

Valerus Internet Access Guide



XX285-40-02



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General

Vicon® Valerus™ VMS is an advanced video management solution designed to operate on IP networks and uses a standard web browser as its client.

Like any network-based system, the VMS offers an option to connect to it over the Internet, virtually from any place that has access to the World Wide Web.

This document will explain some of the challenges involved in such access and the simple solutions integrated into Valerus to resolve them.

Valerus Topology

The Valerus VMS is built from several modules:

- Application and Web Server – The “brains” of the system holding global information and database as well as running the web server used by the web clients.
- Recording Servers (NVRs) – The recording servers handle live streaming of video and audio to clients as well as recording and playback.
- Client Application – Thin client using a web browser.

Depending on the specific system layout, the different modules can be deployed in various ways:

- All-in-one – In this deployment, a single PC runs the application and web server, the recording server and, if need be, the client. An example for such a system would typically be for smaller installations where the minimum number of PCs is required.



- Separate Application Server – Installing the application server on its own dedicated hardware is a deployment method that can be used in the following cases:
 - Server is hosted in a different location on the network.
 - In a system that has more than 150 IP devices, Vicon recommends a separate application server to allow all computer resources to be used by it.
 - System design calls for a dedicated server.
- Separate Recording Server – Running only the recording server on a PC will be the most common scenario, as multiple NVRs can be part of a system either to support all devices or because different devices run on different parts of the network.



Connecting from the Internet

In order to connect to a Vicon Valerus system from the Internet, certain configurations to the router providing the Internet connectivity will be needed. An explanation of the most common challenges and solutions follows.

Typical Network Layout

Most systems reside on a local network and connect to the Internet through a router. The typical Internet service provides the router with a single "public IP" address that all devices on the network share in a method called Network Address Translation or NAT for short.

This very efficient method allows a simple almost automatic configuration. When using NAT, the devices on the local network have what is referred to as "private IP addresses," which means they are not true internet IPs and require the router, with its "public IP," to access it.

Port Forwarding

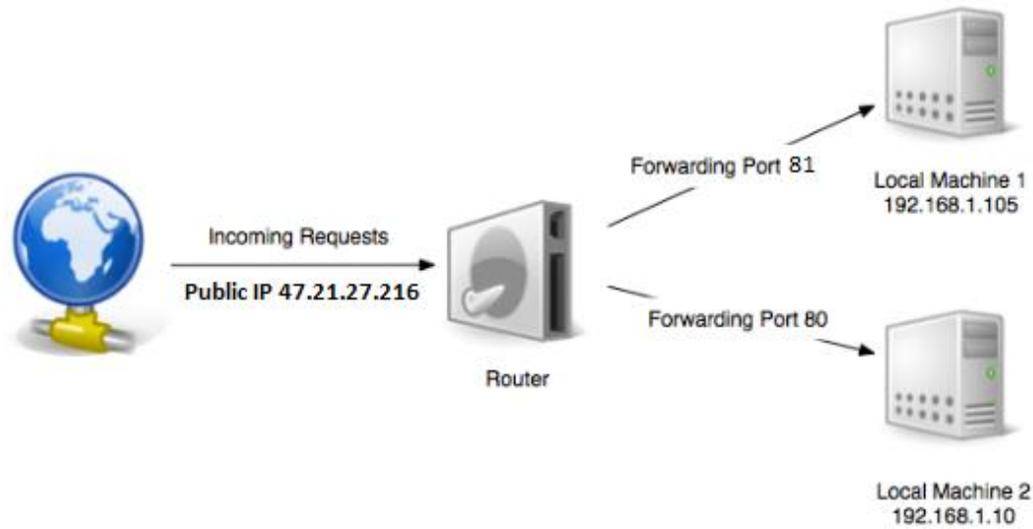
In order to connect from outside the network (anywhere on the Internet) to the system, it is not enough to connect to the public IP of the router. It is also required to tell the router where to "send" the connection request; for example, if **many** cameras or **many** NVRs are on the network, it's important to know which one we are trying to connect with. This is similar to an office phone system, where you would always call the same "public" number, but by using an extension number, the phone system will know to send the call to a certain phone.

