-CS-UPG-HW is *one* server, a C1 system has two core servers present.

A **C1-FT** system (fault tolerant redundancy) is replaced by:
- **1x STRATUS-CSC1-FT-HW** in physical systems, **OR**
- **2x STRAT-CS-UPG-FT-HW** in physical systems where the Proxy NAS is not to be replaced, **OR**
- **1x STRATUS-VM-C1** (Note: In VM systems the customer would use VMware HA to achieve redundancy)

C1 systems will also require one or more render servers, please see the relevant section below.
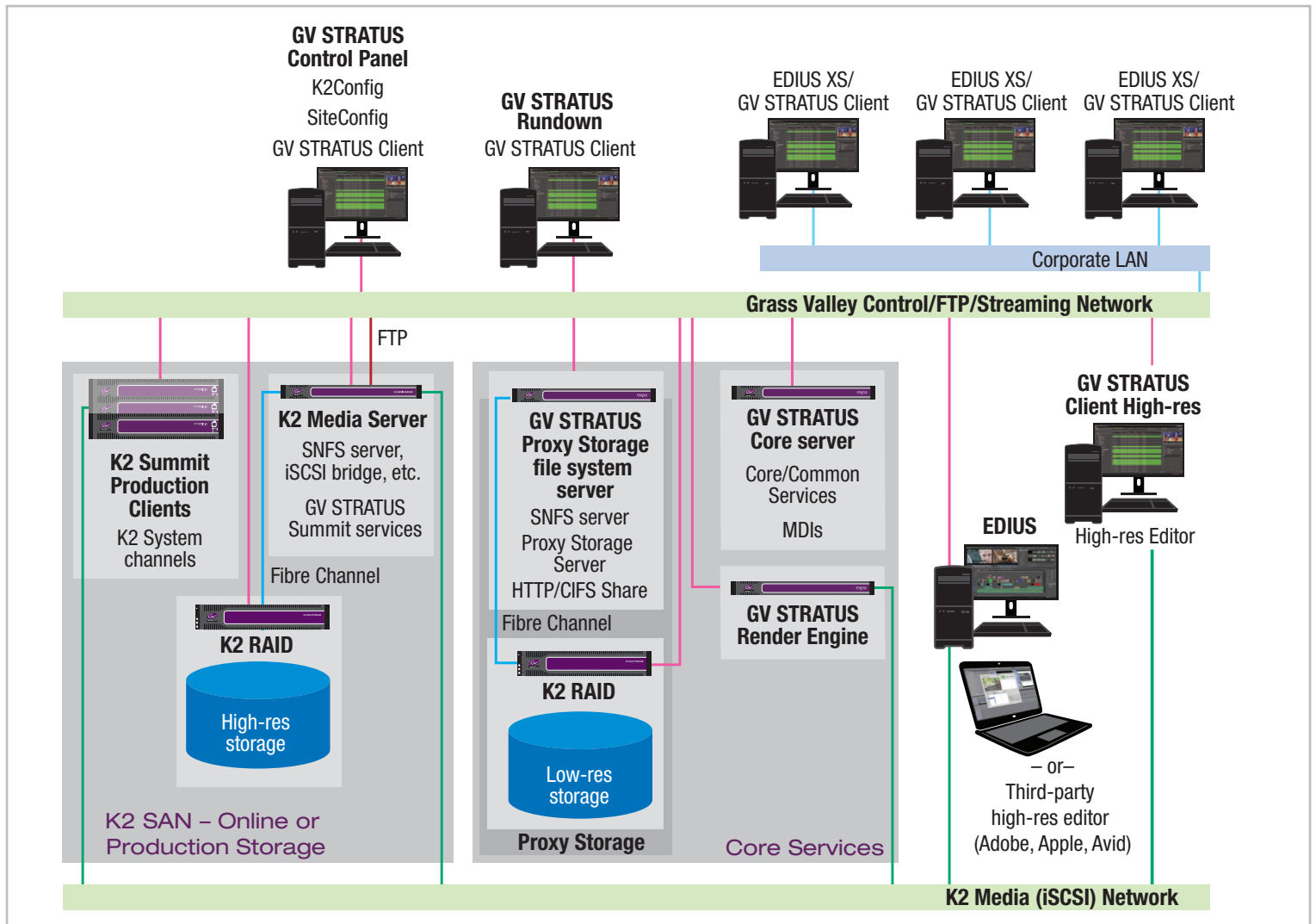
Upgrading Proxy Encoders, Conform and Render Servers

GV STRATUS systems have included several different types of these servers during the product's history, used to scavenge, conform and render media. These may be described as follows in older systems deployed in the field (especially those deployed before GV STRATUS v4.0):

- GV STRATUS Proxy Encoder (STRATUS-CS-PE)
- GV STRATUS Conform Engine (STRATUS-CS-CE-ENG)
- GV STRATUS XRE Server (STRATUS-CS-XRE)

Proxy encoders, Conform servers, and XRE servers have all been retired and replaced by the:

- GV STRATUS Render Server (STRATUS-CS-RE)

All servers of these types should now be upgraded / replaced by:

- **N**x **STRATUS-CSGVRE-HW** in physical systems, **OR**
- **N**x **STRATUS-VM-GVRE** in VM systems

where **N** is the total sum of all existing CS-PE, CS-CE, CS-XRE and CS-RE which need to be upgraded.

