**WGQ EDM and RMQ IR/TEIS Work Paper**

05/21/20

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sandia Issue1** | **Sandia Report2** | **Issue Summary** | **NAESB Response** | **WGQ Standards created/modified in response to this issue** | **RMQ Standards created/modified in response to this issue** |
| 13 | BusOps | Consider options to mitigate replay and amplification attacks | TBD |  |  |
| 5 | Add | Whitelisting | TBD |  |  |
|  |  | Refnum | TBD |  |  |

1 Not all identified issues were relevant to WGQ/RMQ, so the issue numbering contains gaps.

2 BusOps = Business Operations Practices and Standards Report; Add = Addendum Report

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 13. | Business Operations Practices and Standards Report – Section 6.1.6 Continued Use of Different Security Paradigms (Pages 13 – 15)  (Table of Contents Section 6.2.3 Gas and Electric Industry Interactions) | Finally, IET business process as currently implemented may be vulnerable to both replay[[1]](#footnote-1) and amplification[[2]](#footnote-2) attacks. Based on the assessment teams review of the transactional process these two attacks were immediately identified as attacks of concern…  Note that this attack is feasible even with payloads that are encrypted with foreign, untrusted keys, or with payloads that are filled with garbage bits. Two basic approaches exist to help eliminate this kind of amplification attack. The first strategy involves making error notification messages to be as small as possible and smaller than the original requests. This way, an attacker using this mechanism will not be able to amplify the volume of data sent to a target; rather, as the response message is smaller, the overall denial-of-service risk will be correspondingly lowered. The second strategy uses rate limiting to ensure that error messages are sent at a rate that is lower than expected message processing speeds. This way, even if the responses are larger than the adversary-submitted requests, they will not be sent to the target at a rate that would strain target computational resources. | The subcommittees should consider standard(s) to address mitigation of replay and amplification attacks as aligned with recommended strategies | Jointly between WGQ EDM and RMQ IR/TEIS  WEQ Cybersecurity Subcommittee |  |
| 5. | Addendum Report Section 2.3.2 – Ukrainian Power Grid Attack (Pages 23 – 25) | A relatively static communications environment, such as the NAESB-responsible systems, should definitely be considered for whitelisting. However, how whitelisting is implemented will be a hardware-specific implementation and thus outside NAESB standards scope. In consideration of the whitelisting ROI are several factors:   * Some related information must be made publicly available and this must not be blocked by the whitelisting implementation. * Since NAESB standards do not specify the environment there could be negative impacts to non-EDI applications which are hosted on the same servers.   The whitelisting decision must consider the support environment. The point being that if a legitimate transaction is blocked by the whitelisting, how quickly could the error be corrected given coverage and capability of the support team? | Subcommittees should consider standard(s) to incorporate whitelisting as a best practice which should be followed | Jointly between WGQ EDM and RMQ IR/TEIS | FAQ of Appendix B in IET Manual:  **Q11: Does NAESB require whitelisting?**  A: NAESB Internet ET participants are encouraged to use whitelisting in EDI/EDM and FF/EDM transactions. Whitelisting should not be considered for Customer Activities or Information Postings web sites. |

1. *Replay Attacks*, retrieved on June 10, 2019, from <https://docs.microsoft.com/en-us/dotnet/framework/wcf/feature-details/replay-attacks> [↑](#footnote-ref-1)
2. *DNS Amplification Attacks*, retrieved on June 10, 2019, from <https://www.us-cert.gov/ncas/alerts/TA13-088A> [↑](#footnote-ref-2)