



Contents

| | |
|--------------------------|---|
| CVSS v3 Equation | 2 |
| 1.1 Base | 2 |
| 1.2 Temporal | 2 |
| 1.3 Environmental | 2 |
| 1.4 Metrics Levels | 3 |
| 2. Appendix | 6 |
| 2.1 Abbreviations..... | 6 |

CVSS v3 Equation

1.1 Base

The base metrics group captures the characteristics of vulnerability that are constant with time and across user environments. Base metrics provide a CVSS score on a scale of zero (0) to ten (10) based on base metrics values.

The Base Score is a function of Impact and Exploitability Sub score:

| Base Score | |
|--------------------------------------|---|
| <i>If (Impact Sub score =< 0)</i> | <i>0 Else,</i> |
| <i>Scope Unchanged</i> | $RoundUp_1 (Minimum [(Impact + Exploitability), 10])$ |
| <i>Scope Changed</i> | $RoundUp_1 (Minimum [1.08 \times (Impact + Exploitability), 10])$ |

| Impact Sub score | |
|------------------------|---|
| <i>Scope Unchanged</i> | $6.42 \times ISC_{Base}$ |
| <i>Scope Changed</i> | $7.52 \times [ISC_{Base} - 0.029] - 3.25 \times [ISC_{Base} - 0.02]^{15}$ |

Where $ISC_{Base} = 1 - [(1 - Impact_{conf}) \times (1 - Impact_{integ}) \times (1 - Impact_{avail})]$

| Exploitability Sub score | |
|--|--|
| $8.22 \times Attack\ Vector \times Attack\ Complexity \times Privilege\ Required \times User\ Interaction$ | |

1.2 Temporal

The Temporal metrics that measures the current state of exploit techniques or code availability.

| Temporal Score | |
|--|--|
| $RoundUp_1 (Base\ Score \times Exploitability_{Temporal} \times Remediation\ Level \times Report\ Confidence)$ | |

1.3 Environmental

These metrics enable the analyst to customize the CVSS score depending on the importance of the affected IT asset to a user's organization, measured in terms of complimentary/alternated security controls in place, confidentiality, integrity, and availability. The metrics are modified equivalent of base metrics and are assigned metrics value based on the component placement in organization infrastructure.

| Environmental Score | |
|---|--|
| <i>If (Modified Impact Sub score =< 0)</i> | <i>0 Else,</i> |
| <i>Modified Scope Unchanged</i> | $RoundUp_1(\text{Minimum} [(M. Impact + M. Exploitability) \times Exploitability_{Temporal} \times Remediation Level \times Report Confidence, 10])$ |
| <i>Modified Scope Changed</i> | $RoundUp_1(\text{Minimum} [1.08 \times (M. Impact + M. Exploitability) \times Exploitability_{Temporal} \times Remediation Level \times Report Confidence, 10])$ |

| Modified Impact Sub score | |
|---------------------------------|---|
| <i>Modified Scope Unchanged</i> | $6.42 \times [ISC_{Modified}]$ |
| <i>Modified Scope Changed</i> | $7.52 \times [ISC_{Modified} - 0.029] - 3.25 \times [ISC_{Modified} - 0.02]^{15}$ |

Where $ISC_{Modified} = \text{Minimum} [1 - (1 - M. I_{conf} \times CR) \times (1 - M. I_{integ} \times IR) \times (1 - M. I_{avail} \times AR), 0.915]$

| Modified Exploitability Sub score | |
|--|--|
| $8.22 \times M. Attack Vector \times M. Attack Complexity \times M. Privilege Required \times M. User Interaction$ | |

1.4 Metrics Levels

| Attack Vector / Modified Attack Vector | |
|--|------------|
| <i>Network</i> | <i>.85</i> |
| <i>Adjacent Network</i> | <i>.62</i> |
| <i>Local</i> | <i>.55</i> |
| <i>Physical</i> | <i>.2</i> |

| Attack Complexity / Modified Attack Complexity | |
|--|-----|
| <i>Low</i> | .77 |
| <i>High</i> | .44 |

| Privilege Required / Modified Privilege Required | |
|--|--|
| <i>None</i> | .85 |
| <i>Low</i> | .62 (.68 if scope/modified scope is changed) |
| <i>High</i> | .27 (.50 if scope/modified scope is changed) |

| User Interaction / Modified User Interaction | |
|--|-----|
| <i>Not Required</i> | .85 |
| <i>Required</i> | .62 |

| Confidentiality Impact / Integrity Impact/ Availability Impact / Modified Confidentiality Impact / Modified Integrity Impact / Modified Availability Impact | |
|---|------|
| <i>High</i> | 0.56 |
| <i>Low</i> | .22 |
| <i>None</i> | 0 |

| Exploitability | |
|-------------------------|-----|
| <i>Unproven</i> | .91 |
| <i>Proof of Concept</i> | .94 |
| <i>Functional</i> | .97 |
| <i>High</i> | 1 |
| <i>Not Defined</i> | 1 |

| Remediation Level | |
|----------------------|-----|
| <i>Official Fix</i> | .95 |
| <i>Temporary Fix</i> | .96 |
| <i>Workaround</i> | .97 |
| <i>Unavailable</i> | 1 |
| <i>Not Defined</i> | 1 |

| Report Confidence | |
|--------------------|-----|
| <i>Unknown</i> | .92 |
| <i>Reasonable</i> | .96 |
| <i>Confirmed</i> | 1 |
| <i>Not defined</i> | 1 |

| Security Requirements – Confidentiality Requirements (CR)/ Integrity Requirements(IR)/ Availability Requirements(AR) | |
|--|-----|
| <i>Low</i> | 0.5 |
| <i>Medium</i> | 1.0 |
| <i>High</i> | 1.5 |
| <i>Not Defined</i> | 1 |

2. Appendix

2.1 Abbreviations

| Abbreviation | Term |
|-------------------------------|--|
| <i>Impact_{conf}</i> | Confidentiality Impact (Base metric) |
| <i>Impact_{Integ}</i> | Integrity Impact (Base metric) |
| <i>Impact_{Avail}</i> | Availability Impact (Base metric) |
| <i>RoundUp₁</i> | Round up to the first decimal place E.g., 3.822 will be rounded off to 3.9 |
| <i>M. Impact</i> | Modified Impact (Environmental metric) |
| <i>M. Exploitability</i> | Modified Exploitability (Environmental metric) |
| <i>M. I_{conf}</i> | Modified Confidentiality Impact (Environmental metric) |
| <i>M. I_{Integ}</i> | Modified Integrity Impact (Environmental metric) |
| <i>M. I_{Avail}</i> | Modified Availability Impact (Environmental metric) |
| <i>CR</i> | Confidentiality Requirement (Environmental metric) |
| <i>IR</i> | Integrity Requirement (Environmental metric) |
| <i>AR</i> | Availability Requirement (Environmental metric) |