



**BCDV<sub>VIDEO</sub>**™  
PURPOSE-BUILT, PERFORMANCE DRIVEN

# 2019 A&E Specifications

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## A&E Specification

# 1RU 2 Bay Short Depth Video Recording Servers, Workstations, and Video Analytics Servers

### Notes to Specifier:

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS, WORKSTATIONS, VIDEO ANALYTICS SERVERS

### PART 1 GENERAL

#### 1.01 Summary

- A This specification describes a 1RU rack-mount enterprise class video recording server, workstation, or video analytics server with capacity up to 28 TB, and NVIDIA® GPU support.

#### 1.02 Related Requirements

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### 1.03 References

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GigE - Gigabit Ethernet
  - 3. GB – Gigabyte

4. GPU – Graphics Processing Unit
  5. HDD - Hard Disk Drive
  6. iDRAC - Integrated Dell Remote Access Controller
  7. LAN - Local Area Network
  8. LOM – LAN on Motherboard
  9. LRDIMM - Load-Reduced Dual Inline Memory Module
  10. NAS- Network Attached Storage
  11. NFS - Network File System
  12. NIC - Network Interface Controller (or Card)
  13. PCIe - PCI (Peripheral Component Interconnect) Express
  14. PERC – (Dell) PowerEdge RAID Controller
  15. NVMe – Non Volatile Memory Express
  16. RAID - Redundant Array of Independent Disks
  17. SATA - Serial Advanced Technology Attachment
  18. SAS - Serial-attached SCSI
  19. SCSI - Small Computer System Interface
  20. SFP - Small Form Factor Pluggable
  21. SSD - Solid State Drive
  22. TB - Terabyte
  23. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## PART 2 PRODUCTS

### 2.01 Manufacturer

#### A BCDVideo

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### B Products

- |  |               |
|--|---------------|
| 1. 1RU 2 Bay Short Depth Video Recording Servers | BCD102SD-ELVS |
| 2. 1RU 2 Bay Short Depth Video Workstation       | BCD102SD-PWS  |
| 3. 1RU 2 Bay Short Depth Video Analytics Server  | BCD102SD-ELAS |

### 2.02 Description

- A The Video Recording Server ("Recording Server"), Video Workstation ("Workstation"), Video Analytics Server ("Analytics Server") shall be an enterprise class 1RU rack-mount server providing storage scalability up to 28 TB and support for NVIDIA® GPUs.
- B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording, analyzing, and processing surveillance video.
- C The Recording Server/Workstation/Analytics Server shall have a dedicated operating system drive to facilitate accelerated boot and application load times.
- D The Recording Server/Workstation/Analytics Server shall have redundant, hot-swappable cooling fans, and power supplies.
- E Video Storage
1. Hard Drive Bays
    - a. Number: **<2>**
    - b. Type: Enterprise SATA Drives
  2. SATA Drives:
    - a. Size: 3.5"
    - b. Capacity 1 TB, 2 TB, 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
    - c. Speed: 7200 rpm
- F Processor:
1. Number: **<1>** Intel® 8<sup>th</sup> Generation Core™ Processor
  2. Properties: Up to 6 Cores, 12 Threads, 4.70GHz
- The Recording Server, Video Workstation, or Analytics Server shall support the Intel® Core™ i3-8100, i5-8500, i7-8700, and i7-8700k*
- G Graphics Cards

1. Number: <1> <2> NVIDIA® Quadro® P620, P1000, P2000, P4000  
**OR** <1> NVIDIA® Quadro® P5000, GeForce® GTX 1050 Ti, 1660 Ti RTX 2060, 2070, 2080, 2080 Ti

#### H Operating System

1. Software: Microsoft Windows 10 Pro
  - a. The server shall support an upgrade to Windows Server 2016
2. Drives: 1 x 256 GB M.2 NVMe SSD dedicated
  - a. The server shall support a second M.2 NVMe SSD to be configured in RAID 1.

#### I Memory

1. Up to <32 GB> in 8 GB increments, <64 GB> in 16GB increments, <128 GB> in 32GB increments  
*The Intel® Core™ i3 variants will have 8GB Standard, and the Intel® Core™ i5 and i7 variants shall have 16GB standard*

#### J Network Controller

1. Ports: 1 x 1GbE RJ45, 1 x 1/10GbE RJ45

#### K Additional Ports

1. Video output: Varies with GPU, (2) USB Type C on motherboard, up to (3) DisplayPort 1.4, (1) HDMI 2.0b, (1) USB Type C for Virtual Link
2. USB: Front: (2) USB 3.1 Type A, (1) USB 3.1 Type C Rear (2) USB 3.1 Type C

#### L Redundancy and Resilience

1. RAID
  - a. Levels supported: RAID 0, 1
  - b. Controller: Embedded SATA

#### M Electrical

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 2 x <550> W
  - b. Heat Dissipation: <2107> BTU/hr.  
*The Intel® Core™ i3 variants will have (1) 550W Standard, and the Intel® Core™ i5 and i7 variants shall have (2) 550W standard*

#### N Mechanical

1. Dimensions (w x d x h): 19" (482.6mm) x 23.19" (589.1mm) x 1.68" (42.8mm)
2. Weight: 19.27 pounds (8.74kg)
3. Form factor: 1 RU 19" rack mount



- 4. Rack support: sliding rack rail with cable management arm
- O Environmental
  - 1. Operating temperature: 50°F - 95° F (10°C - 35°C)
  - 2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

**PART 3 EXECUTION**

**3.01** Installers

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02** Preparation

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03** Installation

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04** Storage

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## **A&E Specification**

### **1RU 4 Bay Short Depth Video Recording/Multi-Purpose Servers**

#### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING/MULTI-PURPOSE SERVERS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 1RU rack-mount short depth enterprise class video recording/multi-purpose server with capacity up to 42 TB.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GigE - Gigabit Ethernet
  - 3. GB - Gigabyte

4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
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  2. FCC - Code of Federal Regulations, Title 47, Part 15
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1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## **PART 2 PRODUCTS**

### **2.01 Manufacturer**

#### **A BCDVideo**

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### **B Products**

1. 1RU 4 Bay Short Depth Video Recording Servers      BCD104SD-ELVS

### **2.02 Description**

A The Video Recording/Multi-Purpose Server ("Recording Server"), shall be an enterprise class 1RU rack-mount server providing storage scalability up to 42 TB.

B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video and be purpose-built for video surveillance applications.

C The Recording Server shall provide the capability for remote management, disaster recovery, and critical resource management.

D The Recording Server shall have a dedicated operating system drive to facilitate accelerated boot and application load times.

E The Recording Server shall have redundant, hot-swappable, storage drives, and cooling fans.

#### **F Video Storage**

##### **1. Hard Drive Bays**

- a. Number:      **<4>**
- b. Type:      Enterprise SATA Drives

##### **2. SATA Drives:**

- a. Size:      3.5"
- b. Capacity      1 TB, 2 TB, 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
- c. Speed:      7200 rpm

#### **G Processor:**

1. Number:      **<1>** Intel® Xeon® E-2100 Series Processor
2. Properties:      Up to 6 Cores, 12 Threads, 4.50GHz

#### **H Operating System**

1. Software:      Microsoft Windows 10 Pro
  - a. The server shall support an upgrade to Windows Server 2016

- 2. Drives: 1 x 240 GB 2.5" SATA SSD dedicated
  - a. The server shall support a second 240GB 2.5" SSD to be configured in RAID 1.
- I Memory
  - 1. Up to **<32 GB>** in 8 GB increments, **<64 GB>** in 16GB increments, **<128 GB>** in 32GB increments
- J Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.
- K Network Controller
  - 1. Ports: 2 x 1GbE RJ45
  - 2. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)
- L Additional Ports
  - 1. Video output: (1) VGA
  - 2. USB: Front: (2) USB 2.0, Rear: (2) USB 3.0, Internal: (1) USB 3.0
- M Redundancy and Resilience
  - 1. RAID
    - a. Levels supported: RAID 0, 1, 10
    - b. Controller: PERC H330
- N Electrical
  - 1. Power: 100–240 V AC, auto-ranging
    - a. Power Supply: 1 x **<250>** W
    - b. Heat Dissipation: **<1039>** BTU/hr.
- O Mechanical
  - 1. Dimensions (w x d x h): 19" (482.6mm) x 22.58" (573.6mm) x 1.68" (42.8mm)
  - 2. Weight: 26.89 pounds (12.2kg)
  - 3. Form factor: 1 RU 19" rack mount
  - 4. Rack support: sliding rack rail with cable management arm
- P Environmental
  - 1. Operating temperature: 50°F - 95° F (10°C - 35°C)
  - 2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

