EXTERNAL DEPENDENCIES MANAGEMENT (EDM)

Assessment User's Guide

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1. Table of contents

2. INTRODUCTION

2.1. Purpose of This Guide

The purpose of this document is to enable organizations to conduct an assessment using the External Dependency Management Assessment (EDM Assessment) method. The EDM Assessment provides a measure of an organization's external dependency management capabilities. This user's guide
• presents an overview of the EDM Assessment structure and content
• provides information on how to prepare for an EDM Assessment
• provides information on how to conduct the assessment, which includes recording responses and scoring functions using the EDM Assessment tool
• assists the organization in evaluating its EDM management capabilities
• provides guidance for follow-on activities

The EDM Assessment incorporates and expands on the cybersecurity concepts included in the National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF). A crosswalk document that maps the EDM Assessment to the NIST CSF is included as a component of the EDM Assessment Kit.

Although the EDM Assessment can be used for this purpose, it is based on a different underlying framework[1] than the NIST CSF. As a result, an organization's fulfillment of EDM Assessment practices and capabilities may fall short of or exceed corresponding practices and capabilities in the NIST CSF.

The EDM Assessment reflects an organization's capabilities only at a single point in time—at the time of the assessment. Even though certain aspects and questions in the EDM Assessment are designed to indicate the organization's ability to sustain EDM cybersecurity practices over time, the organization should not rely on the assessment results as a conclusive expression of the organization's cybersecurity capability in the future.

2.2. Intended Audience

This user's guide is intended for use by the individual who plans and facilitates an EDM Assessment. This individual is called the *facilitator*. The facilitator is typically accountable to a sponsor within the organization who has requested an EDM Assessment.

2.3. How to Use This Guide

The facilitator should use this guide as a starting point for preparing and executing the EDM Assessment. Sections 1 and 2 serve as an introduction to and overview of the EDM Assessment process. Sections 3 through 5 of the guide correspond to the three key phases of an assessment: EDM Assessment Form Completion, Report Interpretation, and Follow-Up. The facilitator should read through the entire guide and the supporting documents to become familiar with the EDM

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[1] The EDM Assessment is based on the CERT® Resilience Management Model (CERT®-RMM).

Assessment itself as well as the end-to-end process of executing the assessment. Familiarity with the materials is important because each assessment is different and may require the facilitator to adapt the process and discussion to the needs of the organization being assessed. While the guide is intended to help ensure consistency of approach and data, there may be situations where some adjustments are necessary to ensure a valuable outcome for the organization being assessed.

2.4. Organization of the Guide

Section 3: EDM Assessment Overview, describes the EDM Assessment architecture as well as the individual components that make up the assessment.

Section 4: Conducting an EDM Assessment, describes how the organization prepares for the assessment, conducts the assessment, and completes the assessment.

Section 5: Interpreting the EDM Assessment Report, describes how the results documented in the assessment report are interpreted within the context of the organization.

Section 6: Making Improvements, describes how the organization determines next steps for improving its EDM management practices.

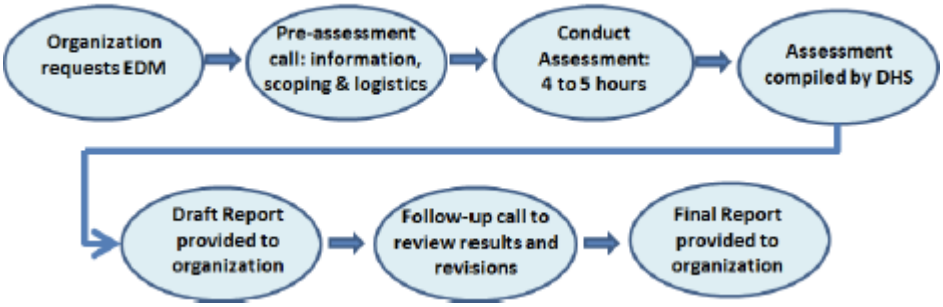
Section 7: Provides a brief summary followed by the appendices, which contain a process checklist, a glossary of terms used in this document, and a list of references.

3. EDM ASSESSMENT OVERVIEW

3.1. EDM Assessment Process

The EDM Assessment is a lightweight assessment method that was created by the Department of Homeland Security (DHS) for the purpose of evaluating the external dependency management cybersecurity practices of critical infrastructure owners and operators. The EDM Assessment, consisting of 105 questions, is typically delivered in a four-hour session led by facilitators from DHS, or through a self-assessment process. The facilitators elicit answers from the critical infrastructure organization's personnel in cybersecurity, operations, physical security, and business continuity.

Figure 1: The EDM Assessment Process



3.2. EDM Assessment Architecture

The EDM Assessment is an interview-based assessment of an organization's cybersecurity management program, focused on the external dependencies of services and their associated assets which are critical for an organization's mission success. The EDM Assessment focuses on protection and sustainment practices within key areas that typically contribute to the overall cyber resilience of an organization. The EDM Assessment measures essential external dependency cybersecurity capabilities and behaviors to provide meaningful indicators of an organization's operational resilience during normal operations and during times of operational stress.

The EDM Assessment is derived from the CERT[#] Resilience Management Model (CERT®-RMM), which was developed by the CERT Division at Carnegie Mellon University's Software Engineering Institute. The CERT-RMM is a capability-focused maturity model for process improvement, and it reflects best practices from industry and government for managing operational resilience across the disciplines of security management, business continuity management, and information technology operations management.

[#] CERT is a registered mark owned by Carnegie Mellon University.

Table 1 details the domains of the EDM Assessment. Each domain represents important capabilities that contribute to managing external dependencies across the lifecycle of the relationships with external organizations. The focus of EDM is on cybersecurity, in particular where information communications and technology (ICT) are involved in delivering essential services.

Table 1: EDM Assessment Domain Composition

EDM Assessment Domain	No. of Goals	No. of Goal Practices
Relationship Formation	6	26
Relationship Management and Governance	7	30
Service Protection and Sustainment	3	15
MIL Practices	4	15

Each domain is composed of a purpose statement, a set of specific goals and associated practice questions unique to the domain. The EDM Assessment utilizes one standard set of Maturity Indicator Level (MIL) questions. The MIL questions examine the institutionalization of practices within an organization. Figure 2 graphically presents the EDM Assessment domain architecture. As shown in Table 1, the number of goals and practice questions varies by domain, but the set of MIL questions and the concepts they encompass are the same for all domains. All EDM Assessment questions have three possible responses: "Yes," "No," and "Incomplete."

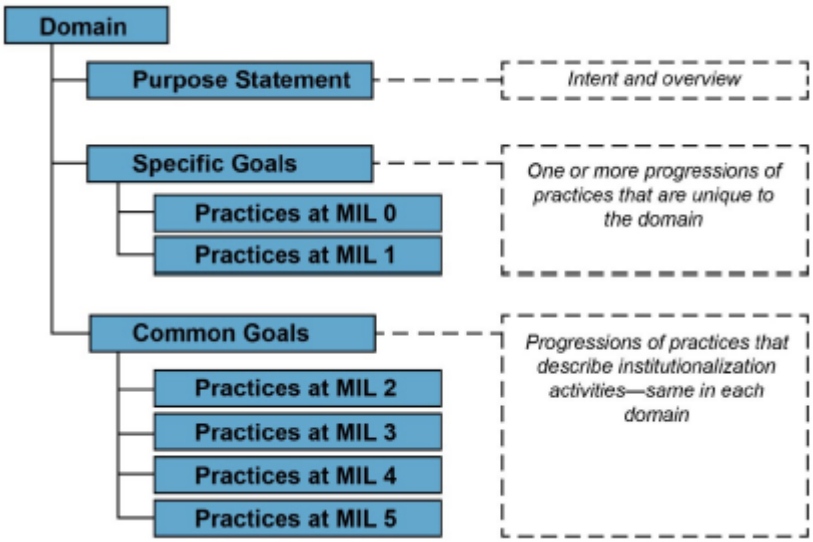


Figure 2: The External Dependency Management Assessment Domain Architecture

3.3. Domain Descriptions

The following section describes the three EDM Assessment domains and summarizes their goals and practice questions.

Relationship Formation (RF)

Domain comprises six goals and 26 practice questions:

Purpose: To assess whether the acquirer evaluates and controls the risks of relying on external entities before entering into relationships with them. Relationship Formation includes understanding the acquirer's critical services, having a process for entering into formal relationships, and evaluating external entities. A key aspect of Relationship Formation is identifying resilience requirements as the basis for risk management and formal agreements. Resilience requirements typically focus on integrity, confidentiality, and availability, but can also include other requirements important to the critical service.

Relationship Management and Governance (RMG)

Domain comprises seven goals and 30 practice questions:

Purpose: Relationship Management and Governance focuses on the extent to which the acquirer manages ongoing relationships to maintain the resilience of the critical service, and mitigate dependency risk. This includes identifying the external entities that support the critical service, ongoing risk management, communicating with external entities about key aspects of protecting the critical service, and controlling external entities' access to the acquirer.

Service Protection and Sustainment (SPS)

Domain comprises three goals and 15 practice questions.

Purpose: The purpose of Service Protection and Sustainment is to assess whether the acquirer accounts for its dependence on external entities as part of its operational activities around managing incidents, disruptions, and threats. This includes integrating external entity considerations into the acquirer's disruption planning—typically incident management and service continuity, validating controls at external entities, and maintaining situational awareness activities directed at external dependencies.

3.4. MIL Scale

The EDM Assessment uses Maturity Indicator Levels (MILs) to provide organizations with an approximation of the maturity of their practices in the three domains. The EDM Assessment's approach to maturity is based on an underlying capability maturity model, the CERT Resilience Management Model.[2] In this approach, the organization's maturity is based on how completely the cybersecurity practices in each of the domains are institutionalized within the organization.

[2] *In its simplest form, a maturity model is a set of characteristics, attributes, indicators, or patterns that represent progression and achievement in a particular domain or discipline. The artifacts that make up*

Institutionalization means that cybersecurity practices become a deeper, more lasting part of the organization because they are managed and supported in meaningful ways. When cybersecurity practices become more institutionalized—or "embedded"—managers can have more confidence in the practices' predictability and reliability. The practices also become more likely to be sustained during times of disruption or stress to the organization. Maturity can also lead to a tighter alignment between cybersecurity activities and the organization's business drivers. For example, in more mature organizations, managers will provide oversight to the particular domain and evaluate the effectiveness of the security activities the domain comprises. The following example illustrates how MILs may be applied to the EDM Assessment Relationship Management and Governance domain in a fictitious organization:

Santa Barbara Manufacturing (SBM) is a medium-sized company that produces precision parts used in certain healthcare applications. The company benefits from having a skilled, capable Chief Information Security Officer (CISO). The CISO has worked hard to ensure that not only does SBM ensure quality control of its products to the highest safety standards, but that it also plans the processes around the availability and reliability of its critical vendors and suppliers. In other words, among other requirements, the company has a documented policy to govern the selection and supervision of its external partners and suppliers.

At the start of this fiscal year, a significant industry peer to SBM suffers a major incident because of a computer intrusion originating in another country. This incident causes SBM's executive leadership to place additional emphasis on external dependency management. They begin to provide oversight to vendor management, ensure that staff and suppliers are qualified, and dedicate adequate funding to third-party management. They also evaluate and make decisions about the risks of deficiencies in the way that SBM and suppliers do contract management. This level of maturity is roughly equivalent to MIL3 Managed in the EDM Assessment.

As part of a strategic plan to diversify and grow the business, SBM is partnering with a company specializing in wireless medical equipment sales and payments management for healthcare providers. SBM plans to outsource its payments process to the smaller company, which brings new risks, such as those associated with suppliers who provide electronic processing of customer billing and payment information. To integrate external dependency management with the new business partner, SBM requires the partner assess its dependency management and achieve a MIL3 or better. To further support its dependency relationship, SBM develops procedures and processes that managers in the new company can use to adapt their management activities. The two business units also start to share lessons learned and improvements with each other. SBM is now starting to exhibit behavior characteristic of the EDM Assessment's highest maturity level, MIL5 Defined.

the model are typically agreed to based on criteria fitting a particular domain or discipline, which are then validated through application and refinement.

The MIL scale itself uses six maturity levels, each with rigorous, defined components:

These are described below:

MIL0 Incomplete
Practices in the domain are not being performed as measured by responses to the relevant EDM Assessment questions in the domain.

MIL1 Performed
All practices that support the goals in a domain are being performed as measured by responses to the relevant EDM Assessment questions.

MIL2 Planned
A specific practice in the EDM Assessment domain is not only performed but is also supported by planning, stakeholders, and relevant standards and guidelines. A planned process or practice is established by the organization through policy and a documented plan supported by stakeholders supported by relevant standards and guidelines

MIL3 Managed
All practices in a domain are performed, planned, and have the basic governance infrastructure in place to support the process. A managed process or practice is governed by the organization appropriately staffed with qualified people adequately funded managed for risk

MIL4 Measured
All practices in a domain are performed, planned, managed, monitored, and controlled. A measured process or practice is periodically evaluated for effectiveness objectively evaluated against its practice description and plan periodically reviewed with higher level management

MIL5 Defined
All practices in a domain are performed, planned, managed, measured, and consistent across all constituencies within an organization who have a vested interest in the performance of the practice. At MIL5, a process or practice is defined by the organization and tailored by individual operating units within the organization for their use supported by improvement information that is collected by and shared among operating units for the overall benefit of the organization

In the above progression, an organization can only attain a given MIL if it has attained all lower MILs. In other words, an organization that fails to perform all of the cybersecurity practices at MIL1 in a domain would also fail to reach MIL2 in that domain, even if it would have satisfied all the requirements at MIL2.

The EDM Assessment uses one maturity scale for all three domains because the domains represent different parts of a lifecycle—from forming external relationships to managing incidents and consequences —rather than representing a fundamentally different capability. Ideally, senior management should manage, measure, and oversee the organization's external dependencies management capability across this complete lifecycle.

4. CONDUCTING THE EDM ASSESSMENT

4.1. Organizing for the Assessment

Identifying the Scope of the Assessment

Part of the facilitator's role is to help the sponsor and the organization identify the scope of the assessment. This scoping exercise is critical because answers to the assessment questions must be provided in relation to a specific service. The scope of the assessment is determined by three factors:

1. Critical service scope
Ask:Which service will be the focus of the assessment?

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2. Organizational scope
Ask: Which parts of the organization deliver the critical service?

Ask: Which parts of the organization deliver the critical service?

3. Asset scope
Ask: Which assets (people, technology, information, and facilities) are requiredfor the delivery of the service.

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Critical Service Scoping

The EDM Assessment has a service-oriented approach, meaning that one of its foundational principles is that an organization and the external entities it utilizes deploy their assets (people, information, technology, and facilities) to support specific operational missions (or services).

The EDM Assessment uses the identified critical service to frame the questions in the assessment. Therefore it is essential that a critical service in your organization be identified that will serve as the focus of the assessment. A critical service is defined as follows:

A set of activities that the organization carries out, in the production of a product or while providing services to its customers, that are so important to the success of the organization that disruption to the service would severely impact the organization's operations or business.

The EDM Assessment strives to identify how an organization aligns its cybersecurity management activities and how it manages the external entities that may be involved with supporting the performance or production of the acquirer's critical services. Often, an organization's product suite provides a useful starting point for identifying a service. The following questions can help users identify their organization's critical services:

1. Which services compose a significant or intrinsic portion of the organization's mission (e.g., processing mortgage applications in a bank)?

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2. Which services are externally focused (i.e, the service delivers value to the stakeholders outside of the organization)?
3. Which services have identifiable ownership (i.e., authority) over assets that contribute to the delivery of the service?

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Which services have identifiable ownership (i.e., authority) over assets that contribute to the delivery of the service?

Below are some examples of organizations and their typical critical services that might be selected as part of an EDM Assessment:

• banks and other financial institutions: clearing and settlement, mortgage application processing
• emergency services providers: processing 911 calls, dispatch
• electrical power plants: electricity generation, electricity distribution
• hospitals: clinical services, prescription management
• government agencies: court case management, benefit management
• manufacturing companies: machining operations, order processing
• airports: air traffic control, fuel management

Organizational Scoping

Organizational scoping considerations can be gathered by asking the following questions:

• *What part(s) of the organization is responsible for the delivery of the critical service?*
• *Who are the owners of the assets required for delivery of the critical service?*
• *Who is responsible for the critical service?*
• *Who are the key stakeholders?*
• *What asset types are used in the delivery of the service?*
• *Who are key external entities that are used in the delivery of the service?*
• *Who is the owner of the relationship(s) with supporting external entities?*
• *What risks have been identified for the service?*
• *Who are the custodians of the assets used in the delivery of the critical service?*

What part(s) of the organization is responsible for the delivery of the critical service?

Who are the owners of the assets required for delivery of the critical service?

Who is responsible for the critical service?

Who are the key stakeholders?

What asset types are used in the delivery of the service?

Who are key external entities that are used in the delivery of the service?

Who is the owner of the relationship(s) with supporting external entities?

What risks have been identified for the service?

Who are the custodians of the assets used in the delivery of the critical service?

Organizations may wish to consider including other units from within their organization as suppliers for the purposes of the assessment.

Administering the EDM Assessment

The EDM Assessment is conducted in a group setting with a facilitator leading a group discussion. During the course of the assessment, the facilitator guides participants to a group consensus for each answer. These participants, drawn from various departments (Line of business leaders, IT operations, Business Continuity, Risk Management, Vendor Management and others as appropriate), are subject matter experts (SMEs) who provide insight relevant to the different EDM

Assessment domains. The agreed-upon answer is then recorded in the assessment form before moving on to the next question.
This section describes planning for and conducting an assessment workshop. Sections 4 and 5 provide guidance for interpreting the resulting report and planning follow-on activities, respectively.

Key Roles in the Assessment Process

A successful EDM Assessment requires the active participation of members of the organization who serve in a variety of roles. Table 2 summarizes the key roles typically involved.

Table 2: Key Roles in the Assessment Process

Role	Description and Responsibilities
sponsor	The sponsor should have a broad understanding of the importance and components of the service fo which the assessment is being completed. General responsibilities include • deciding whether the organization should conduct an EDM Assessment • selecting an individual to serve as the facilitator • ensuring that the resources necessary for the assessment are available • communicating the organization's support for the assessment
facilitator	The facilitator is identified and assigned by the sponsor to have overall responsibility for preparing the organization for and conducting the EDM Assessment. General responsibilities include • completing the three phases of an assessment process • working with the organization to ensure the assessment produces high-quality results • facilitating the completion of the assessment form • generating the EDM Assessment report • distributing the EDM Assessment report to the sponsor and designees • assisting in the planning of follow-on activities
subject matter experts (SMEs)	During the assessment, SMEs provide answers that best represent the organization's current cybersecurity capabilities in relation to the function being evaluated. It is most helpful for a SME to be • closely involved in the planning, implementation, or management of the domain represented • able to represent organizational functions being assessed • able to represent one or more of the organization's activities in the assessment's three domains

Meeting with the Sponsor and Other Stakeholders

Prior to setting a date for the planned assessment, the facilitator should meet with the sponsor and other stakeholders identified by the sponsor to prepare the organization for the assessment. The meeting should be scheduled a few weeks prior to the assessment.
The objectives of this meeting include the following:
• Familiarize the sponsor and/or stakeholders with the EDM Assessment.
• Obtain executive support and establish the role the sponsor wishes to play in the assessment.

