STR-iCT
IBM i security and traceability

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IBM i

KHAN Nauman

- Ex-IBMer (20 years' experience) & founder of Blue-Channel (Blue for Big Blue !) in 2008
- Operational marketing for IBM Business Partners (BPs) and Start-Ups, "only" with IBM

FACQ-GUIRAUD Guilian

- Systems and Networks Engineer
- SSO and security implementer for I.GAYTE.IT

About Us

I.GAYTE.IT research & develop innovative IBM i security and modernization software solutions

A few words from Mr Dominique GAYTE, I.GAYTE.IT's CEO & IBM Champion.
With over 35 years' experience in securing IBM i servers and implementing SSOs on hundreds of IBM i partitions all over the world, we wanted to converge our experience with extensive customer feedback to design unique & high added value software solutions for IBM i clients to protect their IBM i investments within an ever-increasing hostile IT environment.

I.GAYTE.IT in two words

Ease of SSO deployment for IBM i

Security and traceability for IBM i

Services

Security and traceability challenges on IBM i

IBM i and security

- IBM i’s often have security built on 1990s principles
  - At the time, little to no networks
  - No internet
  - No hackers nor ransomwares
- But often at the heart of a company’s information system
  - 100% of the activity generally goes through its applications
    - Accounting
    - Stocks
    - Business management
    - Production
    - …
- They are therefore critical and do not have a suitable security configuration
- They are often excluded or overlooked by network security softwares (SIEM)

Traceability

- Maintaining a history of actions that have occurred
  - For events
  - For data
- At the heart of new standards
  - NIS2
  - DORA
  - RGPD

Me Cathie-Rosalie Joly - Lawyer

NIS2

Technical aspect, particularly with SOC/SIEMs

- Security Operations Center
- Security Information and Event Management

1. **Cyber threat detection**
    1. **SOC** : ensures continuous monitoring of systems, detection of abnormal behavior, and incident response
    2. **SIEM** : collects, correlates, and analyzes logs to identify threats in real time
2. **Incident management**
    1. **SIEM** : enables incident detection through alerts based on event correlations
    2. **SOC** : coordinates incident response, post-mortem analysis, and communication with ANSSI
3. **Risk assessment and management (classification and notification)**
    1. **SIEM** : provides useful data for risk analysis (frequency, severity, types of incidents)
    2. **SOC** : contributes to threat mapping and classification

Règlement DORA – Key elements

1. **IT Risk Management** – governance and organization, detection, response, and recovery

2. **Management, classification, and notification of IT-related incidents** – IT incident management processes, classification of IT-related incidents, notification of major IT incidents, and centralization of notifications for major IT incidents

3. **Digital operational resilience testing –** general requirements applicable to conducting digital operational resilience tests, testing of IT tools and systems, advanced testing of IT tools, systems, and processes based on threat-led penetration testing

4. **Management of risks related to third-party IT service providers –** key principles for effective management of risks related to third-party IT service providers, main contractual provisions, supervisory framework for critical third-party IT service providers, on-site inspections, continuous monitoring

5. **Information-sharing arrangements –** a framework for sharing information and intelligence on cyber threats

	Events to be notified	Timeframe	Receiving authority	Penalty
NIS2	**"Significant"** incidents affecting the availability, integrity, authenticity, or confidentiality of networks/systems, causing: • Severe operational disruption or financial losses • Material, physical, or moral damage to third parties	• **Initial early warning** without undue delay and in any case within 24 hours after becoming aware of the incident • Notification within 72 hours after becoming aware of the significant incident • Then final report within 1 month	ANSSI in France	• Essential entities: €10,000,000 or at least 2% of total worldwide annual turnover • Important entities: €7,000,000 or at least 1.4% of total worldwide annual turnover
DORA	**Major ICT-related incidents** in the financial sector (banks, insurance companies, critical ICT service providers)	• **Initial early warning** without undue delay and in any case no later than 24 hours after becoming aware of the incident and within 4 hours after its classification • Then an intermediate report within 72 hours • A final report when the incident is resolved: 1 month	ACPR & AMF in France	• Competent authorities have all necessary supervisory, investigative, and sanctioning powers • Member States may impose criminal and administrative penalties • The penalty amount, calculated from the date indicated in the penalty decision, may be up to 1% of the average daily worldwide turnover of the critical ICT third-party provider
GDPR	**Personal data breach** posing a risk to the rights and freedoms of individuals	• Within **72 hours** after becoming aware (initial notification possible, followed by additional information)	CNIL and, if high risk, the affected individuals	• €10,000,000 or at least 2% of total worldwide annual turnover • €20,000,000 or at least 4% of total worldwide annual turnover

