DISGUISE

Part 1. Disguise VX 2+

1.01 Control Hardware

A. General

- The product should be a purpose built server system designed for control of video, lighting and other related systems for live events, virtual production, or in an architectural or entertainment application. A personal computer running emulation software shall not be acceptable.
- The server shall store show data in non-volatile solid-state memory.
- The operating software of the server shall be stored in a dedicated non-removable, non-volatile solid-state memory. It shall be possible to update the Operating Software by download from a remote personal computer over an Ethernet or USB connection.
- The server shall have an internal real-time clock that continues to operate when external power is absent. It shall be capable of adjusting for Daylight Saving Time automatically and can be updated over the Internet using the Network Time Protocol (NTP).
- The server shall output control data as sACN and Art-Net protocols.
- There shall be visual indicators on the server showing status of the controller.
- The server shall be accessible over IP on its Ethernet interface. This shall allow status information, control and configuration options to be accessed remotely.
- The server shall support incoming LTC Timecode signal
- The server shall support incoming VITC Timecode signal
- The server shall contain an RME Audio card, supporting 8 channels of audio input and output via ADAT.
- The server shall feature a light on the rear panel with a dedicated hardware switch to illuminate connectivity.
- The rear panel light shall be able to work in dimmable states.
- The server shall support connection to a network to connect multiple systems together from its one control interface software.
- The server shall support multiple streams of timecode and audio data within a single networked system.
- The server shall have a front loaded power button for resetting the unit without removal of power.
- The server shall have a single drive cage that can hold a single NVMe drive.
- The server shall have the option to upgrade the storage capacity of the single NVMe drive as a paid-for upgrade.
- The server shall have a power consumption peak of 655W.
- The server shall have a heat dissipation peak of 2,235 BTU/hr.
- The server shall provide a maximum decibel rating of 56dB.

B. Mechanical

- The server shall be a black metal enclosure, 4U 19” rack mount.
- The server shall be 445mm x 178mm x 593mm (17.52” x 7.00” x 23.35”).
- The server shall weigh 17.4kg (38.36lbs).
- The server shall feature rack handles measuring 621mm (24.45”)
- The server shall feature NVMe storage with no moving parts.
- The server shall operate in a temperature range of 5 - 35°C (40 - 95°F).
- The server shall operate in a humidity range of 5 - 95% non condensing.
- The server shall operate at an altitude range of 0 - 2700m (0 - 8850 ft).
- The server shall feature user-replaceable filters for the cooling fans, accessible with a standard toolkit.

C. Electrical

- The server shall have the following Inputs and Outputs:
    - 1 x PowerCon True1 Input
    - 2 x Video Format Conversion (VFC) Bays for selectable output configuration
    - 2x 12G SDI video inputs or 8 x 3G SDI video inputs (all HD-BNC connector)
    - 2 x Balanced 3-pin XLR Output
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    - 1 x 6.3mm (¼”) Headphone Jack
    - 2 x ADAT/SPDIF via TOSLINK
    - 2 x MIDI - In & Out via 5-pin DIN
    - 1 x 1Gb Ethernet with EtherCON connector
    - 2 x 10Gb Ethernet with EtherCON connector
    - 2 x 100Gb Ethernet with QSFP28 connector
    - 5 x USB 3.0
    - 1 x Genlock (BNC)
    - 1 x DisplayPort 1.4 GUI port
- The server shall offer an OLED display for status information and general feedback.
- Video Format Conversion (VFC) cards shall enable output connectivity changes. These shall be available to order in the following configurations:
    - 1 x DisplayPort 1.4
        - DisplayPort 1.4 output shall support up to 4096 x 2160 @ 60 Hz
    - 4 x DVI Dual-link
        - All four DVI Dual-link shall support up to 1920 x 1200 @ 60Hz (in quad mode)
    - 4 x 3G-SDI (BNC)
        - All four 3G-SDI shall support up to 1080p level A and level B
    - 1 x HDMI 2.0
        - HDMI 2.0 shall support up to 4096 x 2160 @ 60 Hz
    - 1 x IP (SFP28)
        - 4x 25GbE outputs shall support up to 4096 x 2160 @ 60 Hz

- The server shall be powered via a worldwide (100-240V AC) auto ranging internal power supply.
- The server shall be powered via a lockable PowerCon True1 connector.

