



RESOURCE AND PATIENT MANAGEMENT SYSTEM

# **Electronic Prescribing of Controlled Substances**

(BEPC)

## **Capacity Planning**

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# Table of Contents

<b>1.0</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Purpose of Capacity Plan .....	1
1.2	Solution Requirements .....	1
1.3	Assumptions/Constraints .....	1
<b>2.0</b>	<b>Analysis of Capacity .....</b>	<b>3</b>
2.1	Base Capacity .....	3
2.1.1	Capacity Type: EPCS-Capable Providers .....	3
2.1.2	Capacity Type: Outpatient Controlled Substance Medication Orders Created.....	4
2.1.3	Capacity Type: EPCS Capable Pharmacists.....	4
2.1.4	Capacity Type: Outpatient Controlled Substance Prescriptions Processed.....	5
2.1.5	Capacity Type: Server Disk Space .....	6
2.1.6	Capacity Type: Backup Space.....	6
2.2	Disk Capacity.....	7
2.2.1	Capacity Type: EPCS Audit Log.....	7
2.2.2	Capacity Type: Order DEA Archive Info .....	9
2.2.3	Capacity Type: PKI Digital Signatures.....	10
2.3	Backup Capacity.....	11
2.3.1	Capacity Type: Backup Cycle.....	11
2.3.2	Capacity Type: Full Backup.....	11
2.3.3	Capacity Type: Incremental Backup .....	12
2.3.4	Capacity Type: Differential Backup.....	14
2.3.5	Capacity Type: Backup Cycle Space.....	15
2.4	EPCS Credentialing Roles.....	16
2.4.1	Capacity Type: Provider Profile Admin .....	16
2.4.2	Capacity Type: Provider Access Admin.....	16
2.5	Cryptographic Tokens.....	17
2.5.1	Capacity Type: Provider Access Admin Tokens .....	17
2.5.2	Capacity Type: Provider Tokens.....	18
2.5.3	Capacity Type: Replacement Tokens.....	18
2.5.4	Capacity Type: Token Renewals .....	19
2.6	Workstation Capacity.....	20
2.6.1	Capacity Type: Provider Access Admin.....	20
2.6.2	Capacity Type: Workstations with USB .....	20
2.6.3	Capacity Type: Workstations with Smart Card Reader.....	20
2.6.4	Capacity Type: Remote Desktop with USB Pass-through .....	21
2.6.5	Capacity Type: Remote Desktop with Smart Card Pass-through .....	21
2.6.6	Capacity Type: Thin Client with USB Pass-through.....	21
2.6.7	Capacity Type: Thin Client with Smart Card Pass-through.....	22
2.6.8	Capacity Type: EPCS Enabled Providers.....	23

2.6.9	Capacity Type: Workstations with USB .....	23
2.6.10	Capacity Type: Workstations with Smart Card Reader.....	23
2.6.11	Capacity Type: Thin Client with USB Pass-through.....	23
2.6.12	Capacity Type: Thin Client with Smart Card Pass-Through .....	24
<b>3.0</b>	<b>Findings Summary .....</b>	<b>25</b>
3.1	Area/Item Monitored: Ratio of EPCS Credentialing Roles to Providers .	25
3.1.1	Capacity Requirements .....	25
3.1.2	Percentage (%) Increase Needed Per [Time Period].....	25
3.1.3	Capacity Thresholds.....	26
3.1.4	Threshold Response Strategy (Action to Take upon Reaching Thresholds).....	26
3.2	Area/Item Monitored: Cryptographic Tokens .....	26
3.2.1	Capacity Requirements .....	26
3.2.2	Percentage (%) Increase Needed per [Time Period].....	26
3.2.3	Capacity Thresholds.....	27
3.2.4	Threshold Response Strategy (Action to Take upon Reaching Thresholds).....	27
3.3	Area/Item Monitored: Disk Capacity .....	27
3.3.1	Capacity Requirements .....	27
3.3.2	Percentage (%) Increase Needed per [Time Period].....	27
3.3.3	Capacity Thresholds.....	28
3.3.4	Threshold Response Strategy (Action to Take upon Reaching Thresholds).....	28
3.4	Area/Item Monitored: Backup Capacity .....	28
3.4.1	Capacity Requirements .....	28
3.4.2	Percentage (%) Increase Needed per [Time Period].....	28
3.4.3	Capacity Thresholds.....	29
3.4.4	Threshold Response Strategy (Action to Take upon Reaching Thresholds).....	29
3.5	Area/Item Monitored: Workstation Capacity .....	29
3.5.1	Capacity Requirements .....	29
3.5.2	Percentage (%) Increase Needed per [Time Period].....	29
3.5.3	Capacity Thresholds.....	30
3.5.4	Threshold Response Strategy (Action to Take upon Reaching Thresholds).....	30
<b>4.0</b>	<b>Cost/Budget Management .....</b>	<b>31</b>
<b>5.0</b>	<b>Compliance-Related Planning .....</b>	<b>32</b>
<b>Appendix A:</b>	<b>References .....</b>	<b>33</b>
<b>Glossary</b> .....		<b>34</b>
<b>Acronym List</b> .....		<b>37</b>
<b>Contact Information</b> .....		<b>38</b>

## 1.0 Introduction

### 1.1 Purpose of Capacity Plan

The Electronic Prescribing of Controlled Substances (EPCS) project implements the Drug Enforcement Administration (DEA) regulations that give providers the ability to electronically prescribe outpatient controlled substances, whether the orders are sent to the local Outpatient Pharmacy at the site or electronically transmitted to Surescripts. The regulations require each provider to be individually configured with specific information, such as the number that gives them the authority to prescribe controlled substances (DEA or Veteran's Administration [VA] number), any schedules for which they can or cannot prescribe, and the authorization to do electronic prescribing of controlled substances.