## **PART 3 EXECUTION**

### **3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

### **3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

### **3.03 Installation**

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

### **3.04 Storage**

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**





## **A&E Specification**

### **1RU 4 Bay Video Recording/Multi-Purpose Servers**

#### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING/MULTI-PURPOSE SERVERS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 1RU rack-mount enterprise class video recording/multi-purpose server with capacity up to 56 TB.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
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- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

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  - 3. GB - Gigabyte

4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
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1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
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    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A** Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## **PART 2 PRODUCTS**

### **2.01 Manufacturer**

#### **A BCDVideo**

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### **B Products**

1. 1RU 4 Bay Video Recording/Multi-Purpose Servers      BCD104-EVS, BCD104-PVS, BCD104-PLVS

### **2.02 Description**

- A The Video Recording/Multi-Purpose Server ("Recording Server") shall be an enterprise class 1RU rack-mount server providing storage scalability up to 56 TB.
- B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video.
- C The Recording Server shall provide the capability for remote management, disaster recovery, and critical resource management.
- D The Recording Server shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.
- E The Recording Server shall have redundant, hot-swappable, storage drives, cooling fans, and power supplies.
- F Video Storage
  1. Hard Drive Bays
    - a. Number:      <4>
    - b. Type:          Dual Port SAS, Enterprise SATA Drives
  2. SAS Drives:
    - a. Size:          3.5"
    - b. Capacity:      8 TB, 10 TB, or 12 TB per drive
    - c. Speed:        7200 rpm
  3. SATA Drives:
    - a. Size:          3.5"
    - b. Capacity      4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
    - c. Speed:        7200 rpm
- G Video Management
  1. Hard Drive Bays

- a. Number: **<4>**
  - b. Type: Dual Port SAS
- 2. SAS Drives
  - a. Size: 2.5"
  - b. Capacity 1 TB, 2 TB per drive
  - c. Speed 7200 rpm
- 3. High-Performance 10K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 10000 rpm
- 4. High-Performance 15K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 15000 rpm
- H Processor:
  - 1. Number: **<2> <1>** Intel® Xeon® Silver 4110 Scalable Processor
  - 2. Properties: 8 Cores, 16 Threads, 3.00GHz
- I Operating System
  - 1. Software: Microsoft Windows 10 Pro, Windows Server 2016  
*The BCD104, when configured with dual-port SAS drives, will use Windows Server 2016. When using SATA drives, the server shall support both Windows 10 Pro or Windows Server 2016*
  - 2. Drives: 2 x 240 GB M.2 NVMe SSD dedicated, RAID 1 configured
- J Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.
- K Memory
  - 1. Up to **<128 GB>** in 8 GB increments, **<256 GB>** in 16GB increments, **<512 GB>** in 32GB increments, with option for 1 TB LRDIMM  
*Dual processor units have a basic configuration of 32 GB; single processor units 16 GB.*
- L Network Controller
  - 1. Ports: 2 x 1GbE RJ45
  - 2. Expansion: capability for 2 x 10 GbE SFP+ ports via add-on LOM mezzanine card
  - 3. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)
- M Additional Ports

1. Video output: VGA (1)
2. USB: (2) USB 3.0, Front (2) USB 2.0, Internal (1) USB 3.0

**N Redundancy and Resilience**

1. RAID
  - a. Levels supported: RAID 0, 1, 5, 6, 10
  - b. Controller: PERC H730P 2GB

**O Electrical**

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 2 x **<550>** W
  - b. Heat Dissipation: **<2107>** BTU/hr.

**P Mechanical**

1. BCD104
  - a. Dimensions (w x d x h): 19" (482.6mm) x 27.26" (692.62mm) x 1.68" (42.8mm)
  - b. Weight: 38.90 pounds (17.64 kg)
  - c. Form factor: 1 RU 19" rack mount
  - d. Rack support: sliding rack rail with cable management arm
2. BCD108
  - a. Dimensions (w x d x h): 19" (482.6mm) x 25.26" (641.85mm) x 1.68" (42.8mm)
  - b. Weight: 35.36 pounds (16.04 kg)
  - c. Form factor: 1 RU 19" rack mount
  - d. Rack support: sliding rack rail with cable management arm

**Q Environmental**

1. Operating temperature: 50°F - 95° F (10°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

**PART 3 EXECUTION**

**3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.

B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02** Preparation

A The network design and configuration shall be verified for compatibility and performance with the Recording Server.

B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03** Installation

A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04** Storage

A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**





## A&E Specification

### 1RU 8 Bay Video Management/Recording Servers

#### Notes to Specifier:

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 1RU rack-mount enterprise class video management/recording server with capacity up to 16 TB.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GbE - Gigabit Ethernet
  - 3. GB - Gigabyte

4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A** Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## PART 2 PRODUCTS

### 2.01 Manufacturer

#### A BCDVideo

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### B Products

1. 1RU 8 bay Video Management Servers BCD108-EVS

### 2.02 Description

- A The Video Recording Server ("Recording Server")/Management Server shall be an enterprise class 1RU rack-mount management server capable of providing storage scalability up to 16 TB.

*The BCD108 is an 8 bay unit providing up to 16 TB SAS storage.*

- B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video.

- C The Recording Server shall provide the capability for remote management, disaster recovery, and critical resource management.

- D The Recording Server shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.

- E The Recording Server shall have redundant, hot-swappable, storage drives, cooling fans, and power supplies.

#### F Video Management

##### 1. Hard Drive Bays

- a. Number: **<8>**
- b. Type: Dual Port SAS

##### 2. SAS Drives

- a. Size: 2.5"
- b. Capacity 1 TB, 2 TB per drive
- c. Speed 7200 rpm

##### 3. High-Performance 10K SAS Drives

- a. Size: 2.5"
- b. Capacity: 600 GB, 900 GB, 1.2 TB
- c. Speed: 10000 rpm

##### 4. High-Performance 15K SAS Drives

- a. Size: 2.5"
- b. Capacity: 600 GB, 900 GB
- c. Speed: 15000 rpm

G Processor:

- 1. Number: **<2> <1>** Intel® Xeon® Silver 4116 Scalable Processor
- 2. Properties: 12 Cores, 24 Threads, 3.00 GHz

H Operating System

- 1. Software: Microsoft Windows Server 2016
- 2. Drives: 2 x 240 GB 2.5" SATA SSD dedicated, RAID 1 configured

I Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.

J Memory

- 1. Up to **<128 GB>** in 8 GB increments, **<256 GB>** in 16GB increments, **<512 GB>** in 32GB increments, with option for 1 TB LRDIMM

*Dual processor units have a basic configuration of 32 GB; single processor units 16 GB.*

K Network Controller

- 1. Ports: 2 x 1GbE RJ45
- 2. Expansion: capability for 2 x 10 GbE SFP+ ports via add-on LOM mezzanine card

*The BCD108 server has the capacity for 1 (single processor), 2 (dual-processor) total PCIe add-on NIC cards.*

- 3. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)

L Additional Ports

- 1. Video output: VGA (1)
- 2. USB: Rear: (2) USB 3.0, Front: (2) USB 2.0, Internal: (1) USB 3.0

M Redundancy and Resilience

- 1. RAID
  - a. Levels supported: RAID 0, 1, 5, 6, 10
  - b. Controller: PERC H730P 2GB

N Electrical

- 1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 2 x **<550>** W
  - b. Heat Dissipation: **<2107>** BTU/hr.

O Mechanical

1. BCD108
  - a. Dimensions (w x d x h): 19" (482.6mm) x 25.26" (641.85mm) x 1.68" (42.8mm)
  - b. Weight: 35.36 pounds (16.04 kg)
  - c. Form factor: 1 RU 19" rack mount
  - d. Rack support: sliding rack rail with cable management arm

P Environmental

1. Operating temperature: 50°F - 95° F (10°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

**PART 3 EXECUTION**

**3.01** Installers

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02** Preparation

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03** Installation

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04** Storage

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## **A&E Specification**

### **2RU 8 Bay Video Analytics Server, Workstation, Video Recording Servers**

#### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.