2.01 Software

- The server shall function as a 3D media server with advanced networking and interconnectivity options.
- The server shall be based upon Windows 11 Enterprise GAC.
- The server shall have the operating software and media stored on separate drives.
- The software shall have a 3D pixel perfect simulation environment.
- The server shall have a software built in lux rendering and heatmap rendering modes to visualise lighting levels within a physical space.
- The server shall have a software built in fly-through option to present the 3D simulation environment, with option to adjust the pivot, rotation and view angle of the virtual camera used to complete the fly-through
- The software shall enable pixel perfect preview and playback.
- The server shall support multiple timelines, crossfades and effects running concurrently.
- The server shall support playback of video media with individual pixels mapped to lighting fixtures or video products.
- The server shall have software built in mapping types, including perspective, parallel, cylindrical, spherical, and direct mappings to allow for flexibility in programming and remapping pixels.
- The server shall support mesh mapping, which automatically adjusts in size according to the surface being used, and calculates the number of render instances needed to cover the screen at the desired resolution and scale.
- The server shall support a skinned mesh workflow, which creates a flexible mesh based on tracked marker positions in order to map video content onto a moving surface.
- The server shall support multiple types of output warping.
- The server shall support a workflow which enables playback of a single large piece of pre-rendered video content greater in size than 16,000 pixels in width and height.
- Show data may be downloaded from a remote personal computer over an Ethernet network connection or USB Drive from specific designer dongle software.
- The server shall have software built in projection calibration, including a built-in wireframe feature that allows the system to generate a line drawing based on the 3D mesh of the projection surface, and a Quick Calibration feature that uses virtual reference points that link to the real-world points.
- The server can be used with a camera-based projector calibration system that captures images of the physical space and constructs a 3D representation of the projection surface in software.
- The server shall have software built in spatial calibrations
- The server shall offer support for projector stacking within the operating software.

- The server shall offer support for masks and soft-edge generation within the operating software (no third party software required).
- The server shall support functionality to dynamically edge-blend content across multiple projectors, and be able to adjust the shape, gradient and gamma settings of the soft-edge blending in real-time.
- The server shall support Designer HTTP APIs, and are documented within its operating system
- The server shall support MIDI, OSC, Art-Net and UDP commands and triggers.
- The server shall support LTC timecode triggers for cues.
- The server shall be controllable via Ethernet DMX protocols input using a user-configurable DMX channel allocation.
- The server shall support playback of both 30p and 60p versions of HAP, HAPQ, Notch LC, ProRes 422, ProRes 4444, ProRes HQ, and lossless Animation codec formatted video files in both Full HD and 4K DCI
- The server shall be used to playback real-time content from graphic engines such as Unreal Engine, Notch, Touch Designer, and Unity.
- The server shall have software built in that enables the content engine to be changed without having to change deployment architecture.
- The server can be used to playback AI-generated 3D content from tools such as Cuebric and Volinga.
- The software shall support the saving of 2.5D assets as .2p5d files so that they can be used across multiple projects.
- The software shall support the usage of .ocio files for colour spaces and transforms so that they can be used across multiple projects.
- The server shall support playback of BMP, JPG, PNG, TIFF, DPX and TGA image files.
- The server shall support uncompressed 10-bit content playback
- The server shall support a variety of HDR gamma profiles including PQ and HLG
- The server shall support playback of WAV and MP3 audio files.
- The server shall support proxy files for 3D previsualisation.
- The server shall utilise UV maps for 3D content delivery.
- The server shall support media ingestion including understanding of file versions via specific naming convention.
- The server shall support frame replacement in video files.
- The server shall offer connectivity to optical tracking systems including but not exclusive to EZtrack, Blacktrax, OptiTrack, Vicon and Stype.
- The server shall be capable of running as a network of machines, operating as a Director, Actor or Understudy depending on configuration, to deliver synchronised video frames to multiple surfaces from a single user interface.
- The server shall be able to take over from any machine in the network when the Understudy role has been assigned via either an automated or manual setting.
- An offline version of the server software shall be available for purchase as a Designer system, enabling pre-visualisation, programming and rendering of concepts.

- Multiple Controllers shall automatically synchronise and share triggers when programmed as part of a single show and linked via Ethernet during playback.
- The server shall allow lighting to be programmed as separate zones, with independent triggering and manual intensity control.
- The server shall support Proof of Play by generating a .csv file with information including but not limited to start and end time, the amount of video frames played, and the total video clip in frames.

3.01 Accessories

- The server shall be supplied with the following packaged in a tray within the shipping container:
    - USB Keyboard
    - USB Mouse
    - 3x PowerCon True1 power cable to support UK, EU and US mains plugs
    - Getting Started Guide
    - Back Mounting Rails

4.01 Service, Documentation & Training

- The server shall be covered by a 2 year return to base hardware warranty, extendable to 5 years with an extended warranty package.
- The server shall be supplied with free technical support via phone or email.
- Regular training courses shall be offered for the server and operating software, at both foundation and advanced levels.
- Documentation shall be provided via printed, online and video formats.
- An online knowledge base shall be provided for the server.