• Shape the stakeholders' expectations for the assessment (e.g., the three phases of the process, required resources, timeframe involved, personnel roles and responsibilities).
• Answer any questions.

Identifying and Preparing Participants

For the EDM Assessment to be successful, participants should be knowledgeable about the organization's cybersecurity practices in relation to both the selected critical service and the external entities that are utilized to support the critical service identified. There should be SMEs familiar with how the organization operates in all three domains of the assessment (see Table 3). It is not necessary to have a single SME for each domain; one SME might cover multiple domains, or a single domain might require multiple SMEs.

Table 3: Identifying Participants

Domain/Expertise/Function	Name(s) of SME/Participant
Relationship Formation	
Relationship Management and Governance	
Service Protection and Sustainment	

Preparing for the Workshop

Together with the sponsor and support staff, the facilitator schedules the workshop. An assessment typically takes two to four hours to complete. Assistance from the sponsor or executive management might be necessary to clear the calendars of SMEs and other critical participants.
Thorough logistical preparation is necessary to ensure a successful assessment workshop. In collaboration with support staff, the facilitator is expected to plan for all workshop logistics including reserving a room large enough to accommodate all participants and assuring that the necessary computing hardware and software are available (see Section 3.2 for system requirements).

During the Workshop

It is often useful to begin the workshop with comments from senior management. These comments can help emphasize the importance of the EDM Assessment to the organization, identify the business drivers for a cybersecurity effort, emphasize the importance of managing external entities, and highlight the importance of the active participation of workshop attendees.

The facilitator should remind participants that the survey is intended to provide a snapshot of the maturity of the organization's cybersecurity posture. Workshops like the EDM Assessment can provide a rare opportunity for discussion and teamwork across various departments, so it is worth reminding participants that they—not just the organization—can benefit from an honest and forthright discussion about the questions in the assessment. The facilitator should ensure that the workshop participants are prepared and comfortable during the workshop.

Table 4 describes several topics that previous EDM Assessments have shown to deserve special emphasis prior to beginning the workshop.

Table 4: Topics for Discussion at the Start of the Workshop

Topic	Discussion

Organization’s vocabulary	This discussion covers terms found in the EDM Assessment that may prompt discussions relating to terms used within an organization.
Agreed-upon service and scope	It is important to remind the participants that the assessment is being applied to a specific critical service and only the set of activities performed by the organization and the external entities that support that critical service. It is useful to describe those activities and external relationships prior to beginning the workshop.
Organization’s environment	It is useful to discuss the organization’s environment to add context to the description of the service being evaluated.
Implemented practices	When completing the assessment, participants must consider practices as they are implemented on the day of the workshop. Do not consider activities that are planned or are in the process of implementation. Likewise, do not consider practices that have not been performed for extended periods of time. For example, if the organization has a disaster recovery plan that, in the opinio of the participants, is out of date to the point of being unusable, the plan should not be considered.
Three-point response scale	Participants use a three-point response scale to evaluate the degree to which the organization has implemented each practice. Review with the participants the meaning of each of the three response options so that all participants have a common understanding of when a particular response will be used.
Follow-on activities	It is important to discuss how the assessment will be used within the organization’s overall cybersecurity program. Emphasize that next steps will be based on the organization’s risks and maturity and point out the roles of participants in follow-on activities.

The facilitator guides the participants through the assessment questions. Remember that open dialog and consensus-building is as important as the completed assessment.

Most groups find it helpful to view a visual (projected) display of the survey. To begin, the facilitator shows participants the first questions from the Relationship Formation domain and reads the description of the domain, the first goal, and the first question verbatim. The facilitator then describes the intent of the practice and reminds participants of the scoring guidelines.

As the assessment progresses, it is helpful to display the questions and the responses participants have already provided. The facilitator controls the responses recorded on the assessment instrument and can display questions and responses as required. Notes regarding the discussions can also be reviewed to determine the rationale behind the responses given.

It is important to encourage discussion. There is value in allowing participants to interact and discuss as a group what the consensus answer will be. The facilitator does not provide answers to the assessment questions but rather helps the group come to a consensus in its response. By facilitating the workshop, the facilitator helps the organization answer the assessment questions and formulate the next steps the organization must take when defining gaps and developing an improvement plan.

At times the facilitator must remind participants not to get stuck on the specific phrasing of a question but to focus on the intent behind the question. The assessment question guidance is useful in coming to this understanding.

4.2. Completing the Assessment

Overview

The EDM Assessment focuses on practices to manage risks associated with external dependencies, especially risks related to information and communications technology (ICT). This type of risk—also commonly called supply chain or third-party risk—is of particular concern to many organizations, which increasingly have a large number of external dependencies. Organizations face inherent uncertainty in managing complex, rapidly changing, arms-length relationships involving technology. They also face a threat environment that exacerbates these concerns. The EDM Assessment helps by providing an efficient, effective way to measure and report on an organization's capability to manage this risk. The EDM Assessment also incorporates and expands on the cybersecurity concepts included in the National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF). As part of this instrument's capability, the EDM results are also depicted in terms of the NIST CSF.

External dependencies exist when external entities have defined obligations or relationships with assets or services that your organization requires to support its business objectives and mission. Examples include third parties that provide, operate, control, have access to, own, or have other responsibilities over key ICT and related assets.

The EDM Assessment

The EDM Assessment consists of a structured interview of key personnel which takes about a half-day to complete. Its goal is to measure and report on an organization's cybersecurity practices as they relate to managing external dependencies and their associated risks.

The EDM Assessment reflects an organization's capabilities at a single point in time—at the time of the assessment.

The assessment does not consider:

• activities that are planned or are in the process of implementation
• practices that have not been performed for extended periods. For example, if the organization has a disaster recovery plan that, in the opinion of the participants, is out of date to the point of being unusable, the plan should not be considered.

Practice Questions Structure

Each practice question contains a 3-point response scale to evaluate the degree to which the organization has implemented each practice. Each question has three possible answers: "Yes", "Incomplete", and "No":

• **Yes** – the organization fully performs the activity specified in the question.
• **Incomplete** – the organization partially performs the activity
• **No** – the organization does not perform the activity at all.

Flag for Review: To the right of the three-point response scale is the Flag icon which can be used to flag a practice for review.

Figure 1. Practice Question Layout

Supplemental Guidance: To aid the facilitator, each question is supported by guidance. The guidance should be referred to for background, possible examples and artifacts, and for criteria that defines the requirements for a "Yes" and an "Incomplete" answer. The guidance is engaged by selecting the Guidance Icon containing the letter "G" located below the question.

Comments: Selecting this icon will display a text box that may be used to make comments regarding the question. For example, a facilitator, for future reference may make a note as to why an answer was marked incomplete vs. no. Note, these comments are not included in the official report and are meant to be private to the facilitator.

Artifacts/Documents: Easily associate, track, and store evidence, artifacts, and other supporting documents throughout the assessment.

References: Selecting the References Icon will display the Options for Consideration associated with the particular question. The Options for Consideration are normally found in the report but are also made available to the facilitator while performing the assessment. These options outline general guidelines or activities and the associated sources that can be used to improve the external dependencies management and the resilience of the critical service assessed.

Observations: Selecting this icon will pop up an observation details dialog box used to capture information about an issue associated with the particular practice along with its importance, resolution date, etc.

Feedback: Used to provide feedback regarding the question to CISA. For example, a user may comment that the question language is too complex and suggest alternate wording.

Glossary Definitions

A question may contain context-sensitive help for certain terms. This can be accessed by hovering over the term that is underlined with a series of dots.

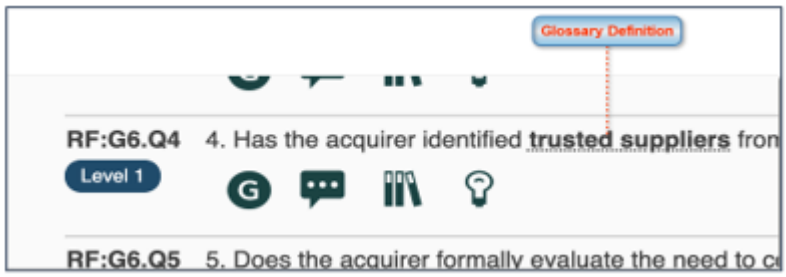


Figure 2: Glossary Definition Pop-Up

At the end of each domain, a Domain Remarks text box is available to the user. Any text entered in this box is copied verbatim into the report. It can be used to capture information such as reasoning or organization-specific information. For example, if an improvement effort is already underway to address some of the practices in a particular domain, it can be detailed here to make it part of the official report. **Since this text is copied verbatim into the report a user should use discretion in their commentary.**

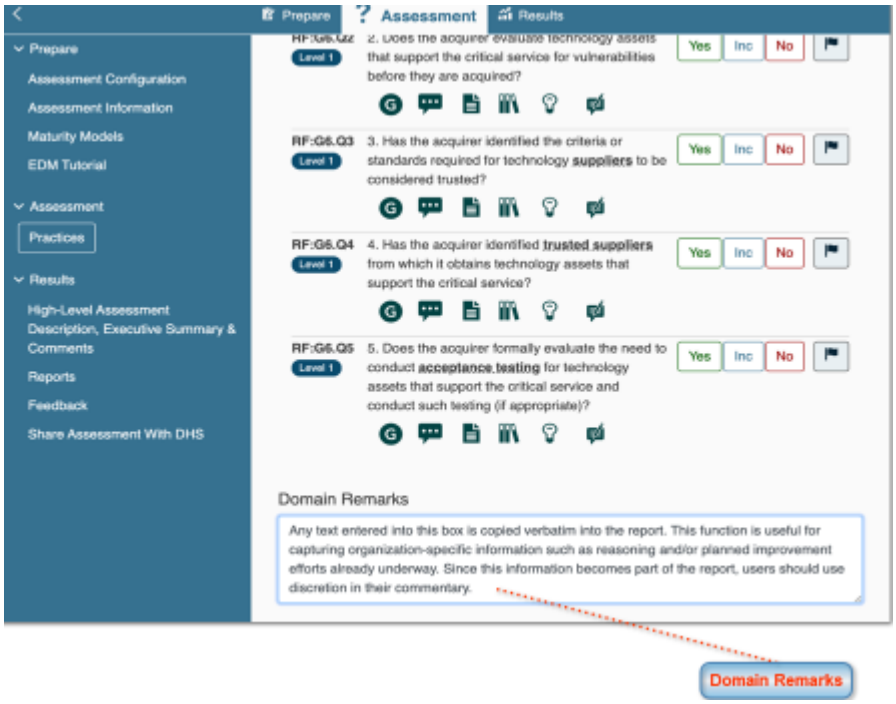


Figure 3. Domain Remarks Text Box

Asset Types

To support the accuracy and completeness of the assessment, several questions involve specific practices for each type of asset. These asset types are:

- People - the staff that support data centers or otherwise use information and communications technology to deliver the service
- Information - account information, technology asset configuration files, and personal health information
- Technology - computers, software, and control systems
- Facilities - offices or data centers supporting the delivery of the service

Some questions require a separate answer for each of the four assets while other questions refer to all assets. See the example below.

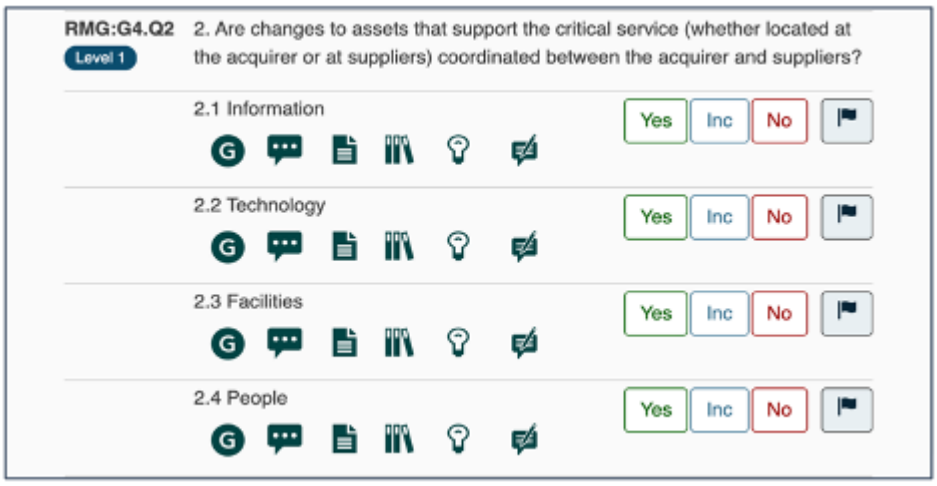


Figure 4. Asset Types

External Entity Types

As described above there are three types of external entities that the EDM assessment addresses. To ensure completeness, several questions ask about practices performed for different types of external entities. See the example below.

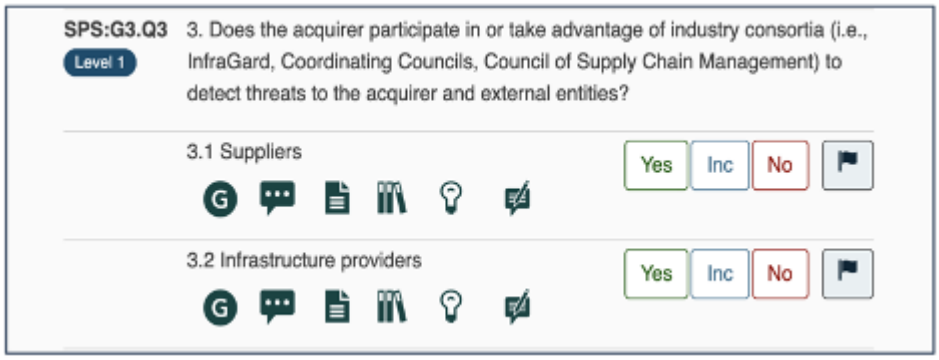


Figure 5. External Entity Types

For more assistance with the CSET tool, please visit the CSET User Guide.

5. INTERPRETING THE EDM ASSESSMENT RESULTS and REPORT

5.1. EDM Assessment Scoring

The scores for practice performance determine the scores for goal performance, which in turn determine the final scoring result for each domain, expressed in the MIL scale. Scores of MIL0 and MIL1 indicate base practice performance. Scores of MIL2 through MIL5 indicate institutionalization of practices.

The Scoring Methodology is also presented in each individual report.

Basic Rules

1. Practices are either performed (answer = “Yes”), incompletely performed (answer = “Incomplete”), or not performed (answer = “No”).
2. A goal is achieved only if all practices are performed.
3. A MIL1 score is achieved if all the goals in the three domains are achieved.

The domains can be achieved at higher levels if the MIL questions for each level (MIL2 through MIL5) are answered “Yes.”

Scoring Rubric

Step 1: Score the Practice Performances per Domain

Each practice in a domain is scored as follows:
• *performed* when the question is answered with a “Yes” (green)
• *not performed* when a question is answered with an “Incomplete” (yellow) or “No” (red) or “Not Answered” (grey)
• if “Not Answered” (grey) is shown, the question was left blank and is scored the same as a “No.”

Step 2: Score the Goal Achievement per Domain

Each goal within the domain is then scored as the following:
• *achieved* when all practices are performed (green)
• *partially achieved* when some practices are performed (yellow)
• *not achieved* when no practices are performed (red)

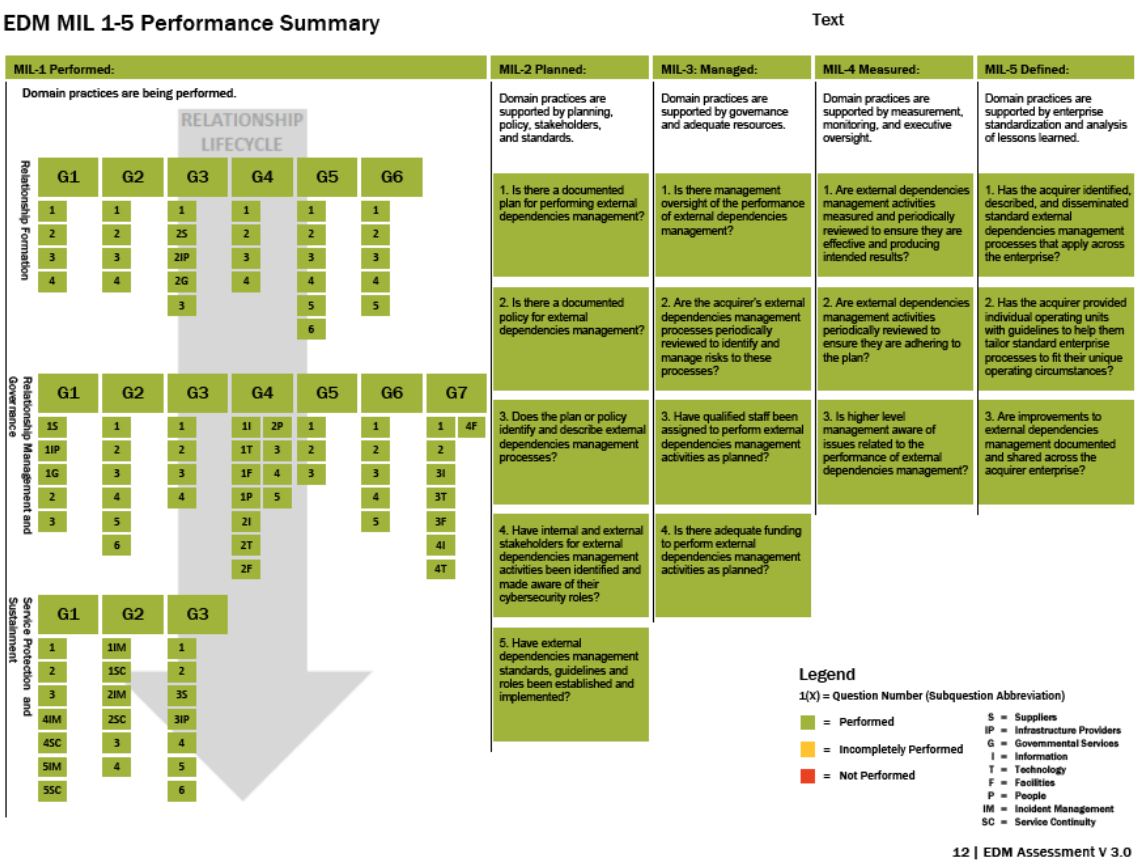
Step 3: Score the Maturity Indicator Level per Domain

Each domain is assigned a MIL based on the following:
• MIL0 if only some of the goals are achieved
• MIL1 if all of the goals are achieved
• MIL2 if MIL1 is achieved and all of the MIL2 questions are answered Yes
• MIL3 if MIL2 is achieved and all of the MIL3 questions are answered Yes
• MIL4 if MIL3 is achieved and all of the MIL4 questions are answered Yes
• MIL5 if MIL4 is achieved and all of the MIL5 questions are answered Yes

MILs are assigned to each domain and represent a consolidated view of performance. CERT-RMM MILs describe attributes that would be indicative of mature capabilities as represented in the model’s capability levels. However, MILs are not the same as capability levels, which can be assigned only after a formal appraisal of capability maturity, not after using an assessment-based instrument.