## VIDEO RECORDING SERVERS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 2RU rack-mount enterprise class video recording server, video analytics server, or workstation with capacity up to 84 TB SATA, 72 TB SAS and multi NVIDIA® GPU support.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GbE - Gigabit Ethernet

3. GB - Gigabyte
  4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## **PART 2 PRODUCTS**

### **2.01 Manufacturer**

#### **A BCDVideo**

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### **B Products**

- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| 1. 2RU 8 Bay Video Recording Servers | BCD208-EVS, BCD208-PVS, BCD208-PLVS |
| 2. 2RU 8 Bay Workstation             | BCD208-EWS                          |
| 3. 2RU 8 Bay Video Analytics Servers | BCD208-PAS                          |

### **2.02 Description**

- A The Video Recording Server ("Recording Server"), Workstation, or Video Analytics Server (categorized as the "Platform") shall be an enterprise class 2RU rack-mount server providing storage scalability up to 84 TB SATA, 72 TB SAS.
- B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video.
- C The Platform shall provide the capability for remote management, disaster recovery, and critical resource management.
- D The Platform shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.
- E The Platform shall have redundant, hot-swappable, storage drives, cooling fans, and power supplies.
- F Video Storage
1. Hard Drive Bays
    - a. Number: 8
    - b. Type: Dual Port SAS, Enterprise SATA Drives
  2. SAS Drives:
    - a. Size: 3.5"
    - b. Capacity: 8 TB, 10 TB, or 12 TB per drive
    - c. Speed: 7200 rpm
  3. SATA Drives:
    - a. Size: 3.5"
    - b. Capacity: 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
    - c. Speed: 7200 rpm

4. High-Performance 10K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 10000 rpm
5. High-Performance 15K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 15000 rpm
- G Processor:
  1. Number: <2> <1> Intel® Xeon® Silver 4110 Scalable Processor
  2. Properties: 8 Cores, 16 Threads, 3.00GHz
  3. Number: <2> <1> Intel® Xeon® Silver 4114 Scalable Processor
  4. Properties: 10 Cores, 20 Threads, 3.00GHz
  5. Number: <2> <1> Intel® Xeon® Gold 6134 Scalable Processor
  6. Properties: 8 Cores, 16 Threads, 3.70GHz
  7. Number: <2> <1> Intel® Xeon® Gold 6140 Scalable Processor
  8. Properties: 18 Cores, 36 Threads, 3.70GHz
  9. Number: <2> <1> Intel® Xeon® Gold 6146 Scalable Processor
  10. Properties: 12 Cores, 24 Threads, 4.20GHz
- H Graphics Cards
  1. Number: <1> <2> <4> NVIDIA® Quadro® P620, P1000, P2000, P4000  
**OR** <1> <2> <3> NVIDIA® Quadro® P5000, GeForce® GTX 1050 Ti, RTX 2060, RTX 2070, RTX 2080, RTX 2080 Ti
- I Operating System
  1. Software: Microsoft Windows 10 Pro, Windows Server 2016  
*The BCD208, when configured with dual-port SAS drives, will use Windows Server 2016. When using SATA drives, the server shall support both Windows 10 Pro or Windows Server 2016*
  2. Drives: 2 x 240 GB 2.5" SATA SSD dedicated, RAID 1 configured
- J Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.
- K Memory
  1. Up to <192 GB> in 8 GB increments, <384 GB> in 16GB increments, <768 GB> in 32GB increments, with option for 1.5 TB LRDIMM

*Dual processor units have a basic configuration of 32 GB; single processor units 16 GB.*

L Network Controller

1. Ports: 4 x 1GbE RJ45

*Dual processor units have a basic configuration 2 x 1GbE RJ45, 2 x 10GbE SFP+.*

2. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)

M Additional Ports

1. Video output: VGA (1)
2. USB: (2) USB 3.0, Front (2) USB 2.0, Internal (1) USB 3.0

N Redundancy and Resilience

1. RAID
  - a. Levels supported: RAID 0, 1, 5, 6, 10
  - b. Controller: PERC H740P 8GB

O Electrical

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 2 x <1600> W
  - b. Heat Dissipation: <6000> BTU/hr.

P Mechanical

1. Dimensions (w x d x h): 19" (482.6mm) x 28.17" (715.5mm) x 3.42" (86.8mm)
2. Weight: 63.05 pounds (28.6 kg)
3. Form factor: 2 RU 19" rack mount
4. Rack support: sliding rack rail with cable management arm

Q Environmental

1. Operating temperature: 50°F - 95° F (10°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

## **PART 3 EXECUTION**

### **3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.

B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02** Preparation

A The network design and configuration shall be verified for compatibility and performance with the Recording Server.

B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03** Installation

A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04** Storage

A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## **A&E Specification**

### **2RU 12 Bay Video Recording Servers**

#### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.



## VIDEO RECORDING SERVERS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 2RU rack-mount enterprise class video recording server with capacity up to 168 TB.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GigE - Gigabit Ethernet
  - 3. GB - Gigabyte

4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## **PART 2 PRODUCTS**

### **2.01 Manufacturer**

#### **A BCDVideo**

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### **B Products**

1. 2RU 12 bay Video Recording Servers BCD212-EVS, BCD212-PVS, BCD212-PLVS

### **2.02 Description**

A The Video Recording Server ("Recording Server") shall be an enterprise class 2RU rack-mount server providing storage scalability up to 168 TB.

B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video.

C The Recording Server shall provide the capability for remote management, disaster recovery, and critical resource management.

D The Recording Server shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.

E The Recording Server shall have redundant, hot-swappable, storage drives, cooling fans, and power supplies.

#### **F Video Storage**

##### **1. Hard Drive Bays**

a. Number: 12

b. Type: Dual Port SAS, Enterprise SATA Drives

##### **2. SAS Drives:**

a. Size: 3.5"

b. Capacity: 8 TB, 10 TB, or 12 TB per drive

c. Speed: 7200 rpm

##### **3. SATA Drives:**

a. Size: 3.5"

b. Capacity 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive

c. Speed: 7200 rpm

##### **4. High-Performance 10K SAS Drives**

a. Size: 2.5"

- b. Capacity: 600 GB, 900 GB
  - c. Speed: 10000 rpm
- 5. High-Performance 15K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 15000 rpm
- G Processor:
  - 1. Number: **<2> <1>** Intel® Xeon® Silver 4110 Scalable Processor
  - 2. Properties: 8 Cores, 16 Threads, 3.00GHz
- H Operating System
  - 1. Software: Microsoft Windows 10 Pro, Windows Server 2016  
*The BCD212, when configured with dual-port SAS drives, will use Windows Server 2016. When using SATA drives, the server shall support both Windows 10 Pro or Windows Server 2016*
  - 2. Drives: 2 x 240 GB M.2 NVMe SSD dedicated, RAID 1 configured
- I Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.
- J Memory
  - 1. Up to **<128 GB>** in 8 GB increments, **<256 GB>** in 16GB increments, **<512 GB>** in 32GB increments, with option for 1 TB LRDIMM  
*Dual processor units have a basic configuration of 32 GB; single processor units 16 GB.*
- K Network Controller
  - 1. Ports: 2 x 1GbE RJ45
  - 2. Expansion: capability for 2 x 10 GbE SFP+ ports via add-on LOM mezzanine card  
*The BCD212 server has the capacity for 5 total PCIe add-on NIC cards.*
  - 3. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)
- L Additional Ports
  - 1. Video output: VGA (1)
  - 2. USB: (2) USB 3.0, Front (2) USB 2.0, Internal (1) USB 3.0
- M Redundancy and Resilience
  - 1. RAID
    - a. Levels supported: RAID 0, 1, 5, 6, 10
    - b. Controller: PERC H740P 8GB
- N Electrical

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 2 x **<750>** W
  - b. Heat Dissipation: **<2891>** BTU/hr.

**O Mechanical**

1. Dimensions (w x d x h): 19" (482.6mm) x 28.15" (646mm) x 3.4" (86.8mm)
2. Weight: 73 pounds (33.1 kg)
3. Form factor: 2 RU 19" rack mount
4. Rack support: sliding rack rail with cable management arm

**P Environmental**

1. Operating temperature: 50°F - 95° F (10°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

**PART 3 EXECUTION**

**3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03 Installation**

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04 Storage**

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## **A&E Specification**

### **2RU 14 Bay Video Recording Servers**

#### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 2RU rack-mount enterprise class video recording server with capacity up to 196 TB.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GigE - Gigabit Ethernet
  - 3. GB - Gigabyte



4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## **PART 2 PRODUCTS**

### **2.01 Manufacturer**

#### **A BCDVideo**

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### **B Products**

1. 2RU 14 bay Video Recording Servers BCD214-EVS, BCD214-PVS, BCD214-PLVS

### **2.02 Description**

A The Video Recording Server ("Recording Server") shall be an enterprise class 2RU rack-mount server providing storage scalability up to 196 TB.