A technique called port forwarding allows this exact ability. Because there is only one public IP address, a different port number will be assigned for each device; for example, let's assume the public IP address is 47.21.27.216 and we have 2 servers:

Server one: IP 47.21.27.216 port 80

Server two: IP 47.21.27.216 port 81

The router will then need to be configured to forward all the requests that come in for port 81 to the first camera using its internal IP address and the requests coming in for port 80 to the second camera.



This solution presents the person configuring the system with a complex configuration scenario and a need to know exactly which camera is set with which port in order to end up getting the correct video. To help and reduce this complexity, Vicon Valerus uses a **single** Internet Gateway to connect to any of the Valerus devices without having to configure the router to know each one.

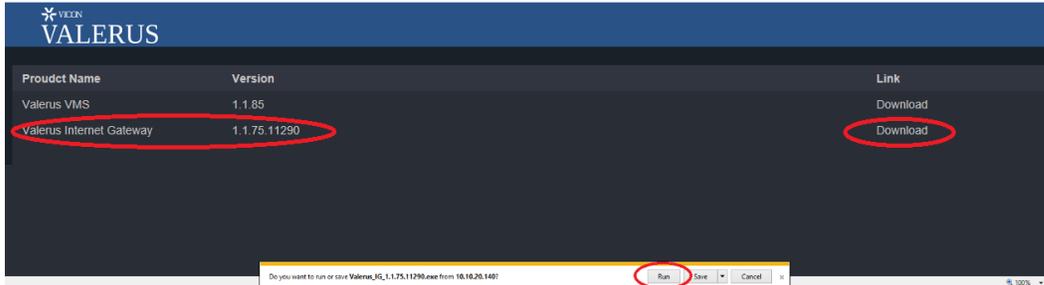
Internet Gateway Installation

In order to add an Internet Gateway to a Valerus system, it is necessary to first install the Internet Gateway module on the PC that will run it:

- Identify the PC that will run the Internet Gateway module.
- From the designated PC, open a browser and log into your Valerus system.
- Enter the Valerus Configuration screen and navigate to System – Internet Gateway.
- To download and install the Internet Gateway on this PC, click the link to the software download page.
- You can also browse directly to the download page <http://xxx.xxx.xxx.xxx/DownloadInstall.html> (replace xxx.xxx.xxx.xxx with your Application Server IP address).

The screenshot shows the Valerus web interface. The top navigation bar includes 'Monitoring', 'Configuration', 'VAX', and 'Dashboard'. The left sidebar has a menu with 'Internet Gateway' circled in red. The main content area shows 'Add Internet Gateway' and 'Remove Internet gateway' buttons, with 'Add Internet Gateway' also circled in red. Below these is a table with columns 'Name' and 'Version'. To the right, the 'Properties' section shows 'Status: Offline', 'Name:', 'IP Address: 10.10.20.41', and 'Port: 9080'. At the bottom, there are instructions for adding an Internet Gateway, with a red circle around the link to the software download page.

- A list of the available installations is shown on the left; pick the latest Internet Gateway link and click to download it to your PC.
- When prompted by the browser, click Run to install the Gateway and follow the instructions on the screen.