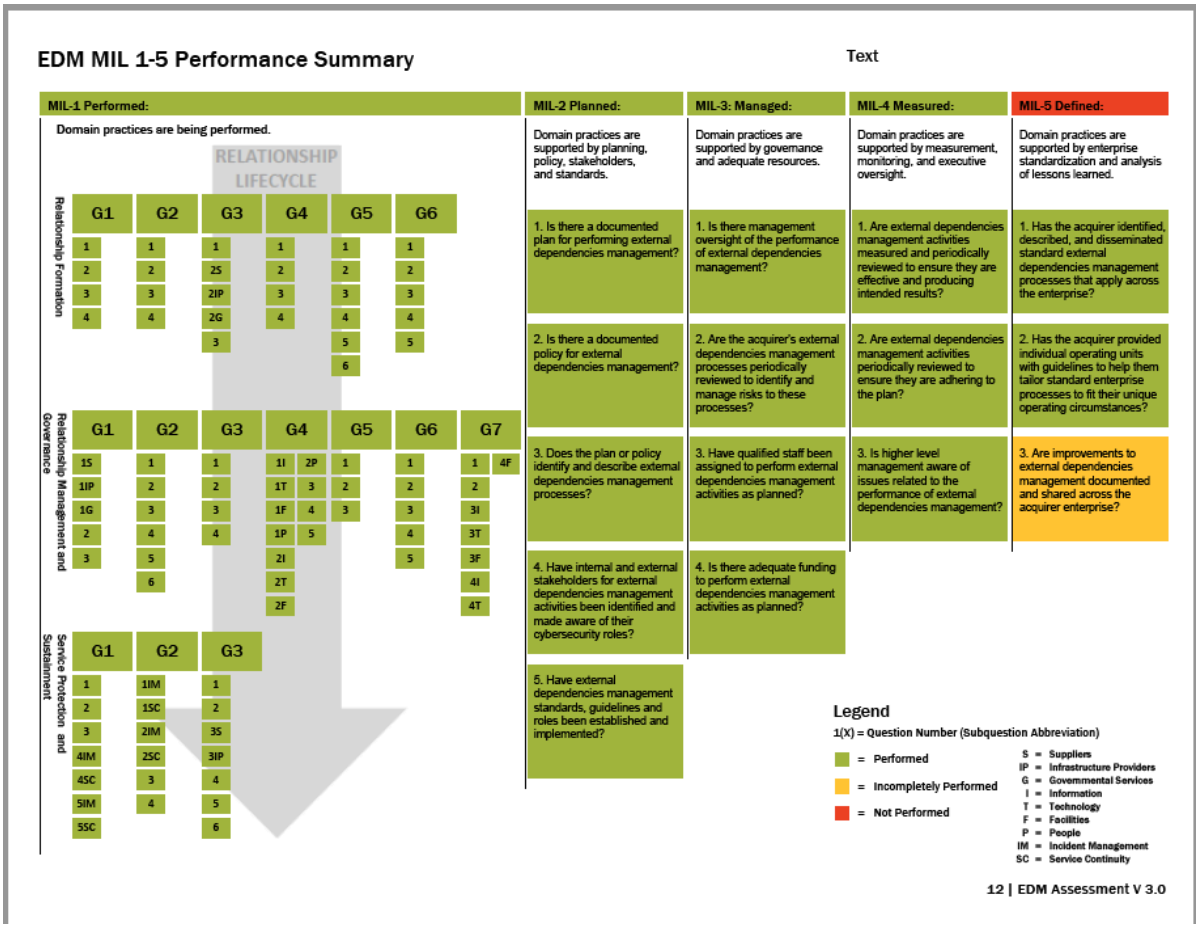
Graphical Representations of the of the cases described above:

MIL 5 is Achieved



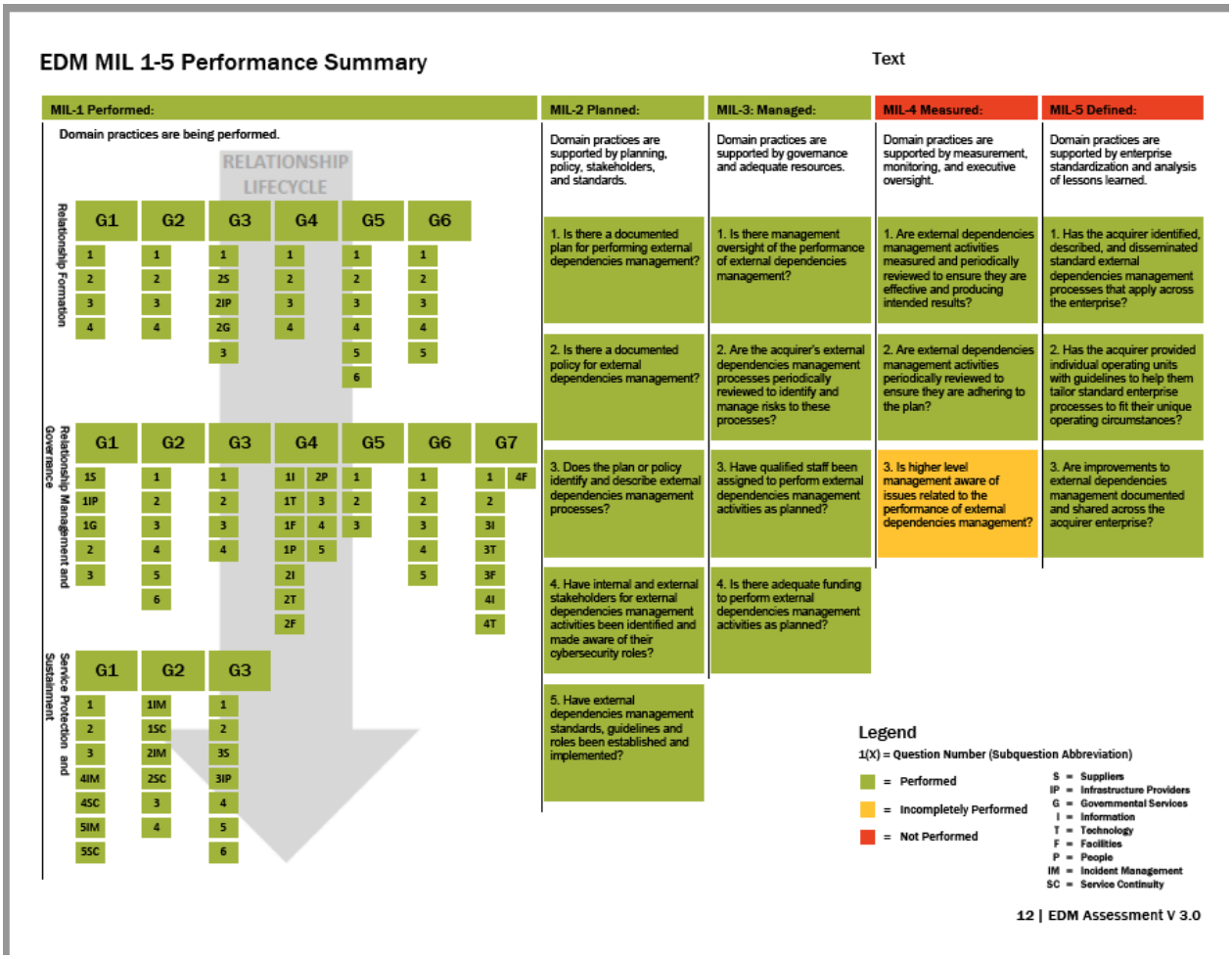
Per the scoring rubric, MIL 5 can only be achieved if all goals at MIL 1 are achieved and all MIL practice questions for MIL 2 through MIL 5 are answered as "Yes". Note to achieve a goal all the practice questions associated with the goal must also be answered as "Yes". Essentially, all question within the assessment must be answered as "Yes".

MIL 4 is Achieved



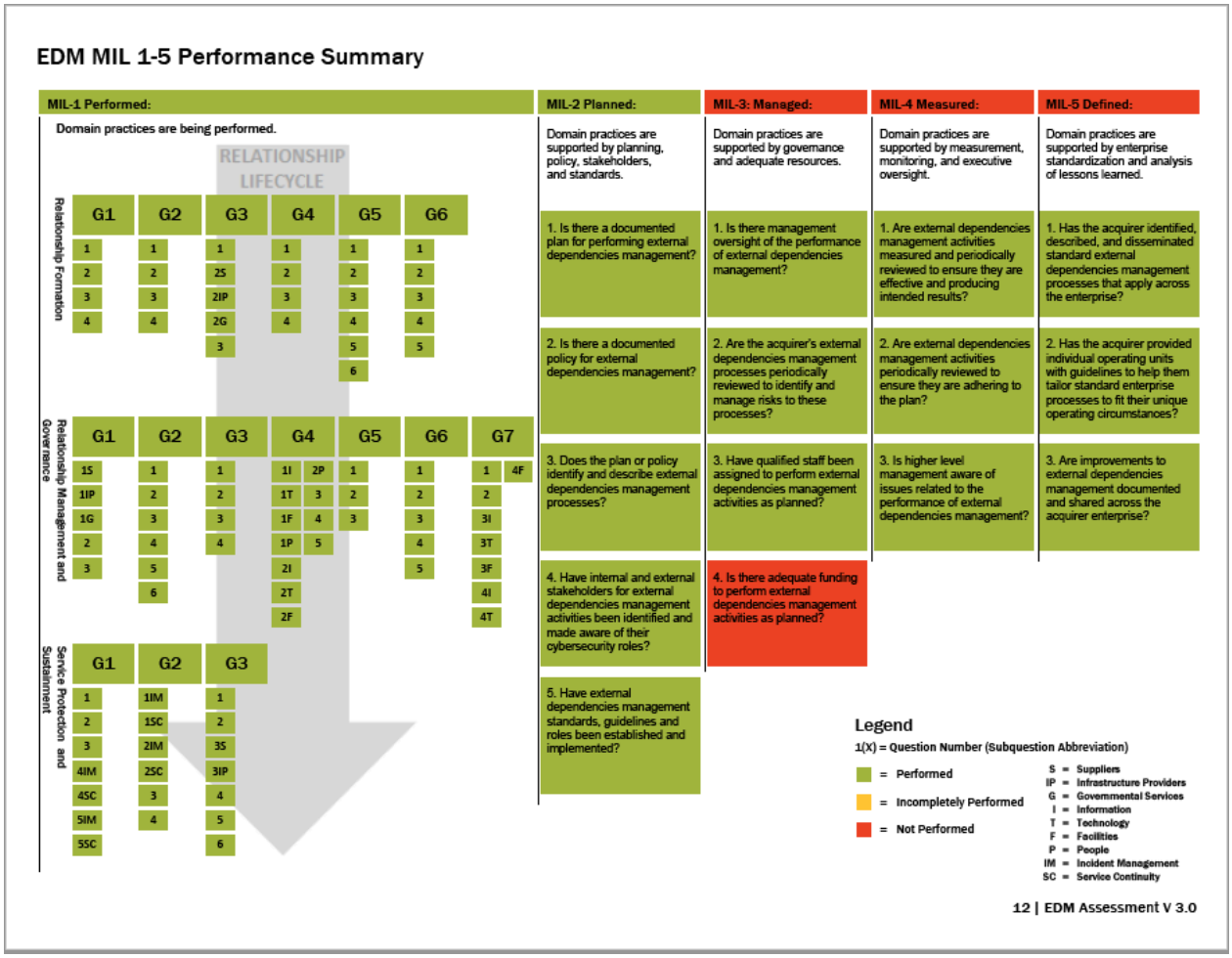
Per the scoring rubric, MIL 4 has been achieved because there were one or more questions that were not answered as "Yes" in MIL 5 and all the questions in the lower levels and in MIL 4 were answered as "Yes". Note, it does not matter if the answer was "Incomplete" or "No", the result is the same. Notice also the stripe that designates the MIL level is colored red. For MILs 2 through 5 the level achieved is either achieved (green) or not achieved (red). An incomplete (yellow) state does not exist. It is binary.

MIL 3 is Achieved



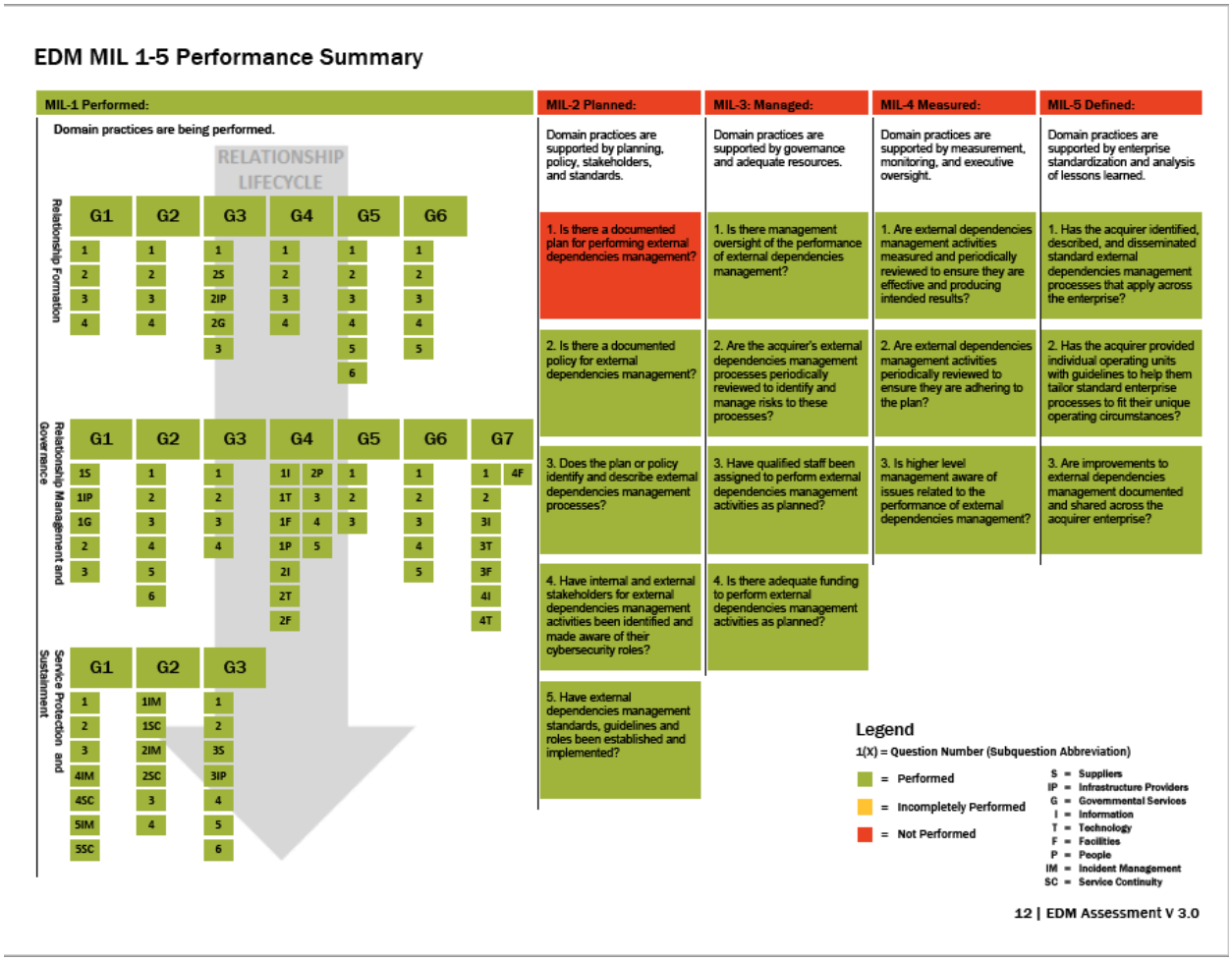
Per the scoring rubric, MIL 3 has been achieved because there were one or more questions were not answered as "Yes" in MIL 4 and all of the questions at the lower MILs and in MIL 3 were answered as "Yes". Note, it does not matter if the answer is "Incomplete" or "No", the result is the same. Notice also that all the question for MIL 5 were answered as "Yes" (green). Even though that is the case the MIL stripe is still not achieved and is colored red as not all questions at the lower levels were answered "Yes" (green). Therefore, the stripe that designates the MIL level is colored red for both MIL 4 and MIL 5. For MILs 2 through MIL 5 the level attained is either achieved (green) or not achieved (red). An "Incomplete" (yellow) state does not exist for MIL 2 through MIL 5. It is binary.