B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video.

C The Recording Server shall provide the capability for remote management, disaster recovery, and critical resource management.

D The Recording Server shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.

E The Recording Server shall have redundant, hot-swappable, storage drives, cooling fans, and power supplies.

#### **F Video Storage**

##### **1. Hard Drive Bays**

a. Number: 14

b. Type: Dual Port SAS, Enterprise SATA Drives

##### **2. SAS Drives:**

a. Size: 3.5"

b. Capacity: 8 TB, 10 TB, or 12 TB per drive

c. Speed: 7200 rpm

##### **3. SATA Drives:**

a. Size: 3.5"

b. Capacity 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive

c. Speed: 7200 rpm

##### **4. High-Performance 10K SAS Drives**

a. Size: 2.5"

- b. Capacity: 600 GB, 900 GB
  - c. Speed: 10000 rpm
- 5. High-Performance 15K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 15000 rpm
- G Processor:
  - 1. Number: **<2> <1>** Intel® Xeon® Silver 4110 Scalable Processor
  - 2. Properties: 8 Cores, 16 Threads, 3.00GHz
- H Operating System
  - 1. Software: Microsoft Windows 10 Pro, Windows Server 2016

*The BCD214, when configured with dual-port SAS drives, will use Windows Server 2016. When using SATA drives, the server shall support both Windows 10 Pro or Windows Server 2016*
  - 2. Drives: 2 x 240 GB M.2 NVMe SSD dedicated, RAID 1 configured
- I Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.
- J Memory
  - 1. Up to **<128 GB>** in 8 GB increments, **<256 GB>** in 16GB increments, **<512 GB>** in 32GB increments, with option for 1 TB LRDIMM

*Dual processor units have a basic configuration of 32 GB; single processor units 16 GB.*
- K Network Controller
  - 1. Ports: 2 x 1GbE RJ45
  - 2. Expansion: capability for 2 x 10 GbE SFP+ ports via add-on LOM mezzanine card

*The BCD214 server has the capacity for 0 total PCIe add-on NIC cards.*
  - 3. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)
- L Additional Ports
  - 1. Video output: VGA (1)
  - 2. USB: (2) USB 3.0, Front (2) USB 2.0, Internal (1) USB 3.0
- M Redundancy and Resilience
  - 1. RAID
    - a. Levels supported: RAID 0, 1, 5, 6, 10
    - b. Controller: PERC H740P 8GB
- N Electrical

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 2 x **<750>** W
  - b. Heat Dissipation: **<2891>** BTU/hr.

**O Mechanical**

1. Dimensions (w x d x h): 19" (482.6mm) x 28.15" (646mm) x 3.4" (86.8mm)
2. Weight: 73 pounds (33.1 kg)
3. Form factor: 2 RU 19" rack mount
4. Rack support: sliding rack rail with cable management arm

**P Environmental**

1. Operating temperature: 50°F - 95° F (10°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

**PART 3 EXECUTION**

**3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03 Installation**

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04 Storage**

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## A&E Specification

### 2RU 18 Bay Video Recording Servers

#### Notes to Specifier:

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 2RU rack-mount enterprise class video recording server with capacity up to 252 TB SATA, 216 TB SAS.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GigE - Gigabit Ethernet
  - 3. GB - Gigabyte

4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings



- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## **PART 2 PRODUCTS**

### **2.01 Manufacturer**

#### **A BCDVideo**

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### **B Products**

1. 2RU 18 bay Video Recording Servers BCD218-EVS, BCD218-PVS, BCD218-PLVS

### **2.02 Description**

- A The Video Recording Server ("Recording Server") shall be an enterprise class 2RU rack-mount server providing storage scalability up to 252 TB SATA, 216 TB SAS.
- B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video.
- C The Recording Server shall provide the capability for remote management, disaster recovery, and critical resource management.
- D The Recording Server shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.
- E The Recording Server shall have redundant, hot-swappable, storage drives, cooling fans, and power supplies.
- F Video Storage
  1. Hard Drive Bays
    - a. Number: 18
    - b. Type: Dual Port SAS, Enterprise SATA Drives
  2. SAS Drives:
    - a. Size: 3.5"
    - b. Capacity: 8 TB, 10 TB, or 12 TB per drive
    - c. Speed: 7200 rpm
  3. SATA Drives:
    - a. Size: 3.5"
    - b. Capacity 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
    - c. Speed: 7200 rpm
  4. High-Performance 10K SAS Drives
    - a. Size: 2.5"

- b. Capacity: 600 GB, 900 GB
  - c. Speed: 10000 rpm
- 5. High-Performance 15K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 15000 rpm
- G Processor:
  - 1. Number: **<2> <1>** Intel® Xeon® Silver 4116 Scalable Processor
  - 2. Properties: 12 Cores, 24 Threads, 3.00GHz
- H Operating System
  - 1. Software: Microsoft Windows 10 Pro, Windows Server 2016  
*The BCD218, when configured with dual-port SAS drives, will use Windows Server 2016. When using SATA drives, the server shall support both Windows 10 Pro or Windows Server 2016*
  - 2. Drives: 2 x 240 GB M.2 NVMe SSD dedicated, RAID 1 configured
- I Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.
- J Memory
  - 1. Up to **<192 GB>** in 8 GB increments, **<384 GB>** in 16GB increments, **<768 GB>** in 32GB increments, with option for 1.5 TB LRDIMM  
*Dual processor units have a basic configuration of 32 GB; single processor units 16 GB.*
- K Network Controller
  - 1. Ports: 4 x 1GbE RJ45
  - 2. Expansion: capability for 2 x 10 GbE SFP+ ports via add-in card  
*The BCD218 server has the capacity for 2 total PCIe add-on NIC cards.*
  - 3. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)
- L Additional Ports
  - 1. Video output: VGA (1)
  - 2. USB: (2) USB 3.0, Front (2) USB 2.0, Internal (1) USB 3.0
- M Redundancy and Resilience
  - 1. RAID
    - a. Levels supported: RAID 0, 1, 5, 6, 10
    - b. Controller: PERC H740P 8GB
- N Electrical

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 2 x **<1100>** W
  - b. Heat Dissipation: **<4100>** BTU/hr.

**O Mechanical**

1. Dimensions (w x d x h): 19" (482.6mm) x 29.59" (751.34mm) x 3.42" (86.8mm)
2. Weight: 73 pounds (33.1 kg)
3. Form factor: 2 RU 19" rack mount
4. Rack support: sliding rack rail with cable management arm

**P Environmental**

1. Operating temperature: 50°F - 95° F (10°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

**PART 3 EXECUTION**

**3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03 Installation**

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04 Storage**

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## A&E Specification

### 2RU 24 Bay Video Recording Servers

#### Notes to Specifier:

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS

### PART 1 GENERAL

#### 1.01 Summary

- A This specification describes a 2RU rack-mount enterprise class video recording server with capacity up to 336 TB SATA, 288 TB SAS.