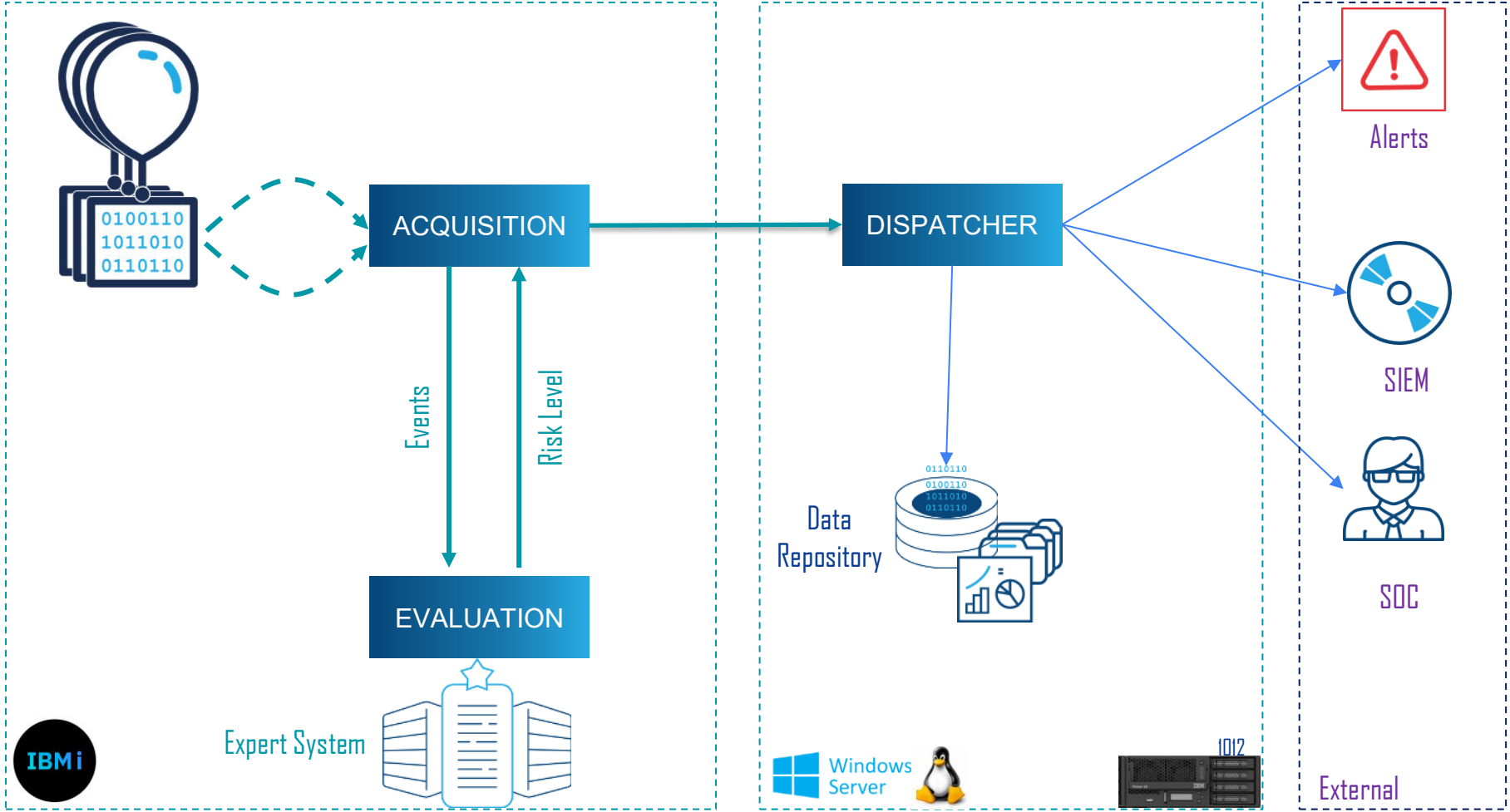
Control of service accounts

- During audits, we often observe that service accounts are not properly controlled.
- These are profiles used by client applications, remotely, to access the IBM i:
  - ODBC, JDBC
  - FTP
  - File Sharing (NetServer)
  - Web Services
- Profiles and passwords are often hard-coded in plain text!
  - And the profiles often have special privileges (*ALLOBJ!).
- Controlling these service accounts is essential!
  - When do external connections occur?
  - For what purpose?
  - With which profile?
  - Where is the password stored (in plain text)?
  - How can it be changed if it is compromised?
  - How can the password strength be improved (V7Rnext removal of level 0 or 1 passwords!)?
- Only traceability can help you see things clearly!

