NATO

OTAN

NATO Command, Control and Consultation Agency

Cyber Defence Data Exchange and Collaboration Infrastructure

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CAT 2 – Cyber Defence and Assured Information Sharing

NATO C3 AGENCY

Objectives of the CDXI

- **Improve Cyber Defence activities such as**
  - Patching Systems
  - Vulnerability Analysis
  - Intrusion Detection
  - Forensics
  - Red Teaming
- **Enable automated response**
  - Blocking ports, IP addresses
  - Shutting down vulnerable services
  - Quarantining compromised hosts/networks
- **Distribute the workload of maintaining Cyber Defence *"Reference Data"***

CDXI Reference Data

- **Data on the following key topics common to all Cyber Defence activities:**
  - Software (Operating systems and applications)
  - Hardware
  - Vulnerabilities
  - Malware
  - Fixes
  - Verification Tests (e.g. IDS signatures and VA tests)
  - Protocols
- **Nothing that is specific to an organization (no IP addresses, no incident data, etc.)**

Improve and Automate Cyber Defence

- **The CDXI can be seen as a service providing *Reference Data* to security products and custom applications**
- **Reference Data consists of:**
  - Pure enumerations on key topics common to all Cyber Defence activities
  - Relationships between elements in these topics
  - Supporting information and meta-data
- **For these objectives, the CDXI will provide an API through which *Reference Data* can be integrated into security products and custom applications**

Distributing the Workload

- **The CDXI must provide:**
  - a user interface to manage the data
  - collaboration tools to discuss problems with the data
  - version control of records so that "*many truths can coexist until the ultimate truth is found*"
- **The CDXI must make it easier for people to contribute Reference Data back to the community**
- **The CDXI must enable data mining by allowing users to develop custom classification schemes and relationships**

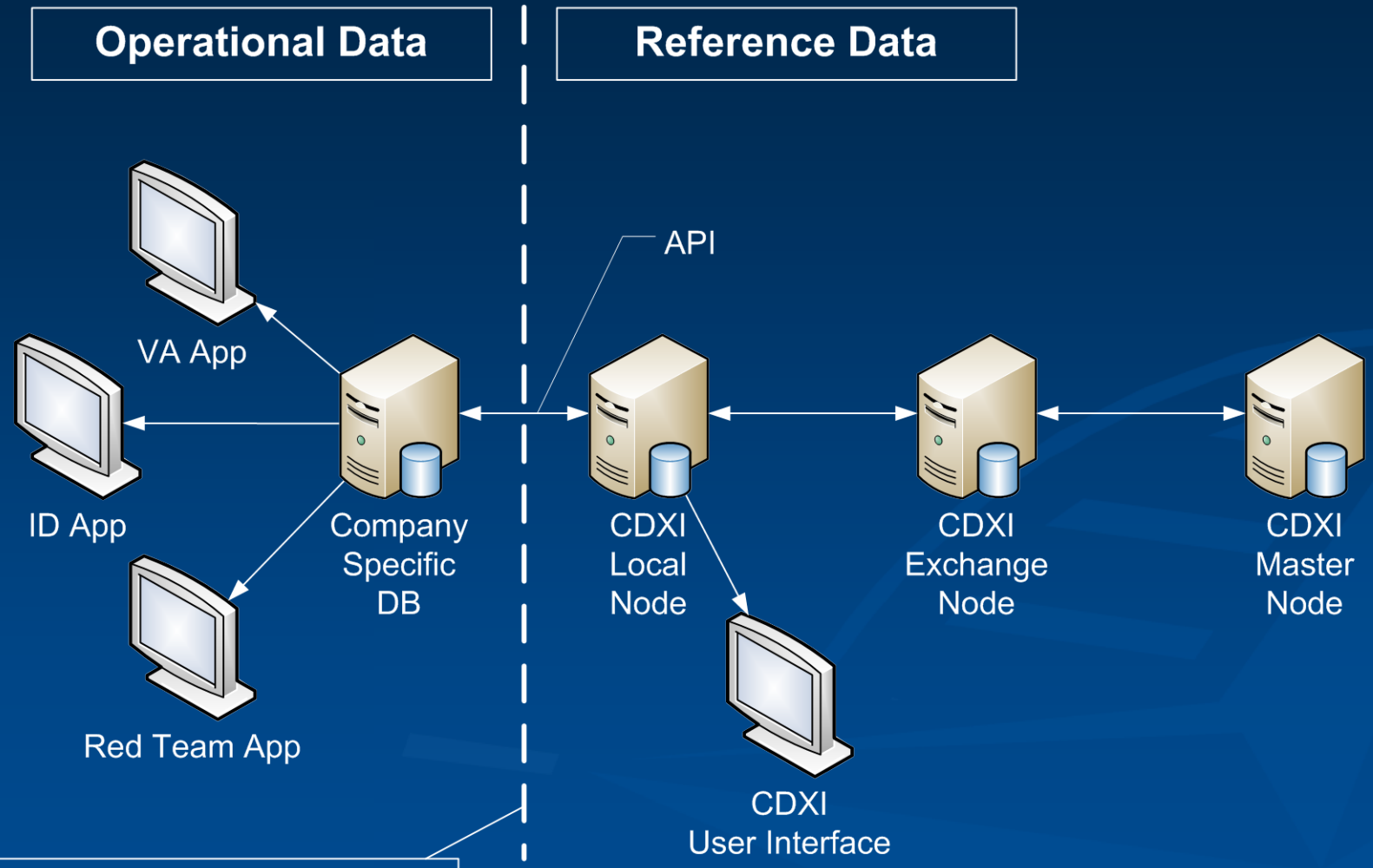
Automating Cyber Defence

- **Accuracy and integrity of the Reference Data is critical**
- **To ascertain the accuracy of Reference Data:**
  - The CDXI must provide the mechanism to develop and use custom “Quality Assurance” processes
- **To ensure integrity:**
  - The CDXI must allow for the cryptographic signing of Reference Data and QA records

Other Required Features

- **Granular access controls to allow for private data and controlled sharing within communities of interest**
- **Encryption of data to allow for commercial exploitation**
  - Feeds of reference data can be sold
  - Quality assurance can be sold
  - Data-mining can be outsourced

CDXI Schematic



CDXI Status

- **Concept has been in development for a number of years, including some prototyping**
- **Detailed NATO requirements and specifications to be completed in 2010**
- **Initial prototype planned for development in 2011**
- **Currently seeking to establish contact with interested parties to:**
  - Share our results where possible
  - Obtain additional input from various communities
  - Perhaps collaborate on the prototype?

Conclusion

- **The CDXI will be a service that provides Reference Data directly into security applications**
- **The CDXI will be sort of a Wikipedia of Reference data, but with the addition of:**
  - Structure to enable machine processing
  - Trust to enable automation
  - Access Controls to control sharing
  - Support for Commercial Exploitation

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