#### 1.02 Related Requirements

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### 1.03 References

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GigE - Gigabit Ethernet
  - 3. GB - Gigabyte

4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**



## **PART 2 PRODUCTS**

### **2.01 Manufacturer**

#### **A BCDVideo**

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### **B Products**

1. 2RU 18 bay Video Recording Servers BCD224-EVS, BCD224-PVS, BCD224-PLVS

### **2.02 Description**

- A The Video Recording Server ("Recording Server") shall be an enterprise class 2RU rack-mount server providing storage scalability up to 336 TB SATA, 288 TB SAS.
- B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video.
- C The Recording Server shall provide the capability for remote management, disaster recovery, and critical resource management.
- D The Recording Server shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.
- E The Recording Server shall have redundant, hot-swappable, storage drives, cooling fans, and power supplies.
- F Video Storage
  1. Hard Drive Bays
    - a. Number: 24
    - b. Type: Dual Port SAS, Enterprise SATA Drives
  2. SAS Drives:
    - a. Size: 3.5"
    - b. Capacity: 8 TB, 10 TB, or 12 TB per drive
    - c. Speed: 7200 rpm
  3. SATA Drives:
    - a. Size: 3.5"
    - b. Capacity 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
    - c. Speed: 7200 rpm
  4. High-Performance 10K SAS Drives
    - a. Size: 2.5"

- b. Capacity: 600 GB, 900 GB
  - c. Speed: 10000 rpm
- 5. High-Performance 15K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 15000 rpm
- G Processor:
  - 1. Number: **<2> <1>** Intel® Xeon® Silver 4116 Scalable Processor
  - 2. Properties: 12 Cores, 24 Threads, 3.00GHz
- H Operating System
  - 1. Software: Microsoft Windows 10 Pro, Windows Server 2016  
*The BCD218, when configured with dual-port SAS drives, will use Windows Server 2016. When using SATA drives, the server shall support both Windows 10 Pro or Windows Server 2016*
  - 2. Drives: 2 x 240 GB M.2 NVMe SSD dedicated, RAID 1 configured
- I Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.
- J Memory
  - 1. Up to **<128 GB>** in 8 GB increments, **<256 GB>** in 16GB increments, **<512 GB>** in 32GB increments, with option for 1 TB LRDIMM  
*Dual processor units have a basic configuration of 32 GB; single processor units 16 GB.*
- K Network Controller
  - 1. Ports: 2 x 1GbE RJ45
  - 2. Expansion: capability for 2 x 10 GbE SFP+ ports via add-on LOM mezzanine card  
*The BCD224 server has the capacity for 3 total PCIe add-on NIC cards.*
  - 3. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)
- L Additional Ports
  - 1. Video output: VGA (1)
  - 2. USB: (2) USB 3.0, Front (2) USB 2.0, Internal (1) USB 3.0
- M Redundancy and Resilience
  - 1. RAID
    - a. Levels supported: RAID 0, 1, 5, 6, 10
    - b. Controller: PERC H740P 8GB
- N Electrical

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 2 x **<1100>** W
  - b. Heat Dissipation: **<4100>** BTU/hr.

**O Mechanical**

1. Dimensions (w x d x h): 19" (482.6mm) x 33.26" (844.826.mm) x 3.42" (86.8mm)
2. Weight: 88.18 pounds (40 kg)
3. Form factor: 2 RU 19" rack mount
4. Rack support: sliding rack rail with cable management arm

**P Environmental**

1. Operating temperature: 50°F - 95° F (10°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

**PART 3 EXECUTION**

**3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03 Installation**

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04 Storage**

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## A&E Specification

# Micro 1 Bay Video Recording Servers and Workstations

### Notes to Specifier:

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS, WORKSTATIONS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a micro video recording server/workstation with capacity up to 2 TB.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GbE - Gigabit Ethernet
  - 3. GB – Gigabyte

4. GPU – Graphics Processing Unit
  5. HDD - Hard Disk Drive
  6. iDRAC - Integrated Dell Remote Access Controller
  7. LAN - Local Area Network
  8. LOM – LAN on Motherboard
  9. LRDIMM - Load-Reduced Dual Inline Memory Module
  10. NAS- Network Attached Storage
  11. NFS - Network File System
  12. NIC - Network Interface Controller (or Card)
  13. PCIe - PCI (Peripheral Component Interconnect) Express
  14. PERC – (Dell) PowerEdge RAID Controller
  15. NVMe – Non Volatile Memory Express
  16. RAID - Redundant Array of Independent Disks
  17. SATA - Serial Advanced Technology Attachment
  18. SAS - Serial-attached SCSI
  19. SCSI - Small Computer System Interface
  20. SFP - Small Form Factor Pluggable
  21. SSD - Solid State Drive
  22. TB - Terabyte
  23. VMS - Video Management System
- B Reference Standards
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A** Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## PART 2 PRODUCTS

### 2.01 Manufacturer

#### A BCDVideo

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### B Products

1. Micro 1 Bay Video Recording Servers BCDM01-ELVS
2. Micro 1 Bay Video Workstation BCDM01-ELWS

### 2.02 Description

A The Video Recording Server ("Recording Server"), Video Workstation ("Workstation"), shall be a micro server/workstation providing storage scalability up to 2 TB.

B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording, analyzing, and processing surveillance video.

C The Recording Server/Workstation shall provide the capability for remote management, disaster recovery, and critical resource management.

D The Recording Server/Workstation shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.

E The Recording Server shall have redundant, hot-swappable cooling fans, and power supplies.

#### F Video Storage

##### 1. Hard Drive Bays

- a. Number: <1>
- b. Type: Enterprise SATA Drives

##### 2. SATA Drives:

- a. Size: 2.5"
- b. Capacity 1 TB, 2 TB
- c. Speed: 5400, 7200 rpm

#### G Processor:

1. Number: <1> Intel® 8<sup>th</sup> Generation Core™ Processor
2. Properties: Up to 6 Cores, 12 Threads, 4.00GHz

*The Recording Server or Video Workstation shall support the Intel® Core™ i3-8100T, i5-8500T, i7-8700T*

#### H Operating System



1. Software: Microsoft Windows 10 Pro
    - a. The server shall support an upgrade to Windows Server 2016
  2. Drives: 1 x 256 GB M.2 NVMe SSD dedicated
- I Memory
- Up to **<8GB>** in 4GB increments, **<16 GB>** in 8 GB increments, **<32 GB>** in 16GB increments.
- The Intel® Core™ i3 variants will have 8GB Standard, and the Intel® Core™ i5 and i7 variants shall have 16GB standard*
- J Network Controller
1. Ports: 1 x 1GbE RJ45
- K Additional Ports
1. Video output: (1) DisplayPort 1.4, (1) HDMI 2.0b
  2. USB: Front: (2) USB 3.1 Gen 1, Rear (2) USB 3.1 Gen 1, (2) USB 2.0
- L Electrical
1. Power: 100–240 V AC, auto-ranging
    - a. Power Supplies: 1 x **<65>** W
    - b. Heat Dissipation: **<222>** BTU/hr.
- M Mechanical
1. Dimensions (w x d x h): 1.4" (36mm) x 7.0" (178mm) x 7.2" (182mm)
  2. Weight: 2.6 pounds (1.18 kg)
  3. Form factor: Micro
  4. Rack support: sliding rack rail with cable management arm
- N Environmental
1. Operating temperature: 50°F - 95° F (10°C - 35°C)
  2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

## **PART 3 EXECUTION**

### **3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02** Preparation

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03** Installation

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04** Storage

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## **A&E Specification**

### **SFF 1 Bay Video Recording Servers and Workstations**

#### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS, WORKSTATIONS

### PART 1 GENERAL

#### 1.01 Summary

- A This specification describes a small form factor video recording server/workstation with capacity up to 14 TB, and NVIDIA® GPU support.

#### 1.02 Related Requirements

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### 1.03 References

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GbE - Gigabit Ethernet
  - 3. GB – Gigabyte

4. GPU – Graphics Processing Unit
  5. HDD - Hard Disk Drive
  6. iDRAC - Integrated Dell Remote Access Controller
  7. LAN - Local Area Network
  8. LOM – LAN on Motherboard
  9. LRDIMM - Load-Reduced Dual Inline Memory Module
  10. NAS- Network Attached Storage
  11. NFS - Network File System
  12. NIC - Network Interface Controller (or Card)
  13. PCIe - PCI (Peripheral Component Interconnect) Express
  14. PERC – (Dell) PowerEdge RAID Controller
  15. NVMe – Non Volatile Memory Express
  16. RAID - Redundant Array of Independent Disks
  17. SATA - Serial Advanced Technology Attachment
  18. SAS - Serial-attached SCSI
  19. SCSI - Small Computer System Interface
  20. SFP - Small Form Factor Pluggable
  21. SSD - Solid State Drive
  22. TB - Terabyte
  23. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## PART 2 PRODUCTS

### 2.01 Manufacturer

#### A BCDVideo

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### B Products

1. SFF 1 Bay Video Recording Servers BCDSF01-ELVS
2. SFF 1 Bay Video Workstation BCDSF01-ELWS

### 2.02 Description

A The Video Recording Server ("Recording Server")/Video Workstation ("Workstation") shall be a SFF server/workstation providing storage scalability up to 14 TB and support for NVIDIA® GPUs.

B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording, analyzing, and processing surveillance video.

C The Recording Server/Workstation shall have a dedicated operating system drive to facilitate accelerated boot and application load times.

