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You may have heard that comment before, and if not...give it time, you will! So, how do you respond to the question...why should they buy a Razberi device?

The first point to make is that they shouldn't if they are working outside of the CCTV surveillance market. We are not here to compete with standard good quality servers, other reputable brands do that very well. Razberi solutions are designed to do a job. To provide; functionality (the Server), storage and connectivity in a secure, monitored, maintained, and managed nature, for CCTV systems. Lots of words so far and not much substance...let's look at some facts.



The Server

In data terms, video is an interesting and challenging source type. A CCTV camera will generate an image (data) 24hours per day, 7 days per week and 52 weeks of the year. That creates a constant stream of data that we need to manage.

To further complicate the issue, evolution brings better quality images, so that adds more data to the stream. Our digital video bandwidth requirements will keep increasing as technology evolves.

To support numbers of high bandwidth video streams, our server must provide high throughput...or put another way, a server must carry out lots of tasks quickly and efficiently. The CPU (Central Processing Unit) is the heart of the

Server and it needs to be powerful. Razberi utilize Intel CPU's with multiple cores, high clock speeds and large cache. The number of cores states how many processing units our CPU has. Each core acts individually and processes information in parallel with the other cores. The more cores the more data can be processed. Cache is local CPU memory, allowing processing functions to be faster (more efficient). Clock speed is how quickly the CPU is working, or processing instructions. For example, Razberi Core servers can use Intel Xeon Silver 4210 processors...they have 10 cores, with 13.75MB of cache memory and operate at 2.20GHz.

Oh, and for good measure some of our servers will have dual processors, so potentially twice the processing capability!

A CPU alone will not give our server the high throughput we want. It needs a great supporting cast.

The connectivity around the CPU and to/from the outside world must provide high bandwidth and that will include the Ethernet network interface. Double Data Rate (DDR) RAM (Random Access Memory) is provided external to the CPU.

In certain servers this can be up to 128GB depending on functionality required. M.2 NVMe SSD (Non-volatile Memory Express Solid State Drive) is used to store the OS (Operating System) software for the server. M.2 is a physical connection type between the SSD and the motherboard. This relatively new technology provides very fast connectivity between the different physical units. All these different modules can be redundant, along with the CPU, depending on device selection.



All Razberi HDD are “Enterprise Grade” supporting 24/7, 365 constant data writing with regular data reading (all those video streams are written to the disc for storage and read from the disc during operator playback and event search functions) with a 5 year warranty.

The Servers have a number of storage bays, where each storage bay holds a HDD. We look to utilize the storage bays of a CORE server to make sure the performance numbers are guaranteed. For example, let’s say the system requires 32Tb of storage and we are offering an 8 bay device. We could configure 2x 16Tb drives but this will not be able to provide storage throughput detailed on product brochures. Our chosen configuration will be 8x 4Tb drives, fully utilizing all bays and offering the best performance. This will not be the lowest cost option...but it is the best option...systems configured for the job they need to do.



Razberi servers will have high quality, high performance components, designed to do a job. Some other manufacturers will state the same with components and specification, so what else can we look at? What features and functionality are added to our Razberi servers to make them “fit for purpose” in the CCTV arena?

Firstly, let’s address storage. In Razberi CORE Servers, HDD (Hard Disc Drive) selection is made on reliability and performance (that is in-house tested) to provide real world recording data rates, as specified in our product brochures. HDD are graded from lowest to highest, with Enterprise grade providing best performance.

At this point we need to introduce our **ApplianceDefence** firmware...

ApplianceDefence, unique to Razberi, works in a number of ways to provide protection and cybersecurity to the server.

The different features will allow you to configure a server simply and quickly, ensure that its cybersecurity posture is good and at the same time offer high product availability to the system. Because it uses very little memory and less than one percent of CPU, ApplianceDefence will not disrupt the video management systems running on Razberi appliances.

