



A government agency

Improving public safety through large-scale open-source data analytics

To improve citizens' quality of life, a government agency sought to turn information published on social media into actionable insight. Working with IBM Platinum Business Partner Sirius, Circinus architected and deployed IBM® Security and IBM Analytics solutions running on highly available IBM LinuxONE™ and IBM FlashSystem® technology, helping the client better understand the population it serves.

Business challenge

Social media networks are a valuable source of real-time news and insight into popular sentiment. This government client saw an opportunity to tap into this information to help optimize service to citizens.

Transformation

To bolster public contentment and safety, Circinus teamed up with Sirius and built a flexible, scalable and secure open-source intelligence solution running on an IBM LinuxONE server to rapidly analyze huge volumes of data.

Business Benefits

- **Accelerates** acquisition and analysis of time-sensitive data to support intelligence work
- **Protects** vital government services with high-availability architecture
- **100% encryption** helps secure sensitive intelligence reports

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Crunching data for citizen security

Social media channels and other publicly available information on the internet can provide a window into what people are thinking, feeling and doing. This gives governments or customers an important opportunity to detect potential threats to public safety and enhance citizen welfare.

With the volume of open-source intelligence growing all the time and new regulatory requirements around the use of data emerging, one government client recognized that its existing analytical tools and approaches would soon be overwhelmed. To support policy decisions and to drive the allocation of government resources, the agency wanted to ensure that it had a better understanding of publicly available information.

The client set out to create a faster and more scalable solution to analyze time-sensitive data from public sources, while ensuring compliance with regulations including the General Data Protection Regulation (GDPR).

Homing in on the insights that matter

The government client engaged intelligence services provider

Circinus, which offers both on-prem and cloud-based technical solutions to analyze data – ultimately helping to predict and mitigate threats to citizen safety. The services provider then engaged Sirius, an IBM Platinum Business Partner, to provide supporting software and hardware as well as additional engineering support. Sirius and Circinus selected a solution for the government client based on the IBM LinuxONE enterprise platform, backed by IBM storage technologies, analytics solutions and more.

Teaming with Sirius, Circinus delivered a fully integrated, turnkey solution that uses [IBM i2® Enterprise Insight Analysis](#) to extract comprehensive and actionable intelligence from unstructured and structured data collected from social media networks. With [IBM Security Guardium® Data Protection for Databases](#), Circinus encrypts data end-to-end across storage and server environments, facilitating GDPR compliance and safeguarding citizen data from compromise.

To analyze and visualize the data, Circinus built a solution with [IBM Watson® Explorer](#), [IBM Cognos® Analytics](#) and [IBM Watson Studio](#) (formerly IBM Data Science

Platform), plus products from third parties including [ScyllaDB](#), [Point Duty](#), [Red Hat® Enterprise Linux](#), and [Rosoka](#). The services provider then customized the solution to deliver its security intelligence workflows, and populated it with unique datasets.

Stable, scalable and highly secure

An on-premises platform was vital to ensure the required levels of security and availability, and Sirius had recommended IBM LinuxONE technology as the best fit for the solution. LinuxONE offers end-to-end pervasive encryption of data at rest and in flight, exceptional vertical scalability and compute power, and mature virtualization with the ability to host thousands of virtual environments in a single physical footprint.

The chosen platform consists of an [IBM LinuxONE Emperor™ II](#) server with 33 IBM Integrated Facility for Linux (IFL) processors, with [IBM FlashSystem 9100](#) and [IBM Storwize® V5030](#) providing high-speed data storage. The strength of this infrastructure proposition helped Circinus to win the contract with the government client.

Andy Kowal, CTO of Circinus, says “The pervasive encryption

capability is a perfect fit for a government client’s tight security requirements, and its powerful, flexible and scalable compute capabilities mean that a single LinuxONE server can handle the large data volumes involved. Our client wanted an impressive, high-end solution, and they were quickly won over by the power and performance of IBM LinuxONE. IBM FlashSystem and Storwize rounded out the proposition, providing high-speed, high-throughput data storage at an economical cost.”

Getting the details right

Sirius architected the server and storage landscape for Circinus, and worked with [IBM Services](#) to build and prove the concept – initially in an IBM data center, and later in the client’s country. The production environment offers secure replication of approximately 1PB of data to [IBM Cloud™ Object Storage](#) to enable high-availability, low-cost archival of intelligence information. The LinuxONE Emperor II is currently configured with three logical partitions (LPAR) – for development, test/staging and production – and uses the IBM z/VM® hypervisor to manage multiple Red Hat Enterprise Linux virtual machines within each LPAR. Within the production environment, Circinus has

allocated 16 of the 33 available IFL engines to run its analytics applications across 17 VMs. An 18th VM runs a cluster of Docker containers that are fired up as required to ingest data.

