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NERC Lessons Learned and Alerts

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Link: Lessons Learned (nerc.com)

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NERC Lessons Learned

EMS pausing during database deployment

Initial Distribution: August 22, 2022

Interest Groups:	TO, TOP, RC, BA
Problem Statement:	Several entities experienced Energy management system (EMS) outage during EMS database deployment, all from the same vendor. Three cases were reported, one concerned with data base promotion which paused the databases due to a critical process that was not monitored. The second event was cause by manually terminating database promotion by a staff which paused SCADA and Front end server (FES) resulting in loss of control centre functionality. The third case was for an entity when the database promotion was paused by design and when it wanted to resume further steps it was not able to unpause a critical database that consisted SCADA data. All these cases had no alarms or notifications during the process.
Lessons Learned :	Entities should work with the EMS vendors to implement alarms/notifications during database promotions.
	Entities should build and implement a list of checks to ensure all processes related to the database promotion are healthy and in place before the database promotion starts.
	Entities should test pre-effort checks, promotion steps and post-effort checks in a non-production environment prior to promotion to production environment.
	Entities should build and implement a list of checks to review functionality after the database promotion to ensure all critical functionality is confirmed or issues identified quickly.

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NERC Lessons Learned

Loss of Energy Management System Functionality due to Server Resource Deadlock

Initial Distribution: September 28, 2022

Interest Groups:	RC, BA, TOP
Problem Statement:	An antivirus software engine installed in an Energy management system production server had a severe flaw that affected servers to deadlock resources and become unresponsive making the EMS unavailable to operators. This was not identified in test environment due to the difference in the Input/output (I/O) workload on servers in production environment. Deadlocks only appear on live production servers that have extremely high file I/O. As a result, the entity was not able to calculate Area Control Error, Control performance standards or implement automatic generation control. The entities State estimator and real time contingency analysis were not solving and the real-time monitoring and alarming was not functioning on the EMS.
Lessons Learned :	The vendor misdiagnosed the event when it happened for the first time, vendor assertions should be tested more rigorously before concluding the root cause.
	The Incident Response Team (IRT) had a shared physical space in a central “war room” where work was coordinated, information shared, sub-teams chartered and tasks given for complex troubleshooting. Having the war room in system operations control center gave a direct link for the IRT to system operators which allowed the IRT to be notified any situation change providing more visibility.
	The event required responders to use multiple disparate tools such as EMS failover tools, windows log, EMS logs, patch reports and performance tools to build a picture of the situation. A central incident response toolkit and scenario based training well prepared the incident responders to act efficiently.
	The IRT quarantined the impacted servers to test theories, determine the root cause and conduct forensic analysis.

NERC Alert

Cold weather preparation for extreme weather events - II

Initial Distribution: September 12, 2022

Entity Distribution:	BA, RC, TOP, GO
Problem Statement:	NERC issued an Extreme weather events alert to understand how Reliability coordinators (RC), Balancing Authorities (BA), Transmission Operators (TOPs) and Generator Owners (GOs) plan for progress towards mitigating risk for the upcoming winter and beyond, before the cold weather reliability standards are enforceable in April 1, 2023. This Level 2, NERC alert requires NERC registered entities to acknowledge receipt of the advisory within the NERC alert system, respond to question and recommendations in the NERC alert, review and complete the reporting instruction in the NERC alert.
Recommendations:	RC, BA, TOP Should create seasonal operating plan with emphasis on extreme cold weather
	GO provide current seasonal operating plan, generator availability, fuel supply, forecast and actual unit de-rate during extreme weather events
	RC, BA, TOP review manual and automatic load shedding plans
	GO with dual fuel capability should conduct dual fuel assessments, review weatherization plans and implement freeze protection measures
	TOP to assess weatherization plans and implement freeze protection measures
	RC, BA, TOP to review applicable assistance agreements to ensure they de-risk the potential for reliability issues

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