

## Cisco Accessibility Conformance Report VPAT® Version 2.1

**Name of Product/Version:** Cisco Kinetic Edge & Fog Processing Module (EFM) version 1.7

**Product Description:** Cisco Kinetic Edge & Fog Processing Module provides customers with fully automated software to manage an extensible distributed computing model.

**Date:** October 7, 2019

**Contact Information:** [accessibility@cisco.com](mailto:accessibility@cisco.com)

**Evaluation Method Used:** The following testing was done on a Windows 10 with Freedom Scientific's JAWs screen reader v2018, Microsoft Accessibility Options (Filter keys and Display/Contrast settings), and standard Keyboard.

### Summary Table - Voluntary Product Accessibility Template

Standard/Guideline	Included In Report	Remarks and Explanations
W3C WCAG 2.0 Level A and AA for Web application	Included	System Administrator, Monitor, Dataflow and Asset Manager portals
Section 508 Chapter 3: Functional Performance Criteria	Included	
Section 508 Chapter 4: Hardware	Not Applicable	
W3C WCAG 2.0 Level A and AA for Software application	Not Applicable	
Section 508 Chapter 5: Software	Included	
W3C WCAG 2.0 Level A and AA for Documentation	Included	PDF documentation
Section 508 Chapter 6: Support Documentation and Services	Included	

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

## W3C WCAG 2.0 Level A and AA for Web Application – Detail

Criteria	Description	Status	Remarks and Explanations
1.1.1 (A)	Non-text content	Supports with Exceptions	Some non-text contents do not have alternative text on Asset Manager portal.
1.2.1 (A)	Audio-only and Video-only (Prerecorded)	Not Applicable	There is no multimedia content.
1.2.2 (A)	Captions (Prerecorded)	Not Applicable	There is no multimedia content.
1.2.3 (A)	Audio Description or Media Alternative (Prerecorded)	Not Applicable	There is no multimedia content.
1.2.4 (AA)	Captions (Live)	Not Applicable	There is no multimedia content.
1.2.5 (AA)	Audio Description (Prerecorded)	Not Applicable	There is no multimedia content.
1.3.1 (A)	Info and Relationships	Supports with Exceptions	Some form controls, data tables, and headings are not fully supported with screen reader.
1.3.2 (A)	Meaningful Sequence	Supports	
1.3.3 (A)	Sensory Characteristics	Supports	
1.4.1 (A)	Use of Color	Supports	
1.4.2 (A)	Audio Control	Supports	
1.4.3 (AA)	Contrast (Minimum)	Supports with Exceptions	Some texts do not meet color contrast ratio requirement. Some elements are not visible in high-contrast schemes.
1.4.4 (AA)	Resize Text	Supports with Exceptions	Some pages do not fully support the browser resize text functionality.
1.4.5 (AA)	Images of Text	Supports	
2.1.1 (A)	Keyboard	Does Not Support	Many elements are not accessible with keyboard.
2.1.2 (A)	No Keyboard Trap	Does Not Support	This criterion cannot be fully tested due to many issues with keyboard navigation.
2.2.1 (A)	Timing Adjustable	Supports	
2.2.2 (A)	Pause, Stop, Hide	Supports	
2.3.1 (A)	Three Flashes or Below Threshold	Supports	
2.4.1 (A)	Bypass Blocks	Supports	
2.4.2 (A)	Page Titled	Supports	