In addition, two-factor authentication for both provider credentialing and the digital signing of controlled substances must be instituted at the site. This configuration should be done prior to enabling the site for EPCS.

The purpose of this capacity plan is to ensure that sites installing and enabling EPCS have the needed capacity to support EPCS activities.

The intended audience of the EPCS Implementation Plan is the Business Sponsor and the Integrated Project Team which needs to include IT personnel, the Clinical Application Coordinator (CAC), pharmacists, and providers.

### 1.2 Solution Requirements

The following are the requirements for enabling EPCS functionality:

- Resource and Patient Management System (RPMS) instance with current and EPCS releases installed.
- USB (Universal Serial Bus) cryptographic tokens with digital-signing certificates acquired from one of the designated credential service providers.
- Workstations with an active USB hardware port and USB pass-through enabled if running on a remote desktop or thin client.
- Sufficient disk space to support EPCS activities.

### 1.3 Assumptions/Constraints

The following assumptions were used in this capacity plan:

- The number of medication orders is based on the number of providers at a site.

- Disk space consumption is concentrated in three critical files:
  - Order DEA Archive Info
  - Public Key Infrastructure (PKI) Digital Signatures
  - BUSA Audit Log

The following constraints were used in this capacity plan:

- Calculations are based on a simplified model that uses numbers that should be readily available to sites.

## 2.0 Analysis of Capacity

The following capacity analysis takes a simplified model to obtain a ballpark of the required capacity over a five-year operating period. The model is based on the number of EPCS orders a site will make, which is in turn dependent on the number of providers at the site. Providers will need tokens and workstations that are capable of accepting a USB cryptographic token. EPCS activities will consume disk space and backup space. The following sections outline the areas of capacity to consider and a set of calculations that can be used based on the simplified model.

### 2.1 Base Capacity

The following base numbers will be used to help determine existing capacity requirements and future growth. The numbers in this section do not necessarily provide any useful information on their own. However, they provide the basis to conduct other capacity assessments.

#### 2.1.1 Capacity Type: EPCS-Capable Providers

The number of EPCS-capable providers will have an impact on the number of controlled substance medication orders written, the number of cryptographic tokens required, and the amount of space used by database and the backups.

Do not forget to include providers from other sites that work at this site (multi-site providers).

The number of EPCS Capable Providers should include the parent and all child divisions that will become EPCS enabled.

##### 2.1.1.1 Current Capacity Analysis

Determine the number of EPCS-capable providers that will be in place at the time of implementation:

Number of EPCS Capable Providers: <# Providers>

##### 2.1.1.2 Planned/Expected Growth and Recommendations

Estimate the annual turnover for EPCS Capable Providers:

1. Number of EPCS Capable Providers that join the site each year:  
<# Providers Added>
2. Number of EPCS Capable Providers that leave the site each year:  
<# Providers that left>

3. Calculate: Net Annual Increase in Number of EPCS Capable Providers:  
 $\langle \# \text{ Providers Added} \rangle - \langle \# \text{ Providers that left} \rangle = \langle \# \text{ Increase in Providers} \rangle$

**Note:** If the Net Annual Increase in Number of EPCS Capable Providers is negative, the calculations could be based on a site with no or a negative number of providers. The site will need to manually determine the turnover or determine when the minimum number of providers would be reached and adjust the calculation appropriately. Alternatively, the site could proceed with the calculations using a Net Annual Increase in Number of EPCS Capable Providers of zero.

## 2.1.2 Capacity Type: Outpatient Controlled Substance Medication Orders Created

The number of EPCS enabled providers will have an impact on the number of outpatient controlled substance medication orders created and the amount of space used by database and the backups.

### 2.1.2.1 Current Capacity Analysis

Determine the current daily order rate:

1. Number of days per week site is open:  $\langle \# \text{ Site Days per Week} \rangle$
2. Average Number of Outpatient Controlled Substance Medication Orders Created Per Day:  $\langle \# \text{ OP Orders Processed} \rangle$

### 2.1.2.2 Planned/Expected Growth and Recommendations

Estimate the number of medications orders processed to associate with turnover.

1. Calculate: Average number of medication orders processed per provider:  
 $\langle \# \text{ OP Orders Processed} \rangle / \langle \# \text{ Providers} \rangle = \langle \# \text{ Daily Orders per Provider} \rangle$

## 2.1.3 Capacity Type: EPCS Capable Pharmacists

If your site supports an internal pharmacy, complete this section. If not, please skip this section and section 2.1.4 and proceed to section 2.1.5.

The number of EPCS Capable Pharmacists will have an impact on the number of prescriptions dispensed and the amount of space used by database and the backups.

### 2.1.3.1 Current Capacity Analysis

Determine the number EPCS Capable Pharmacists that will be in place at the time of implementation:

- Number of EPCS Capable Pharmacists: <# Pharmacists>

### 2.1.3.2 Planned/Expected Growth and Recommendations

Estimate the annual turnover for EPCS Capable Pharmacists:

1. Number of EPCS Capable Pharmacists that join the site each year:  
<# Pharmacists Added>
2. Number of EPCS Capable Pharmacists that leave the site each year:  
<# Pharmacists that left>
3. Calculate: Net Annual Increase in Number of EPCS Capable Pharmacists:  
<# Pharmacists Added> – <Pharmacists that left> = <#Increase in Pharmacists>

**Note:** If the Net Annual Increase in Number of EPCS Capable Pharmacists is negative, the calculations could be based on a site with no or a negative number of pharmacists. The site will need to manually determine the turnover or determine when the minimum number of pharmacists would be reached and adjust the calculation appropriately. Alternatively, the site could proceed with the calculations using a Net Annual Increase in Number of EPCS Capable Pharmacists of zero (0).

