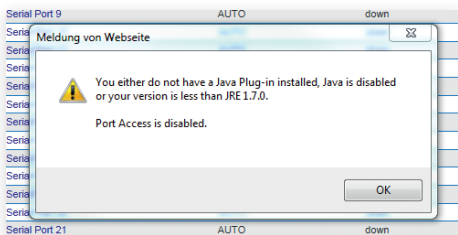


Tested: Raritan Dominion SX II

# Serial over the Network

Even in the Internet of Things (IoT) age, administrators are still working with serial console connections to securely and reliably reach their network infrastructure systems. Raritan's Dominion SX II makes these connections fully network-based – and encrypted at that.

Administrators always configure modern infrastructure systems via the network – or so one might think. But just in case, the network pro always carries a USB/serial adapter and the respective cable so as to tackle a machine by glancing at the console. Especially in environments with very high security requirements, serial console access is still the method of choice. Annoying if the device to be administered is to be found in a completely different tract. That doesn't just sound like the sneakernet – it is exactly that.



Java is a must-have for using the Dominion SX2.

It is at this very point that Raritan's concept of the Dominion SX series comes to bear. The administrator connects the serial consoles of the devices to be managed to a Dominion device, accessing the consoles via this system – and via the network. The Dominion SX II series encompasses console servers/terminal servers of the latest kind, allowing administrators not only serial-over-IP access, but also targeted device control. The manufacturer praises the device as one of the most powerful, secure, reliable, and user-friendly console servers in the market. Everything that can be

managed via serial console – i.e. switches, routers, servers, security appliances, rack PDUs, virtual hosts, as well as wireless and telecommunications systems – lends itself to being hooked up. The SX II supports a large number of serial-over-IP connections via SSH/telnet client, web browser, Command Center, telephony modem, cellular phone network modem, and direct access at the rack. In all, the series consists of 13 different 1-RU appliances that the network manager can connect to serial devices via four, eight, 16, 32, or 48 ports. All devices of the series provide two redundant power supplies and two Gigabit Ethernet LAN ports.

The SX II offers full CLI (command line interface) access and a comprehensive CLI administration for SSH, telnet, and via web browser in so-called „Direct Port Access“ mode. Two script-based auto-configuration methods (TFTP server and USB stick) allow the administrator to speed up deployment and configuration changes. Scalability via Raritan's Command Center allows for adding an almost unlimited number of Dominion systems, enabling management of several thousand devices.

As for security, the system supports various standards, for example AES and FIPS-140-2-certified encryption, LDAP/RADIUS/Active Directory authentication, as well as IPv4 and IPv6 dual-stack network operations. Those who, for security reasons, manage their network infrastructure systems separated from the regular Ethernet traffic by using a serial console will

insist the special management network connection be protected against sniffers and other protocol tools by HTTPS. An integrated iptables firewall emphasizes the manufacturer's intent to deliver a system that is as secure as possible.

## Unboxing

For several years, the unboxing and hooking up of devices – e.g. an iPhone – has been positively celebrated and displayed on the internet. The SX II is not really suitable for that kind of act – even if the design of the 19-inch, 1-RU device will indeed attract attention in the data center. The device is looking good with its front-side row of blue LEDs. These are illuminated permanently if a device is connected by cable on the back side, while a blinking LED indicates that a user is active in a console session. On the back side, one finds, in addition to 32 RJ45 ports for the console devices, just two Ethernet NICs, a local terminal port, as well as the low-power cable ports for the power supply. Three

**Dominion® SX II**

**Time & Session:**  
February 23, 2016 20:07:18

User: admin  
State: active  
Your IP: 192.168.0.200  
Last Login: Jan 01, 2000 01:04:05

**Device Information:**  
Device Name: DominionSX  
IP Address:  
192.168.0.192  
Firmware: 2.0.0.5.871  
Device Model: DSX2-32M  
Network: LAN1  
PowerIn1: off  
PowerIn2: on

**Port States:**  
2 Ports: up  
30 Ports: down  
30 Ports: idle  
2 Ports: busy

**Connected Users:**  
admin (192.168.0.200)  
active  
thomas (192.168.0.200)  
39 sec idle

[Online Help](#)

**Favorite Devices:**

**All important information at a glance: who is currently accessing what from where?**

USB ports and one DVI port lend themselves to directly connecting input devices and a display.

We added the SX II to our test environment within only a few minutes' time. The network manager performs all configuration and the majority of administrative steps via web browser. In the default configuration, the IP address of the management interface is preset, but one can adjust it to one's needs later on. The SX II is extremely tenacious regarding its default password and requires an immediate change. Repeated entry of the default password is not allowed.