Barry Busler, Director of Engineering at Circinus, remarks: “z/VM is a highly mature and robust virtualization platform, which helps us manage large numbers of completely isolated environments in a single physical footprint. Running a Docker cluster on the IBM LinuxONE server gives us a great degree of agility and flexibility—we typically run 20 or 30 containers at any given time, and depending on the kind of data we’re collecting, each could be running for anything between 15 seconds to a couple of hours. This helps us to rapidly scale up to capture large data volumes at peak times, without wasting resources in quieter periods.”

Busler adds: “Sirius and the IBM z/VM team provided invaluable support, working closely with us to fine-tune configuration in a short time-frame. With the team’s help, the whole environment was up and running in just 45 days. This was achieved through great teamwork between Circinus, Sirius, the client, IBM and [GBM](#), the IBM partner on the ground.



Now that the solution is live, we can fine-tune the details in real-time without disturbing the production environment supporting our client’s intelligence analysts.”

GBM provided expert services to install the IBM hardware and software according to the blueprint established by Sirius, set up operations, and stabilize and tune the environment. The organization now provides operational support and problem resolution, helping to ensure that the solution runs smoothly for the government agency.

In addition to automatically replicating data to IBM Cloud Object Storage for secure backup

and disaster recovery, the IBM LinuxONE solution also integrates with Circinus’ public cloud storage, which the organization uses to capture the initial volumes of publicly available data before extracting, transforming and loading relevant data for analysis on LinuxONE.

“By smoothly integrating with our cloud assets and enabling us to run a hybrid cloud architecture, IBM LinuxONE helps us gain even greater flexibility and agility,” adds Poore. “We can use the public cloud for the initial load of public data, and then protect sensitive analytics and intelligence data by moving it to the on-premises zone of the hybrid cloud.”

Protecting citizens

Backed by IBM LinuxONE technology, IBM, Sirius and GBM services, Circinus was able to build a secure, high-performance, high-resiliency analytics platform for its government client. The client can in turn protect its citizens with the help of high-end intelligence and security analytics, relying on the IBM technology to scale up as demand grows, while keeping sensitive information safe and secure. The solution is owned by the government client, but run entirely by Circinus, which also provides training to the analysts who use it.

“Thanks to the power of the LinuxONE Emperor II server, our advanced Circinus Security Analytics solution is able to analyze enormous volumes of data in close to real time,” says Busler. “Once ingested, data reaches our analytical index within just ten minutes – enabling our client to respond intelligently to emerging insights exceptionally fast.”

He adds: “We enjoy great support from the IBM and GBM teams on an ongoing basis. Coupled with the reliability and security of the LinuxONE platform, this means that we do not need to worry about maintenance and availability—instead we can focus on training the analysts who use our platform, and improving the value we deliver to our client.”

Bob Ross, Business Solutions Specialist at Sirius, adds: “At Sirius, we were delighted to be able to apply our expert knowledge of IBM hardware and software to assist Circinus in meeting the client’s needs. Technology really adds value when multiple solutions are blended in the right way and Circinus’ security intelligence know-how is delivering significant benefits to the end-client.” Given the vertical scaling capability of the IBM LinuxONE

server, Circinus and the government client will be able to expand the analytics solution to take on larger volumes and different kinds of data as required in the future.

“Unlike in a cloud based on distributed servers, where we would need to grow horizontally by deploying new machines, raising the complexity, we can simply add IFLs into our production environment,” says Busler. “At the moment, we would be hard pressed to exceed the huge capacity of the IBM LinuxONE server, unless we start taking on much larger data volumes—but if this does happen, we can easily expand the platform vertically with minimal overhead to meet new demands.”

The Circinus solution on IBM LinuxONE empowers the government organization with the tactical, operational and strategic insights it needs to detect trends, connect facts, and develop a coherent picture of potential geopolitical threats from publicly available information.

Kowal concludes: “Thanks to the IBM LinuxONE server, we have been able to create a powerful, reliable and highly secure analytics platform for our client, to help them use data to keep

citizens safe. Its easy scalability and integration with other systems will be invaluable as we grow the solution to improve our services and meet future demands.”

Take the next Step

To learn more about IBM LinuxONE, please contact your IBM representative listed below or IBM Business Partner, or visit the following website: ibm.com/it-infrastructure/linuxone

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Circinus, headquartered in Arlington, Virginia, provides training, support and technology solutions for intelligence services in federal, civilian, and military organizations across the world. To learn more about Circinus, please visit: circinus-llc.com

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Solution components:

- [IBM® LinuxONE Emperor II](#)
- [IBM FlashSystem® 9100](#)
- [IBM Cloud™ Object Storage](#)
- [IBM Storwize® V5030](#)
- [IBM i2® Enterprise Insight Analysis](#)
- [IBM Security Guardium® Data Protection for Databases](#)
- [IBM Watson® Explorer](#)
- [IBM Cognos® Analytics](#)
- [IBM Watson Studio](#)
- [Red Hat Enterprise Linux](#)

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