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**CMVP Approved Sensitive Security
Parameter Generation and
Establishment Methods:**
CMVP Validation Authority Updates to ISO/IEC 24759

Kim Schaffer

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<https://doi.org/10.6028/NIST.SP.800-140Dr1-draft>

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Draft NIST Special Publication 800-140D
Revision 1

**CMVP Approved Sensitive Security
Parameter Generation and
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CMVP Validation Authority Updates to ISO/IEC 24759

Kim Schaffer
*Computer Security Division
Information Technology Laboratory*

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90

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101

Abstract

102 NIST Special Publication (SP) 800-140D replaces the approved sensitive security parameter
103 generation and establishment methods of ISO/IEC 19790 Annex D. As a validation authority, the
104 Cryptographic Module Validation Program (CMVP) may supersede this Annex in its entirety.
105 This document supersedes ISO/IEC 19790 Annex D and ISO/IEC 24759 paragraph 6.16.

106

Keywords

107 Cryptographic Module Validation Program; CMVP; FIPS 140 testing; FIPS 140-3; ISO/IEC
108 19790; ISO/IEC 24759; sensitive security parameter establishment methods; sensitive security
109 parameter generation; testing requirement; vendor evidence; vendor documentation.

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Audience

111 This document is focused toward the vendors, testing labs, and CMVP for the purpose of
112 addressing issues in cryptographic module testing.

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131 1 Scope

132 This document specifies the Cryptographic Module Validation Program (CMVP) approved
133 sensitive security parameter generation and establishment methods and supersedes those
134 specified in ISO/IEC 19790 Annex D and ISO/IEC 24759 paragraph 6.16.

135 2 Normative references

136 This section identifies the normative references cited as ISO/IEC 19790 and ISO/IEC 24759. The
137 specific editions to be used are ISO/IEC 19790:2012 and ISO/IEC 24759:2017. Please note that
138 the version 19790:2012 referenced here includes the corrections made in 2015.

139 National Institute of Standards and Technology (2019) *Security Requirements for*
140 *Cryptographic Modules*. (U.S. Department of Commerce, Washington, DC), Federal
141 Information Processing Standards Publication (FIPS) 140-3.
142 <https://doi.org/10.6028/NIST.FIPS.140-3>

143 3 Terms and definitions

144 The following terms and definitions supersede or are in addition to ISO/IEC 19790 and ISO/IEC
145 24759.

146 *None at this time*

147 4 Symbols and abbreviated terms

148 The following symbols and abbreviated terms supersede or are in addition to ISO/IEC 19790 and
149 ISO/IEC 24759 throughout this document:

150	CCCS	Canadian Centre for Cyber Security
151	CMVP	Cryptographic Module Validation Program
152	CSD	Computer Security Division
153	CSTL	Cryptographic and Security Testing Laboratory
154	FIPS	Federal Information Processing Standard
155	FISMA	Federal Information Security Management/Modernization Act
156	NIST	National Institute of Standards and Technology
157	SP 800-XXX	NIST Special Publication 800 series document

158 **5 Document organization**

159 **5.1 General**

160 Section 6 of this document replaces the approved sensitive security parameter generation and
161 establishment methods of ISO/IEC 19790 Annex D and ISO/IEC 24759 paragraph 6.16.

162 **5.2 Modifications**

163 Modifications will follow a similar format to that used in ISO/IEC 24759. For additions to test
164 requirements, new Test Evidence (TEs) or Vendor Evidence (VEs) will be listed by increasing
165 the “sequence_number.” Modifications can include a combination of additions using underline
166 and deletions using ~~striketrough~~. If no changes are required, the paragraph will indicate “No
167 change.”

168 **6 CMVP-approved sensitive security parameter generation and establishment** 169 **requirements**

170 **6.1 Purpose**

171 This document identifies CMVP-approved sensitive security parameter generation and
172 establishment methods. It precludes the use of all other sensitive security parameter generation
173 and establishment methods.

174 **6.2 Sensitive security parameter generation and establishment methods**

175 **6.2.1 Transitions**

176 Barker EB, Roginsky AL (2019) *Transitioning the Use of Cryptographic Algorithms and*
177 *Key Lengths*. (National Institute of Standards and Technology, Gaithersburg, MD), NIST
178 Special Publication (SP) 800-131A, Rev. 2. <https://doi.org/10.6028/NIST.SP.800-131Ar2>

- 179 • Sections relevant to this Annex: 1, 5, 6, 7, and 8.

180 **6.2.2 Key Establishment Techniques**

- 181 1. Key establishment techniques allowed in the approved mode with appropriate restrictions
182 are listed in FIPS 140-3 [Implementation Guidance](#) Section D.A.
 - 183 2. National Institute of Standards and Technology (2013) Digital Signature Standard (DSS).
184 (U.S. Department of Commerce, Washington, DC), Federal Information Processing
185 Standards Publication (FIPS) 186-4. <https://doi.org/10.6028/NIST.FIPS.186-4>
- 186 • DSA, RSA, and ECDSA.