Where customers wish to upgrade just the OS image on existing GVRE servers, **STRATUS-RE-OS-UPG** should be quoted, but only for servers remaining in a GV SA (not EoS).

Important note:

GVRE servers are more capable (from a performance perspective) than the former CS-PE, CS-CE and CS-XRE servers sold originally in systems. However, where the K2 SAN (or Isilon storage) at a customer premises are not being replaced, the migrated system (comprising the new CS-RE servers) must be configured to use the original bandwidths/engine job quantities allocated in the legacy system prior to migration. This is to ensure that the storage is not over-subscribed by the newer servers (which could in theory consume more media streams if configured against a new SAN and storage system).

Replacing Other Important System Components

Grass Valley's server upgrade packages cover the hardware provided by third-parties (such as Dell or NEC) which are used within GV STRATUS or K2 SAN systems. The upgrade packages do not include any options for the following components, which can be quoted as "like-for-like" replacements.

GV STRATUS Proxy Storage

With the exception of the Core Express server (where the proxy storage is internal to the server), physical GV STRATUS systems include proxy storage based upon K2 SAN or Nearline storage.

Systems ordered from 2019 onwards using the new -HW Core server nomenclatures will include proxy storage from the factory.

System migrations that require the replacement of the proxy storage in a B1 or C1 system should be quoted from the standard price book using GV Config (to create a "like-for-like" configuration with current components) and replacement K2 Nearline (NL3) components.

GV STRATUS

K2 Summit Clients (SAN and Distributed)

GV STRATUS systems until version 6.0 (when the GV I/O was launched) have all included at least 1 K2 Summit device, whether XDP, XDP2 or XDT1 type.

Any K2 Summit devices requiring replacement will be quoted and supplied from new stock based on the currently supported shipping models. Alternatively, customers can migrate from the K2 Summit platform to the GV I/O, or create a hybrid system using both.

K2 Summit devices which are being kept, but require upgrade to Windows 10 Embedded OS and SNFS 6, will each require a "Windows 10 Field Kit" to be procured as part of the upgrade. There are versions available for XDT1 servers and XDP2 servers; these include the relevant Compact Flash (XDT1) or mSATA (XDP2) drive hardware used by the server OS partition (the original server parts contained 32 GB drives, which cannot accommodate a Windows 10 OS image):

Server Field Kit Part	Description
K2-XDT1-V10-FK	K2, SNFS and Windows OS software upgrade for existing Summit Transmission (XDT1) servers. Includes 64 GB CF card to field replace
K2-XDP2-V10-FK	K2, SNFS and Windows OS software upgrade for existing Summit Production (XDP2) servers. Includes 64 GB mSATA drive to field replace existing OS storage volume

Note that the field kit K2-XDT1-V10-FK only applies to XDT1 SAN clients, not standalone servers. The LSI chipset used in the XDT1 RAID controller is not supported within Windows 10. Although K2 Solo was never an officially supported server with GV STRATUS systems, the K2 Solo 3G is also not upgradable due to the LSI chipset.

Early XDP2 standalone servers also used the LSI controller, and are not upgradable. Later servers used an AIC chipset, which does have a Windows 10 driver, and is upgradable. To establish which chipset a K2 server has, please check the Windows Device Manager and K2 Storage Manager:

If the server has the AIC chipset named and single controller instance, then the standalone K2 server can be upgraded.