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

2.4.3 (A)	Focus Order	Does Not Support	This criterion cannot be fully tested due to many issues with keyboard navigation.
2.4.4 (A)	Link Purpose (In Context)	Supports	
2.4.5 (AA)	Multiple Ways	Supports	
2.4.6 (AA)	Headings and Labels	Supports	
2.4.7 (AA)	Focus Visible	Does Not Support	This criterion cannot be fully tested due to many issues with keyboard navigation.
3.1.1 (A)	Language of Page	Supports with Exceptions	Some pages do not have LANG attribute.
3.1.2 (AA)	Language of Parts	Not Applicable	There are no multiple languages phrases on a page.
3.2.1 (A)	On Focus	Supports	
3.2.2 (A)	On Input	Supports	
3.2.3 (AA)	Consistent Navigation	Supports	
3.2.4 (AA)	Consistent Identification	Supports	
3.3.1 (A)	Error Identification	Supports	
3.3.2 (A)	Labels or Instructions	Supports with Exceptions	Some forms do not have required field labels.
3.3.3 (AA)	Error Suggestion	Supports	
3.3.4 (AA)	Error Prevention (Legal, Financial, Data)	Supports	
4.1.1 (A)	Parsing	Supports with Exceptions	Some elements do not have unique ID on a page.
4.1.2 (A)	Name, Role, Value	Supports with Exceptions	Some elements do not have corrected Name, Role and Value.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

## Section 508 Chapter 3: Functional Performance Criteria – Detail

Criteria	Description	Status	Remarks and Explanations
302.1	Without Vision. Where a visual mode of operation is provided, ICT shall provide at least one mode of operation that does not require user vision.	Supports with Exceptions	The product does not fully support users without vision, please see “W3C WCAG 2.0 Level A and AA for Web Application” table for more details.
302.2	With Limited Vision. Where a visual mode of operation is provided, ICT shall provide at least one mode of operation that enables users to make use of limited vision.	Supports with Exceptions	The product does not fully support users with limited vision, please see “W3C WCAG 2.0 Level A and AA for Web Application” table for more details.
302.3	Without Perception of Color. Where a visual mode of operation is provided, ICT shall provide at least one visual mode of operation that does not require user perception of color.	Supports with Exceptions	The product does not fully support users without perception of color, please see “W3C WCAG 2.0 Level A and AA for Web Application” table for more details.
302.4	Without Hearing. Where an audible mode of operation is provided, ICT shall provide at least one mode of operation that does not require user hearing.	Supports	
302.5	With Limited Hearing. Where an audible mode of operation is provided, ICT shall provide at least one mode of operation that enables users to make use of limited hearing.	Supports	
302.6	Without Speech. Where speech is used for input, control, or operation, ICT shall provide at least one mode of operation that does not require user speech.	Supports	
302.7	With Limited Manipulation. Where a manual mode of operation is provided, ICT shall provide at least one mode of operation that does not require fine motor control or simultaneous manual operations.	Supports with Exceptions	The product does not fully support users with limited manipulation, please see “W3C WCAG 2.0 Level A and AA for Web Application” table for more details.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

302.8	With Limited Reach and Strength. Where a manual mode of operation is provided, ICT shall provide at least one mode of operation that is operable with limited reach and limited strength.	Supports	
302.9	With Limited Language, Cognitive, and Learning Abilities. ICT shall provide features making its use by individuals with limited cognitive, language, and learning abilities simpler and easier.	Supports with Exceptions	Support for users with limited language, cognitive, and learning abilities is vary and depends on the user's experience.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

## Section 508 Chapter 5: Software - Detail

Criteria	Description	Status	Remarks and Explanations
501.1	Scope – Incorporation of WCAG 2.0	Supports with Exceptions	For exceptions, see “W3C WCAG 2.0 level A and AA for Web Application” table.
502.2.1	User Control of Accessibility Features. Platform software shall provide user control over platform features that are defined in the platform documentation as accessibility features.	Not Applicable	This product is not a platform software.
502.2.2	No Disruption of Accessibility Features. Software shall not disrupt platform features that are defined in the platform documentation as accessibility features.	Supports with Exceptions	Some elements are not visible in high-contrast schemes.
502.3.1	Object Information. The object role, state(s), properties, boundary, name, and description shall be programmatically determinable	Not Applicable	This product is not a platform software.
502.3.2	Modification of Object Information. States and properties that can be set by the user shall be capable of being set programmatically, including through assistive technology.	Not Applicable	This product is not a platform software.
502.3.3	Row, Column, and Headers. If an object is in a data table, the occupied rows and columns, and any headers associated with those rows or columns, shall be programmatically determinable.	Not Applicable	This product is not a platform software.
502.3.4	Values. Any current value(s), and any set or range of allowable values associated with an object, shall be programmatically determinable.	Not Applicable	This product is not a platform software.
502.3.5	Modification of Values. Values that can be set by the user shall be capable of being set programmatically, including through assistive technology.	Not Applicable	This product is not a platform software.
502.3.6	Label Relationships. Any relationship that a component has as a label for another component, or of being labeled by another component, shall be programmatically determinable.	Not Applicable	This product is not a platform software.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