- 187 **Note.** For the purposes of the key establishment techniques, the Digital Signature
188 Standard is only used to define the domain parameters and the (private, public) key-
189 pair generation.
- 190 3. Barker EB, Chen L, Roginsky AL, Vassilev A, Davis R (2018) *Recommendation for*
191 *Pair-Wise Key-Establishment Schemes Using Discrete Logarithm Cryptography*.
192 (National Institute of Standards and Technology, Gaithersburg, MD), NIST Special
193 Publication (SP) 800-56A, Rev. 3. <https://doi.org/10.6028/NIST.SP.800-56Ar3>
- 194 4. Barker EB, Chen L, Roginsky AL, Vassilev A, Davis R, Simon S (2019)
195 *Recommendation for Pair-Wise Key-Establishment Using Integer Factorization*
196 *Cryptography*. (National Institute of Standards and Technology, Gaithersburg, MD),
197 NIST Special Publication (SP) 800-56B, Rev. 2. [https://doi.org/10.6028/NIST.SP.800-](https://doi.org/10.6028/NIST.SP.800-56Br2)
198 [56Br2](https://doi.org/10.6028/NIST.SP.800-56Br2)
- 199 5. Chen L (2009) *Recommendation for Key Derivation Using Pseudorandom Functions*
200 *(Revised)*. (National Institute of Standards and Technology, Gaithersburg, MD), NIST
201 Special Publication (SP) 800-108, Revised. <https://doi.org/10.6028/NIST.SP.800-108>
- 202 6. Sönmez Turan M, Barker EB, Burr WE, Chen L (2010) *Recommendation for Password-*
203 *Based Key Derivation: Part 1: Storage Applications*. (National Institute of Standards and
204 Technology, Gaithersburg, MD), NIST Special Publication (SP) 800-132.
205 <https://doi.org/10.6028/NIST.SP.800-132>
- 206 7. Dang QH (2011) *Recommendation for Existing Application-Specific Key Derivation*
207 *Functions*. (National Institute of Standards and Technology, Gaithersburg, MD), NIST
208 Special Publication (SP) 800-135, Rev. 1. <https://doi.org/10.6028/NIST.SP.800-135r1>
- 209 8. Rescorla E (2018) *The Transport Layer Security (TLS) Protocol Version 1.3*, Section 7.1.
210 (Internet Engineering Task Force (IETF)), IETF Request for Comments (RFC) 8446,
211 August 2018. <https://tools.ietf.org/html/rfc8446#section-7.1>
- 212 9. Barker EB, Chen L, Davis R (2020) *Recommendation for Key-Derivation Methods in*
213 *Key-Establishment Schemes*. (National Institute of Standards and Technology,
214 Gaithersburg, MD), NIST Special Publication (SP) 800-56C, Rev. 2.
215 <https://doi.org/10.6028/NIST.SP.800-56Cr2>
- 216 10. Barker EB, Chen L, Davis R (2018) *Recommendation for Key-Derivation Methods in*
217 *Key-Establishment Schemes*. (National Institute of Standards and Technology,
218 Gaithersburg, MD), NIST Special Publication (SP) 800-56C, Rev. 1.
219 <https://doi.org/10.6028/NIST.SP.800-56Cr1>
- 220 11. Dworkin MJ (2012) *Recommendation for Block Cipher Modes of Operation: Methods for*
221 *Key Wrapping*. (National Institute of Standards and Technology, Gaithersburg, MD),
222 NIST Special Publication (SP) 800-38F. <https://doi.org/10.6028/NIST.SP.800-38F>

- 223 12. Barker EB, Roginsky AL, Davis R (2020) *Recommendation for Cryptographic Key*
224 *Generation*. (National Institute of Standards and Technology, Gaithersburg, MD), NIST
225 Special Publication (SP) 800-133, Rev. 2. <https://doi.org/10.6028/NIST.SP.800-133r2>
- 226 13. Barker EB, Kelsey J (2015) *Recommendation for Random Number Generation Using*
227 *Deterministic Random Bit Generators*. (National Institute of Standards and Technology,
228 Gaithersburg, MD), NIST Special Publication (SP) 800-90A, Rev. 1.
229 <https://doi.org/10.6028/NIST.SP.800-90Ar1>
- 230 14. Sonmez Turan M, Barker EB, Kelsey J, McKay KA, Baish, ML, Boyle M (2018)
231 *Recommendation for Entropy Sources Used for Random Number Generation*. (National
232 Institute of Standards and Technology, Gaithersburg, MD), NIST Special Publication
233 (SP) 800-90B. <https://doi.org/10.6028/NIST.SP.800-90B>
- 234

235 **Document Revisions**

Edition	Date	Change
Revision 1	[date]	<p>§ 6.2.2 Key Establishment Techniques</p> <p>Added: FIPS 140-3 Implementation Guidance Section D.A</p> <p>Added: RFC 8446, Section 7.1, August 2018</p> <p>Added: SP 800-56C Revision 2, August 2020</p> <p>Added: SP 800-133 Revision 2, June 2020</p> <p>Removed: SP 800-133 Revision 1, July 2019</p>

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