Freelance and Cyber Security
How to implement "Defense In-Depth Concept" in cyber strategies with Freelance DCS system

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ABB understands the customer's need to maintain a secure and reliable control environment – with minimal time and effort. Cyber security is an important aspect of any comprehensive security plan, especially at a time when the number of active IT viruses is on the rise and targeted cyber-attacks are rapidly increasing.

The damage caused by these viruses and attacks have become more crippling, given their ever-growing sophistication. Industrial control systems have been the target of such attacks in the past – and will continue to be so in the near term.

Control systems are the "command and control centers" of industrial installations. As such, a variety of groups find them to be "interesting" targets. **Control systems should be protected.**

However, just as there is no 100% security in the real world, a 100% security in the cyber world is simply not attainable. What can be done instead is to have a solid cyber-security strategy in place consisting of several layers of defense to protect against attacks and to minimize disruptions to the control system and the plant in case of attacks.

In addition to building many security features into Freelance, ABB actively participates in several major control system security standards committees. These standards are designed to increase the integrity and confidentiality of all system functions and help to prevent unauthorized access to control systems.

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Security is embedded in the entire product development process of Freelance. Using the "defense in depth" concept, the Freelance distributed control system (DCS) offers a host of security features:

ABB's Device Security Assurance Center

The Device Security Assurance Center performs device robustness testing on hardware products such as controllers, communication interfaces and field devices. This product-independent facility utilizes state-of-the-art security testing tools and a multi-testing approach with defined policies to deliver the most secure solutions possible across all ABB products.

Secure architecture using security zones

One way to protect the Freelance control network layer is by isolating the control network and Freelance stations. If complete isolation is not possible, the DCS network can be protected by using a demilitarized zone or DMZ (see Figure 1).

Figure 2 shows how the network between two firewalls forms a DMZ. The proxy server in the DMZ represents the servers in the automation system that is accessible from the corporate network. No direct connection is possible.
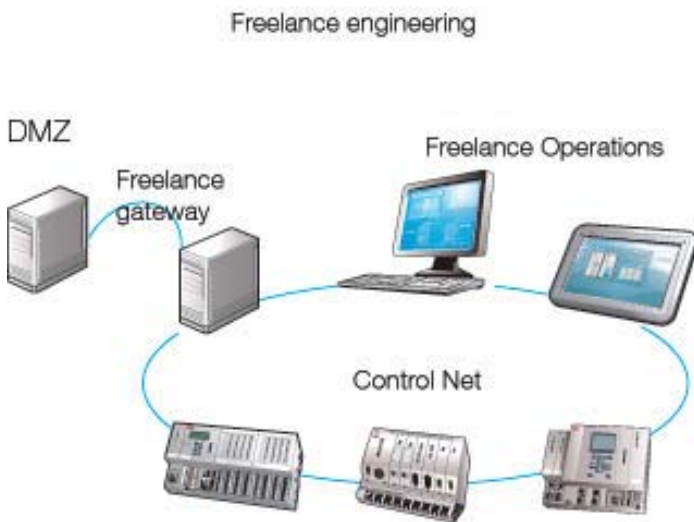
Other precautionary measures include limiting access to the DCS and hardening all engineering, operator and server stations. Remote access to the DCS can also be permitted via secure connections only, such as ABB's Remote Diagnostic Service (RDS) which offers a secure connection with authentication levels (see Figure 3).