502.3.7	Hierarchical Relationships. Any hierarchical (parent-child) relationship that a component has as a container for, or being contained by, another component shall be programmatically determinable.	Not Applicable	This product is not a platform software.
502.3.8	Text. The content of text objects, text attributes, and the boundary of text rendered to the screen, shall be programmatically determinable.	Not Applicable	This product is not a platform software.
502.3.9	Modification of Text. Text that can be set by the user shall be capable of being set programmatically, including through assistive technology.	Not Applicable	This product is not a platform software.
502.3.10	List of Actions. A list of all actions that can be executed on an object shall be programmatically determinable.	Not Applicable	This product is not a platform software.
502.3.11	Actions on Objects. Applications shall allow assistive technology to programmatically execute available actions on objects.	Not Applicable	This product is not a platform software.
502.3.12	Focus Cursor. Applications shall expose information and mechanisms necessary to track focus, text insertion point, and selection attributes of user interface components.	Not Applicable	This product is not a platform software.
502.3.13	Modification of Focus Cursor. Focus, text insertion point, and selection attributes that can be set by the user shall be capable of being set programmatically, including through the use of assistive technology.	Not Applicable	This product is not a platform software.
502.3.14	Event Notification. Notification of events relevant to user interactions, including but not limited to, changes in the component's state(s), value, name, description, or boundary, shall be available to assistive technology.	Not Applicable	This product is not a platform software.
502.4	Platform Accessibility Features. Platforms and platform software shall conform to the requirements in ANSI/HFES 200.2, Human Factors Engineering of Software User Interfaces—Part 2: Accessibility (2008) (incorporated by reference, see 702.4.1) listed below:	Not Applicable	This product is not a platform software.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

	A. Section 9.3.3 Enable sequential entry of multiple (chorded) keystrokes; B. Section 9.3.4 Provide adjustment of delay before key acceptance; C. Section 9.3.5 Provide adjustment of same-key double-strike acceptance; D. Section 10.6.7 Allow users to choose visual alternative for audio output; E. Section 10.6.8 Synchronize audio equivalents for visual events; F. Section 10.6.9 Provide speech output services; and G. Section 10.7.1 Display any captions provided.		
503.2	User Preferences. Applications shall permit user preferences from platform settings for color, contrast, font type, font size, and focus cursor.	Supports with Exceptions	Some elements are not visible in high-contrast schemes.
503.3	Alternative User Interfaces. Where an application provides an alternative user interface that functions as assistive technology, the application shall use platform and other industry standard accessibility services.	Not Applicable	There is no alternate user interface used as assistive technology for this product.
503.4.1	Caption Controls. Where user controls are provided for volume adjustment, ICT shall provide user controls for the selection of captions at the same menu level as the user controls for volume or program selection.	Not Applicable	This product does not have multimedia content.
503.4.2	Audio Description Controls. Where user controls are provided for program selection, ICT shall provide user controls for the selection of audio descriptions at the same menu level as the user controls for volume or program selection.	Not Applicable	This product does not have multimedia content.
504.2	Content Creation or Editing. Authoring tools shall provide a mode of operation to create or edit content that conforms to Level A and Level AA Success Criteria and Conformance Requirements in WCAG 2.0 (incorporated by reference, see 702.10.1) for all supported features and, as applicable, to file formats supported by the authoring tool. Authoring tools shall	Not Applicable	This product is not an authoring tool.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019