MIL 2 is Achieved



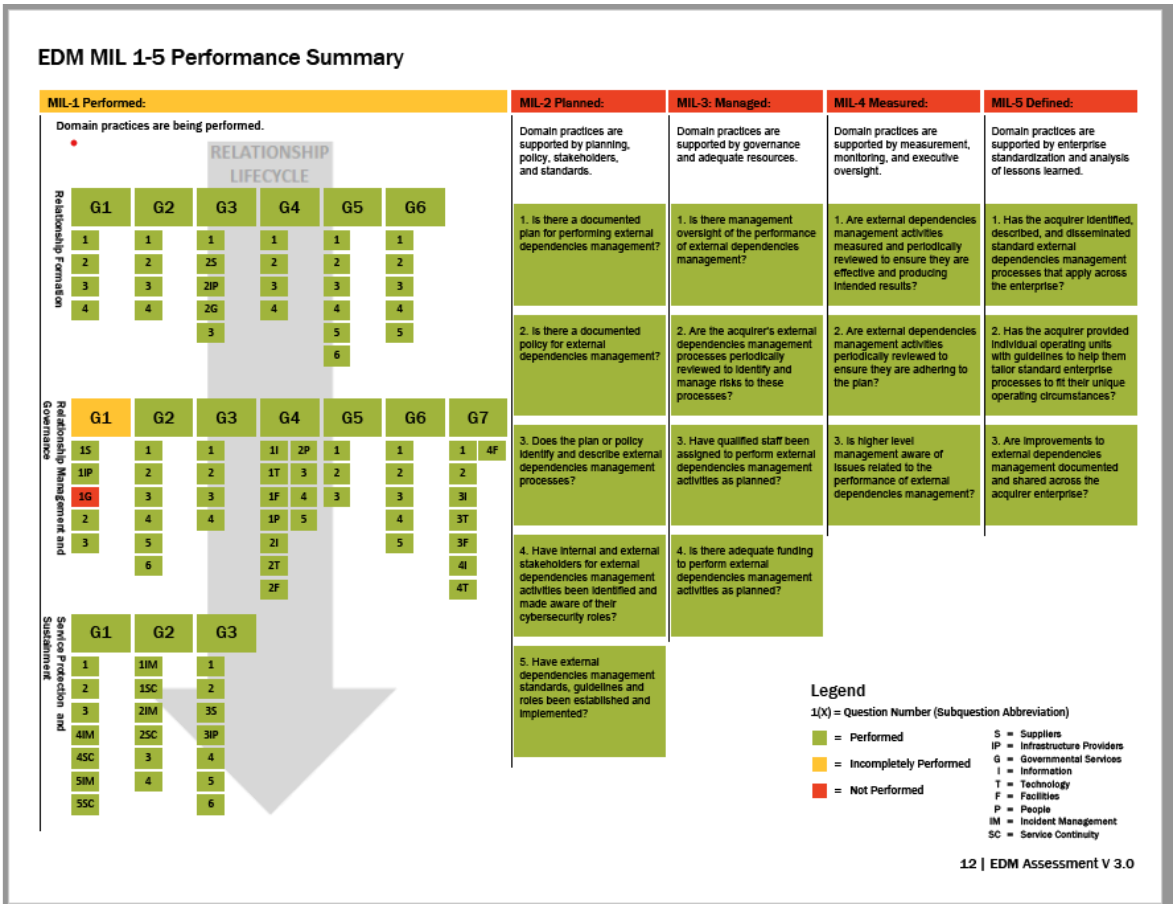
MIL 2 follows the same pattern as described above for MIL 3 and MIL 4.

MIL 1 is Achieved



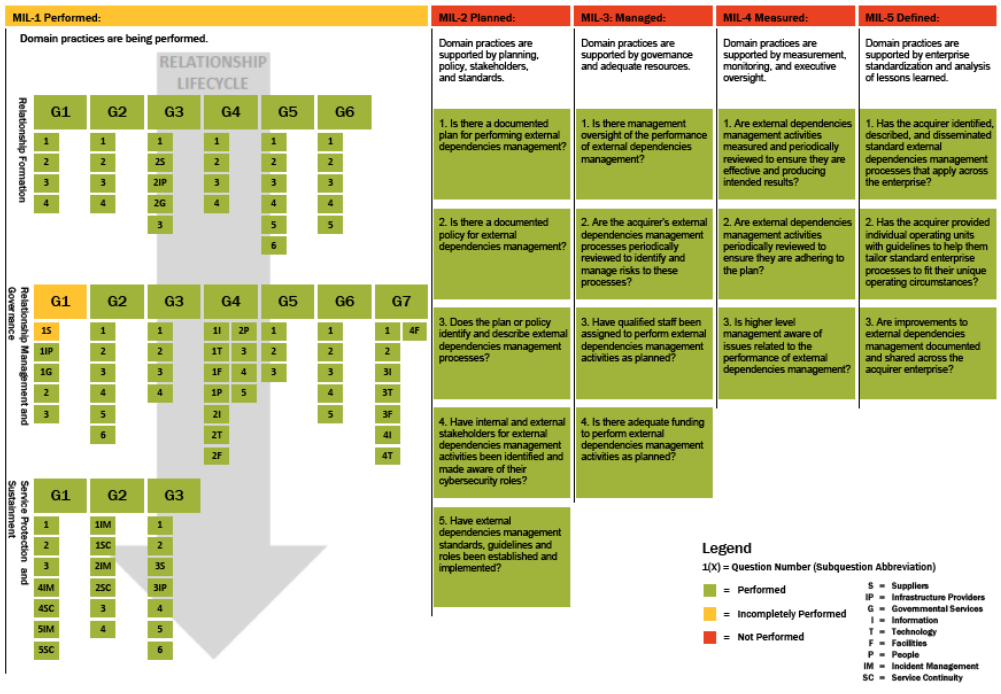
If MIL 1 is achieved, MIL 1 scoring follows the same pattern as described above for MIL 2, MIL 3 and MIL 4. If MIL 1 scoring is not achieved the scoring is slightly different and will be described below in the MIL 0 section.

MIL 0 – Incomplete (MIL 1 is not achieved)

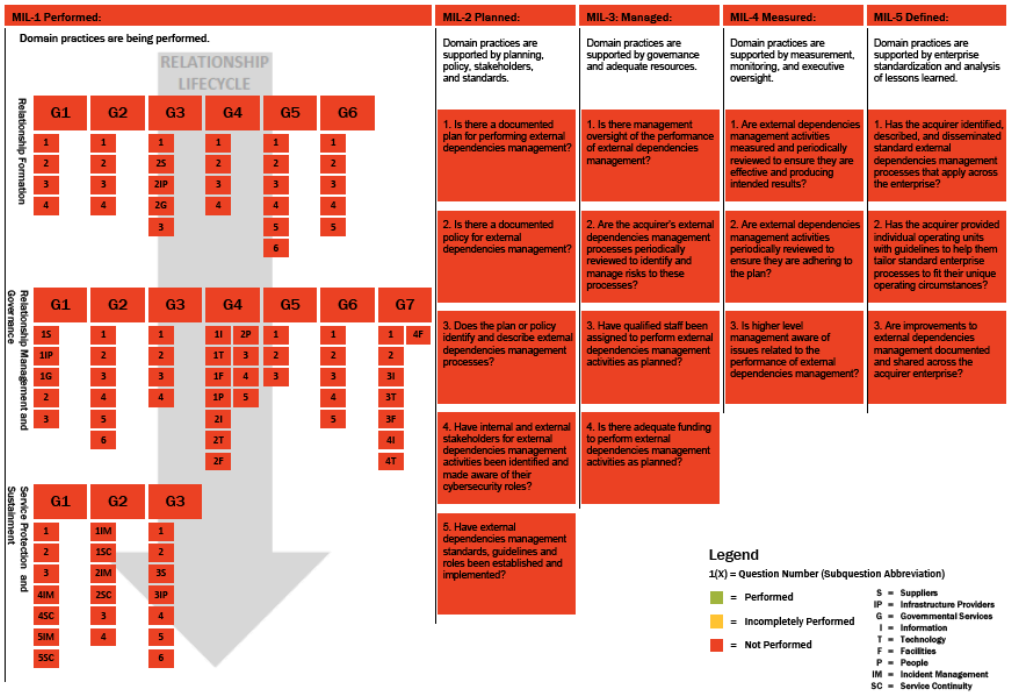


Note the depiction above and below on the next page. Any single non-yes answer, regardless of which domain, will cause MIL 1 to be incomplete. The corresponding strip at the top of the MIL 1 portion of the graph will be colored yellow. MIL 1 is the only MIL that can have the corresponding colored stripe indicator be green, yellow or red. For the MIL 1 to be achieved (green), all questions in all domains must be answered "Yes". For MIL 1 to not be achieved all questions at MIL 1 will need to be answered "No". This is the only time the stripe indicating the MIL 1 state will be colored "Red" (see below). All goal and question indicators will also be colored red. If all questions in the entire assessment are answered "No", all indicators or the entire depiction will be colored red.

EDM MIL 1-5 Performance Summary



EDM MIL 1-5 Performance Summary



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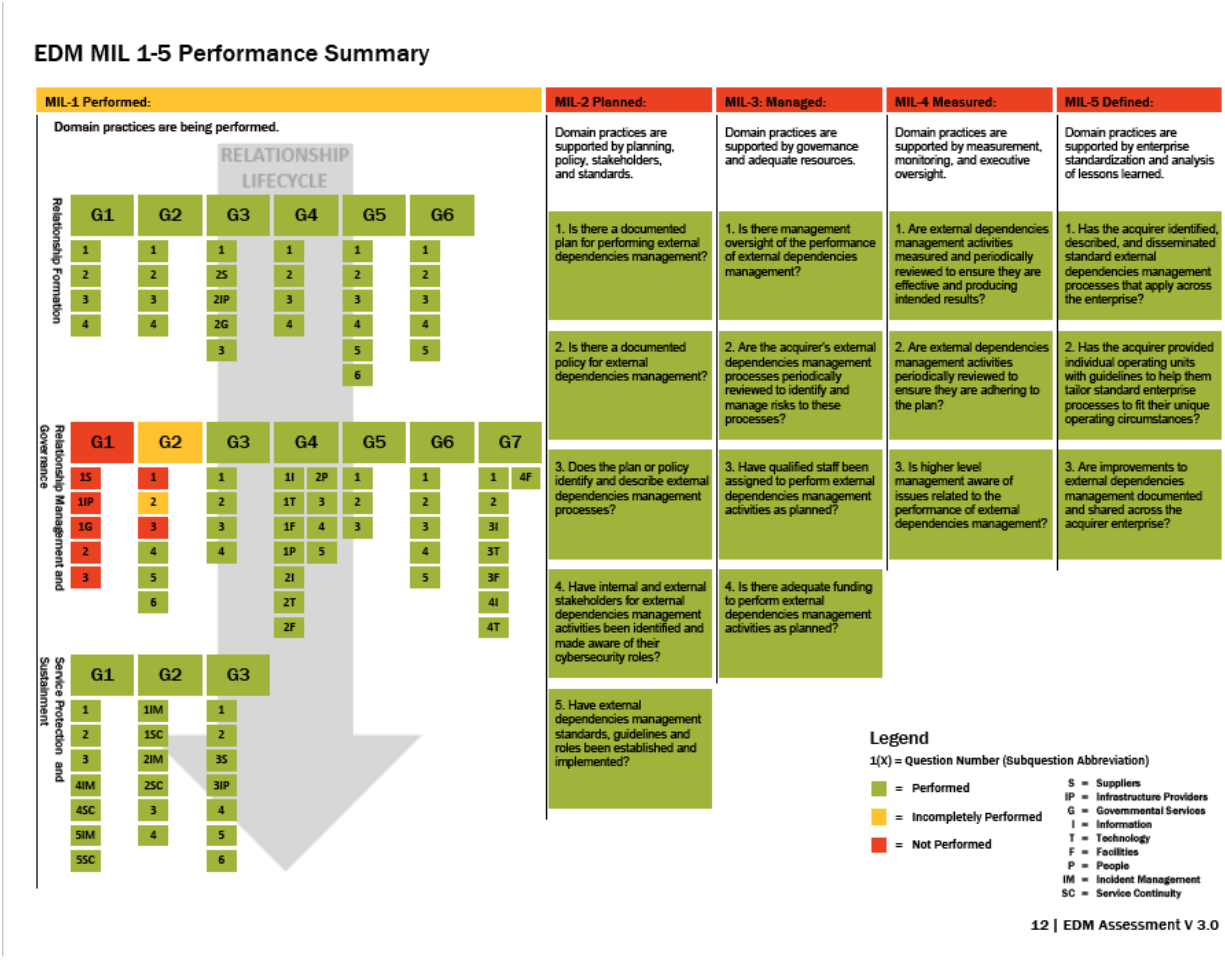
Goal Level Achievement:



The MIL 1 goal level indicators are also color coded. As can be seen in the depiction directly above, if all questions within a goal are answered "No", the corresponding goal indicator is also colored red to signify the goal was not achieved at all. If a goal contains 1 or more non-Yes answers the goal is colored yellow to indicate it is partially achieved or incomplete. If all practice questions supporting the goal are answered "Yes", the goal indicator is colored green to indicate the goal is achieved.

5.2. RESULTS

EDM Results are presented in the following categories:

Summary Results
Relationship Formation
Relationship Management and Governance
Service Protection and Sustainment
Maturity Indicator Levels

Summary Results
CSET offers EDM assessment users the MIL **Summary Results** page in the form of progress bars for completed practices by MIL organized by domain (RF, RMG, SPS) and MIL level 1-5.
The CSET EDM MIL Progress Summary section is accessed under **EDM Results** in the side navigation bar.

The graph shows the organization's maturity capacity, measured next to the domains in which the organization has made progress in and the corresponding MIL level progression.

Maturity Indicator Levels provide a combined measurement of the completeness of EDM practices, as well as the enterprise management activities necessary to ensure that this capability is sustained over time, despite disruptions or organizational changes. The MIL scale is cumulative; each MIL level must be complete before achieving a higher MIL is possible. Viewed collectively, these depictions provide an understanding of overall performance. While achieving a certain Maturity Indicator Level is one possible process improvement objective, it may not be the most important objective for every organization or in every context.

MIL0 Expressed in Percentage of Progress
At the bottom of the graph, the overall Maturity Indicator Level shows the progress for the organization across the entire EDM MIL spectrum. The first section of the bar graph indicates the requirement to satisfy 100% of MIL0 to get to the first milestone (MIL 1), and it details where an organization falls along that progression to the first MIL.

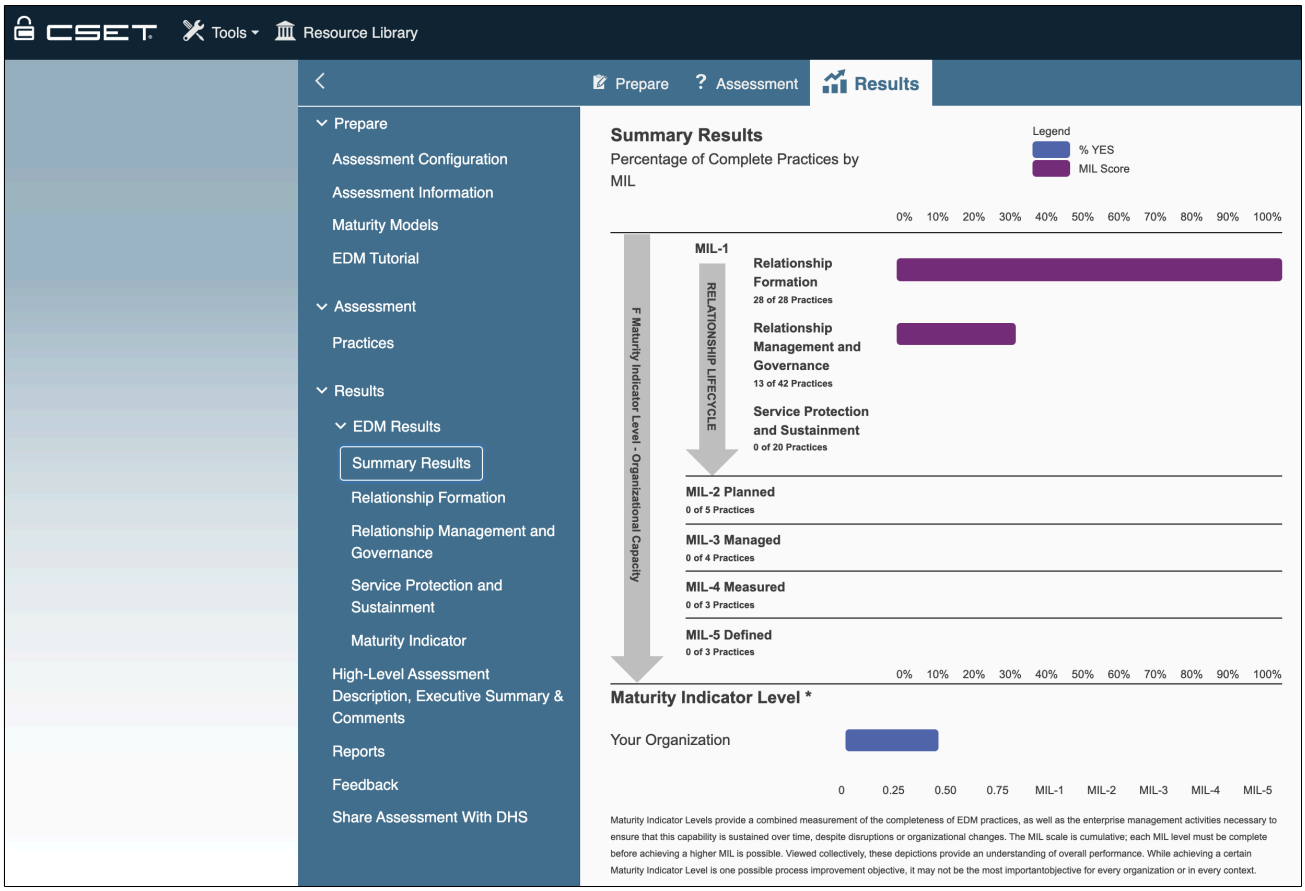
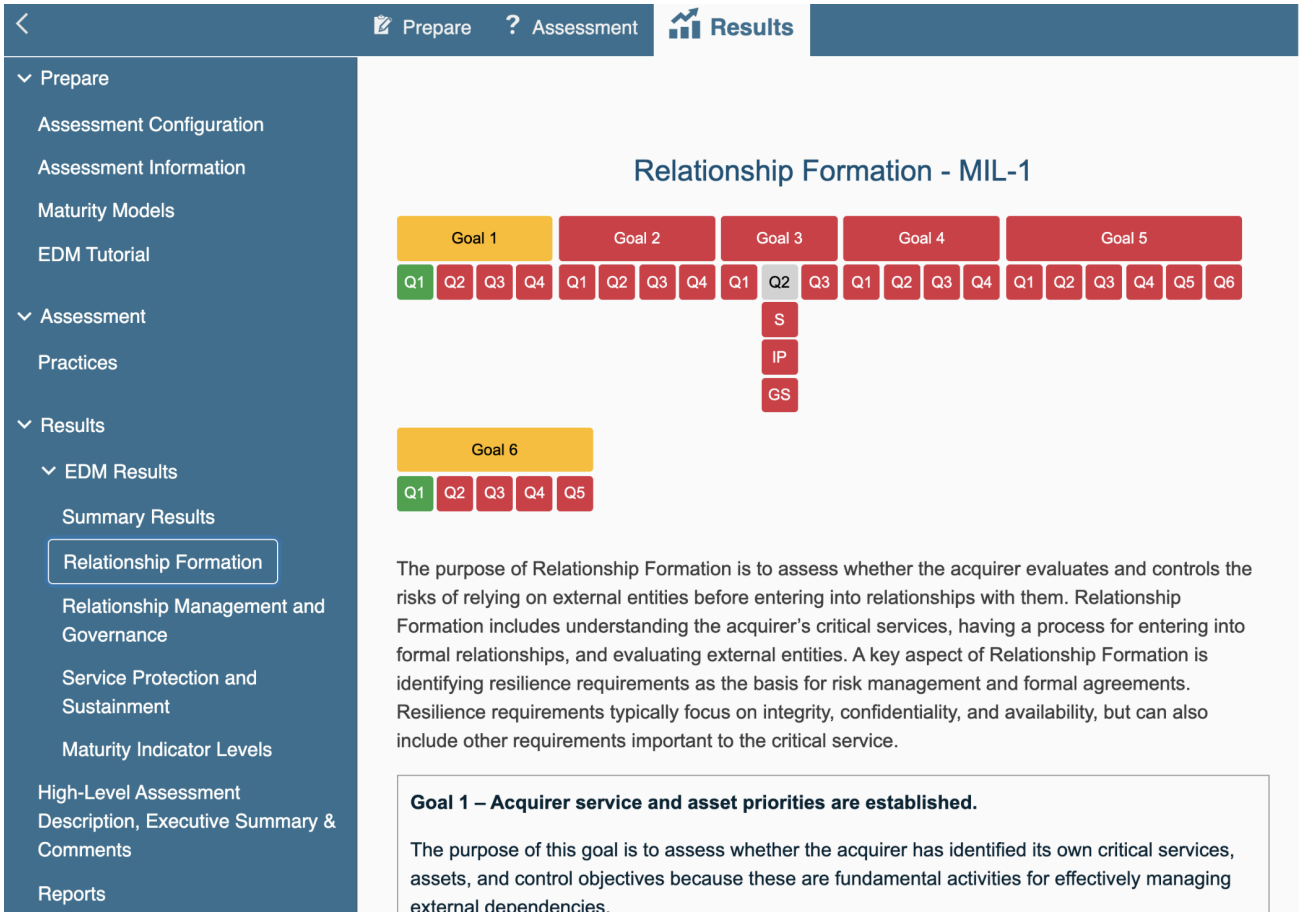