### 2.1.4 Capacity Type: Outpatient Controlled Substance Prescriptions Processed

If your site supports an internal pharmacy, complete this section. If not, please skip proceed to section 2.1.5.

The number of Outpatient EPCS-capable pharmacists will have an impact on the number of prescriptions processed and the amount of space used by the database and the backups.

#### 2.1.4.1 Current Capacity Analysis

Determine the current daily dispense rate:

1. Number of days per week the pharmacy is open: <#Pharmacy Days per Week>
2. Average Number of Outpatient Controlled Substance Prescriptions Processed Per Day: <# OP Prescriptions Processed>



**Note:** Processed includes Dispensed or Discontinued prescriptions.

#### 2.1.4.2 Planned/Expected Growth and Recommendations

1. Estimate the number of prescriptions processed to associate with turnover:
2. Calculate: Average number of prescriptions processed per pharmacist:  
 $\text{<\#OP Prescriptions Processed>} / \text{<\# Pharmacists>} = \text{<\# Daily Prescriptions per Pharmacist>}$

#### 2.1.5 Capacity Type: Server Disk Space

EPCS will consume disk space as records are stored in the database.

##### 2.1.5.1 Current Capacity Analysis

- Total Disk Space Available <\# Disk Space Available>
- Total Disk Space Used <\# Disk Space Used>
- Reserved Free Disk Space <\# Reserved Free Disk Space>

**Note:** Specify whether the disk space is in KB, MB, or GB.

##### 2.1.5.2 Planned/Expected Growth and Recommendations

Average daily growth of disk space used: <\# Disk Space Used Increase>

#### 2.1.6 Capacity Type: Backup Space

EPCS will consume backup space as records are stored in the database.

##### 2.1.6.1 Current Capacity Analysis

- Total Backup Space Available <\# Backup Space Available>
- Total Backup Space Used <\# Space Used>
- Average Backup Compression Ratio: <\# Backup Compression Ratio>
- Example: The backup file size is 60% of the original file size, the Backup Compression Ratio would be 0.60.

**Note:** Specify whether the disk space is in KB, MB, or GB.

##### 2.1.6.2 Planned/Expected Growth and Recommendations

Average daily growth of backup space used: <\# Backup Space Used Increase>

## 2.2 Disk Capacity

The EPCS activity will consume additional disk space. Sites will want to ensure sufficient disk space is available to support continued operations of the RPMS server and to support DEA regulations.

### 2.2.1 Capacity Type: EPCS Audit Log

EPCS activities generate audit events that will eat up disk space.

#### 2.2.1.1 Current Capacity Analysis

- Size of EPCS Audit Record: 4.3 KB
- Average Number EPCS Audit Records Generated per Medication Order: 47

#### 2.2.1.2 Planned/Expected Growth and Recommendations

- Year 1 Calculate: Determine the amount of disk space consumed by EPCS audit logs:
  - a.  $\langle \# \text{ Providers} \rangle * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record per Med Order} \rangle * \langle \# \text{ EPCS Audit Record Size} \rangle = \langle \# \text{ Year 1 EPCS Order Audit Space} \rangle$
  - b. If Internal Pharmacy then:  $\langle \# \text{ Pharmacists} \rangle * \langle \# \text{ Daily Prescriptions per Pharmacist} \rangle * \langle \# \text{ Pharmacy Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record per Prescription} \rangle * \langle \# \text{ EPCS Audit Record Size} \rangle = \langle \# \text{ Year 1 EPCS Prescription Audit Space} \rangle$
  - c.  $\langle \# \text{ Year 1 EPCS Order Audit Space} \rangle + \langle \# \text{ Year 1 EPCS Prescription Audit Space} \rangle = \langle \# \text{ Year 1 EPCS Audit Space} \rangle$
- Year 2 Calculate: Determine the amount of disk space consumed by EPCS audit logs:
  - a.  $\langle \# \text{ Year 1 EPCS Order Audit Space} \rangle + ((\langle \# \text{ Providers} \rangle + \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record per Med Order} \rangle * \langle \# \text{ EPCS Audit Record Size} \rangle) = \langle \# \text{ Year 2 EPCS Order Audit Space} \rangle$
  - b. If Internal Pharmacy then:  $\langle \# \text{ Year 1 EPCS Prescription Audit Space} \rangle + ((\langle \# \text{ Pharmacists} \rangle + \langle \# \text{ Increase in Pharmacists} \rangle) * \langle \# \text{ Daily Prescriptions per Pharmacist} \rangle * \langle \# \text{ Pharmacy Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record per Prescription} \rangle * \langle \# \text{ EPCS Audit Record Size} \rangle) = \langle \# \text{ Year 2 EPCS Prescription Audit Space} \rangle$
  - c.  $\langle \# \text{ Year 2 EPCS Order Audit Space} \rangle + \langle \# \text{ Year 2 EPCS Prescription Audit Space} \rangle = \langle \# \text{ Year 2 EPCS Audit Space} \rangle$