K2 Summit devices which have a CPU labeled earlier than "Type IV" (4) should be upgraded to the latest computer module, to ensure adequate, stable performance when running Windows 10/K2 Summit 10 software.
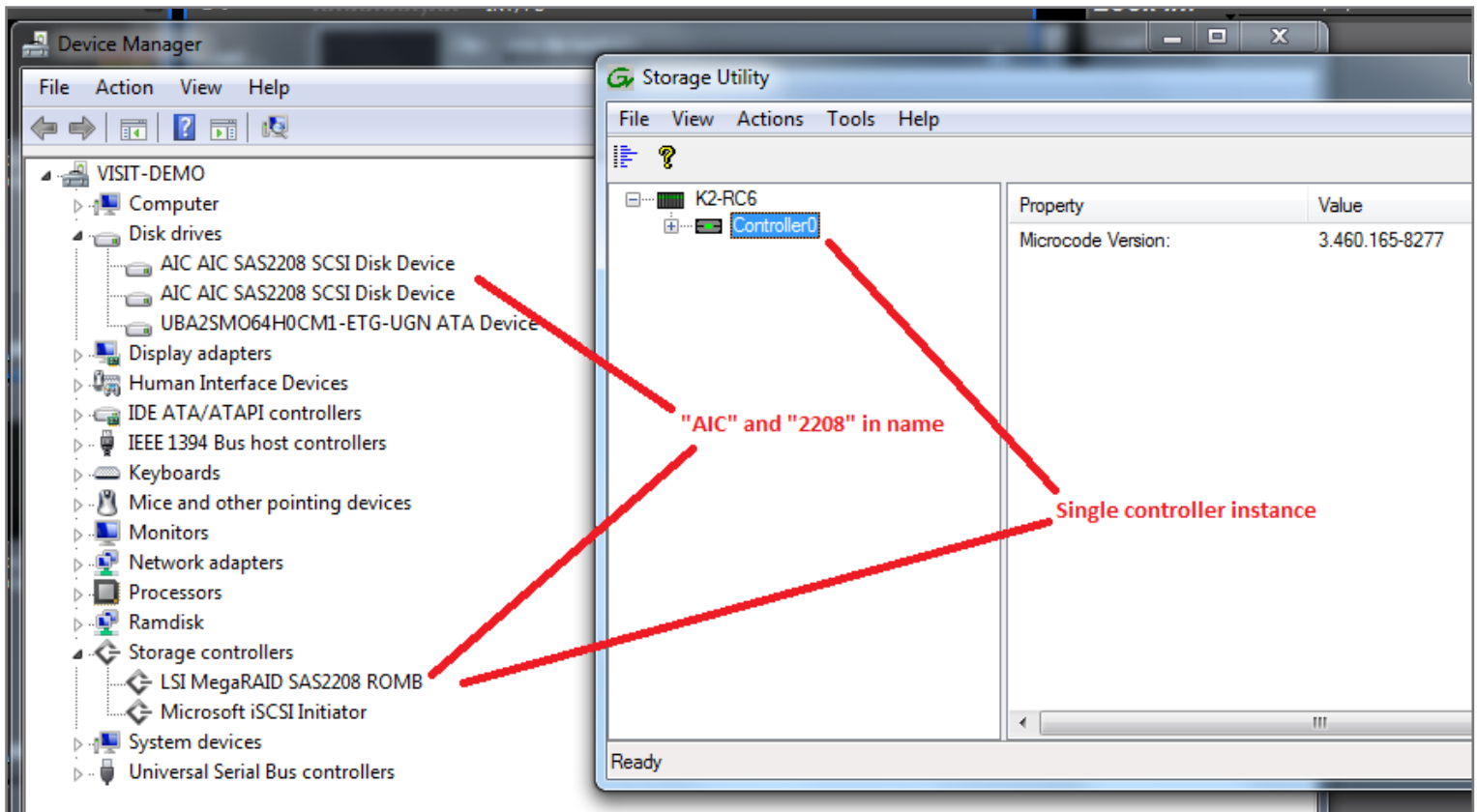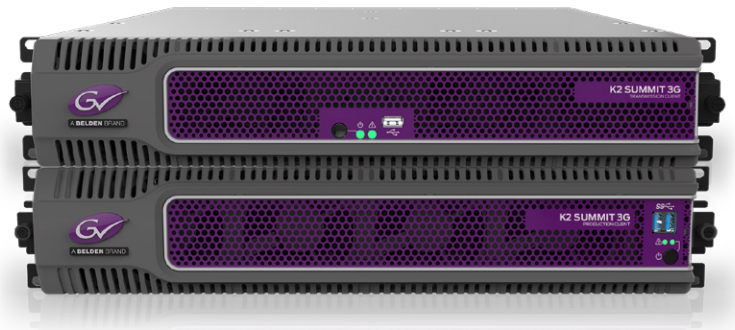
K2 SAN Servers and Storage

Customers upgrading to a Windows 2016 based migration should purchase new servers using the following nomenclatures:

- Purchase new K2-FSM-100 server for each K2 FSM (Media) server in their system, this will provide new hardware, support for SNFS 6, and Windows 2016 OS. K2 server licenses must be migrated ("removed" and "re-cut" by a GV FSE) from the existing to the new server(s). A HRES upgrade license to SNFS 6 must be purchased for each client connected to the server.
- Purchase new K2-NH10-GE server for each K2 FTP server in their system, this will provide new hardware, support for SNFS 6, and Windows 2016 OS. Any K2 server licenses present must be migrated ("removed" and "re-cut" by a GV FSE) from the existing to the new server(s).