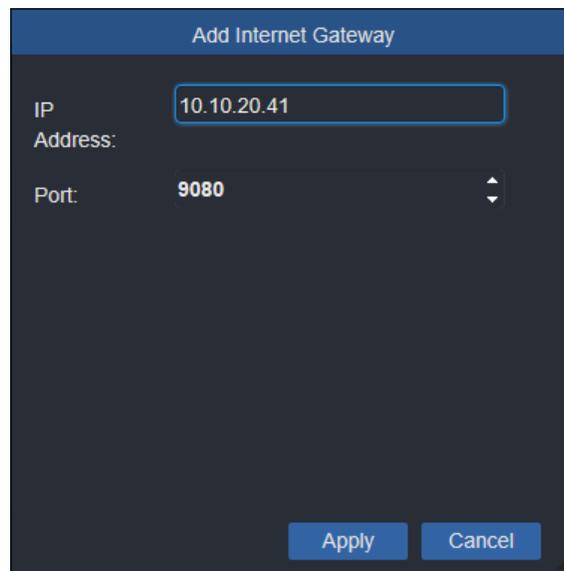
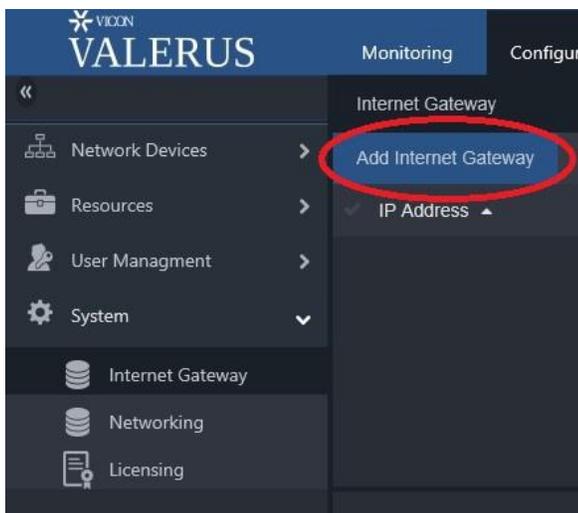


The Internet Gateway module is installed as a Windows® service and will automatically start when installed. After an Internet Gateway is installed you can add it to Valerus to complete the configuration.

Internet Gateway Configuration

To add the Internet Gateway to your Valerus system follow the steps below:

- On the same Internet Gateway Configuration screen, click the Add Internet Gateway button to begin.
- Enter the IP address of the PC you have installed the Internet Gateway module on.
- Set the port to 9080. This is the port the Application Server will use to communicate with the Internet Gateway module as well as port 9081 for streaming.
- Click Apply to add the Gateway.



- You can edit the Gateway details on the right side of the screen.
- Make sure the Internet Gateway status is changed to online.

Note: The ports used to communicate with the Internet Gateway are set by default to 9080 and 9081. If for any reason you need to change these to other ports, please contact Vicon technical support.

Router Configuration

The final step will be to configure the router connecting the system to the Internet to forward the traffic to the Internet Gateway (not to each device).

As previously described, you will only need to route browser-based traffic (http or https) to the PC running the Internet Gateway module, which will communicate back and forth with the different devices of the Valerus VMS system. There is no need for additional routing or forwarding.

The example below was documented using a D-Link DSL-6740U router and shows port forwarding set up. While every manufacturer has a slightly different user interface, most offer a similar method to get to this configuration.

- In this router there is a menu under its firewall setting for adding a “virtual server.”

The screenshot shows the D-Link DSL-6740U router's web interface. The left sidebar contains navigation options: Monitoring, Home, Status, Net, Wi-Fi, Advanced, Firewall (selected), IP filters, Virtual servers, DMZ, Application rules, MAC filter, Control, and System. The main content area is titled 'Firewall / Virtual servers' and contains a search bar. Below the search bar is a table of virtual servers:

Name	Interface	Protocol	Public port	Private port	Private IP	Remote IP
Valerus Browsing	pppoe_VDSL PTM_3	TCP/UDP	80:80	9080:9080	192.168.20.55	
Valerus Streaming	pppoe_VDSL PTM_3	TCP/UDP	9081:9081	9081:9081	192.168.20.55	

Below the table are buttons for 'Add', 'Delete', and 'Clear all'. Below the buttons is a section titled 'Remote access configuration' with a table header:

Name	Interface	IP address	Mask	Public port	Private port
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- The basics, as discussed above, are to tell the router where requests coming from the Internet through its public IP should be forwarded. In our case, these should be forwarded to our Internet Gateway on IP address 192.168.20.55.
- The standard port used for HTTP web browsing is port 80 (here showing port range 80:80).
- Forward web requests coming on port 80 to port 9080 (here showing port range 9080:9080)
- Forward streaming requests coming on port 9081 to port 9081 (here showing port range 9081:9081)
- In case you want to connect to the Internet Gateway using HTTPS, you will need to route an additional port. The standard port used for HTTPS web browsing is port 443.
- Forward web requests coming on port 443 to port 9443. There is no need to route both HTTP and HTTPS ports if only one is being used.
- The internal IP of our Internet Gateway is set as the private one (here showing 192.168.20.55)



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