#### D Video Storage

1. Hard Drive Bays
  - a. Number: <1>
  - b. Type: Enterprise SATA Drives
2. SATA Drives:
  - a. Size: 3.5"
  - b. Capacity 1 TB, 2 TB, 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
  - c. Speed: 7200 rpm

#### E Processor:

1. Number: <1> Intel® 8<sup>th</sup> Generation Core™ Processor
2. Properties: Up to 6 Cores, 12 Threads, 4.70GHz

*The Recording Server, Video Workstation, or Analytics Server shall support the Intel® Core™ i3-8100, i5-8500, and i7-8700*

#### F Graphics Cards

1. Number: <1> NVIDIA® Quadro® P400, P620, P1000

#### G Operating System

1. Software: Microsoft Windows 10 Pro
    - a. The server shall support an upgrade to Windows Server 2016
  2. Drives: 1 x 256 GB M.2 NVMe SSD dedicated
- H Memory
1. Up to **<16 GB>** in 8 GB increments, **<32 GB>** in 16GB increments  
*The Intel® Core™ i3 variants will have 8GB Standard, and the Intel® Core™ i5 and i7 variants shall have 16GB standard*
- I Network Controller
1. Ports: 1 x 1GbE RJ45
- J Additional Ports
1. Video output: Varies with GPU, (1) HDMI 2.0b, (1) DisplayPort 1.4 on motherboard, up to (4) DisplayPort 1.4
  2. USB: Front: (2) USB 3.1, (2) USB 2.0, Rear: (2) USB 3, (2) USB 2.0
- K Electrical
1. Power: 100–240 V AC, auto-ranging
    - a. Power Supplies: 1 x **<200>** W
    - b. Heat Dissipation: **<683>** BTU/hr.
- L Mechanical
1. Dimensions (w x d x h): 3.7" (97mm) x 11.5" (292mm) x 11.4" (290mm)
  2. Weight: 11.42 pounds (5.14 kg)
  3. Form factor: Small Form Factor
- M Environmental
1. Operating temperature: 50°F - 95° F (10°C - 35°C)
  2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

## **PART 3 EXECUTION**

### **3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

### **3.02 Preparation**



- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03** Installation

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04** Storage

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## **A&E Specification**

# **Tower 1 Bay Video Recording Servers and Workstations**

### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS, WORKSTATIONS

### PART 1 GENERAL

#### 1.01 Summary

- A This specification describes a tower enterprise class video recording server with capacity up to 14 TB, and NVIDIA® GPU support.

#### 1.02 Related Requirements

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### 1.03 References

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GbE - Gigabit Ethernet
  - 3. GB – Gigabyte

4. GPU – Graphics Processing Unit
  5. HDD - Hard Disk Drive
  6. iDRAC - Integrated Dell Remote Access Controller
  7. LAN - Local Area Network
  8. LOM – LAN on Motherboard
  9. LRDIMM - Load-Reduced Dual Inline Memory Module
  10. NAS- Network Attached Storage
  11. NFS - Network File System
  12. NIC - Network Interface Controller (or Card)
  13. PCIe - PCI (Peripheral Component Interconnect) Express
  14. PERC – (Dell) PowerEdge RAID Controller
  15. NVMe – Non Volatile Memory Express
  16. RAID - Redundant Array of Independent Disks
  17. SATA - Serial Advanced Technology Attachment
  18. SAS - Serial-attached SCSI
  19. SCSI - Small Computer System Interface
  20. SFP - Small Form Factor Pluggable
  21. SSD - Solid State Drive
  22. TB - Terabyte
  23. VMS - Video Management System
- B Reference Standards
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## PART 2 PRODUCTS

### 2.01 Manufacturer

#### A BCDVideo

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### B Products

1. Tower 1 Bay Video Recording Servers BCDT01-ELVS
2. Tower 1 Bay Video Workstation BCDT01-ELWS

### 2.02 Description

A The Video Recording Server ("Recording Server"), Video Workstation ("Workstation"), shall be an enterprise class tower server providing storage scalability up to 14 TB and support for NVIDIA® GPUs.

B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording, analyzing, and processing surveillance video.

C The Recording Server/Workstation shall have a dedicated operating system drive to facilitate accelerated boot and application load times.

#### D Video Storage

1. Hard Drive Bays
  - a. Number: <1>
  - b. Type: Enterprise SATA Drives
2. SATA Drives:
  - a. Size: 3.5"
  - b. Capacity 1 TB, 2 TB, 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
  - c. Speed: 7200 rpm

#### E Processor:

1. Number: <1> Intel® 8<sup>th</sup> Generation Core™ Processor
2. Properties: Up to 6 Cores, 12 Threads, 4.70GHz

*The Recording Server, Video Workstation, or Analytics Server shall support the Intel® Core™ i3-8100, i5-8500, and i7-8700*

#### F Graphics Cards

1. Number: <1> NVIDIA® Quadro® P620, P1000, GeForce® GTX 1050 Ti

#### G Operating System

1. Software: Microsoft Windows 10 Pro
    - a. The server shall support an upgrade to Windows Server 2016
  2. Drives: 1 x 256 GB M.2 NVMe SSD dedicated
- H Memory
1. Up to **<16 GB>** in 8 GB increments, **<32 GB>** in 16GB increments  
*The Intel® Core™ i3 variants will have 8GB Standard, and the Intel® Core™ i5 and i7 variants shall have 16GB standard*
- I Network Controller
1. Ports: 1 x 1GbE RJ45
- J Additional Ports
1. Video output: Varies with GPU, (1) HDMI 2.0b, (1) DisplayPort 1.4 on motherboard, up to (4) DisplayPort 1.4
  2. USB: Front: (2) USB 3.1, (2) USB 2.0, Rear: (2) USB 3.1, (2) USB 2.0
- K Electrical
1. Power: 100–240 V AC, auto-ranging
    - a. Power Supplies: 1 x **<260>** W
    - b. Heat Dissipation: **<888>** BTU/hr.
- L Mechanical
1. Dimensions (w x d x h): 6.1" (154mm) x 10.8" (274mm) x 13.8" (350mm)
  2. Weight: 17.49 pounds (7.93 kg)
  3. Form factor: Tower
- M Environmental
1. Operating temperature: 50°F - 95° F (10°C - 35°C)
  2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

## **PART 3 EXECUTION**

### **3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

### **3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03** Installation

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04** Storage

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**





## A&E Specification

### 3 Bay Tower Video Recording Server, Video Analytics Server, and Workstation

#### Notes to Specifier:

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## **WORKSTATIONS AND VIDEO ANALYTICS SERVERS**

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 3-bay tower, with rack-mount options, enterprise class video recording server, video analytics server, or workstation with capacity up to 42 TB and dual NVIDIA® GPU support.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
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- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GigE - Gigabit Ethernet

3. GB – Gigabyte
4. GPU – Graphics Processing Unit
5. HDD - Hard Disk Drive
6. iDRAC - Integrated Dell Remote Access Controller
7. LAN - Local Area Network
8. LOM – LAN on Motherboard
9. LRDIMM - Load-Reduced Dual Inline Memory Module
10. NAS- Network Attached Storage
11. NFS - Network File System
12. NIC - Network Interface Controller (or Card)
13. PCIe - PCI (Peripheral Component Interconnect) Express
14. PERC – (Dell) PowerEdge RAID Controller
15. NVMe – Non Volatile Memory Express
16. RAID - Redundant Array of Independent Disks
17. SATA - Serial Advanced Technology Attachment
18. SAS - Serial-attached SCSI
19. SCSI - Small Computer System Interface
20. SFP - Small Form Factor Pluggable
21. SSD - Solid State Drive
22. TB - Terabyte
23. VMS - Video Management System

**B Reference Standards**

1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
2. FCC - Code of Federal Regulations, Title 47, Part 15

**C Definitions**

1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals

- a. Final listing of devices and settings
- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## PART 2 PRODUCTS

### 2.01 Manufacturer

#### A BCDVideo

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### B Products

1. 3 Bay Tower Video Recording Server BCDT03-ELVS
2. 3 Bay Tower Video Workstation BCDT03-PWS
3. 3 Bay Tower Video Analytics Server BCDT05-ELAS

### 2.02 Description

A The Video Recording Server ("Recording Server"), Video Workstation ("Workstation"), Video Analytics Server ("Analytics Server") shall be an enterprise class tower providing storage scalability up to 42 TB and support for dual NVIDIA® GPUs.

B The Manufacturer shall certify that the Workstation has been designed and built for the purpose of recording, analyzing, processing, and decoding surveillance video.