- Year 3 Calculate: Determine the amount of disk space consumed by EPCS audit logs:
  - a.  $\langle\# \text{ Year 2 EPCS Order Audit Space}\rangle + ((\langle\# \text{ Providers}\rangle + 2 * \langle\# \text{ Increase in Providers}\rangle) * \langle\# \text{ Daily Orders per Provider}\rangle * \langle\# \text{ Site Days per Week}\rangle * 52 * \langle\# \text{ EPCS Audit Record per Med Order}\rangle * \langle\# \text{ EPCS Audit Record Size}\rangle) = \langle\# \text{ Year 3 EPCS Order Audit Space}\rangle$
  - b. If Internal Pharmacy then:  $\langle\# \text{ Year 2 EPCS Prescription Audit Space}\rangle + ((\langle\# \text{ Pharmacists}\rangle + 2 * \langle\# \text{ Increase in Pharmacists}\rangle) * \langle\# \text{ Daily Prescriptions per Pharmacist}\rangle * \langle\# \text{ Pharmacy Days per Week}\rangle * 52 * \langle\# \text{ EPCS Audit Record per Prescription}\rangle * \langle\# \text{ EPCS Audit Record Size}\rangle) = \langle\# \text{ Year 3 EPCS Prescription Audit Space}\rangle$
  - c.  $\langle\# \text{ Year 3 EPCS Order Audit Space}\rangle + \langle\# \text{ Year 3 EPCS Prescription Audit Space}\rangle = \langle\# \text{ Year 3 EPCS Audit Space}\rangle$
- Year 4 Calculate: Determine the amount of disk space consumed by EPCS audit logs:
  - a.  $\langle\# \text{ Year 3 EPCS Order Audit Space}\rangle + ((\langle\# \text{ Providers}\rangle + 3 * \langle\# \text{ Increase in Providers}\rangle) * \langle\# \text{ Daily Orders per Provider}\rangle * \langle\# \text{ Site Days per Week}\rangle * 52 * \langle\# \text{ EPCS Audit Record per Med Order}\rangle * \langle\# \text{ EPCS Audit Record Size}\rangle) = \langle\# \text{ Year 4 EPCS Order Audit Space}\rangle$
  - b. If Internal Pharmacy then:  $\langle\# \text{ Year 3 EPCS Prescription Audit Space}\rangle + ((\langle\# \text{ Pharmacists}\rangle + 3 * \langle\# \text{ Increase in Pharmacists}\rangle) * \langle\# \text{ Daily Prescriptions per Pharmacist}\rangle * \langle\# \text{ Pharmacy Days per Week}\rangle * 52 * \langle\# \text{ EPCS Audit Record per Prescription}\rangle * \langle\# \text{ EPCS Audit Record Size}\rangle) = \langle\# \text{ Year 4 EPCS Prescription Audit Space}\rangle$
  - c.  $\langle\# \text{ Year 4 EPCS Order Audit Space}\rangle + \langle\# \text{ Year 4 EPCS Prescription Audit Space}\rangle = \langle\# \text{ Year 4 EPCS Audit Space}\rangle$
- Year 5 Calculate: Determine the amount of disk space consumed by EPCS audit logs:
  - a.  $\langle\# \text{ Year 4 EPCS Order Audit Space}\rangle + ((\langle\# \text{ Providers}\rangle + 4 * \langle\# \text{ Increase in Providers}\rangle) * \langle\# \text{ Daily Orders per Provider}\rangle * \langle\# \text{ Site Days per Week}\rangle * 52 * \langle\# \text{ EPCS Audit Record per Med Order}\rangle * \langle\# \text{ EPCS Audit Record Size}\rangle) = \langle\# \text{ Year 5 EPCS Order Audit Space}\rangle$
  - b. If Internal Pharmacy then:  $\langle\# \text{ Year 4 EPCS Prescription Audit Space}\rangle + ((\langle\# \text{ Pharmacists}\rangle + 4 * \langle\# \text{ Increase in Pharmacists}\rangle) * \langle\# \text{ Daily Prescriptions per Pharmacist}\rangle * \langle\# \text{ Pharmacy Days per Week}\rangle * 52 * \langle\# \text{ EPCS Audit Record per Prescription}\rangle * \langle\# \text{ EPCS Audit Record Size}\rangle) = \langle\# \text{ Year 5 EPCS Prescription Audit Space}\rangle$
  - c.  $\langle\# \text{ Year 5 EPCS Order Audit Space}\rangle + \langle\# \text{ Year 5 EPCS Prescription Audit Space}\rangle = \langle\# \text{ Year 5 EPCS Audit Space}\rangle$

## 2.2.2 Capacity Type: Order DEA Archive Info

DEA regulations require that an archive of the signed medication order/prescription be maintained. Order DEA Archive Info stores a copy of the order information. Disk space will need to be allocated for the archive.

### 2.2.2.1 Current Capacity Analysis

Size of Archive: 1.4 KB

### 2.2.2.2 Planned/Expected Growth and Recommendations

- Year 1 Calculate: Determine the amount of disk space consumed by the Order DEA Archive Info file:
 
$$\langle \# \text{ Providers} \rangle * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record Size} \rangle = \langle \# \text{ Year 1 EPCS Order Archive Space} \rangle$$
- Year 2: Calculate: Determine the amount of disk space consumed by Order DEA Archive Info:
 
$$\langle \# \text{ Year 1 Archive Space} \rangle + ((\langle \# \text{ Providers} \rangle + \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record Size} \rangle) = \langle \# \text{ Year 2 EPCS Order Archive Space} \rangle$$
- Year 3 Calculate: Determine the amount of disk space consumed by Order DEA Archive Info:
 
$$\langle \# \text{ Year 2 Archive Space} \rangle + ((\langle \# \text{ Providers} \rangle + 2 * \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record Size} \rangle) = \langle \# \text{ Year 3 EPCS Order Archive Space} \rangle$$
- Year 4 Calculate: Determine the amount of disk space consumed by Order DEA Archive Info:
 
$$\langle \# \text{ Year 3 Archive Space} \rangle + ((\langle \# \text{ Providers} \rangle + 3 * \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record Size} \rangle) = \langle \# \text{ Year 4 EPCS Order Archive Space} \rangle$$
- Year 5 Calculate: Determine the amount of disk space consumed by Order DEA Archive Info:
 
$$\langle \# \text{ Year 4 Archive Space} \rangle + ((\langle \# \text{ Providers} \rangle + 4 * \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS Audit Record Size} \rangle) = \langle \# \text{ Year 5 EPCS Order Archive Space} \rangle$$

## 2.2.3 Capacity Type: PKI Digital Signatures

DEA regulations require that an archive of the signed medication orders/prescriptions be maintained. PKI Digital Signatures stores a copy of the signature and the public key of the certificate that was used to sign the order. The records in PKI Digital signatures are tied to the records in DEA Order Archive Info. Disk space will need to be allocated to store the signatures.