	permit authors the option of overriding information required for accessibility.		
504.2.1	Preservation of Information Provided for Accessibility in Format Conversion. Authoring tools shall, when converting content from one format to another or saving content in multiple formats, preserve the information required for accessibility to the extent that the information is supported by the destination format.	Not Applicable	This product is not an authoring tool.
504.2.2	PDF Export. Authoring tools capable of exporting PDF files that conform to ISO 32000-1:2008 (PDF 1.7) shall also be capable of exporting PDF files that conform to ANSI/AIIM/ISO 14289-1:2016 (PDF/UA-1)	Not Applicable	This product is not an authoring tool.
504.3	Prompts. Authoring tools shall provide a mode of operation that prompts authors to create content that conforms to Level A and Level AA Success Criteria and Conformance Requirements in WCAG 2.0 (incorporated by reference, see 702.10.1) for supported features and, as applicable, to file formats supported by the authoring tool.	Not Applicable	This product is not an authoring tool.
504.4	Templates. Where templates are provided, templates allowing content creation that conforms to Level A and Level AA Success Criteria and Conformance Requirements in WCAG 2.0 (incorporated by reference, see 702.10.1) shall be provided for a range of template uses for supported features and, as applicable, to file formats supported by the authoring tool.	Not Applicable	This product is not an authoring tool.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

## W3C WCAG 2.0 Level A and AA for Documentation – Detail

Criteria	Description	Status	Remarks and Explanations
1.1.1 (A)	Non-text content	Supports with Exceptions	Some non-text content does not fully support screen reader software.
1.2.1 (A)	Audio-only and Video-only (Prerecorded)	Not Applicable	There is no multimedia content.
1.2.2 (A)	Captions (Prerecorded)	Not Applicable	There is no multimedia content.
1.2.3 (A)	Audio Description or Media Alternative (Prerecorded)	Not Applicable	There is no multimedia content.
1.2.4 (AA)	Captions (Live)	Not Applicable	There is no multimedia content.
1.2.5 (AA)	Audio Description (Prerecorded)	Not Applicable	There is no multimedia content.
1.3.1 (A)	Info and Relationships	Supports with Exceptions	Some data tables, lists and headings are not fully supported with screen reader.
1.3.2 (A)	Meaningful Sequence	Supports	
1.3.3 (A)	Sensory Characteristics	Supports	
1.4.1 (A)	Use of Color	Supports	
1.4.2 (A)	Audio Control	Supports	
1.4.3 (AA)	Contrast (Minimum)	Supports with Exceptions	Some texts do not meet the color contrast ratio requirement.
1.4.4 (AA)	Resize Text	Supports	
1.4.5 (AA)	Images of Text	Supports	
2.1.1 (A)	Keyboard	Supports	
2.1.2 (A)	No Keyboard Trap	Supports	
2.2.1 (A)	Timing Adjustable	Supports	
2.2.2 (A)	Pause, Stop, Hide	Supports	
2.3.1 (A)	Three Flashes or Below Threshold	Supports	
2.4.1 (A)	Bypass Blocks	Not Applicable	Not Required for Non-web Documentation
2.4.2 (A)	Page Titled	Supports	
2.4.3 (A)	Focus Order	Supports	
2.4.4 (A)	Link Purpose (In Context)	Supports with Exceptions	Some links do not have purpose.
2.4.5 (AA)	Multiple Ways	Not Applicable	Not Required for Non-web Documentation
2.4.6 (AA)	Headings and Labels	Supports	

