Part 1. Disguise EX 3+

1.01 Control Hardware

A. General

- The product should be a server system designed for control of video, lighting and other related systems for immersive experiences, fixed installations and for live events. A personal computer running emulation software shall not be acceptable.
- The server shall store 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.
- The server shall support connection to a network to connect multiple systems together from its one control interface software.
- 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 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 332W.
- The server shall have a heat dissipation peak of 1,132 BTU/hr.
- The server shall provide a maximum decibel rating of 53dB.

B. Mechanical

- The server shall be a black metal enclosure, 2U 19" rack mount.
- The server shall be 441mm x 88.4mm x 645.25mm (17.36" x 3.48" x 25.4").
- The server shall weigh 11.5kg (25.35lbs).
- The server shall feature rack handles measuring 677.5mm (26.67")
- 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 20 - 80% 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:
    - 1x Neutrik powerCON True1 power connection
    - 3x DisplayPort 1.4 for selectable output configuration
    - 1x 12G SDI video inputs or 4 x 3G SDI video inputs (all HD-BNC connector)
    - 1x HDMI 2.0 video input (HDMI 2.0 connector)
    - 2 x 10Gb Ethernet connector
    - 2 x 100Gb Ethernet with QSFP28 connector
    - 2 x USB 3.2 (Gen 2x1)
    - 1x Genlock (BNC)
    - 1 x DisplayPort 1.4 GUI port
- 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.
- Each selectable output configuration shall support up to 4K DCI (4096 x 2160) @ 60Hz

2.01 Software

- The server shall function as a 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 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 shall offer support for masks and soft-edge generation within the operating software (no third party software required).
- The server shall have software built in spatial calibrations.
- The server shall offer support for projector stacking within the operating software.
- The server shall support Designer HTTP APIs, and are documented within its operating system.
- The server shall support MIDI, OSC and Art-Net commands and triggers.
- The server shall be able to support video input over NDI
- 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 generative content from content engines such as Notch using an optional paid-for realtime connector license.
- 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 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
    - Hardware guide
    - 4-Port USB 3.0 Hub
    - Rack rails with support for server racks with square holes (9.5mm), circle holes (7.1mm), and threaded holes (up to 7.1mm)

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.