### 2.2.3.1 Current Capacity Analysis

Size of Archive: 1.6 KB

### 2.2.3.2 Planned/Expected Growth and Recommendations

- Year 1 Calculate: Determine the amount of disk space consumed by the PKI Digital Signatures file:
 
$$\langle \# \text{ Providers} \rangle * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS PKI Record Size} \rangle = \langle \# \text{ Year 1 PKI Space} \rangle$$
- Year 2 Calculate: Determine the amount of disk space consumed by PKI Digital Signatures file:
 
$$\langle \# \text{ Year 1 PKI Space} \rangle + ((\langle \# \text{ Providers} \rangle + \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS PKI Record Size} \rangle) = \langle \# \text{ Year 2 EPCS PKI Space} \rangle$$
- Year 3 Calculate: Determine the amount of disk space consumed by PKI Digital Signatures file:
 
$$\langle \# \text{ Year 2 PKI Space} \rangle + ((\langle \# \text{ Providers} \rangle + 2 * \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS PKI Record Size} \rangle) = \langle \# \text{ Year 3 EPCS PKI Space} \rangle$$
- Year 4 Calculate: Determine the amount of disk space consumed by PKI Digital Signatures file:
 
$$\langle \# \text{ Year 3 PKI Space} \rangle + ((\langle \# \text{ Providers} \rangle + 3 * \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS PKI Record Size} \rangle) = \langle \# \text{ Year 4 EPCS PKI Space} \rangle$$
- Year 5 Calculate: Determine the amount of disk space consumed by PKI Digital Signatures file:
 
$$\langle \# \text{ Year 4 PKI Space} \rangle + ((\langle \# \text{ Providers} \rangle + 4 * \langle \# \text{ Increase in Providers} \rangle) * \langle \# \text{ Daily Orders per Provider} \rangle * \langle \# \text{ Site Days per Week} \rangle * 52 * \langle \# \text{ EPCS PKI Record Size} \rangle) = \langle \# \text{ Year 5 EPCS PKI Space} \rangle$$

## 2.3 Backup Capacity

The added disk used for EPCS activities also means that additional space will be used during backup. Sites should ensure that sufficient backup is available for disaster recovery purposes.

### 2.3.1 Capacity Type: Backup Cycle

#### 2.3.1.1 Current Capacity Analysis

Describe the typical backup cycle: [Backup Cycle].

- Example: Weekly backup cycle with one full back-up on the weekend, followed by five incremental backups.
- Days in the cycle: <# Days Backup Cycle>

#### 2.3.1.2 Planned/Expected Growth and Recommendations

None

### 2.3.2 Capacity Type: Full Backup

#### 2.3.2.1 Current Capacity Analysis

Number of Full Backups During a Backup Cycle: <# Full Backups>

**Note:** The fields in the PKI Digital Signatures file are already stored in encoded and compressed format. This file will not see much benefit from backup compression.

#### 2.3.2.2 Planned/Expected Growth and Recommendations

- Year 1 Calculate: Estimate the space EPCS consumes on a backup:  

$$((\text{<# Year 1 EPCS Audit Space>} + \text{<# Year 1 EPCS Order Archive Space >}) * \text{<# Backup Compression Ratio>}) + \text{<# Year 1 PKI Space>} = \text{<# Year 1 Full Backup Space>}$$

Total Full Backup Space for Cycle:  $\text{<# Year 1 Full Backup Space>} * \text{<# Full Backups>} = \text{<# Year 1 Cycle Full Backups>}$
- Year 2 Calculate: Estimate the space EPCS consumes on a backup:  

$$((\text{<# Year 2 EPCS Audit Space>} + \text{<# Year 2 EPCS Order Archive Space >}) * \text{<# Backup Compression Ratio>}) + \text{<# Year 2 PKI Space>} = \text{<# Year 2 Full Backup Space>}$$

Total Full Backup Space for Cycle: <# Year 2 Full Backup Space> \* <# Full Backups> = <# Year 2 Cycle Full Backups>

- Year 3 Calculate: Estimate the space EPCS consumes on a backup:  

$$((\text{<# Year 3 EPCS Audit Space>} + \text{<# Year 3 EPCS Order Archive Space >}) * \text{<# Backup Compression Ratio>}) + \text{<# Year 3 PKI Space>} = \text{<# Year 3 Full Backup Space>}$$

Total Full Backup Space for Cycle: <# Year 3 Full Backup Space> \* <# Full Backups> = <# Year 3 Cycle Full Backups>

- Year 4 Calculate: Estimate the space EPCS consumes on a backup:  

$$((\text{<# Year 4 EPCS Audit Space>} + \text{<# Year 4 EPCS Order Archive Space >}) * \text{<# Backup Compression Ratio>}) + \text{<# Year 4 PKI Space>} = \text{<# Year 4 Full Backup Space>}$$

Total Full Backup Space for Cycle: <# Year 4 Full Backup Space> \* <# Full Backups> = <# Year 4 Cycle Full Backups>

- Year 5 Calculate: Estimate the space EPCS consumes on a backup:  

$$((\text{<# Year 5 EPCS Audit Space>} + \text{<# Year 5 EPCS Order Archive Space >}) * \text{<# Backup Compression Ratio>}) + \text{<# Year 5 PKI Space>} = \text{<# Year 5 Full Backup Space>}$$

Total Full Backup Space for Cycle: <# Year 5 Full Backup Space> \* <# Full Backups> = <# Year 5 Cycle Full Backups>

### 2.3.3 Capacity Type: Incremental Backup

#### 2.3.3.1 Current Capacity Analysis

Number of Incremental Backups During a Backup Cycle: <# Incremental Backups>

Number of Days Between Incremental Backup: <# Days Incremental>

(e.g., Daily Incremental Backups would be one day between.)

