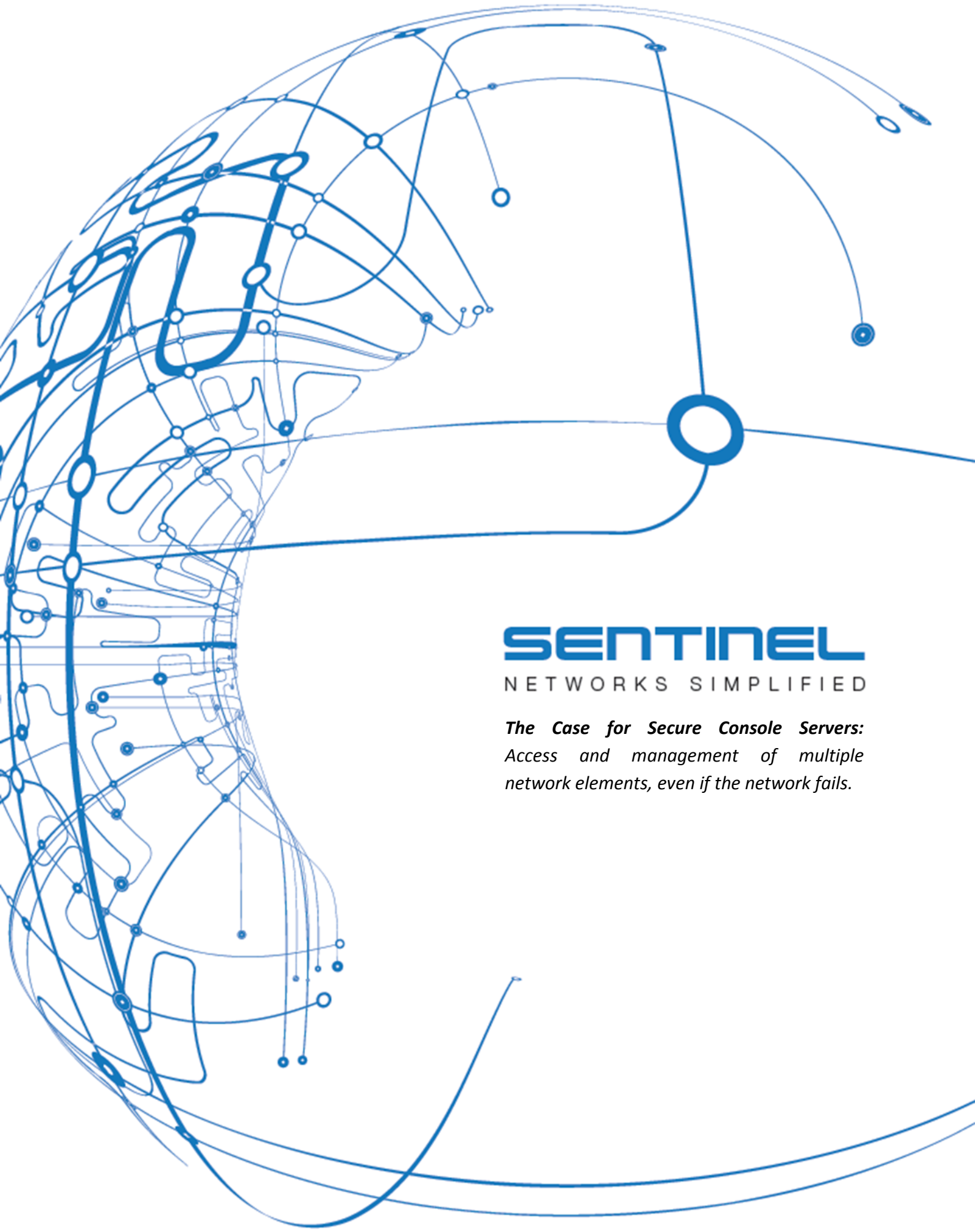

SENTINEL

NETWORKS SIMPLIFIED

The Case for Secure Console Servers: *Access and management of multiple network elements, even if the network fails.*

Secure and Reliable Console Access

Introduction

Corporate IT is constantly evolving, meaning the task of managing an ever increasing range of IT equipment, often running different operating systems across many sites and datacentres, is often a challenge. Any IT failure will directly impact on productivity, so network and server management is a high priority. So how best to maintaining updates to software, troubleshoot problematic devices and respond to network failures while minimising network downtime and staying within departmental budgets and squeezed staffing levels?

Serial Console Management

The serial console port of any network device (router, server, switch, DSLAM, PBX etc.) can provide local or remote access for re-configuring, rebooting, re-loading or upgrading firmware at the BIOS level. Not so long ago, network managers relied on on-site IT engineers pushing terminals on trolleys through data centre aisles to provide direct access to a device's serial console port. However, as the number of IT assets increased and become more geographically dispersed, it was no longer practical to connect a terminal to every console port, so other solutions were required.

