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Server Hardware and Software

1. **ARMOR™ Sentry server (main server that includes the ARMOR web app and SQL)** **This is the only server needed for a single-lot configuration with less than 500 buses.*
 - CPU: Quad Core Intel Xeon at 3.0 GHz or equivalent
 - Memory: 16 GB or more
 - Networking: Gigabit network adapter
 - Hard drive #1: 1 TB
 - 250 GB partition (OS)
 - 750 GB partition (data storage)
 - Hard drive #2: 2 TB - video repository
 - Windows Server Standard Edition 2016, REI will install the IIS portion.
 - *SQL Server Standard Edition 2017 (up to SQL Server 2019 supported), REI can install SQL if desired.
 - PowerShell version 4.0 or later
 - TeamViewer - Version 15 - see notes below
 - Redundancy is suggested

2. **ARMOR Agent servers (these allocate more resources for job processing, i.e. downloads and conversions)** **This server is typically used in larger configuration environments. If an agent server is necessary, an additional discussion needs to occur.*
 - CPU: Quad Core Intel Xeon at 3.0 GHz or equivalent
 - Memory: 16 GB or more
 - Networking: Gigabit network adapter
 - Hard drive: 500 GB
 - Operating system
 - ARMOR agent

NOTES:

- **VMware or Hyper-V** - ARMOR is supported on physical hardware as well as virtual hardware, *which REI recommends*. The main server will support up to 500 buses. Depending on usage, it's recommended to add one agent server per 500 additional buses.
- **TeamViewer** - or other remote access software mutually agreed upon by the customer and REI. Customer licensing of TeamViewer is not required. Remote access will be obtained using REI TeamViewer licenses.

- **Client Access Licenses (CALs):**
 - Windows - the customer must have a number of CALs to cover the number of end users. This may already be covered by per-seat licensing within their environment.
 - SQL - if the customer opts for the Server/CAL licensing model, the customer is responsible for obtaining a sufficient number of CALs for each anticipated end user AND for each DVR (bus).
- **Storage** – the capacities stated above for hard drives #1 and #2 are based on average/normal use for data and video storage. If your organization chooses to download larger than normal quantities of video to the ARMOR server, the recommended hard-drive capacities may need to be adjusted; especially the capacity stated for hard drive #2.

Infrastructure and Network

- **SMTP server settings:**
 - Credentials/account to allow ARMOR server to send email reports, configure user accounts, and reset passwords.
REI requires an email account for this purpose, and it is recommended that it is not a free email account. We will need the address and the password for the account.
- **Firewall changes:**
 - Firewall changes will be necessary to allow communication between the end user and the ARMOR server, ARMOR server and the DVRs, and, in the case of VMS, end user to the DVRs.
- **Switch hardware:**
 - Gigabit-capable switches required
- **Multi-site:**
 - 100 MB minimum internet connection between sites. More may be required depending on bus count.
- **Wireless:**
 - If the customer requires lot-based Wi-Fi capability, the wireless infrastructure should be designed and installed to:
 - Support 802.11n in the 2.4 GHz range
 - HD5 systems also support 802.11b and 802.11g in the 2.4 GHz range and 802.11a and 802.11n in the 5 GHz range.
 - Support WPA2 encryption

- Must have a minimum of -65 dbm coverage for all points on the lot
- REI recommends a site survey for wireless access point installation in bus lots to ensure the necessary coverage is achieved.

Additional Information

Between end user and DVR:

- Port 9006 TCP - VMS access to HD5 Series
- Port 80 TCP - VMS access to HD5 Series

Between end user and server:

- Port 80 TCP - web access via IIS
- Port 8000 TCP - data communication layer for Sentry client
- Port 8001 TCP - web browser and GUI Service
- Port 8004 TCP - Real-Time Messages

Between server and DVRs:

- Port 80 TCP - DVR control and data access
- Port 6075 UDP* - communications to the central server, configurable
- Port 4321 UDP - outgoing broadcast presence packet, 30 bytes, sent to 255.255.255.255 port 31501, for HD Series
- Port 31500 UDP* - incoming presence packet from HD Series
- Port 31501 UDP - outgoing presence packet from HD Series
- Port 13503 UDP - incoming presence packet from HD5 Series
- Port 13502 UDP - outgoing presence packet from HD5 Series
- Port 4567 TCP - live View
- Port 554 TCP - agent Server and DVR (this is only necessary if they have Live View)

NOTES:

- You can verify that the server is listening from the command line with a 'netstat -ano.' The PID (process ID) in the listing should match the PID for the REI.SentryServer.exe process.
- If DVRs are configured to synchronize with an NTP server on the internet, port 123 UDP will have to be opened.
- Additionally, port 53 TCP/UDP may have to be opened for DNS name resolution.
- Each REI DVR has its own IP address that is accessible through a web browser. The ability to browse to the DVR from the network where the server resides is required.