User authentication and access control

– User Authentication based on proprietary implementation, on top of Windows Authentication. In production mode, Freelance Operations is active by default. Access to the system is via user authentication only.
– Access control based on user, role and location; Set on display level.
– Operator logs are records of all user actions in connection with controlling the process by recording username, time, action performed, and values before and after the action.
– With "Security Lock," Freelance provides a unique user management tool for Freelance Engineering and Freelance Operations. It allows up to 1,000 users and 16 user groups. Another security feature requires operators to key in a password to access Microsoft® accounts. This further safeguards the system against unauthorized access.
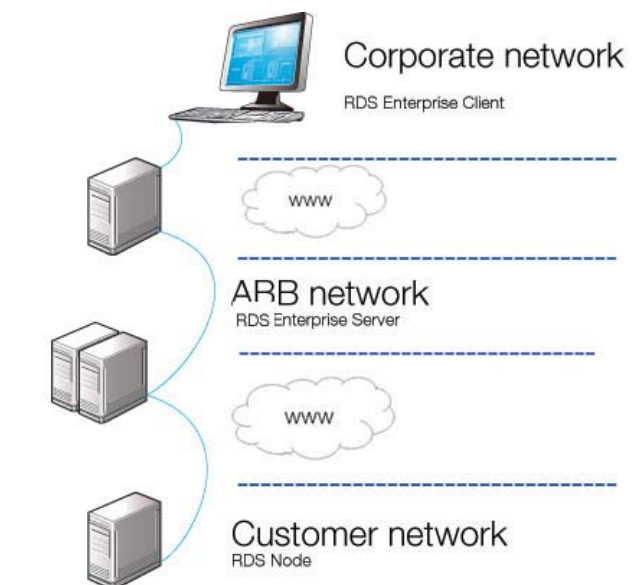
Freelance engineering

Figure 1: How to protect a DCS network using a demilitarized zone (DMZ).
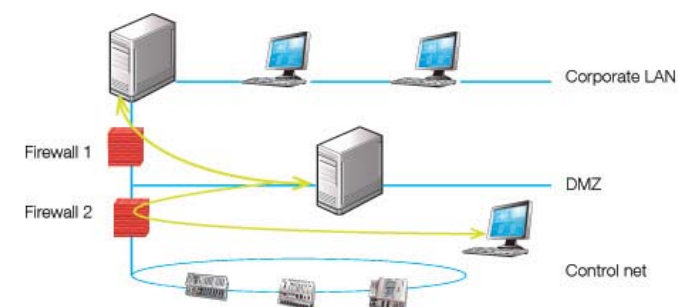
Figure 2: The network between the two firewalls forms a DMZ.

Figure 3: Remote access to the DCS can be permitted via secure connections only such as ABB's Remote Diagnostics Services (RDS).

Backup/Restore functions

Freelance features an option for an automatic backup of the project application file to a station on the network. This could be any operator station, Trendserver or OPC Server station, as long as it has a station ID within the Freelance project configuration. This way you make sure, that whenever one does changes in the Engineering tool, they are backed up.

If someone hacks into the network and kills or alters the controller application, one can always restore the latest backup (manually) and overwrite the changes with the original application.

Malware protection solutions

To ensure continuous protection, Freelance systems regularly check for updates in the anti-virus scanner software. McAfee® and Symantec® usually release several updates at regular intervals in a week. ABB verifies these updates as soon as they are available to ensure that the anti-virus scanner software does not treat any legal ABB code as "false positive." Daily verification reports can be accessed by qualified users via ABB SolutionsBank.

Microsoft Patch Management solutions

All Microsoft security updates are evaluated for compatibility with Freelance. ABB conducts compatibility tests for all affected ABB systems within 72 hours of update release. Validated patches and documentation can be accessed by qualified users via ABB SolutionsBank.

Automation Sentinel for Freelance users

The ABB Automation Sentinel program offers many life cycle services. The following are the core inclusions of agreements:
– Maintenance includes patches, service packs and roll-ups, service packs and other software maintenance items.
– Upgrades to new versions are included at no charge.
– Telephone technical support is usually packaged with Automation Sentinel and is delivered by the local service organization as part of a service contract.
– Automation Sentinel subscribers have exclusive access to the ABB network of Control System experts and specialists.
– The SolutionsBank is an online support tool that enables self-service. It includes technical information, documentation, software downloads, problem work-arounds, user forums and other features.
– Group subscriptions are available to Automation Sentinel subscribers who run multiple control systems. It provides better management and synchronization and is priced lower than buying the subscriptions individually.

– Notifications are automatically generated for alerts, control system news, software updates and new releases. This service also prompts users when it is time to renew an Automation Sentinel subscription.
– MyControlSystem is a secure Web platform where users can find important information about their system. It includes detailed information about the software, a health status, reports, alerts and service contact information.

Web Coach is a series of training videos for several ABB control systems, complete with live Q & A sessions.

Automation Sentinel subscribers are able to purchase a wide variety of advanced services such as Web Tech Talks, System Benchmark, System Fingerprints, Expert workshops and User Certification at an Advantageous price.

Lastly, Automation Sentinel subscribers receive a discount on all spare parts and spare parts service.

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