C The Recording Server/Workstation/Analytics Server shall have a dedicated operating system drive to facilitate accelerated boot and application load times.

#### D Video Storage

1. Hard Drive Bays
  - a. Number: **<3>**
  - b. Type: Enterprise SATA Drives
2. SATA Drives:
  - a. Size: 3.5"
  - b. Capacity 1 TB, 2 TB, 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
  - c. Speed: 7200 rpm

#### E Processor:

1. Number: **<1>** Intel® 8<sup>th</sup> Generation Core™ Processor
2. Properties: Up to 8 Cores, 16 Threads, 4.70GHz

*The Video Workstation, Video Recording, or Analytics Server shall support the Intel® Core™ i3-8100, i5-8500, and i7-8700k*

#### F Graphics Cards

1. Number: **<1> <2>** NVIDIA® Quadro® P620, P1000, P2000, P4000

**OR** **<1>** NVIDIA® GeForce® GTX 1050 Ti, RTX 2060, RTX 2070, RTX 2080, RTX 2080 Ti

**G Operating System**

1. Software: Microsoft Windows 10 Pro
  - a. The server shall support an upgrade to Windows Server 2016
2. Drives: 1 x 256 GB M.2 NVMe SSD dedicated

**H Memory**

1. Up to **<32 GB>** in 8 GB increments, **<64 GB>** in 16 GB increments, **<128 GB>** in 32 GB increments  
*Both Intel® Core™ and Xeon® variants shall have 16GB standard*

**I Network Controller**

1. Ports: 1 x 1GbE RJ45

**J Additional Ports**

1. Video output: Varies with GPU, (2) DisplayPort 1.4 on motherboard, Up to (3) DisplayPort 1.4, (1) HDMI 2.0b, (1) USB Type C for Virtual Link
2. USB: Front: (2) USB 3.1 Type A, (2) USB 2.0, (1) USB 3.1 Type C, Rear: (4) USB 3.1, (2) USB 2.0

**K Electrical**

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies: 1 x **<460>** W
  - b. Heat Dissipation: **<1569>** BTU/hr.

**L Mechanical**

1. Dimensions (w x d x h): 6.89" (175mm) x 17.12" (434.8mm) x 14.17" (359.9mm)
2. Weight: 20.06 pounds (9.1 kg)
3. Form factor: Tower, with rack-mount support
4. Rack support: rack-mount kit with sliding rails

**M Environmental**

1. Operating temperature: 50°F - 95° F (5°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

### **PART 3 EXECUTION**

#### **3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

#### **3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

#### **3.03 Installation**

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

#### **3.04 Storage**

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## **A&E Specification**

### **5 Bay Tower Video Analytics Server and Workstation**

#### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.



## **WORKSTATIONS AND VIDEO ANALYTICS SERVERS**

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes a 5-bay tower, with rack-mount options, enterprise class video recording server with capacity up to 56 TB and dual NVIDIA® GPU support.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GigE - Gigabit Ethernet
  - 3. GB – Gigabyte

4. GPU – Graphics Processing Unit
  5. HDD - Hard Disk Drive
  6. iDRAC - Integrated Dell Remote Access Controller
  7. LAN - Local Area Network
  8. LOM – LAN on Motherboard
  9. LRDIMM - Load-Reduced Dual Inline Memory Module
  10. NAS- Network Attached Storage
  11. NFS - Network File System
  12. NIC - Network Interface Controller (or Card)
  13. PCIe - PCI (Peripheral Component Interconnect) Express
  14. PERC – (Dell) PowerEdge RAID Controller
  15. NVMe – Non Volatile Memory Express
  16. RAID - Redundant Array of Independent Disks
  17. SATA - Serial Advanced Technology Attachment
  18. SAS - Serial-attached SCSI
  19. SCSI - Small Computer System Interface
  20. SFP - Small Form Factor Pluggable
  21. SSD - Solid State Drive
  22. TB - Terabyte
  23. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A** Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## PART 2 PRODUCTS

### 2.01 Manufacturer

#### A BCDVideo

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### B Products

1. 5 Bay Tower Video Workstation      BCDT05-EWS
2. 5 Bay Tower Video Analytics Server      BCDT05-PLAS

### 2.02 Description

A The Video Workstation ("Workstation"), Video Analytics Server ("Analytics Server") shall be an enterprise class tower providing storage scalability up to 56 TB and support for dual NVIDIA® GPUs.

B The Manufacturer shall certify that the Workstation has been designed and built for the purpose of recording, analyzing, processing, and decoding surveillance video.

C The Workstation/Analytics Server shall have a dedicated operating system drive to facilitate accelerated boot and application load times.

#### D Video Storage

1. Hard Drive Bays
  - a. Number:      <5>
  - b. Type:      Enterprise SATA Drives
2. SATA Drives:
  - a. Size:      3.5"
  - b. Capacity      1 TB, 2 TB, 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
  - c. Speed:      7200 rpm

#### E Processor:

1. Number:      <1> Intel® 7<sup>th</sup> Generation Core™ X-Series Processor  
                    **OR**                      <1> Intel® Xeon® W Series processor
2. Properties:      Up to 14 Cores, 24 Threads, 4.30GHz

*The Video Workstation or Analytics Server shall support the Intel® Core™ i7-7820X, and i9-7940X, as well as the Xeon® W-2145*

#### F Graphics Cards

1. Number:      <1> <2> NVIDIA® Quadro® P620, P1000, P2000, P4000

**OR**                    **<1> <2> NVIDIA® Quadro® P5000, GeForce® GTX 1050 Ti, 1660 Ti  
RTX 2060, 2070, 2080, 2080 Ti**

**G Operating System**

1. Software:            Microsoft Windows 10 Pro
  - a. The server shall support an upgrade to Windows Server 2016
2. Drives:              1 x 256 GB 2.5" SATA SSD dedicated
  - a. The server shall support a second 256GB 2.5" SATA SSD to be configured in RAID 1.

**H Memory**

1. **<Intel® Core™ X-Series>** Up to **<64 GB>** in 8 GB increments, **<128 GB>** in 16 GB increments, **<128 GB>** in 32 GB increments
2. **<Intel® Xeon® W-Series>** Up to **<64 GB>** in 8 GB increments, **<128 GB>** in 16 GB increments, **<256 GB>** in 32 GB increments

*Both Intel® Core™ and Xeon® variants shall have 16GB standard*

**I Network Controller**

1. Ports:    1 x 1GbE RJ45

**J Additional Ports**

1. Video output:    Up to (3) DisplayPort 1.4, (1) HDMI 2.0b, (1) USB Type C for Virtual Link
2. USB:              Front: (2) USB 3.1 Type A, (1) USB 3.1 Type C Rear (2) USB 3.1 Type C

**K Electrical**

1. Power: 100–240 V AC, auto-ranging
  - a. Power Supplies:    1 x **<950> W**
  - b. Heat Dissipation:    **<3241.5> BTU/hr.**

**L Mechanical**

1. Dimensions (w x d x h): 6.8" (172.6mm) x 19.11" (485.5mm) x 16.3" (414mm)
2. Weight:                    57 pounds (25.86 kg)
3. Form factor:              Tower, with rack-mount support
4. Rack support:              rack-mount kit with sliding rails

**M Environmental**

1. Operating temperature: 41°F - 95° F (5°C - 35°C)
2. Operating humidity:    8 – 85% non-condensing

**END OF SECTION**

## **PART 3 EXECUTION**

### **3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

### **3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

### **3.03 Installation**

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

### **3.04 Storage**

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**



## **A&E Specification**

### **8 Bay Tower Video Recording Server**

#### **Notes to Specifier:**

1. Where several alternative parameters or specifications exist, or where, the specifier has the option of selecting and inserting text, such choices are presented in **<bold text>**.
2. Explanatory notes and comments are presented in *italic* text.

## VIDEO RECORDING SERVERS

### **PART 1 GENERAL**

#### **1.01 Summary**

- A This specification describes an 8-bay tower enterprise class video recording server with capacity up to 112 TB SATA, 96 TB SAS.