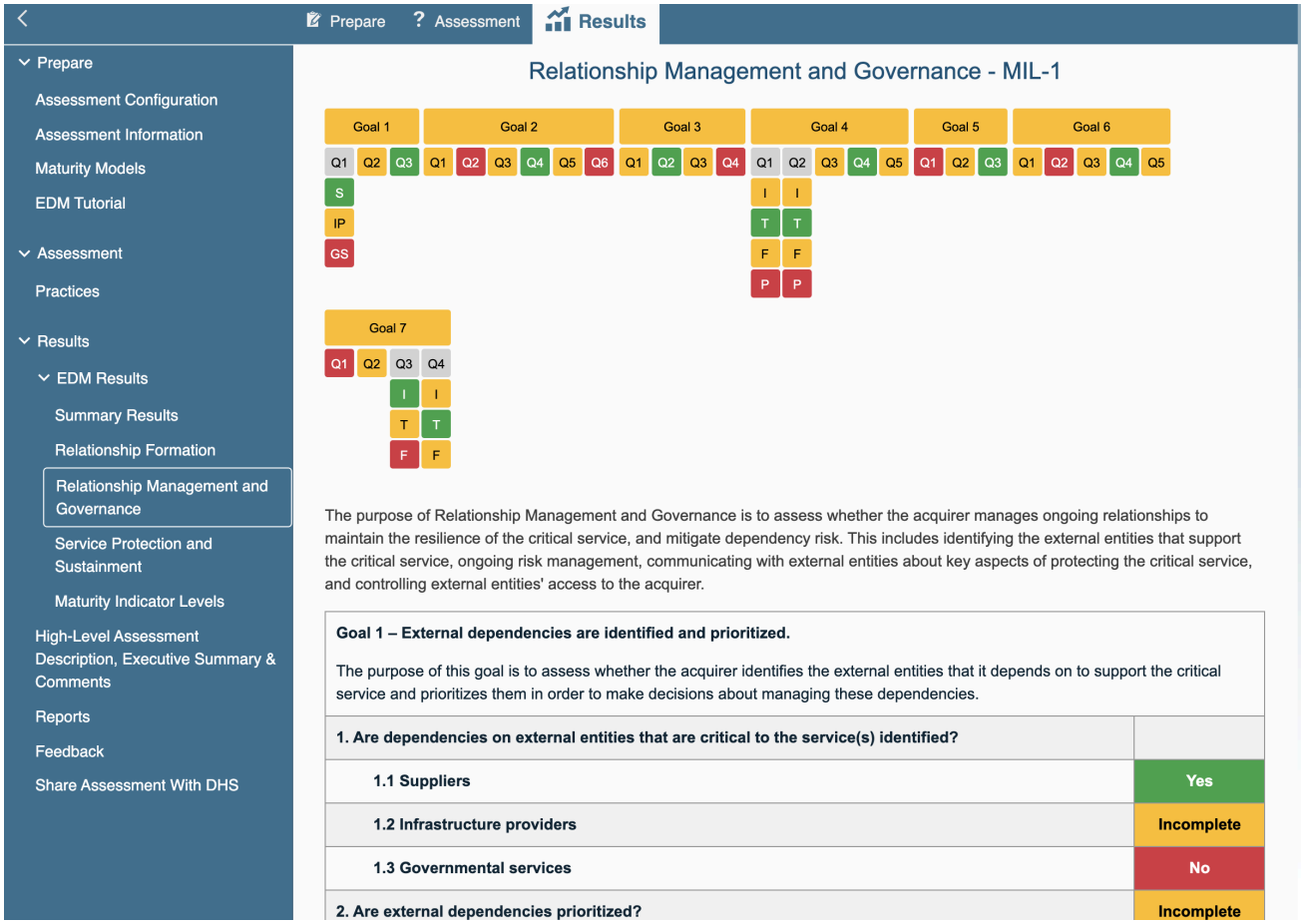
Figure: MIL Progress Summary Results

Relationship Formation

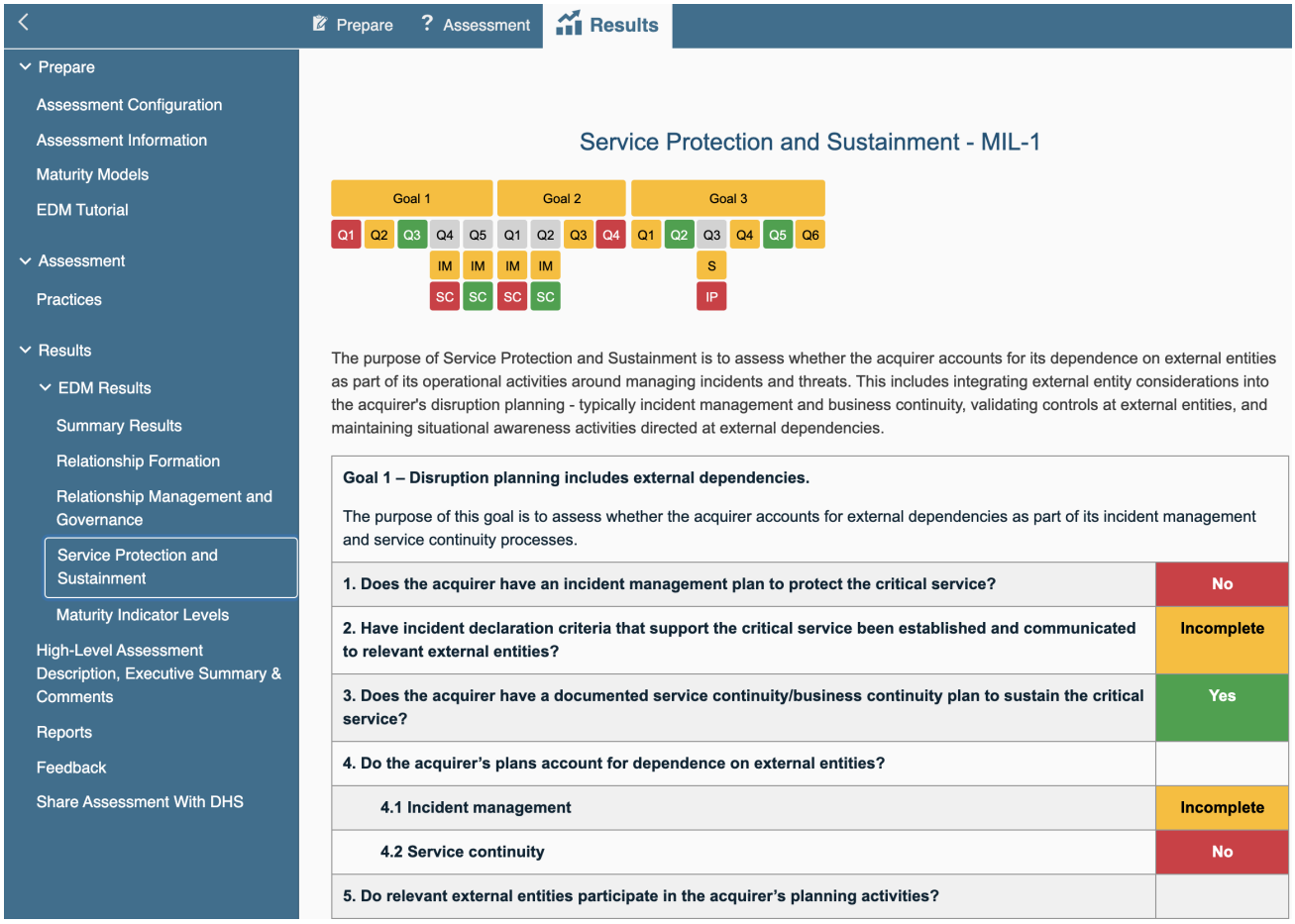
The purpose of Relationship Formation is to assess whether the acquirer evaluates and controls the risks of relying on external entities before entering into relationships with them. Relationship Formation includes understanding the acquirer's critical services, having a process for entering into formal relationships, and evaluating external entities. A key aspect of Relationship Formation is identifying resilience requirements as the basis for risk management and formal agreements. Resilience requirements typically focus on integrity, confidentiality, and availability, but can also include other requirements important to the critical service.



Relationship Management and Governance
The purpose of Relationship Management and Governance is to assess whether the acquirer manages ongoing relationships to maintain the resilience of the critical service, and mitigate dependency risk. This includes identifying the external entities that support the critical service, ongoing risk management, communicating with external entities about key aspects of protecting the critical service, and controlling external entities' access to the acquirer.

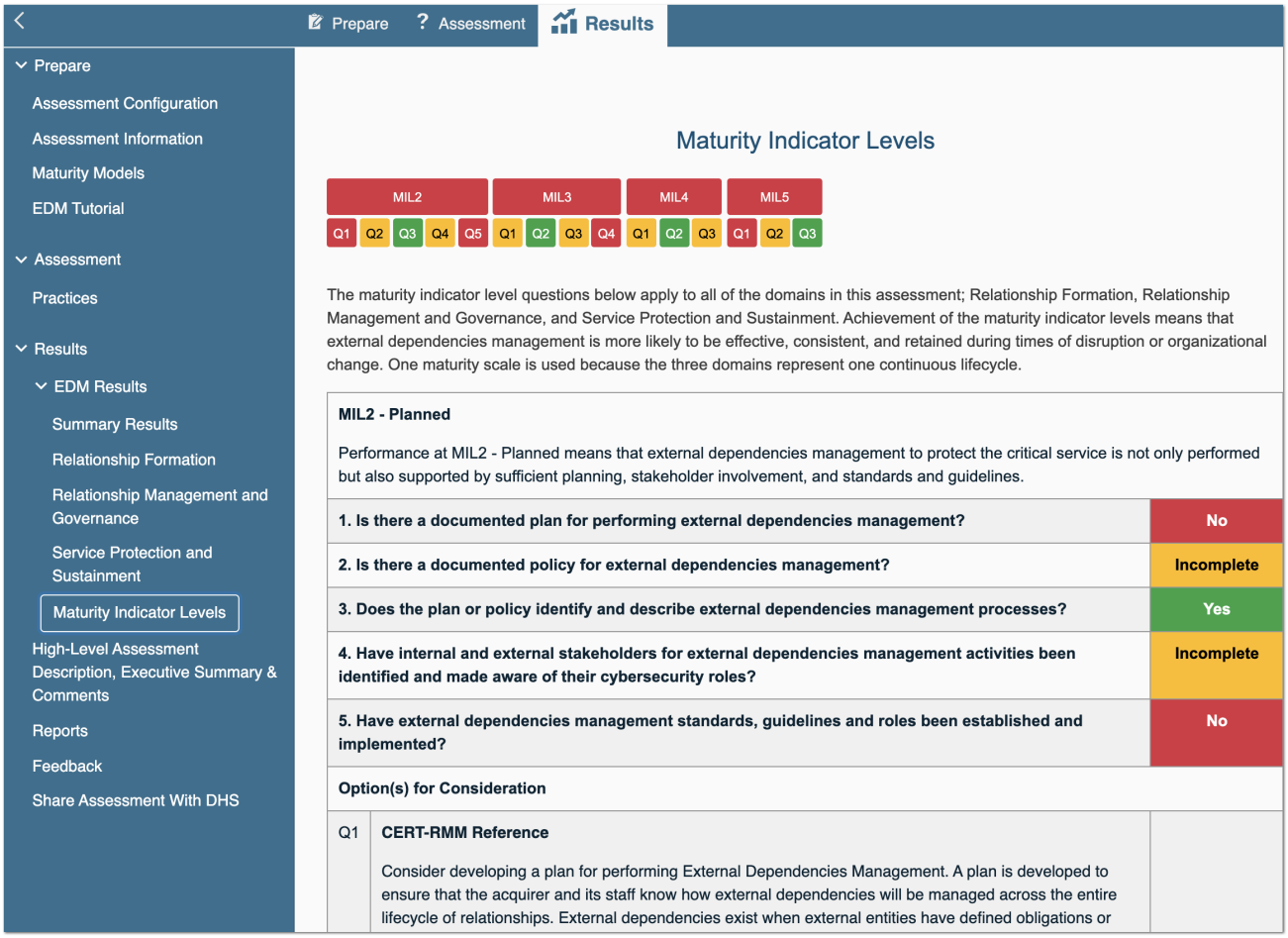


Service Protection and Sustainment
The purpose of Service Protection and Sustainment is to assess whether the acquirer accounts for its dependence on external entities as part of its operational activities around managing incidents and threats. This includes integrating external entity considerations into the acquirer's disruption planning - typically incident management and business continuity, validating controls at external entities, and maintaining situational awareness activities directed at external dependencies.



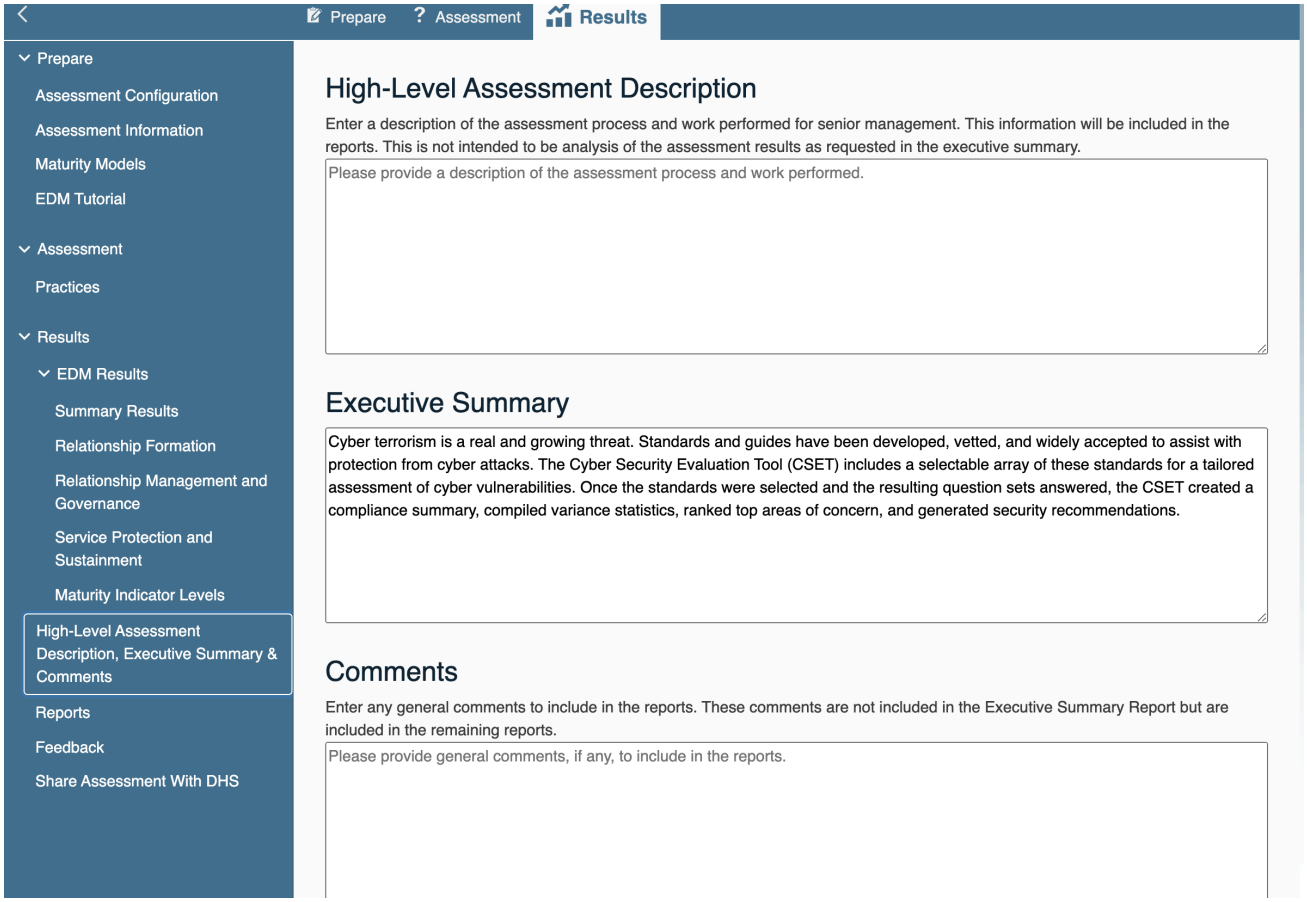
Maturity Indicator

The maturity indicator level questions below apply to all of the domains in this assessment; Relationship Formation, Relationship Management and Governance, and Service Protection and Sustainment. Achievement of the maturity indicator levels means that external dependencies management is more likely to be effective, consistent, and retained during times of disruption or organizational change. One maturity scale is used because the three domains represent one continuous lifecycle.