Some features are:

✔ **Secure Boot**

Razberi servers are built with Secure Boot to ensure that appliances boot only trusted software. Secure Boot detects tampering with boot loaders and key operating system files by validating their digital signatures. It protects the system from malicious attacks, rootkits and unauthorized software updates that can happen prior to the Operating System starting.

✔ **Artificial Intelligence-driven threat protection**

CylancePROTECT is an advanced threat protection solution that, unlike other traditional endpoint protection software, makes no use of malware signatures. Instead, it employs techniques such as machine learning and artificial intelligence, which allows the identification of malicious code based on its behaviour. In theory, this ensures protection even against zero-day codes...malware that has never been seen before. This also means Cylance does not need regular updates to keep current, offering solid virus protection in both internet connected and local area network applications. CylancePROTECT is provided as standard on all Razberi server devices.

✔ **Audit log**

Razberi appliances implement an audit log that conforms to Critical Infrastructure Protection (CIP) standards to verify password changes and other modifications.

✔ **Encryption-ready hardware**

A Trusted Platform Module (TPM) features in every Razberi server device. This motherboard based Chipset provides encryption keys for hardware authentication, such as unlocking hard disk encryption to allow the device to boot. The TPC will also be used by many other applications within the device. All adds to the cybersecurity posture of the individual device.

✔ **Best practice operating system images**

Razberi Operating System (OS) images are created using best practices to maximize security and provide an OS that is correct for the requirement. Many features of a Windows OS are not required for operation and could also create a cybersecurity weakness by being operational. Razberi constantly check for Windows OS updates and apply those at the factory. This reduces installation times as multiple machines are not carrying out lengthy system updates. To switch off all the unwanted features on-site would be a time consuming and expensive operation for a knowledgeable contractor.

✔ **Secure Protocols**

Razberi servers communicate with Razberi EndpointDefenders and Razberi Monitor using TLS 1.2 (Transport Layer Security) for secure, encrypted communications. Within the Razberi environment, security is maintained, across both a Local and Wide Area Network.

Six very useful features...but what is ApplianceDefence providing for both the installer and End user? Cybersecurity for the End User would be a fundamental benefit of ApplianceDefence, but we should also look at that from the installer side. All ApplianceDefence functions are either pre-configured by Razberi or are simple to configure on-site through the wizard. That allows installers, of various skills and capabilities, to provide a cybersecure device and system for their end user with minimal input. There we are looking at time savings and allowing customers to take responsibility for projects that, with standard products, would be beyond them, or require the skills and time of a knowledgeable IT administrator. Best practices applied out of the box!

Monitor™

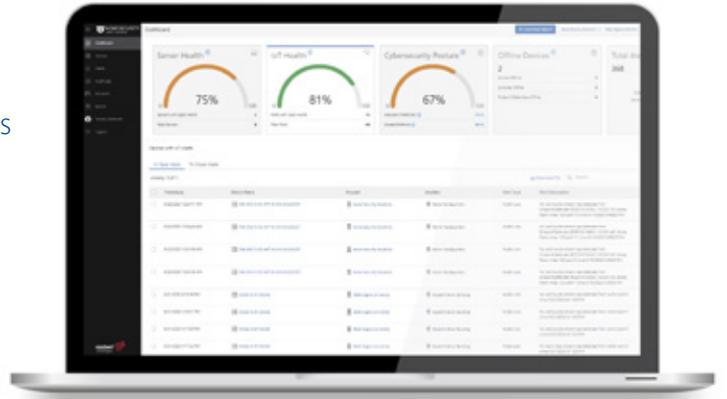
The final part of the Razberi differential. Monitor™ provides an array of information on both Razberi and third-party server devices. All Razberi devices have the Monitor™ agent loaded at shipment. They can be connected to a Razberi Monitor Cloud account via an internet connection including by proxy if a proxy server is available on the network. Free of charge, Razberi Monitor can be used for asset management.

Through the Monitor subscription service, many different parameters can be reported back to the user. These are listed in the following table. There is also an Alert suite customizable by location, asset tags and contacts for SMS and/or email.