**Note:** The fields in the PKI Digital Signatures file are already stored in encoded and compressed format. This file will not see much benefit from backup compression.

#### 2.3.3.2 Planned/Expected Growth and Recommendations

- Year 1 Calculate: Estimate the space EPCS consumes on a backup:

$$\left( \left( \langle \# \text{ Year 1 EPCS Audit Space} \rangle + \langle \# \text{ Year 1 EPCS Order Archive Space} \rangle \right) * \langle \# \text{ Backup Compression Ratio} \rangle + \langle \# \text{ Year 1 PKI Space} \rangle \right) * \langle \# \text{ Days Incremental} \rangle / (\langle \# \text{ Site Days per Week} \rangle * 52) = \langle \# \text{ Year 1 Incremental Backup Space} \rangle$$

Total Full Backup Space for Cycle:  $\langle \# \text{ Year 1 Incremental Backup Space} \rangle * \langle \# \text{ Incremental Backups} \rangle = \langle \# \text{ Year 1 Cycle Incremental Backups} \rangle$

- Year 2 Calculate: Estimate the space EPCS consumes on a backup:

$$\left( \left( \langle \# \text{ Year 2 EPCS Audit Space} \rangle + \langle \# \text{ Year 2 EPCS Order Archive Space} \rangle \right) * \langle \# \text{ Backup Compression Ratio} \rangle + \langle \# \text{ Year 2 PKI Space} \rangle \right) * \langle \# \text{ Days Incremental} \rangle / (\langle \# \text{ Site Days per Week} \rangle * 52) = \langle \# \text{ Year 2 Incremental Backup Space} \rangle$$

Total Full Backup Space for Cycle:  $\langle \# \text{ Year 2 Incremental Backup Space} \rangle * \langle \# \text{ Incremental Backups} \rangle = \langle \# \text{ Year 2 Cycle Incremental Backups} \rangle$

- Year 3 Calculate: Estimate the space EPCS consumes on a backup:

$$\left( \left( \langle \# \text{ Year 3 EPCS Audit Space} \rangle + \langle \# \text{ Year 3 EPCS Order Archive Space} \rangle \right) * \langle \# \text{ Backup Compression Ratio} \rangle + \langle \# \text{ Year 3 PKI Space} \rangle \right) * \langle \# \text{ Days Incremental} \rangle / (\langle \# \text{ Site Days per Week} \rangle * 52) = \langle \# \text{ Year 3 Incremental Backup Space} \rangle$$

Total Full Backup Space for Cycle:  $\langle \# \text{ Year 3 Incremental Backup Space} \rangle * \langle \# \text{ Incremental Backups} \rangle = \langle \# \text{ Year 3 Cycle Incremental Backups} \rangle$

- Year 4 Calculate: Estimate the space EPCS consumes on a backup:

$$\left( \left( \langle \# \text{ Year 4 EPCS Audit Space} \rangle + \langle \# \text{ Year 4 EPCS Order Archive Space} \rangle \right) * \langle \# \text{ Backup Compression Ratio} \rangle + \langle \# \text{ Year 4 PKI Space} \rangle \right) * \langle \# \text{ Days Incremental} \rangle / (\langle \# \text{ Site Days per Week} \rangle * 52) = \langle \# \text{ Year 4 Incremental Backup Space} \rangle$$

Total Full Backup Space for Cycle:  $\langle \# \text{ Year 4 Incremental Backup Space} \rangle * \langle \# \text{ Incremental Backups} \rangle = \langle \# \text{ Year 4 Cycle Incremental Backups} \rangle$

- Year 5 Calculate: Estimate the space EPCS consumes on a backup:

$$\left( \left( \langle \# \text{ Year 5 EPCS Audit Space} \rangle + \langle \# \text{ Year 5 EPCS Order Archive Space} \rangle \right) * \langle \# \text{ Backup Compression Ratio} \rangle + \langle \# \text{ Year 5 PKI Space} \rangle \right) * \langle \# \text{ Days Incremental} \rangle / (\langle \# \text{ Site Days per Week} \rangle * 52) = \langle \# \text{ Year 5 Incremental Backup Space} \rangle$$

Total Full Backup Space for Cycle:  $\langle \# \text{ Year 5 Incremental Backup Space} \rangle * \langle \# \text{ Incremental Backups} \rangle = \langle \# \text{ Year 5 Cycle Incremental Backups} \rangle$



## 2.3.4 Capacity Type: Differential Backup

### 2.3.4.1 Current Capacity Analysis

- Number of Differential Backups during a Backup Cycle: <# Differential Backups>
- Number of Days Between Full Backup: <# Days Full>

**Note:** The fields in the PKI Digital Signatures file are already stored in encoded and compressed format. This file will not see much benefit from backup compression.