High-Level Assessment Description, Executive Summary, & Comments

The **High-Level Assessment Description, Executive Summary, & Comments** sections can be customized according to the user's reporting requirements and should take into consideration internal and external audiences and stakeholders.


Prepare
Assessment
Results
Prepare
Assessment Configuration
Assessment Information
Maturity Models
EDM Tutorial
Assessment
Practices
Results
EDM Results
Summary Results
Relationship Formation
Relationship Management and Governance
Service Protection and Sustainment
Maturity Indicator Levels
High-Level Assessment Description, Executive Summary & Comments
Reports
Feedback
Share Assessment With DHS
High-Level Assessment Description
Enter a description of the assessment process and work performed for senior management. This information will be included in the reports. This is not intended to be analysis of the assessment results as requested in the executive summary.
Please provide a description of the assessment process and work performed.
Executive Summary
Cyber terrorism is a real and growing threat. Standards and guides have been developed, vetted, and widely accepted to assist with protection from cyber attacks. The Cyber Security Evaluation Tool (CSET) includes a selectable array of these standards for a tailored assessment of cyber vulnerabilities. Once the standards were selected and the resulting question sets answered, the CSET created a compliance summary, compiled variance statistics, ranked top areas of concern, and generated security recommendations.
Comments
Enter any general comments to include in the reports. These comments are not included in the Executive Summary Report but are included in the remaining reports.
Please provide general comments, if any, to include in the reports.

5.3. REPORT

5.3.1. EDM Reports Features

The **EDM Reports** section can be accessed from the side navigation menu and in the links under the **Reports** content on the main screen.

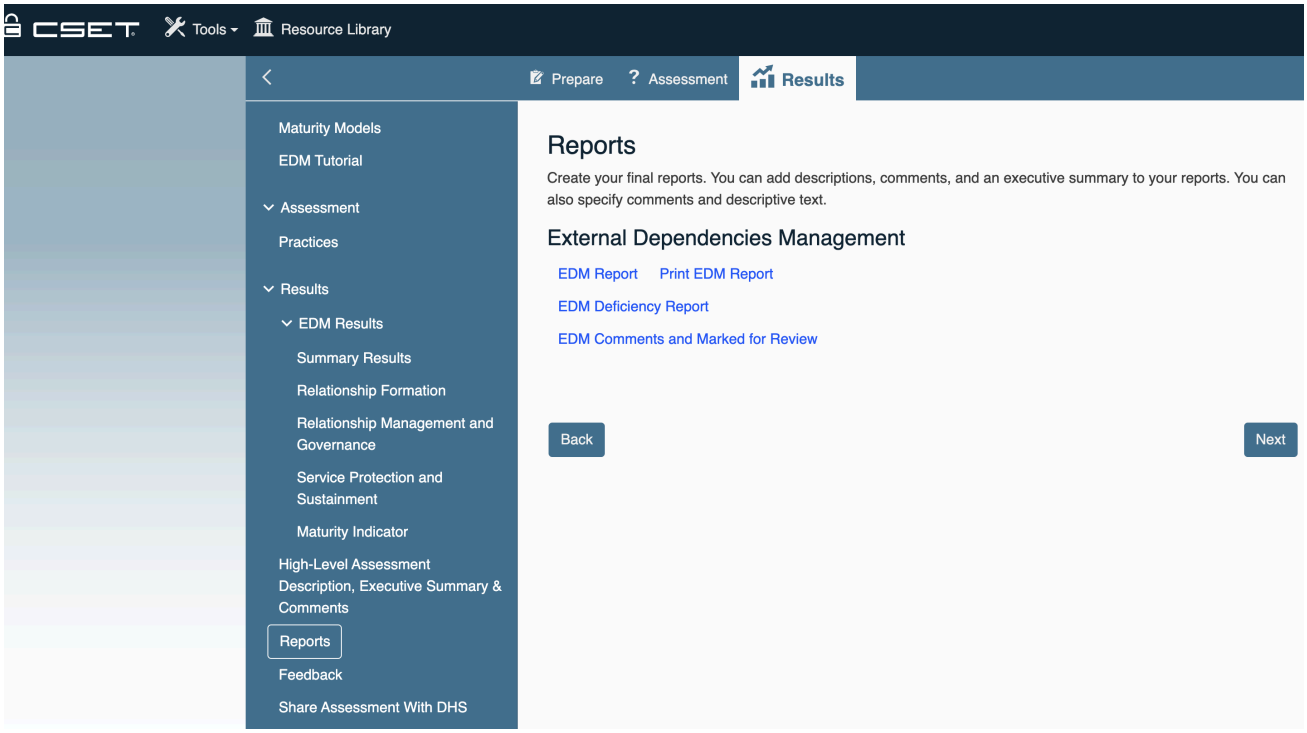


Figure: EDM Reports Options

Print EDM Report (to pdf)
Allows the user to print to pdf.

EDM Deficiency Report
The deficiency report lists the statements that are not currently compliant or "No" answers.This is often referred to as the GAP Report. This report intends to list the gaps, assist users of the report in identifying gaps, prioritizing work, and beginning to make a plan to address the gaps by implementing the controls necessary to come into compliance with the associated statement.The percentage gap in each domain is also listed and will help to determine the priority. EDM is a cumulative maturity model meaning lower levels should be completed before moving to higher levels. Ideally baseline should be completed before focusing efforts on controls in evolving and so forth up the line of maturity levels.

EDM Comments and Marked for Review
The user can locate comments made during the assessment and recall any practices that were marked for review.

Deficiencies (gaps) are further discussed in the Identify Gaps section of this User Guide. The figure below shows an example of the Deficiencies page and those items that might have been flagged for review.

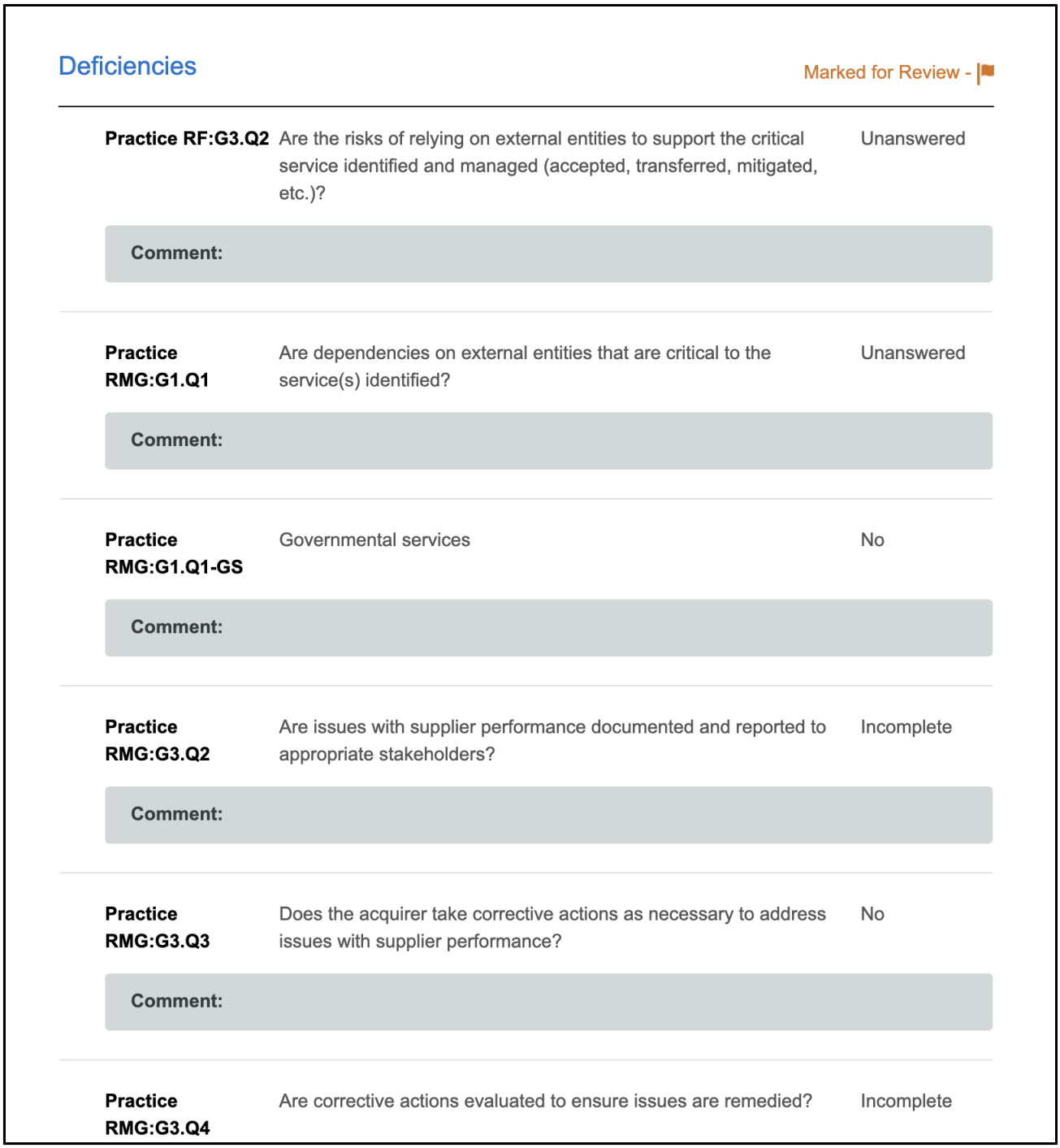


Figure: Deficiencies Report and Items Marked for Review

EDM Reports Options

The following options are available in the **EDM Reports** side navigation pane**:**

5.3.2. Overview: Interpreting the Report

The organization may use the EDM Assessment Report to create an action plan for addressing weaknesses and leveraging strengths identified in the assessment. A good place to start is with the EDM Assessment Performance Summary; Figure 8 shows an example.
It is important to note that a higher maturity level can only be achieved by an organization if it satisfies all of the practices of all of the maturity levels below it. In other words, an organization that fails to perform all of the cybersecurity practices at MIL1 in a domain would also fail to reach MIL2 in that domain even if it satisfied (answered Yes to) all of the requirements at MIL2.

The MILs are an approximation of maturity in the organization. MILs describe attributes that would be *indicative* of these capabilities if a more rigorous, formal appraisal process had found the same attributes. In other words, achieving a MIL does not necessarily imply an absolute capability (in the sense of a formal appraisal), but it does *indicate* capability. The MIL scale is highly useful as an efficient way to focus on improvement and compare maturity across multiple domains. It is less useful as a rigorous, exact demonstration of a specific capability level in a single domain.

The performance summary may give some initial insights into where to invest in cybersecurity improvements by drawing attention to the absence of performed practices. As shown in Figure 8, the color-coded map of results by domain, combined with the individual domain results as shown in Figure 9, is useful for identifying areas for improvement.

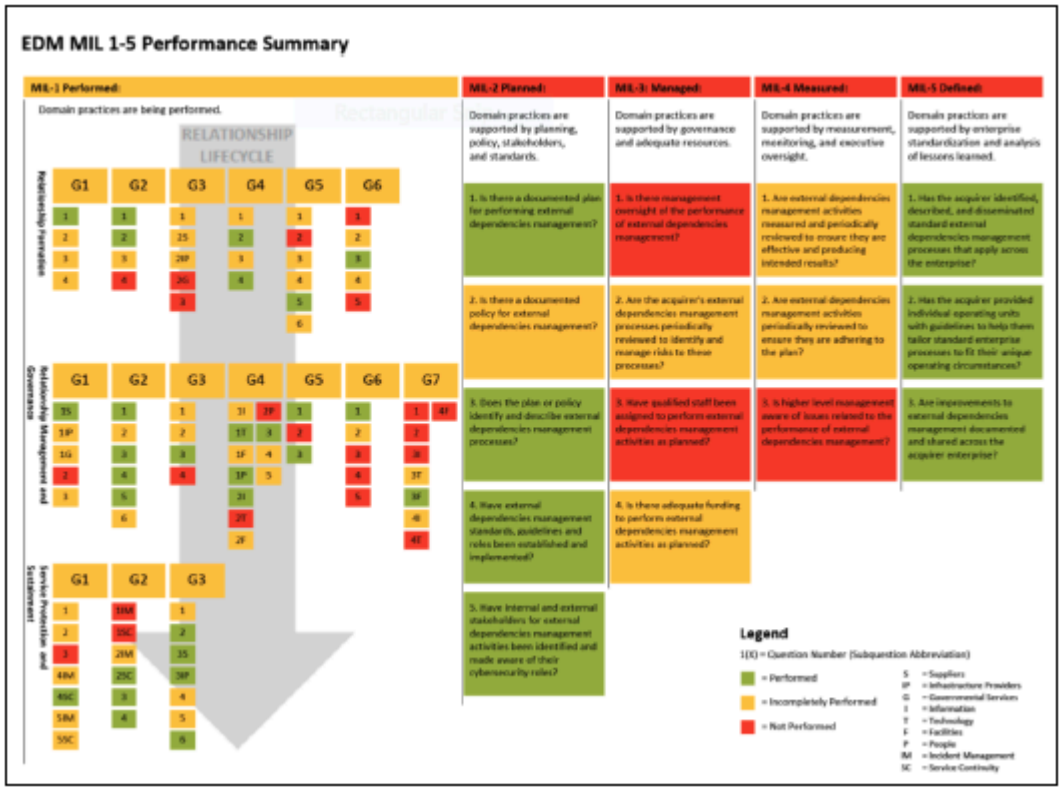


Figure 8: EDM Assessment Performance Summary

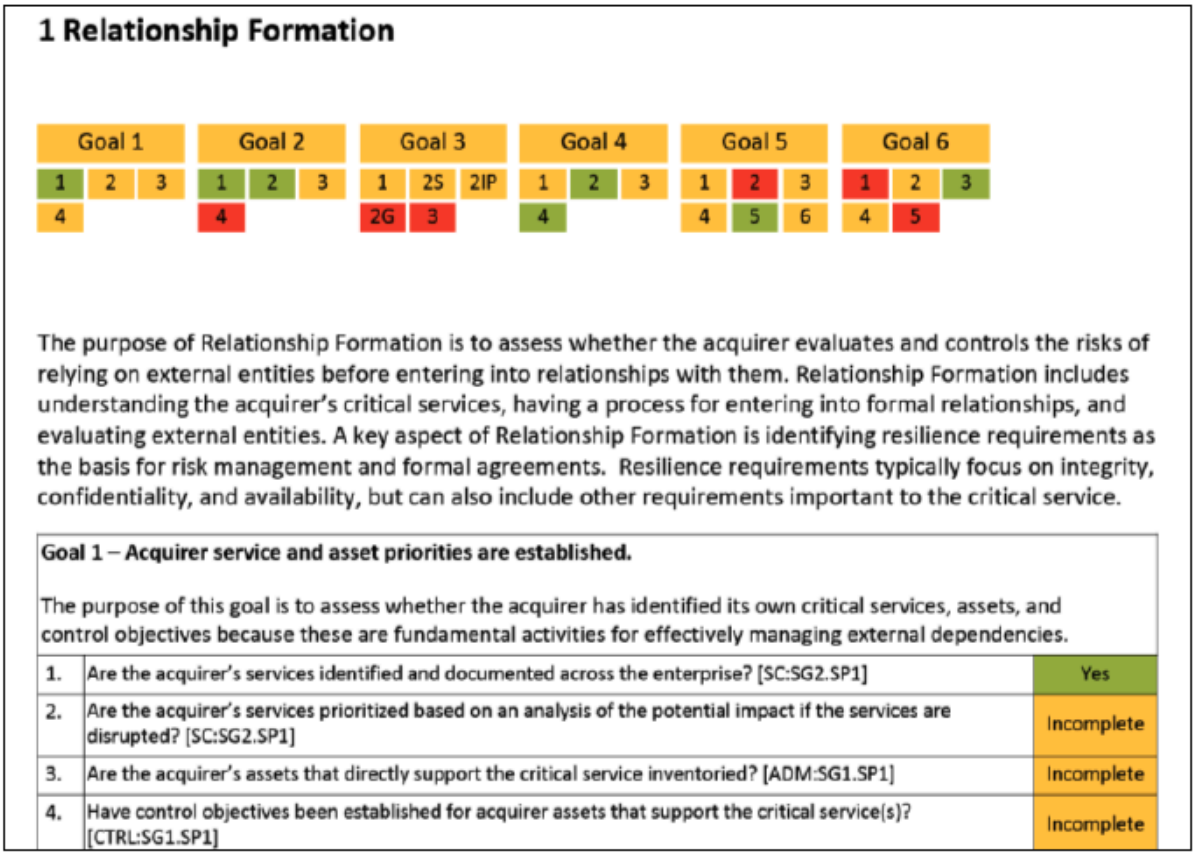
The overview shows a linear display of an organization's results. MIL1 reflects whether a goal has been fully achieved (green), has been partially achieved (yellow), or has not been achieved (red). For a goal to be fully achieved, all of the practices that make up the goal must be performed. MIL2 through MIL5 reflect whether each practice at a specific maturity level is performed (green), partially performed (yellow), or not performed (red).

A typical organizational objective may be to first achieve MIL1 in all domains and then, based on the organization's risk tolerance, select other areas for improvement. An organization can use the overview to focus on prioritizing and implementing practices in the domains it chooses to improve.

Organizations should set their own path for improvement based on their organizational needs, for example:

• If an organization relies on external vendors for the delivery of a critical service and no practices are being performed in the Relationship Formation domain, the organization may need to begin improvement in this domain first.
• If an organization has a regulatory compliance issue that is not being addressed and may result in a cost to the organization if not corrected, the organization may need to address practices related to that issue first.

Individual domain reports, as shown in Figure 9, provide question-level detail to help organizations focus on specific practices for improvement.



1 Relationship Formation

Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
1 2 3 4	1 2 3 4	1 2S 2IP 2G 3	1 2 3 4	1 2 3 4 5 6	1 2 3 4 5

The purpose of Relationship Formation is to assess whether the acquirer evaluates and controls the risks of relying on external entities before entering into relationships with them. Relationship Formation includes understanding the acquirer's critical services, having a process for entering into formal relationships, and evaluating external entities. A key aspect of Relationship Formation is identifying resilience requirements as the basis for risk management and formal agreements. Resilience requirements typically focus on integrity, confidentiality, and availability, but can also include other requirements important to the critical service.

Goal 1 – Acquirer service and asset priorities are established.

The purpose of this goal is to assess whether the acquirer has identified its own critical services, assets, and control objectives because these are fundamental activities for effectively managing external dependencies.