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

2.4.7 (AA)	Focus Visible	Supports	
3.1.1 (A)	Language of Page	Supports	
3.1.2 (AA)	Language of Parts	Not Applicable	There are no multiple languages phrases on a page.
3.2.1 (A)	On Focus	Supports	
3.2.2 (A)	On Input	Supports	
3.2.3 (AA)	Consistent Navigation	Not Applicable	Not Required for Non-web Documentation
3.2.4 (AA)	Consistent Identification	Not Applicable	Not Required for Non-web Documentation
3.3.1 (A)	Error Identification	Supports	
3.3.2 (A)	Labels or Instructions	Supports	
3.3.3 (AA)	Error Suggestion	Supports	
3.3.4 (AA)	Error Prevention (Legal, Financial, Data)	Supports	
4.1.1 (A)	Parsing	Supports	
4.1.2 (A)	Name, Role, Value	Supports	

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

## Section 508 Chapter 6: Support Documentation and Services – Detail

Criteria	Description	Status	Remarks and Explanations
602.2	Accessibility and Compatibility Features. Documentation shall list and explain how to use the accessibility and compatibility features required by Chapters 4 and 5. Documentation shall include accessibility features that are built-in and accessibility features that provide compatibility with assistive technology.	Does Not Support	The documentation does not provide accessibility and compatibility features.
602.3	Electronic Support Documentation. Documentation in electronic format, including Web-based self-service support, shall conform to Level A and Level AA Success Criteria and Conformance Requirements in WCAG 2.0.	Supports with Exceptions	For exceptions, please see “WCAG 2.0 Level A and AA for Documentation” table.
602.4	Alternate Formats for Non-Electronic Support Documentation. Where support documentation is only provided in non-electronic formats, alternate formats usable by individuals with disabilities shall be provided upon request.	Supports	
603.2	Information on Accessibility and Compatibility Features. ICT support services shall include information on the accessibility and compatibility features required by 602.2.	Supports	Contact Cisco accessibility team via email, <a href="mailto:accessibility@cisco.com">accessibility@cisco.com</a> for more information.
603.3	Accommodation of Communication Needs. Support services shall be provided directly to the user or through a referral to a point of contact. Such ICT support services shall accommodate the communication needs of individuals with disabilities.	Supports	Cisco conforms through equal facilitation. Customers may reach Cisco Technical Assistance Center (TAC) via Phone, Email or Web Form. All cases open through email or web are opened as Priority 3 cases. All Priority 1 or Priority 2 case can only be opened via the telephone. TTY users must call the Text Relay Service (TRS) by dialing 711 or their state Video Relay Service (VRS) and have the TRS agent contact Cisco TAC via voice.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019

## Supporting Feature (Status) Terminology

The result of "Accessibility Testing" assists in the determination of the Supporting Features.

Supporting Features or Status	Description
Supports	Use this language when you determine the product fully meets the intent of the criteria or meets with equivalent facilitation. If the product meets equivalent facilitation, please document it in the "Remarks and Explanations" column.
Supports with Exceptions	Use this language when you determine the product does not fully meet the intent of the criteria, but provides some level of access relative to the criteria. Please document the exception in the "Remarks and Explanations" column.
Does not Support	Use this language when you determine the product does not meet the intent of the criteria. Please document the reason in the "Remarks and Explanations" column.
Not Applicable	Use this language when you determine that the criteria do not apply to the specific product. For example, many web applications do not have video content the "Not Applicable" can be used. Please state, "The application does not have any video content" in the "Remarks and Explanations" column.
Not Evaluated	Use this language when the product has not been evaluated.

All contents are Copyright © 1992-2019 Cisco Systems, Inc. All rights reserved.

This information is true and correct to the best of our knowledge as of the Last Updated date printed below; is supplied for market research purposes only; and is subject to change without notice. The contents of this document do not constitute either legal advice, representation, warranty or guarantee regarding a person's ability to comply with applicable accessibility requirements. Such a determination is the sole responsibility of the purchaser.

For more information, please contact: [accessibility@cisco.com](mailto:accessibility@cisco.com)

Last Updated: October 7, 2019