#### **1.02 Related Requirements**

- A 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
  - 1. 23 70 00 Central HVAC Equipment
  - 2. 23 80 00 Decentralized HVAC Equipment
- B 27 00 00 Communications
  - 1. 27 05 00 Common Work Results for Communications
  - 2. 27 11 16 Communications Cabinets, Racks, Frames, and Enclosures
  - 3. 27 15 01 Communications Horizontal Cabling Applications
    - a. 27 15 01.13 Video Surveillance Communications Conductors and Cables
  - 4. 27 20 00 Data Communications Network Equipment
- C 28 01 00 Operation and Maintenance of Electronic Safety and Security
  - 1. 28 01 20 Operation and Maintenance of Video Surveillance
- D 28 05 00 Common Work Results for Electronic Safety and Security
  - 1. 28 05 07 Power Sources for Electronic Safety and Security
  - 2. 28 05 09 Surge Protection for Electronic Safety and Security
  - 3. 28 05 11 Cyber Security Requirements for Electronic Safety and Security
  - 4. 28 05 17 Workstations for Electronic Safety and Security
  - 5. 28 05 19 Storage Appliances for Electronic Safety and Security
  - 6. 28 05 31 Communications Equipment for Electronic Safety and Security
  - 7. 28 05 45 Systems Integration and Interconnection Requirements
- E 28 06 00 Schedules for Electronic Safety and Security
- F 28 08 00 Commissioning of Electronic Safety and Security
- G 28 20 00 Video Surveillance

#### **1.03 References**

- A Abbreviations
  - 1. Gb/s - Gigabit per second
  - 2. GbE - Gigabit Ethernet
  - 3. GB - Gigabyte



4. HDD - Hard Disk Drive
  5. iDRAC - Integrated Dell Remote Access Controller
  6. LAN - Local Area Network
  7. LOM – LAN on Motherboard
  8. LRDIMM - Load-Reduced Dual Inline Memory Module
  9. NAS- Network Attached Storage
  10. NFS - Network File System
  11. NIC - Network Interface Controller (or Card)
  12. PCIe - PCI (Peripheral Component Interconnect) Express
  13. PERC – (Dell) PowerEdge RAID Controller
  14. NVMe – Non Volatile Memory Express
  15. RAID - Redundant Array of Independent Disks
  16. SATA - Serial Advanced Technology Attachment
  17. SAS - Serial-attached SCSI
  18. SCSI - Small Computer System Interface
  19. SFP - Small Form Factor Pluggable
  20. SSD - Solid State Drive
  21. TB - Terabyte
  22. VMS - Video Management System
- B Reference Standards**
1. Institute of Electronic and Electrical Engineers (IEEE) 802.3 standards
  2. FCC - Code of Federal Regulations, Title 47, Part 15
- C Definitions**
1. iDRAC - Dell technology which allows administrators to deploy, monitor, manage, configure, update, troubleshoot and remediate servers from any location, and without the use of agents, regardless of operating system or hypervisor presence or state.
  2. M.2 – Formerly known as NGFF ("Next-Generation Form Factor"), an expansion slot/form factor that can interface with SATA 3.0, PCI Express 3.0, and USB 3.0.

**1.04 Submittals**

1. Informational Submittals
  - a. Product Data
    - 1) Manufacturer product data sheets
    - 2) Manufacturer product instructions, and installation and operating manuals
  - b. Shop Drawings
2. Closeout Submittals
  - a. Final listing of devices and settings

- b. Complete set of supplier's operating instructions, installation instructions, and troubleshooting guide.
- c. Recommended spare parts list.

**B Quality Assurance**

- 1. Contractor qualifications: minimum of 2 (two) years system design, engineering supervision, and installation experience in the security or information technology industry.
- 2. Manufacturer qualifications
  - a. The Manufacturer shall have a minimum of 5 years of manufacturing, selling and supporting systems of the type described herein and provide evidence of successful installations acceptable to the Owner.

**C Product Delivery, Storage, and Handling**

- 1. Acceptance: Upon delivery to the site, Contractor shall inspect all products and materials for any damage.

**1.05 Project Conditions**

- 1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

**1.06 Warranty and Support**

- A Manufacturer shall provide a five-year, on-site, next business day warranty, with a "Keep Your Hard Drive" feature.

*Keep Your Hard Drive is defined as: In the event of a drive failure, a replacement drive shall be provided, and the faulty drive shall remain on premise.*

**END OF SECTION**

## **PART 2 PRODUCTS**

### **2.01 Manufacturer**

#### **A BCDVideo**

901 Deerfield Pkwy, Buffalo Grove, IL 60089

Phone: +1 847 205-1922

[support@bcdvideo.com](mailto:support@bcdvideo.com)

<https://www.bcdvideo.com>

#### **B Products**

1. 8 Bay Tower Video Recording Servers BCDT08-EVS, BCDT08-PVS, BCDT08-PLVS

### **2.02 Description**

- A The Video Recording Server ("Recording Server") shall be an enterprise class 8-bay tower server providing storage scalability up to 112 TB SATA, 96 TB SAS.
- B The Manufacturer shall certify that the Recording Server has been designed and built for the purpose of recording surveillance video.
- C The Platform shall provide the capability for remote management, disaster recovery, and critical resource management.
- D The Platform shall have dual dedicated operating system drives to facilitate accelerated boot and application load times.
- E The Platform shall have redundant, hot-swappable, storage drives, cooling fans, and power supplies.
- F Video Storage
  1. Hard Drive Bays
    - a. Number: 8
    - b. Type: Dual Port SAS, Enterprise SATA Drives
  2. SAS Drives:
    - a. Size: 3.5"
    - b. Capacity: 8 TB, 10 TB, or 12 TB per drive
    - c. Speed: 7200 rpm
  3. SATA Drives:
    - a. Size: 3.5"
    - b. Capacity 4 TB, 8 TB, 10 TB, 12 TB, or 14 TB per drive
    - c. Speed: 7200 rpm
  4. High-Performance 10K SAS Drives
    - a. Size: 2.5"

- b. Capacity: 600 GB, 900 GB
  - c. Speed: 10000 rpm
- 5. High-Performance 15K SAS Drives
  - a. Size: 2.5"
  - b. Capacity: 600 GB, 900 GB
  - c. Speed: 15000 rpm
- G Processor:
  - 1. Number: **<1>** Intel® Xeon® E-2136 Processor
  - 2. Properties: 6 Cores, 12 Threads, 4.50 GHz
- H Operating System
  - 1. Software: Microsoft Windows 10 Pro, Windows Server 2016  
*The BCDT08, when configured with dual-port SAS drives, will use Windows Server 2016. When using SATA drives, the server shall support both Windows 10 Pro or Windows Server 2016*
  - 2. Drives: 2 x 240 GB 2.5" M.2 NVMe SSD dedicated, RAID 1 configured
- I Video Management System – The Recording Server shall have the VMS pre-installed and configured at the assembly location.
- J Memory
  - 1. Up to **<64 GB>** in 8 GB increments, **<64 GB>** in 16GB increments, **<128 GB>** in 32GB increments.
- K Network Controller
  - 1. Ports: 2 x 1GbE RJ45
  - 2. Remote Management: via dedicated iDRAC port (Front: Micro-AB USB, Rear: RJ45)
- L Additional Ports
  - 1. Video output: VGA (1)
  - 2. USB: (2) USB 3.0, Front (2) USB 2.0, Internal (1) USB 3.0
- M Redundancy and Resilience
  - 1. RAID
    - a. Levels supported: RAID 0, 1, 5, 6, 10
    - b. Controller: PERC H730P 2GB
- N Electrical
  - 1. Power: 100–240 V AC, auto-ranging
    - a. Power Supplies: 2 x **<495>** W
    - b. Heat Dissipation: **<1908>** BTU/hr.

**O Mechanical**

1. Dimensions (w x d x h): 12.12" (307.9mm) x 23.75" (603.2mm) x 16.94" (430.3mm)
2. Weight: 55.67 pounds (26 kg)
3. Form factor: Standalone tower with 4U rack-mount options
4. Rack support: sliding rack rail with cable management arm

**P Environmental**

1. Operating temperature: 50°F - 95° F (10°C - 35°C)
2. Operating humidity: 5 – 90% non-condensing

**END OF SECTION**

**PART 3 EXECUTION**

**3.01 Installers**

- A Contractor personnel shall comply with all applicable state and local licensing requirements.
- B Contractor personnel shall comply with all applicable Manufacturer training certifications.

**3.02 Preparation**

- A The network design and configuration shall be verified for compatibility and performance with the Recording Server.
- B All applicable operating system updates available from the Manufacturer shall be installed by the Contractor prior to project completion.

**3.03 Installation**

- A Contractor shall follow manufacturer published installation and configuration instructions and guidelines.

**3.04 Storage**

- A Server and system hardware devices and components shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

**END OF SECTION**