### 2.3.4.2 Planned/Expected Growth and Recommendations

- Year 1 Calculate: Estimate the space EPCS consumes on a backup:  

$$\left( \left( \left( \text{<# Year 1 EPCS Audit Space>} + \text{<# Year 1 EPCS Order Archive Space>} \right) * \text{<# Backup Compression Ratio>} \right) + \text{<# Year 1 PKI Space>} \right) * \text{<# Days Full>} / \left( \text{<# Site Days per Week>} * 52 \right) = \text{<# Year 1 Differential Backup Space>}$$

Total Full Backup Space for Cycle:  $\text{<# Year 1 Differential Backup Space>} * \text{<# Differential Backups>} = \text{<# Year 1 Cycle Differential Backups>}$
- Year 2 Calculate: Estimate the space EPCS consumes on a backup:  

$$\left( \left( \left( \text{<# Year 2 EPCS Audit Space>} + \text{<# Year 2 EPCS Order Archive Space>} \right) * \text{<# Backup Compression Ratio>} \right) + \text{<# Year 2 PKI Space>} \right) * \text{<# Days Full>} / \left( \text{<# Site Days per Week>} * 52 \right) = \text{<# Year 2 Differential Backup Space>}$$

Total Full Backup Space for Cycle:  $\text{<# Year 2 Differential Backup Space>} * \text{<# Differential Backups>} = \text{<# Year 2 Cycle Differential Backups>}$
- Year 3 Calculate: Estimate the space EPCS consumes on a backup:  

$$\left( \left( \left( \text{<# Year 3 EPCS Audit Space>} + \text{<# Year 3 EPCS Order Archive Space>} \right) * \text{<# Backup Compression Ratio>} \right) + \text{<# Year 3 PKI Space>} \right) * \text{<# Days Full>} / \left( \text{<# Site Days per Week>} * 52 \right) = \text{<# Year 3 Differential Backup Space>}$$

Total Full Backup Space for Cycle:  $\text{<# Year 3 Differential Backup Space>} * \text{<# Differential Backups>} = \text{<# Year 3 Cycle Differential Backups>}$
- Year 4 Calculate: Estimate the space EPCS consumes on a backup:  

$$\left( \left( \left( \text{<# Year 4 EPCS Audit Space>} + \text{<# Year 4 EPCS Order Archive Space>} \right) * \text{<# Backup Compression Ratio>} \right) + \text{<# Year 4 PKI Space>} \right) * \text{<# Days Full>} / \left( \text{<# Site Days per Week>} * 52 \right) = \text{<# Year 4 Differential Backup Space>}$$

Total Full Backup Space for Cycle: <# Year 4 Differential Backup Space> \* <# Differential Backups> = <# Year 4 Cycle Differential Backups>

- Year 5 Calculate: Estimate the space EPCS consumes on a backup:  

$$\left( \left( \left( \text{<# Year 5 EPCS Audit Space>} + \text{<# Year 5 EPCS Order Archive Space >} \right) * \text{<# Backup Compression Ratio>} \right) + \text{<# Year 5 PKI Space>} \right) * \text{<# Days Full>} / \left( \text{<#Site Days per Week>} * 52 \right) = \text{<# Year 5 Differential Backup Space>}$$

Total Full Backup Space for Cycle: <# Year 5 Differential Backup Space> \* <# Differential Backups> = <# Year 5 Cycle Differential Backups>

## 2.3.5 Capacity Type: Backup Cycle Space

### 2.3.5.1 Current Capacity Analysis

None.

### 2.3.5.2 Planned/Expected Growth and Recommendations

- Year 1 Calculate: Estimate amount of backup space required for EPCS activity:  

$$\text{<# Year 1 Cycle Full Backups>} + \text{<# Year 1 Cycle Incremental Backups>} + \text{<# Year 1 Cycle Differential Backups>} = \text{<# Year 1 Backup Cycle Space>}$$
- Year 2 Calculate: Estimate amount of backup space required for EPCS activity:  

$$\text{<# Year 2 Cycle Full Backups>} + \text{<# Year 2 Cycle Incremental Backups>} + \text{<# Year 2 Cycle Differential Backups>} = \text{<# Year 2 Backup Cycle Space>}$$
- Year 3 Calculate: Estimate amount of backup space required for EPCS activity:  

$$\text{<# Year 3 Cycle Full Backups>} + \text{<# Year 3 Cycle Incremental Backups>} + \text{<# Year 3 Cycle Differential Backups>} = \text{<# Year 3 Backup Cycle Space>}$$
- Year 4 Calculate: Estimate amount of backup space required for EPCS activity:  

$$\text{<# Year 4 Cycle Full Backups>} + \text{<# Year 4 Cycle Incremental Backups>} + \text{<# Year 4 Cycle Differential Backups>} = \text{<# Year 4 Backup Cycle Space>}$$
- Year 5 Calculate: Estimate amount of backup space required for EPCS activity:  

$$\text{<# Year 5 Cycle Full Backups>} + \text{<# Year 5 Cycle Incremental Backups>} + \text{<# Year 5 Cycle Differential Backups>} = \text{<# Year 5 Backup Cycle Space>}$$

## 2.4 EPCS Credentialing Roles

Sites should ensure that the individuals who conduct the EPCS credentialing for a provider are available when needed. Sites should consider the number of individuals that are assigned to the Provider Profile Admin and Provider Access Admin roles.

### 2.4.1 Capacity Type: Provider Profile Admin

#### 2.4.1.1 Current Capacity Analysis

1. Determine the number of Provider Profile Admins a site will assign  
<# Provider Profile Admins>
2. Calculate: Determine the ratio of Providers to the number of Provider Profile Administrators:  
$$\frac{\text{<# Providers>}}{\text{<# Provider Profile Admins>}} = \text{<# Provider Profile Admin Ratio>}$$

#### 2.4.1.2 Planned/Expected Growth and Recommendations

Estimate the Annual Change in the ratio of Provider Profile Admins to Providers. Use the calculations that follow or manually calculate based on the site's EPCS enabled provider levels.