IBM i and traceability

- The IBM i is very talkative if you know how to listen to it
- It produces (or can produce) a massive amount of traceability data
- But
  - Not always simple to find
  - Not always simple to read (decrypt)
  - Not always simple to configure
- Rarely kept in a structured manner
  - It can take a lot of disk space
  - Information is not available when we need it
    - Log receivers deleted every day, or on the fly


STR-iCT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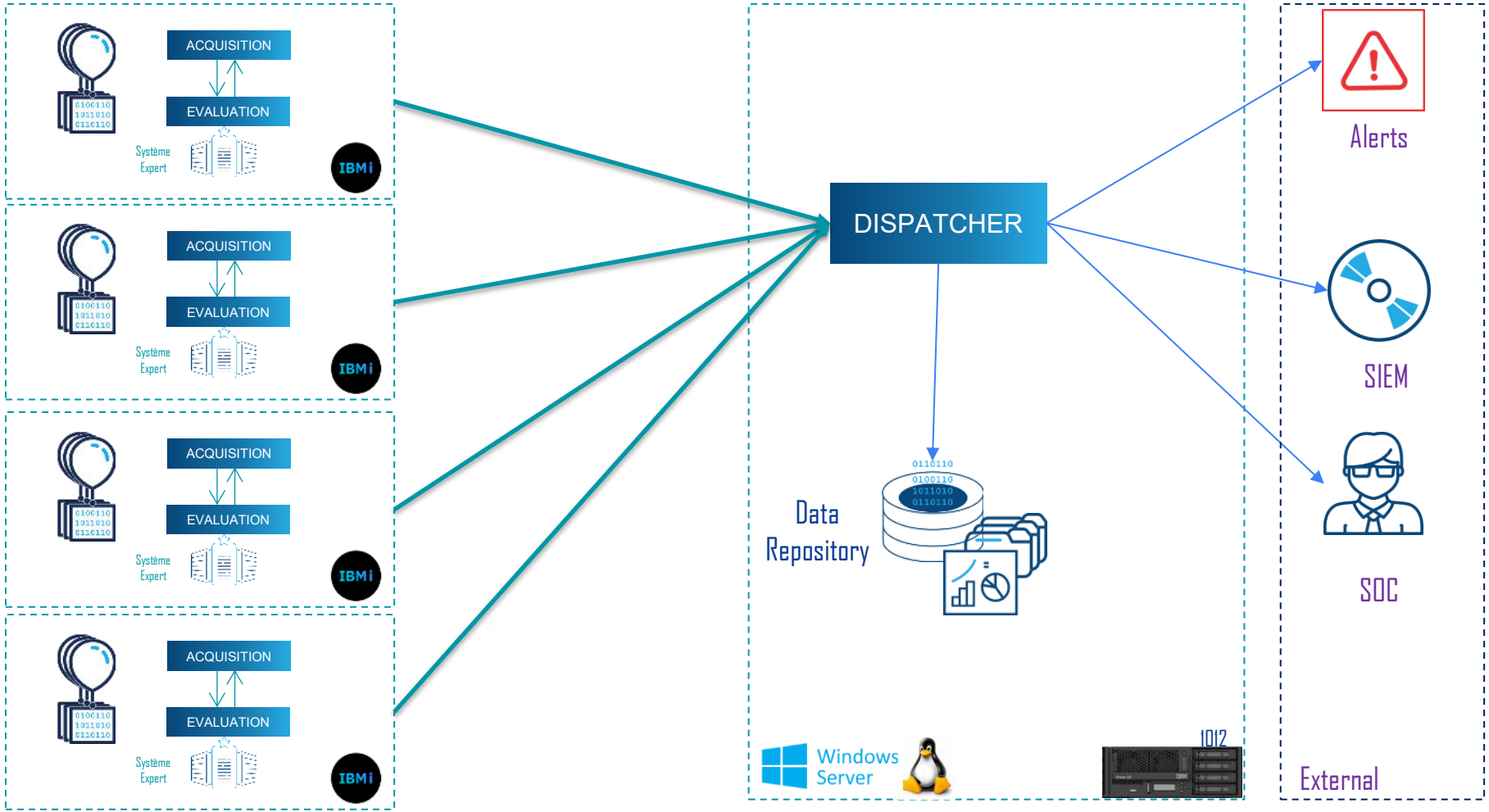
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IBMi
DISPATCHER
Data Repository
Windows Server
Alerts
SIEM
SOC
External