1.	Are the acquirer's services identified and documented across the enterprise? [SC:SG2.SP1]	Yes
2.	Are the acquirer's services prioritized based on an analysis of the potential impact if the services are disrupted? [SC:SG2.SP1]	Incomplete
3.	Are the acquirer's assets that directly support the critical service inventoried? [ADM:SG1.SP1]	Incomplete
4.	Have control objectives been established for acquirer assets that support the critical service(s)? [CTRL:SG1.SP1]	Incomplete

Figure 9: Relationship Formation Individual Domain Report

In the Relationship Formation scenario shown in Figure 9, the organization may benefit from focusing on the prioritization, review, and resilience requirements of the critical service in order to advance from the current

MIL0 state to MIL1, as the organization is not yet performing all practices. The organization should focus on improvements in areas of highest risk rather than simply trying to achieve a higher MIL for its own sake.

The EDM Assessment MIL1 Performance Summary shown in Figure 10 provides an in-depth summary of MIL1 goals and practices for each EDM Assessment domain. The goal statement with a graphical depiction of the number of associated practices that are performed, incompletely performed, or not performed is provided. The summary of MIL1 practice performance is also provided for each domain and for the entire EDM Assessment.

Figure 10 also shows the side navigation bar to help users easily navigate the report.

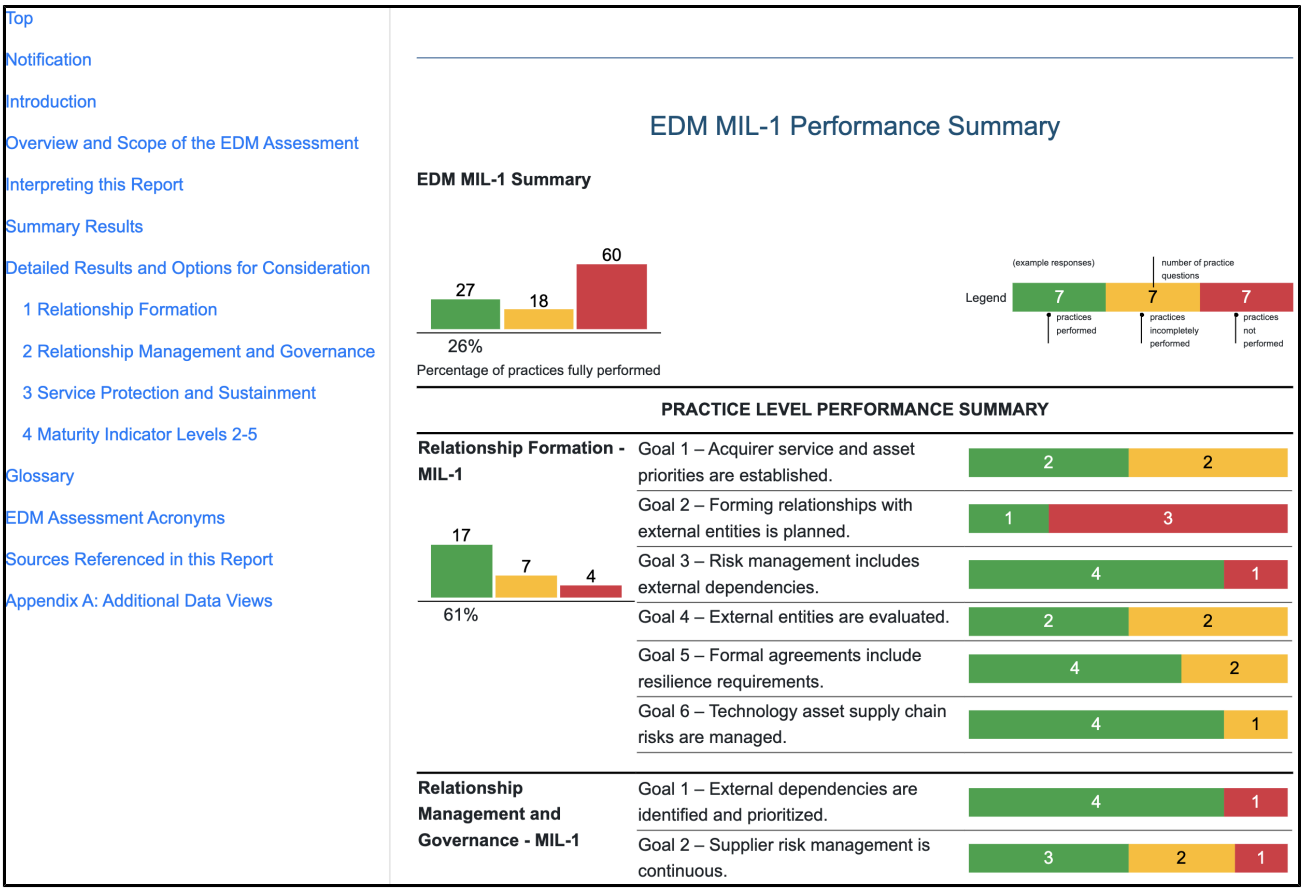


Figure 10: EDM Assessment MIL-1 Performance Summary – Relationship Formation

As with Figure 10, the EDM Assessment MIL1 Performance depiction shown in Figure 11 provides a fine level of operational detail. In the Relationship Formation scenario presented in Figure 11, the organization can determine that governmental services are not managed as well as other external dependency types. This view can be used to aid in identifying discrepancies in how dependencies are being managed.

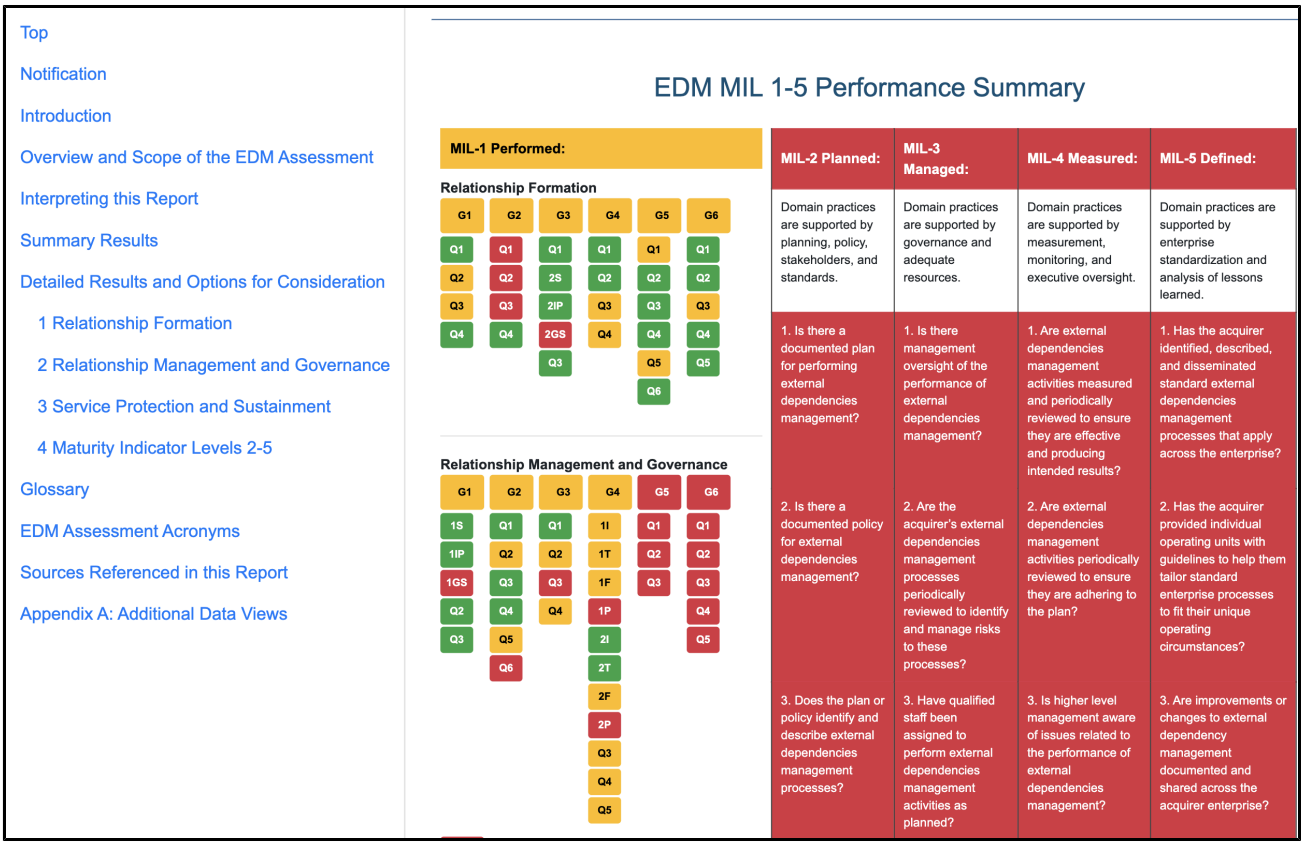


Figure 11: EDM Assessment MIL-1 Performance – Relationship Formation and Relationship Management and Governance

NIST Cybersecurity Framework

The EDM Assessment also enables an organization to assess its capabilities relative to the National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF). Each EDM Assessment practice has been mapped to the applicable categories and subcategories of the NIST CSF. Figure 12 displays the organization's results by function and category. Bear in mind that there are sections of the CSF that do not map to the EDM because the assessment is focused on external dependencies and they will be clearly marked in the reports. An organization can use the summary of results to focus on prioritizing categories it chooses to improve. For example, while the organization is performing 33% of the practices that compose the Identify Function, the results also show that the organization is incompletely performing or not performing all the practices that relate to the Asset Management category. Therefore, the organization may choose to prioritize the implementation of practices that would lead to the improvement of the Asset Management category.

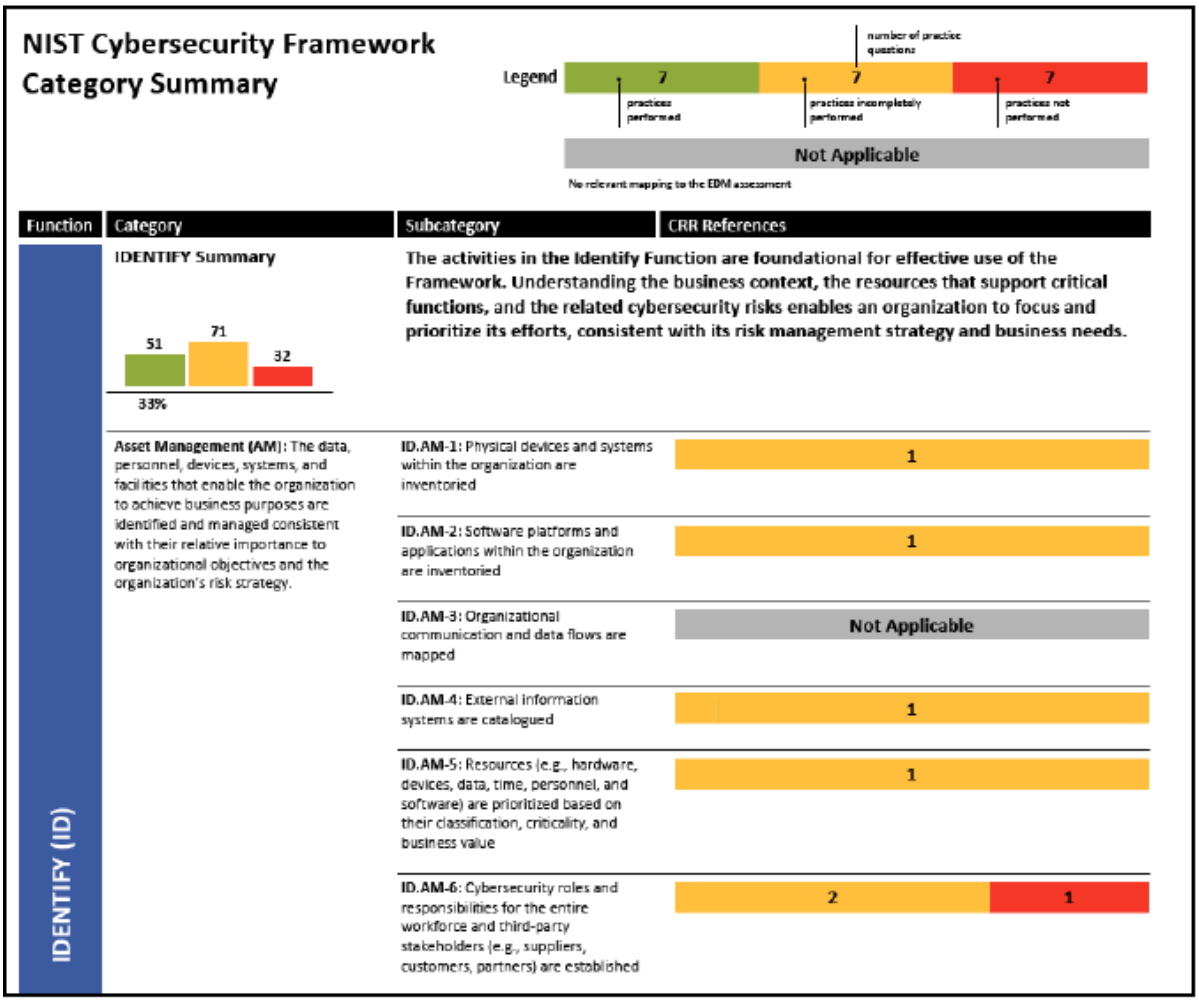


Figure 12: NIST Cybersecurity Framework Summary

Options for Consideration

The EDM Assessment Report includes a potential path toward improving the performance of each practice. These Options for Consideration are displayed in a grid below the organization's results for each goal in each domain (see Figure 13).

Q1	**CERT-RMM Reference** **[SC:SG2.SP1]** Identify the acquirer's high-value services A fundamental risk management principle is to focus on activities to protect and sustain services and assets that most directly affect the acquirer's ability to achieve its mission. This practice refers to identifying the assessed acquirer's high-value services, which it provides to its customers and other stakeholders. **Additional References** *NIST Special Publication 800-53 Revision 4*, "Recommended Security Controls for Federal Information Systems and Organizations" The Fundamentals, 2.1 Multitiered Risk Management.

Figure 13: Option for Consideration

Options for Consideration are primarily sourced from the CERT-RMM and NIST special publications. Appendix C of this guide gives a full list of sources. The CERT-RMM options contain a root reference to the relevant specific goals and practices. This root reference has a standard pattern of abbreviation: *process area:specific goal.specific practice.* In Figure 13, the CERT-RMM reference for Question 1 (Q1) is to Service Continuity:Specific Goal 2.Specific Practice 1.

5.3.3. Identify Gaps

The EDM Assessment evaluates maturity across three domains and identifies specific gaps that can be used to initiate a process improvement project. A plan for improvement is guided in part by
• an evaluation of the assessment results
• the identification of practice performance gaps in each domain
• an alignment of each domain's practices with the organization's mission, strategic objectives,
• and the risk to critical infrastructure, resulting in a target maturity level for each domain
• review of provided Options for Consideration

Figure 14 demonstrates the iterative process of performing improvement activities.

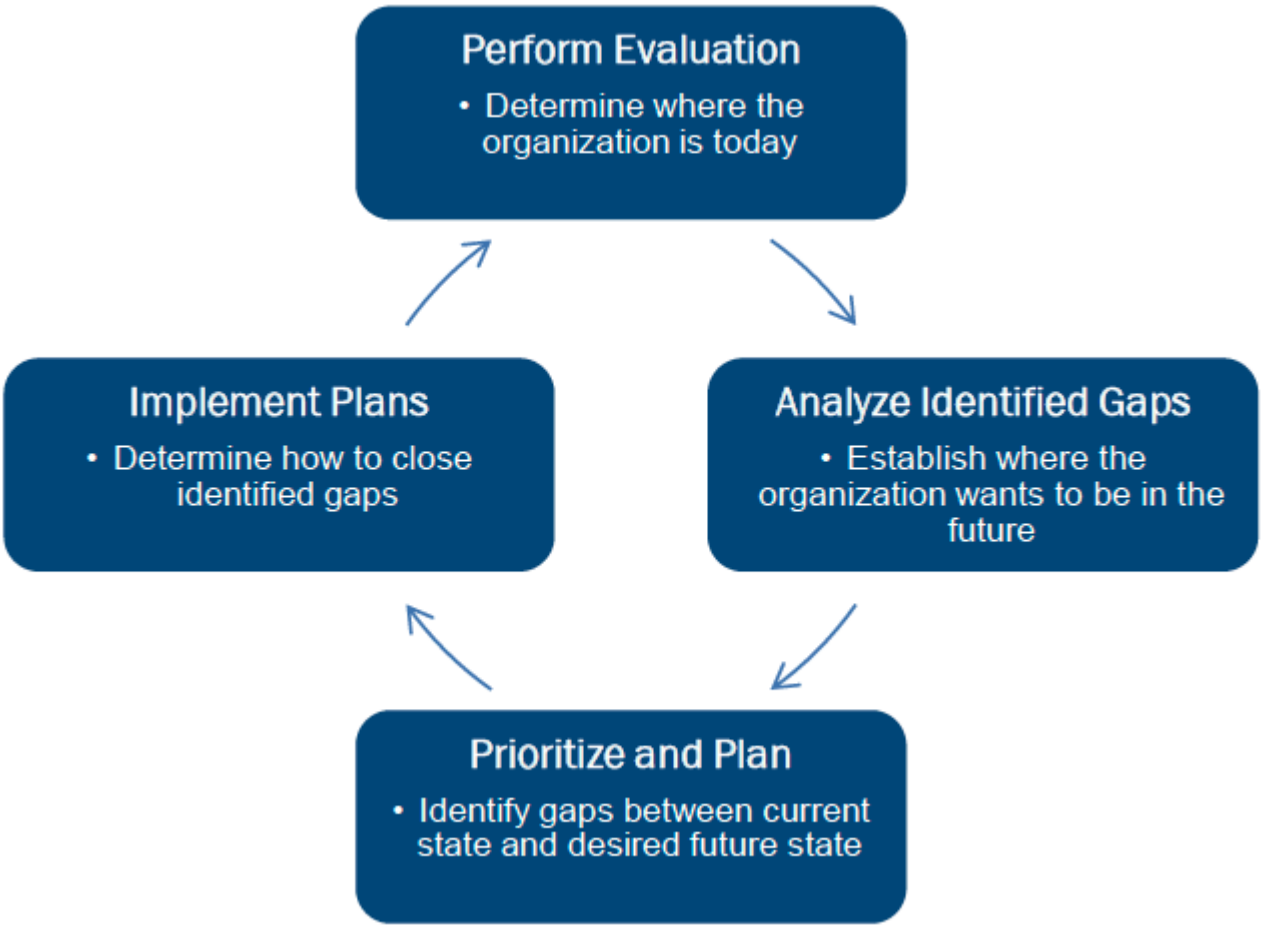


Figure 14: Steps in a Typical Process Improvement Activity

Table 5 demonstrates the initial workflow for the process improvement activities.