Traditional Methods

Traditionally, generic terminal servers were used to connect remotely to multiple serial console ports across the network. Rather than connecting terminals to host systems as the terminal server was designed to do, the application was reversed so that the Terminal Server acted as a serial console switch to connect one console terminal to a number of hosts. By using Telnet, administrators could access a number of devices via the Terminal Server from one fixed screen and so the need for multiple terminals on a trolley was done away with. It even became possible to connect to servers in remote locations via the corporate network. However, these devices lacked specific console management features such as data logging for troubleshooting, event logging, alarm notification and most critically, any level of security to prevent unauthorised access. The lack of event logging also meant it was simply not possible to capture the critical moments leading up to a crash, so network engineers were effectively working in the dark without this essential information.

Remote Management Software

Remote Management Software has also developed and enables IT administrators to access the desktop and applications running on servers. However, remote management software is limited in that is it requires the target Operating System to be always available. If the operating system is frozen or crashes, then quite simply the server cannot be accessed. Moreover, these remote management software solutions are dependent on the network connection to the particular server's network interface card being up and running. If the network fails and is unavailable for any reason, access to the server is blocked and the remote management software is rendered useless.

A Dedicated Tool for System Management

A Serial Console Server is a reliable and dedicated hardware solution to securely access and manage multiple network devices in remote locations from one central site. Unlike a generic terminal server, Serial Console Servers have been designed specifically for console management so will have strong security features and comprehensive alarm monitoring.

Simple Troubleshooting

A Serial Console Server captures and stores incoming data at an individual serial port even during non-connect periods, and time stamps the data. By buffering this data, troubleshooting is simplified when an issue arises.

Proactive Troubleshooting

A Serial Console Server will remotely monitor network devices, watching for any significant changes. Administrators are promptly notified via SNMP or email when critical events are detected such as high temperatures in the rack. A Serial Console Server with an integral temperature sensor will alert you if the pre-defined temperature thresholds in the rack are exceeded so that action can be taken quickly to lower the temperature to the pre-set level.

Security Preserved

Comprehensive security and authentication features on a Serial Console Server will prevent unauthorised access and ensure that the Serial Console Server integrates seamlessly into your existing corporate security standards. These features may include SSH Version 2 for encryption of console traffic, authentication protocols such as LDAP, RADIUS, TACACS and Kerberos and callback functions.

Out-of-Band Management

As previously discussed, it is clearly not sufficient to simply rely on software based network management tools which only work when the enterprise network is running. Telnet and its encrypted counterpart SSH are also used in-band to access and configure devices with serial ports, however, like remote management software, this access method is only as effective as its network connection.

If the primary network fails, you need a secure alternative method so that problems can be resolved quickly. Out-of-Band Management provides an alternative pathway to access devices within your IT infrastructure. Out-of-Band Management is completely separate from the primary enterprise network on which it is installed. Out-of-Band Management provides emergency access, by allowing direct access to the serial port of the affected device even when the network has crashed.

Out-of-Band Management cont'd…

Out-of-Band management is essential if problems are to be resolved quickly. Unplanned outages cost money so you need to ensure you have full access to all your devices even if the enterprise network fails. 47% of all operational failures are identified as being network or IT hardware failures (Forrester Research) and can only be addressed by out-of-band access tools. These tools will greatly reduce downtime.

Typically, an Out-of-Band management solution consists of a Serial Console Server which resides on a secondary maintenance network, yet is able to contact network devices on the primary network via cable connection to serial console ports on the network devices. In cases where a secondary network is not feasible, a 4G LTE Cellular or dial-up connection should be used to connect to the console server in order to provide Out-of-Band access to command functions on remote devices when normal network communication is not available.

With a Serial Console Server - Out of Band management solution, you can easily connect to console ports on remote network devices and invoke troubleshooting and configuration commands to quickly deal with malfunctioning network equipment. This removes the need for an engineering call-out to site. An Out-of-Band management solution also cuts network administration costs by eliminating these expensive service calls to remote sites, and also minimizes network downtime, by providing a fast, secure way to solve network problems whatever and wherever they are.

Dual Redundancy

High availability of your Serial Console Server is essential so that you have access to all your IT equipment, even if the network is down. Infrastructure failures are to blame for a large portion of unplanned downtime, and when the network fails, so do your networking management tools. You need your serial console server to always be available, whatever the networking problem. Dual power supply redundancy on the Serial Console Server ensures reliable access to all your mission critical networking 24/7. Dual Ethernet interfaces provide backup network access when your primary network has failed. When communication via the primary network is interrupted, access will still be available via the secondary network, providing continuous access to remote serial ports.

Conclusion

Networks are required 24/7. As we increasingly rely on IT, any downtime impacts a company's operational ability. When a network device fails, a Serial Console Server becomes a fast way to securely access, diagnose and restore the device without the need for a costly and time consuming engineering site visit. Network downtime can be kept to a minimum. In-Band (across the network), or Out-of-Band via a dial-up or 4G LTE cellular connection, you need to be able to connect quickly whatever the problem. A Serial Console Server – Out of Band Solution means remote access is guaranteed no matter how near or far the issue is.