A few moments later, the administrator is asked to activate Java, as numerous workflows are Java-based. As for the default settings, we were only wondering why the NTP time server could not be reached per DNS name, and didn't deliver time data via IP. This only worked fine after manually entering date and time.

### Test Environment

In our test, the SX II had to connect to a Dell server and a Cisco Catalyst 3550. Raritan offers a whole variety of adapter jacks to get from the serial console ports to RJ45. This isn't necessary for Cisco,

as here a standard Ethernet cable does the trick. Of course, the support is not limited to Cisco products – with HP, Dell, or IBM systems, too, the Dominion tends to identify the DTE/DCE setting of the serial port in the 1,200 to 230,400 bps range.

User management of the Dominion SX II is self-explanatory. First of all, the administrator defines a group and allocates access rights to it, e.g. defining that members of one group may only access a specific set of devices. After that, he creates the actual user account and adds it to the group. This doesn't even require a glance at the online documentation. The administrator will proceed in a similar fashion with many other items, such as routing entries, SMTP and SNMP settings, or port configuration. Even rather specific customizations such as setting the terminal emulation for a port don't require any additional explanation. The reactions of the SX II to „multiple writers“ is also self-explanatory – „single writer allowed“ or „multiple writers allowed on a port at a time“.

### Browser-based Console

Ultimately, the administrator can access the local consoles of connected devices by

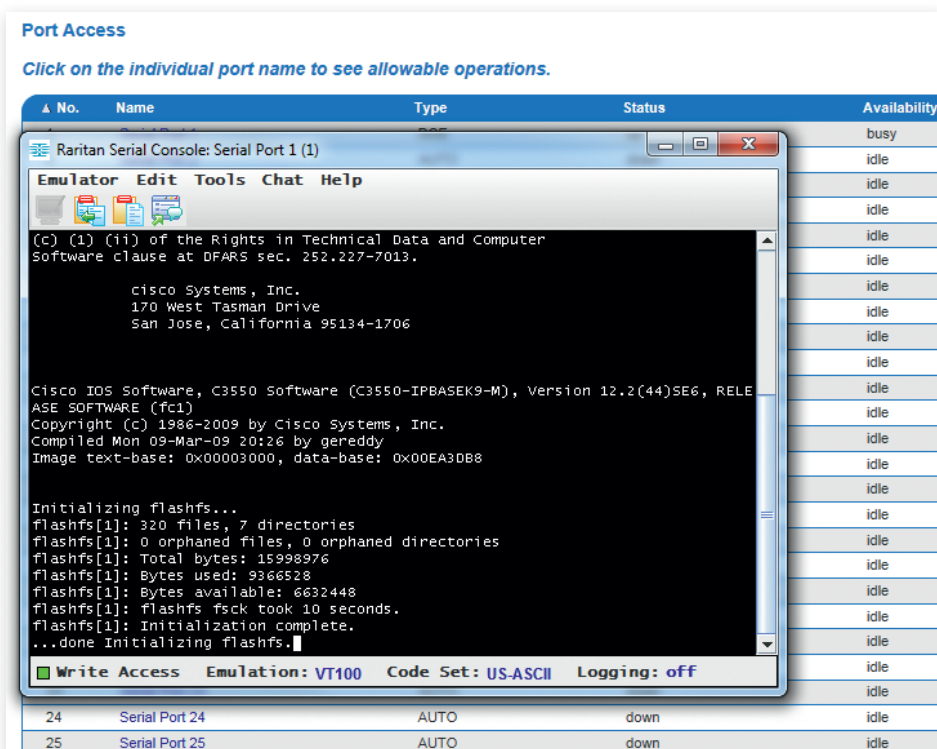
means of the Dominion. The click on „Serial Port x“ will produce a context menu, and the administrator can access the device through a console window, as if the cable were directly attached to the serial port. Raritan's „serial console“ is limited to the necessary features. If need be, the software allows for logging to a text file, yet without listing the actual password entries – very helpful for documentation purposes. If several users are active on a serial console via the Dominion, they can exchange information by chat.

The administrator basically decides what actions to perform in the local session. The console software will simply forward all commands, inputs, and outputs. However, the SX II also allows for some additional actions, for example automated reactions via E-Mails, SNMP messages, or port log entries, if a specific keyword trigger passes the console.

### Conclusion

Without any doubt – the Dominion SX2-32M is a highly interesting and sophisticated solution in this specific application range. The Raritan developers have made sure that there is nothing amiss which might ease an administrator's life in this respect. Will there ever be a need for a follow-up product, an SX III? Today, that's hard to imagine, as the current Dominion generation already offers everything. Maybe the developers might want to reconsider the Java platform, as Java is – for a good reason – thought to be a security risk. The tested version for up to 32 console connections costs about 3,300 Euros.

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The SX2 enables access to the serial console via browser.

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