Table 5: EDM Assessment in the Process Improvement Workflow

	Inputs	Activities	Output
Perform Evaluation	1. EDM Assessment 2. Organizational policies and procedures 3. Understanding of current cybersecurity management and operations	1. Conduct the EDM Assessment	1. EDM Assessment Report

6. MAKING IMPROVEMENTS

The EDM Assessment does not prescribe the achievement of specific MILs for organizations in any particular sector. The EDM Assessment Report provides an organization with information on its current level of cybersecurity capabilities in each of the three EDM Assessment domains and can be used as a baseline for initiating a data-driven process improvement project, as depicted in Table 6.

This section focuses on the three phases of a process improvement project that remain after the assessment is performed:

- Analyze Identified Gaps
- Prioritize and Plan
- Implement Plans

Table 6: Recommended Process for Using Results

	Inputs	Activities	Outputs
Analyze Identified Gaps	1. EDM Assessment Report 2. Understanding the organization's objectives with respect to the critical service and its impact on critical infrastructure	1. Analyze gaps within the context of the organization (e.g., risk tolerance or threat profile) 2. Determine the potential impact of gaps to organizational objectives and impact on the critical service and on critical infrastructure 3. Determine which gaps should receive further attention	1. List of gaps and potential impact
Prioritize and Plan	1. List of gaps and potential impact 2. Understanding of organizational constraints (e.g., resources, legislation)	1. Identify potential actions to address gaps 2. Perform cost-benefit analysis (CBA) for actions 3. Prioritize gaps and actions based on CBA and impact 4. Develop plan to implement prioritized actions	1. Prioritized implementation plan
Implement Plans	1. Prioritized implementation plan	1. Monitor and measure implementation progress against plan 2. Reevaluate periodically and in response to major changes in the risk environment	1. Improvement plan tracking data

6.1. Analyze Identified Gaps

The EDM Assessment Report provides graphs and tables that detail an analysis based on the recorded responses. Summary charts show achievement of MILs by domain, and detailed tables show the responses for each survey question. These graphs and tables show how the organization scores against the criteria of the EDM Assessment.

It is not optimal for an organization to strive to achieve the highest MIL in all domains. The organization should instead determine the level of practice performance and MIL achievement for each domain that best enable it to meet its business objectives and cybersecurity strategy. This collection of desired capabilities is the organization's target state of practice performance and MIL achievement. There are two common approaches for identifying a target state. The first approach, which involves using the results of the EDM Assessment to identify a desired target, is often adopted by organizations that are new to the EDM Assessment and have not previously established targets. The second approach, which involves walking through the practices before performing an Assessment, is most typically adopted by organizations that have more experience and familiarity with the EDM Assessment practices.

Setting a Target: Method 1

In this approach, an organization uses the results of a completed EDM Assessment to jump-start the identification of its target state. The organization begins by walking through its scores in each domain of the EDM Assessment Report and performing the following steps:

1. Identify all of the practices that have a "No" response.
2. For each practice that has a "No" response, review the practice and determine whether the practice must be performed to meet the organization's business and cybersecurity objectives.
3. If the practice must be performed, then document that practice.
4. If the practice does not need to be performed, then move on to the next practice for which there was a "No" response.
5. Repeat steps 1 through 4 for all practices in the domain that have been identified as "Incomplete."
6. Repeat for all three model domains.

Once this review is complete, the organization should have a documented list of practices that need to be performed. Combined with the list of practices the organization is already performing, which appears in the assessment report, the set of practices is the organization's target state of practice performance. One advantage of this approach is that the generated list of practices that need to be performed also serves as the list of gaps to be addressed. This list of gaps gives the organization a starting point for prioritizing and planning.

Setting a Target: Method 2

In this approach, an organization walks through the EDM Assessment practices before conducting an assessment to identify its target state of practice performance and MIL achievement. The organization begins by walking through each of the practices in each domain in the model and performing the following steps:

1. Review the practice and determine whether the practice must be performed to meet the organization's business and cybersecurity objectives.
2. If "yes," then document that practice.
3. If "no," then move on to the next practice in the domain.
4. Repeat for all three model domains.

Once this review is complete, the organization will have a documented list of practices that it believes it must perform to meet its goals. This selection of practices is the organization's target state of practice performance, which can then be compared against the results of the assessment to determine where gaps exist that need to be addressed.

6.2. Prioritize and Plan

After the gap analysis is complete, the organization should prioritize the actions needed to fully implement the practices that enable the achievement of the desired capability in specific domains. The prioritization should be done using criteria such as how gaps affect organizational objectives and critical infrastructure, the criticality of the business objective supported by the domain, the cost of implementing the necessary practices, and the availability of resources to implement the practices. A cost-benefit analysis for gaps and activities can inform the prioritization of the actions needed.

Next, the organization should develop a plan to address the selected gaps. An organizational sponsor would ideally be the owner of the plan, though responsibility for implementation might be assigned to a person designated by the sponsor.

6.3. Implement Plans

For the plan to succeed, organizations must provide adequate resources, including people with the necessary skills to accomplish the planned tasks and an adequate budget. In addition, the organization must continue supporting the execution of the plan by tracking progress and recognizing accomplishments.

After developing and implementing plans to address selected gaps, the organization should periodically reevaluate its business objectives and the risks to determine if changes to desired capability are needed. Periodic re-assessment using the EDM Assessment Package can track progress toward the organization's desired capability profile.

7. SUMMARY

This document describes the External Dependency Management Assessment (EDM Assessment) architecture and provides detailed descriptions of the three EDM Assessment domains and six Maturity Indicator Levels (MILs). This document also contains information about how to prepare for an EDM Assessment and how a facilitator assists the organization in assessing the maturity of its cybersecurity capabilities. It also gives guidance on follow-on activities to prioritize and implement a plan to close capability gaps that are identified through analysis of the EDM Assessment Report.

The EDM Assessment also provides an assessment of an organization's capabilities relative to the NIST Cybersecurity Framework (CSF). A reference crosswalk that maps the relationship of NIST CSF categories and subcategories to EDM Assessment goals and practices is included in the EDM Assessment Package.

For additional assistance, the facilitator and other participants can contact the Department of Homeland Security (DHS) at cse@hq.dhs.gov.

8. APPENDIX A: PROCESS CHECKLIST

EDM Assessment Checklist

Purpose: To guide the EDM Assessment process

Time	Item	Description	Completed
Four weeks prior to assessment workshop	Preparation meeting	Hold a preparation meeting. • Answer organizational questions. • Establish the scope of the assessment. • Identify participants. • Schedule the assessment workshop.	
Two weeks prior to assessment workshop	Facilities	Ensure that facilities have been set up correctly. • The room for the assessment workshop is large enough to hold all participants and any observers. • The room is set up to facilitate dialog among participants. • A projector and screen are available. • The lights in the room can be dimmed to ensure that projected information is readable. • One or more personal computers are available with Adobe Reader X or higher or Adobe Acrobat DC or higher.	
	Catering	Confirm catering, as applicable.	

One week prior to assessment workshop	Availability	Confirm that all participants are available and committed to attend the workshop.

Name	**Title**	**Role (EDM Assessment Domain)**
		RF
		RMG
		SPS

	Sponsor	Confirm that the sponsor is prepared to deliver opening remarks or has delegated this responsibility to another executive.

After the assessment workshop	Interpreting EDM Assessment Report	Examine the EDM Assessment Report and answer the following questions: What are the overall strengths and weaknesses (see the Overall EDM Assessment Results chart in the report)? • What domains have not achieved at least MIL1? -What domains have achieved MIL3 or above? -What domains show the highest level of achievement? • What domain practices should the organization focus on (see the detailed domain sections of the report)?

	-Identify the practices that are not performed at MIL1. -Identify the MIL practices that are not performed at MIL2 in the domains that have achieved MIL1.
Analyzing gaps	Determine where the organization wants to be and what the gaps are. • Review each domain and identify what level of achievement is desired in the next three to five years. -When identifying the future state, consider criteria such as the organization's business objectives and the criticality of the practice (or domain). • Compare the current state (the EDM Assessment Report) to the future state (where the organization wants to be in the next three to five years). -Identify the practices that are not currently performed and are preventing the organization from achieving its future state.
Prioritizing and planning	Prioritize the practices not currently performed that must be performed to achieve the future state. Consider criteria such as • how gaps affect organizational objectives and critical infrastructure • the criticality of the business objective supported by the domain • the cost of implementing the necessary practices • the availability of resources to implement the practices A cost-benefit analysis for gaps and activities can inform the prioritization of the actions needed. Create a plan to achieve the future state, using the prioritized list of identified practices that must be implemented.
Implementing plan	Implement the plan. • Assign resources to implement the plan. • Periodically conduct assessments to measure progress. • Manage progress against the plan. • Re-plan as necessary.

9. APPENDIX B: EDM ASSESSMENT GLOSSARY/TERMS

The following definitions are used in the EDM Assessment:

Acquirer – an organization that depends on external entities (vendors, infrastructure providers, public services, other business units in some cases) to fulfill its mission or business objectives. Acquirer refers to the assessed or subject organization, e.g., the organization undergoing the EDM Assessment

Assets – people, information, technology, and facilities that are used to provide the critical service being assessed. Several questions in the EDM Assessment refer to acquirer or external assets. These terms have the following meanings:

Acquirer assets – assets (people, information, technology, facilities) for which the acquirer is primarily responsible in terms of the assets' viability, productivity, and resilience

External assets – assets (people, information, technology, facilities) for which external entities are primarily responsible in terms of the assets' viability, productivity, and resilience

Capacity management – managing the demand for technology assets over a range of operational needs

Change management (change control) – a continuous process of controlling changes to information or technology assets, related infrastructure, or any aspect of services, enabling approved changes with minimum disruption

Control – a method, policy, or procedure—manual or automated—that is adopted by an organization to ensure the safeguarding of assets, the accuracy and reliability of management information and financial records, administrative efficiency, and adherence to standards

Cooperative – describes activities or processes that are jointly performed by the acquirer and one or more external entities

Critical service – activities an organization carries out in the performance of a duty or in the production of a product that is essential to the organization’s mission

Disruption management – activities to manage and mitigate the impact of events that may negatively affect the critical service. These usually involve activities such as incident management, problem management, service/ business continuity, or crisis planning.

Domain – in the context of the EDM Assessment, a domain is a logical grouping of external dependencies management practices that contribute to the cyber resilience of an organization.

Enterprise – the largest (i.e., highest level) organizational entity to which the acquirer belongs. For some participants, the acquirer is the enterprise itself.

External dependency – a condition in which the production and requirements of one or more products or services provided by the acquirer depend on the actions of an external entity. This is usually because the external entity is a supplier of goods or services to the acquirer; it has access to, ownership of, control of, responsibility for, or some other defined obligation relating to an asset that is important to the critical service.

Related terms:

Relationship: the existence of a connection, association or some level of external dependency

Formal agreement: a written agreement that creates obligations between the acquirer and an external entity. Formal agreements can provide clarity on terms, requirements, and responsibilities. Examples include contracts, service level agreements, or operational level agreements. Formal agreements are not required for an external dependency or relationship to exist.

External entity – an organization that is separate from the assessed acquirer or business unit. While these are frequently separate legal entities, they may also be separate business units, affiliates, or divisions within a large enterprise.

External entity types. The following are the definitions used in the EDM Assessment:

Supplier – an external entity that

1. supplies one or more of the following to the acquirer:
    a. information and communications technology (ICT)
    b. services supported by ICT
    c. services that support the acquirer's operation or sustainment of ICT, and
2. with which the acquirer has some ability to negotiate the terms and conditions of agreements that govern the acquirer-supplier relationship

Suppliers may also be known subcontractors, vendors, or separate divisions or affiliates of a large enterprise.

Governmental services – a service provided to people, organizations, or other entities in a political subdivision (nation, state, or locality), usually provided by a governmental department or agency. These services frequently involve security: for example fire, police, and emergency response. Non-emergency examples include the U.S. Postal Service and transportation management and support agencies (federal and state agencies, regional port authorities, etc.).

Industry consortia – voluntary groups of private industry or public stakeholders working cooperatively to minimize cybersecurity and external dependency risk. This activity frequently involves exchanging information about risks and threats.

Infrastructure providers – a type of supplier that supplies goods or services to a region, economy, infrastructure sector, or political subdivision, and with which the acquirer normally has no commercially practical ability to negotiate the terms and conditions of agreements. Contracts with infrastructure providers are generally “take it
or leave it.”[1] Examples include natural gas, water, power, or transportation.

Trusted supplier (ICT) – a supplier that provides information and communications technology to the acquirer, which the acquirer has justifiable reason to believe meets appropriate standards for the use intended.
One way for the supplier to achieve this is by demonstrating compliance with standards set forth by an acknowledged authority to ensure the integrity of the technology purchased. The authority may be the original equipment manufacturer or an appropriate industry body (such as The Open Group, International Standards Organization, or similar body). Well-established experience with suppliers may also establish trust. NIST Special Publication 800-53 states “services provided to organizations through well-established . . . business relationships may provide degrees of trust in such services within the tolerable risk range of the authorizing officials and organizations using the services.”

Using a trusted ICT supplier cannot provide complete protection against vulnerabilities, malicious tampering, or counterfeit ICT; however, it does indicate the presence of management controls against this specific risk.

High value service – see critical service

ICT Supply Chain – linked set of resources and processes between acquirers, integrators, and suppliers that begins with the design of ICT products and services and extends through development, sourcing, manufacturing, handling, and delivery of ICT products and services to the acquirer.[2]

Incident – an event (or series of events) that significantly affects (or has the potential to significantly affect) assets and services and requires the acquirer (and possibly external entities) to respond in some way to prevent or limit adverse impacts.

Maturity Indicator Level (MIL) – the MIL scale measures the level of process institutionalization and describes attributes indicative of mature capabilities. Higher degrees of institutionalization translate to more stable processes that produce consistent results over time and that are retained during times of operational stress.

Operational resilience – the organization's ability to adapt to risk that affects its core operational capabilities. Operational resilience is the emergent property of an organization to continue to survive and carry out its mission after disruption that does not exceed its operational limit.

Operational risk – potential for an adverse outcome assessed as a function of threats, vulnerabilities, and consequences associated with an incident, event, or occurrence. Managing risk in the EDM Assessment focuses on operational risks involving the actions of people, technology failures, failed internal processes, and disruptive external events. Operational risk is distinct from, but related to, other enterprise risk areas such as financial and market risk.

Plan – a detailed, written formulation of a program of action to satisfy or perform a practice or goal in the EDM Assessment. At higher maturity levels (MIL2 - Planned) the plan is a document to support the acquirer's performance of External Dependencies Management as an organizational capability.

Policy – a high-level, overall plan embracing the general goals and acceptable procedures of an organization

Practice – an activity performed to support a domain goal

Process – a series of actions or steps taken in order to achieve a particular EDM practice or goal

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1 The key difference between a supplier and an infrastructure provider, from the perspective of External Dependencies Management, is that acquirers normally have a very limited ability to negotiate the terms of the relationship with infrastructure providers. Note that this is a relative standard. In other words, large acquirers that *do* have the ability to negotiate terms with infrastructure providers may wish to treat these external entities as suppliers for the purpose of an Assessment. Because the EDM Assessment is intended for critical infrastructure organizations of different sizes, this is intended to be a flexible definition.

2 National Institute *of Standards and Technology, NISTIR 7622*, Notional Supply Chain Risk Management Practices for Federal Information Systems, October 2012, p. 75.

Resilience requirement – a constraint that the acquirer places on internal or external assets to ensure they remain viable and sustainable when charged into production to support a service. These are often expressed in terms of confidentiality, integrity, or availability. Resilience requirements help ensure the protection of high-value assets as well as their continuity when an incident or disruption occurs.

Risk – see Operational risk.

Service – a set of activities the acquirer carries out in the performance of a duty or in the production of a product

Situational awareness – the purpose of situational awareness is to actively discover and analyze information related to immediate operational stability and security and to coordinate such information across the enterprise.

Stakeholder – a person or organization that has a vested interest in the organization or its activities

Threat – the combination of a vulnerability, a threat actor, a motive (if the threat actor is a person or persons), and the potential to produce a harmful outcome for the acquirer

Vulnerability – a characteristic of design, location, security posture, operation, or any combination thereof that renders an asset, system, network, or entity susceptible to disruption, destruction, or exploitation

10. APPENDIX C: REFERENCES

A Complete Guide to the Common Vulnerability Scoring System Version 2.0 Security Incident Response Teams (CSIRTs) https://resources.sei.cmu.edu/library/asset-view.cfm?assetid=6305
NIST Cybersecurity Framework
https://www.nist.gov/cyberframework

Managing for Enterprise Security
https://resources.sei.cmu.edu/library/asset-view.cfm?assetid=7019

Special Publication 800-18 Revision 1, Guide for Developing Security Plans for Federal Information Systems
https://csrc.nist.gov/publications/nistpubs/800-18-Rev1/sp800-18-Rev1-final.pdf

Special Publication 800-30 Revision 1, Guide for Conducting Risk Assessments
https://csrc.nist.gov/publications/nistpubs/800-30-rev1/sp800_30_r1.pdf

Special Publication 800-34, Contingency Planning for Federal Information Systems
https://csrc.nist.gov/publications/nistpubs/800-34-rev1/sp800-34-rev1_errata-Nov11-2010.pdf

Special Publication 800-37 Revision 2, Guide for Applying the Risk Management Framework to Federal Information Systems
https://csrc.nist.gov/publications/detail/sp/800-37/rev-2/final

Special Publication 800-39, Managing Information Security Risk Organization, Mission, and Information System View
https://csrc.nist.gov/publications/nistpubs/800-39/SP800-39-final.pdf
Special Publication 800-40 Revision 3, Guide to Enterprise Patch Management Technologies
https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-40r3.pdf

Special Publication 800-53 Revision 4, Security and Privacy Controls for Federal Information Systems and Organizations
https://csrc.nist.gov/publications/detail/sp/800-53/rev-4/final

Special Publication 800-53 Revision 5 (Draft), Security and Privacy Controls for Information Systems and Organizations
https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/draft

Special Publication 800-61 Revision 2, Computer Security Incident Handling Guide
https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-61r2.pdf

Special Publication 800-70 Revision 4, National Checklist Program for IT Products: Guidelines for Checklist Users and Developers https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-70r4.pdf
Special Publication 800-84, Guide to Test, Training, and Exercise Programs for IT Plans and Capabilities
https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-84.pdf

Special Publication 800-128, Guide for Security-Focused Configuration Management of Information Systems
https://csrc.nist.gov/publications/nistpubs/800-128/sp800-128.pdf

Special Publication 800-137, Information Security Continuous Monitoring (ISCM) for Federal Information Systems and Organizations
https://csrc.nist.gov/publications/nistpubs/800-137/SP800-137-Final.pdf