STR-iCT

- STR-iCT is a dedicated software to secure IBM i’s
- Detects events that are related to security and traceability
- A unique Expert System assesses the risk of each of these events
- Data is sent to a dispatcher that determines the actions to be carried out, according to the customer’s configuration
  - Archiving in a data repository, centralizing all the IBM i partitions (with a graphical consultation interface)
  - Alert trigger
  - Send to an external SIEM (Qradar, Sentinel…)
  - Transmit to a SOC (Security Operation Center)

Available probes : audit log journal

- Password error
- Access violation attempt
- Object deletion
- Socket connection (non existing IP port)
- Netserver password error
- SSO connections
- SST/DST : profiles, actions
- User profiles
- IFS/DLO object deletion
- Audit management
- System values management
- PTF
- Rights adoption
- Object management
- Object restoration
- Network attributes
- Commands

Available probes : other probes

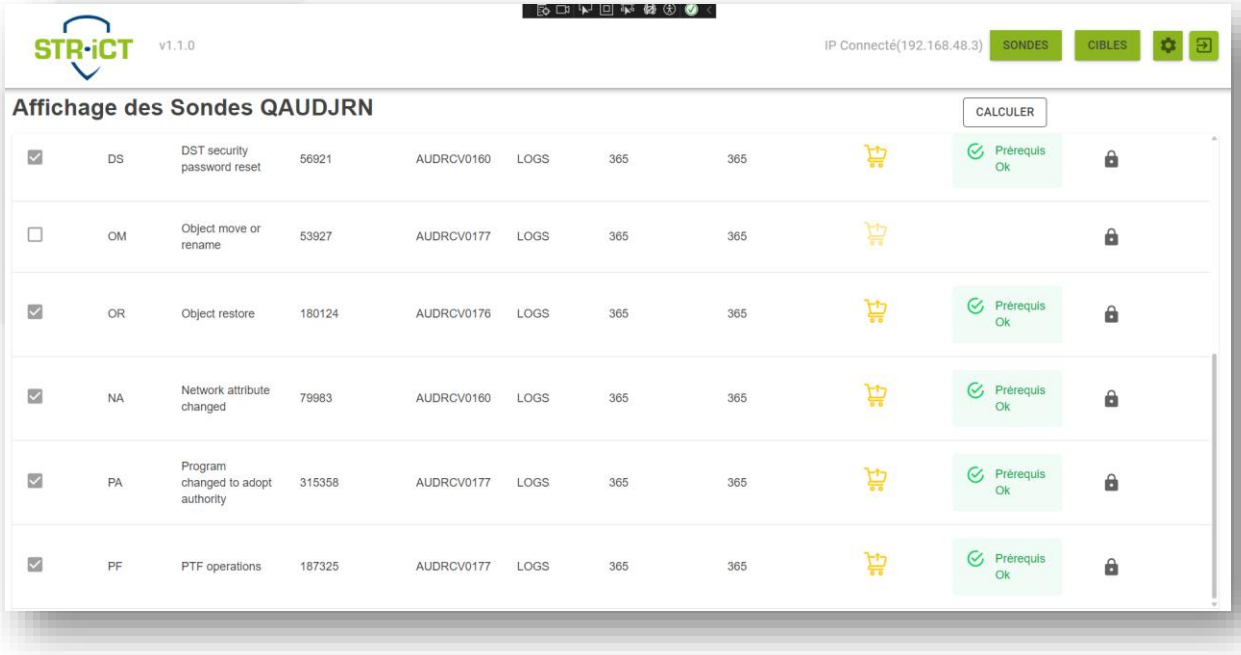
- Intrusion attempts detected by the IDS (Intrusion Detection System)
  - False positives management
- Exit points
  - FTP access
  - ODBC/JDBC access
  - IFS access
- Database traceability (Legacy)
  - Modification of areas of a file regardless of its origin
- Audit
  - Profiles
  - System values
  - Best practices
  - …
- Assure Security integration (PRECISELY ex CILASOFT)