K2 SAN Storage

K2 SAN storage should be quoted from the current Grass Valley pricebook using currently supported models (ONL3 and PRO3 at the time of writing). K2 SAN systems should be designed using the GV Config tool to re-create the customer system in all relevant details (including all K2 clients, network transfers, editor clients and GV STRATUS High Resolution clients) to ensure the new SAN meets all customer requirements.

GV ION AMS Pro Storage

GV STRATUS also supports third-party storage options, via GV STRATUS Storage Managers and Gateways with GV ION AMS Pro (Isilon) storage. These can be virtualized where required, allowing a customer (who wishes to "cross-grade" from a physical to VM system) to also virtualize their storage servers. Where a customer wishes to migrate from a K2 SAN to a third-party storage solution, please use the tools available in the GV Config tool to design the storage solution, or if in doubt please have your sales representative contact the GV STRATUS product team to discuss complex solutions with the Systems Team.

Pre-requisites for a System Upgrade

This section explains what must be agreed and in place with the customer before the upgrade (and subsequently, the relevant data migration) can take place.

1. The existing customer system must be upgraded to the latest version validated by the system migration scripts/procedure and packages:
   – For example, a customer on v4.8 **must** first upgrade their **existing** system to the latest version (or at least v6.5). Note this upgrade may require multiple steps to ensure intermediate GV STRATUS versions (and their scripts) are run correctly to ensure the database is upgraded correctly.
   – Services effort must be included to perform this upgrade **AND** the subsequent migration.
2. Upgrade packages are provided with new OS and SQL licenses. Grass Valley **cannot** and **will not** migrate existing Windows Server OS or SQL licenses to new hardware or images:
   – Windows Server 2016 upgrades will include a new MS SQL 2017 license on the Core server(s).
3. Customers **cannot** provide their own OS or SQL licenses.
4. Customers **must** provide the hostnames (and if possible target IP addresses) for all the servers to be replaced at the point the upgrades are ordered, so that servers can be manufactured with the correct hostnames applied (this significantly simplifies migration in the field). Hostnames need to match the existing server equipment.
5. Where a customer wishes to upgrade from a physical to a VM-based system (or hybrid of the two) the customer must provide the VM infrastructure, storage and VMware licensing to meet the Grass Valley virtualization specification (see the latest relevant Virtualization App Note for all details).
6. Upgrade packages do not contain any GV software licenses. All software licenses **must** be migrated ("removed" and "re-cut" by an FSE) from the existing system to the new one. This includes all GV STRATUS volume and site licenses (held on the Core server) and any K2 licenses held on the media server(s).
7. Licenses should only be created against the Customer's existing sales order details, and must reflect the scale of the existing system; they will not include any ad hoc (free of charge) expansions. If customers require the system to be expanded, new components which include the relevant licenses must be purchased.

Migrating Data to the Upgraded System

Upgrading/replacing the server hardware is only part of the equation — the system comprises media (essence) data, metadata (held in databases) and configuration data that must also be migrated from the old to new system. Upgrades from SNFS 4.7 to SNFS 6 can be performed without any loss of content, and are now well known within the GV Service and Support team.

When a system upgrade is quoted, the upgrade packages (hardware or VM images) are only part of the solution. A service effort to perform the migration from the old to new system components as a chargeable item must be included.

System upgrades and migrations must be planned carefully with the local service and support team, so they are tailored to a customer's environment and consider the complexity of the migration (which may include replacement storage and video servers in some cases). Grass Valley does not intend these to be performed by end-user customers, they are intended to be delivered by GV Service and Support personnel (or by Grass Valley integration partners who have been suitably trained in the procedure).

Grass Valley has created the following to support customer system migrations, which are available separately on request:

1. A procedure for Field Service Engineers (FSEs) to follow to complete a successful migration. This includes instructions for how to:
   – Migrate proxy media to new storage (if required)
   – Migrate databases from one server to another
2. A set of scripts which can "capture", "save" and "re-deploy" device configurations between old and new system devices (servers or VM images)
3. A set of Hardware (or VM) packages to allow customers to deploy new systems as physical or virtualized solutions

Where to Get Help?

If in doubt about how to plan a migration, please contact your local Grass Valley sales representative. They will then contact the GV STRATUS Business Development Manager, or the product team, who can assist. They will also engage the Grass Valley Service and Support team to ensure the migration is correctly planned.

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