Monitor™ is an integral component of creating a highly available system for the End User. It does this by providing dynamic information to the system maintainer on pre-fail alerts.

This detailed information allows low cost fixes to take place rather than high cost failures, with maintenance efficiency greatly improved through the provided information. Go to the exact location armed with the solution.

The following list shows the provided alerts for both Razberi and third-party devices.



Server Alerts

Hardware Alerts	Alert Description	Core	3rd Party Servers
Unit Offline	Notifies when a unit has not communicated with Razberi Monitor for 15 minutes.	✓	✓
Unit Offline	Notifies when a unit has returned online after going offline.	✓	✓
Disk Health	Storage disk errors, disk missing, or disk failure notifications.	✓	✗
RAID Health	RAID array advice messages indicating issues or failure.	✓	✗
CPU Temperature	The CPU temperature is too high. (CPU Temperature is sampled every 5 minutes, if it is above 80C for three consecutive samples (e.g. 15 minutes) the alert is raised)	✓	✓
Power Supply Core & Gen 5 SS32	For units with multiple power supply units, when a PSU loses AC power, is removed, or malfunctions a PSU alert is sent during one of the 5 minute polling cycles.	✓	✗
PoE Overload Gen5 SS32	Notifies when a switch ports on the switch receives an PoE overload event	✓	✗
Hardware Alerts	Alert Description	Core	3rd Party Servers
Windows Event Log Alert	Event ID 41: The system has rebooted without cleanly shutting down first. This error could be caused if the system stopped responding, crashed, or lost power unexpectedly.	✓	✓
Windows Event Log Alert	Event ID 1001: The computer has rebooted from a bug check.	✓	✓
Windows Event Log Alert	Event ID 55: The file system structure on the disk is corrupt or unstable. You may need to run a utility like chkdsk to find bad sectors on the drive and fix them.	✓	✓

Server Alerts continued...

Cyber Health Alerts	Alert Description	Core	3rd Party Servers
Malware Protection	Alerts when malware and related cyber threats has been detected, quarantined, or blocked. (applicable to ApplianceDefense Installed)	✓	✓
VMS Health	Alert Description	Core	3rd Party Servers
Milestone Video Management	Requires Milestone recorder on this platform with a MonitorCloud account and subscription.	✓	✓
VMS Monitoring Offline	VMS is Offline, system or service is down	✓	✓
VMS Monitoring Online	The connection to the video management system has been restored.	✓	✓
VMS Service Offline	A video management system service has reported been stopped or is not reporting.	✓	✓
VMS Service Online	A video management system service that was previously stopped or not reporting has been restored.	✓	✓
VMS Video Loss	A camera is not streaming video to the video management system as expected.	✓	✓
VMS Video Restored	The video from a camera that was previous not streaming has been restored.	✓	✓
Razberi Expiration Alerts	Alert Description	Core	3rd Party Servers
Warranty Expiration	Notifies when the Razberi Hardware Warranty is expiring. Notifications at 30 days, 7 day countdown, and when it expires.	✓	✗
ApplianceDefense Expiration	Notifies when the Razberi ApplianceDefense license is expiring. Notifications at 30 days, 7 day countdown, and when it expires.	✓	✓
License Expiration	Notifies when the Razberi Monitor license is expiring. Notifications at 30 days, 7 day countdown, and when it expires.	✓	✓
Razberi Monitor Integrations	Subscription based integrations		
Razberi Monitor Cloud	MonitorCloud is Cloud-based monitoring tool provided by Razberi Technologies.	✓	✓
Milestone Video Management	Milestone Xprotect is a physical security industry leader in Video Management Software that Razberi Monitor integrates with for providing alerts.	✓	✓
SolarWinds	Solarwinds is a commercial network device and network monitoring tool. Razberi Monitor provides alerts via a native API integration into the Solarwinds Orion platform.	✓	✓
Syslog	Syslog is an IETF messaging standard that licensed users of Razberi Monitor can utilized for premise based network and security monitoring tools (Splunk, Solarwinds, Zabbix).	✓	✓