The Expert System

- Objective: set the risk index induced by the event
- All our **experience**
- All our **cybersecurity knowledge**
- All cyber-attack mechanisms identified by our **honeypot** on the internet
  - Up to ~~30 000~~ ~~50 000~~ **100 000 attacks in one day**
  - A huge knowledge base of operating methods

DEMO - Probes configuration

- All the configuration is done graphically

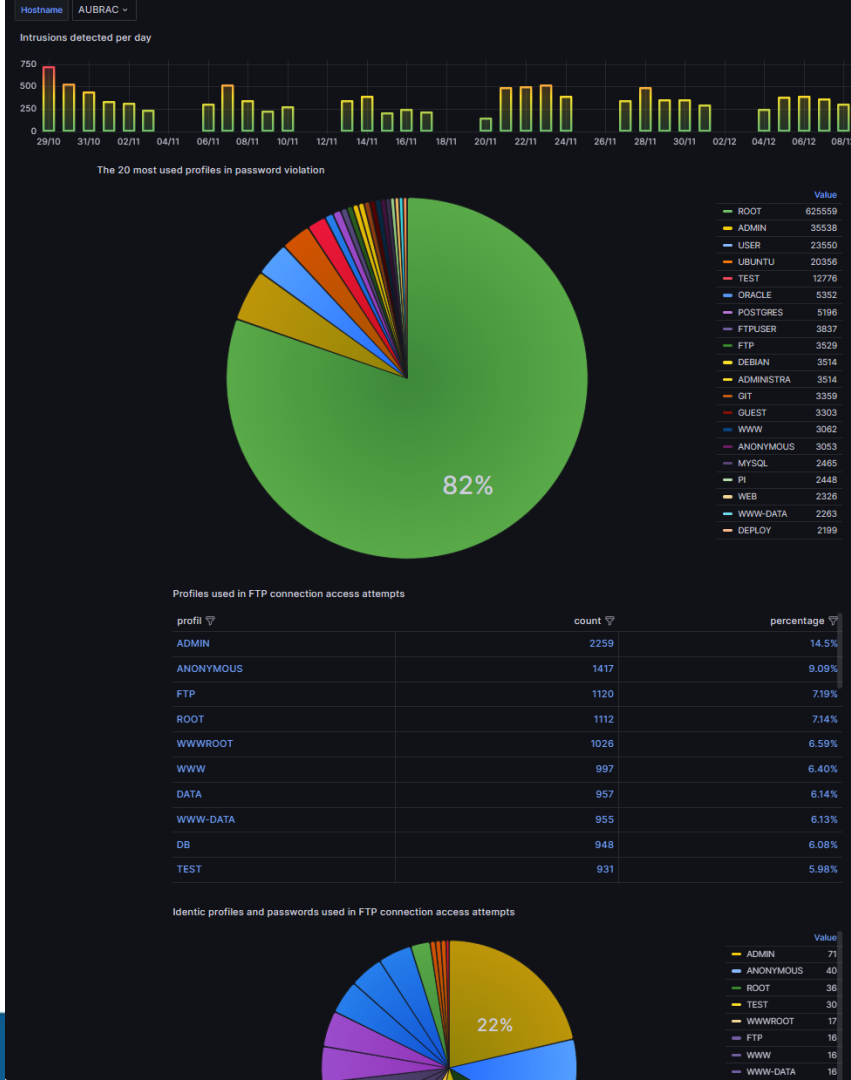


The dispatcher

- Receives data (Web Service)
- Depending on the configuration
  - Saves locally in a data repository (with a restitution graphical interface)
  - Sends to an external SIEM (Microsoft Sentinel, Elastic Search (ELK), IBM Qradar, SPLUNK…)
  - By Web Service or by Syslog
  - Generates alerts

DEMO - The data repository's graphical interface

- Based on Grafana
- Graphical, but with SQL queries possibilities
- Mutliple IBM i data agregation
- Easily adaptable



Are you SiEM or SIEM ?

- Security Information Event Manager
- SIEMs manage the security of entire network
  - But generaly not the IBM i !
- STR-iCT is a real SIEM in itself, dedicated to IBM i machines
  - Data acquisition, risk determination, alert, reporting
- SiEM : STR-iCT for IBM i Event Manager
- But STR-iCT also knows how to communicate with the other SIEMs on the market

Merci /
Thank you

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