- Calculate Year 2 Ratio:  $(\text{<# Providers>} + \text{<#Increase in Providers>}) / \text{<# Provider Profile Admins>} = \text{<# Year 2 Provider Profile Admin Ratio>}$
- Calculate Year 3 Ratio:  $(\text{<# Providers>} + 2 * \text{<#Increase in Providers>}) / \text{<# Provider Profile Admins>} = \text{<# Year 3 Provider Profile Admin Ratio>}$
- Calculate Year 4 Ratio:  $(\text{<# Providers>} + 3 * \text{<#Increase in Providers>}) / \text{<# Provider Profile Admins>} = \text{<# Year 4 Provider Profile Admin Ratio>}$
- Calculate Year 5 Ratio:  $(\text{<# Providers>} + 4 * \text{<#Increase in Providers>}) / \text{<# Provider Profile Admins>} = \text{<# Year 5 Provider Profile Admin Ratio>}$

### 2.4.2 Capacity Type: Provider Access Admin

#### 2.4.2.1 Current Capacity Analysis

1. Determine the number of Provider Access Admins a site will assign: <# Provider Access Admins>
2. Calculate: Determine the ratio of Providers to number of Provider Access Administrators:  $\text{<# Provider Access Admins>} / \text{<# Providers>} = \text{<Provider Access Admin Ratio>}$

### 2.4.2.2 Planned/Expected Growth and Recommendations

Estimate the Annual Change in the ratio of Provider Access Admins to Providers. Use the calculations that follow or manually calculate based on the site's projected EPCS enabled provider levels.

- Calculate Year 2 Ratio:  $(\langle\# \text{ Providers}\rangle + \langle\# \text{ Increase in Providers}\rangle) / \langle\# \text{ Provider Access Admins}\rangle = \langle\# \text{ Year 2 Provider Access Admin Ratio}\rangle$
- Calculate Year 3 Ratio:  $(\langle\# \text{ Providers}\rangle + 2 * \langle\# \text{ Increase in Providers}\rangle) / \langle\# \text{ Provider Access Admins}\rangle = \langle\# \text{ Year 3 Provider Access Admin Ratio}\rangle$
- Calculate Year 4 Ratio:  $(\langle\# \text{ Providers}\rangle + 3 * \langle\# \text{ Increase in Providers}\rangle) / \langle\# \text{ Provider Access Admins}\rangle = \langle\# \text{ Year 4 Provider Access Admin Ratio}\rangle$
- Calculate Year 5 Ratio:  $(\langle\# \text{ Providers}\rangle + 4 * \langle\# \text{ Increase in Providers}\rangle) / \langle\# \text{ Provider Access Admins}\rangle = \langle\# \text{ Year 5 Provider Access Admin Ratio}\rangle$

## 2.5 Cryptographic Tokens

EPCS-enabled providers and individuals assigned the Provider Access Admin role will require cryptographic tokens. Sites will want to ensure they have a sufficient number of tokens available to provision these users. Sites should also consider a set of reserve tokens in the event a token is lost. Sites will also need to account for the renewal of certificates on each of the tokens.

For federal sites that will be using a Personal Identity Verification card (PIV), the issuance of the card is built into the normal on-boarding process. This section is for non-federal sites or for federal sites that have opted to use a USB cryptographic token as an interim or backup token.

### 2.5.1 Capacity Type: Provider Access Admin Tokens

The individuals assigned the Provider Access Admin will require a cryptographic token to conduct the multi-factor authentication to activate a provider's EPCS Profile.

#### 2.5.1.1 Current Capacity Analysis

1. Determine number of Provider Access Admin Tokens Required:  
 $\langle\# \text{ Provider Access Admins}\rangle = \langle\# \text{ Provider Access Admin Tokens}\rangle$

If a site is using PIV only, set  $\langle\# \text{ Provider Access Admin Tokens}\rangle = 0$ .

If a federal site, set  $\langle\# \text{ Provider Access Admin Tokens}\rangle = \langle\# \text{ Interim and Backup Provider Access Admin Tokens}\rangle$ .

2. Determine number of Provider Access Admins that are also EPCS enabled providers:  $\langle\# \text{ EPCS Enabled Provider Access Admins}\rangle$

**Note:** The same cryptographic token may be used for both purposes.

### 2.5.1.2 Planned/Expected Growth and Recommendations

Not provided.

## 2.5.2 Capacity Type: Provider Tokens

EPCS-enabled Providers will require a cryptographic token and digital signing certificate to conduct the multi-factor authentication to digitally sign a controlled substance medication order.

### 2.5.2.1 Current Capacity Analysis

Calculate: Determine number of Provider Tokens Required:  $\langle\# \text{ Providers}\rangle - \langle\# \text{ EPCS Enabled Provider Access Admins}\rangle = \langle\# \text{ Provider Tokens}\rangle$

If a site is using PIV only, set  $\langle\# \text{ Provider Tokens}\rangle = 0$ .

If a federal site, set  $\langle\# \text{ Provider Tokens}\rangle = \langle\# \text{ Interim and Backup Provider Access Admin Tokens}\rangle$ .

### 2.5.2.2 Planned/Expected Growth and Recommendations

Calculate: Determine the number of additional tokens needed for subsequent years:  $\langle\# \text{ Providers Added}\rangle = \langle\# \text{ Provider Tokens Added}\rangle$

If a site is using PIV only, set  $\langle\# \text{ Provider Tokens Added}\rangle = 0$ .

**Note:** For federal sites using USB cryptographic tokens as an interim or backup device, this calculation assumes each new provider will require an interim or backup device. Manually adjust if this is not the case.

**Note:** Unlike the use of turnover to estimate the number of controlled substance medication orders, each EPCS-enabled provider will need to obtain a cryptographic token. Cryptographic tokens cannot be reassigned.

## 2.5.3 Capacity Type: Replacement Tokens

Sites should account for the need to replace cryptographic tokens in the event that a provider loses a token.

### 2.5.3.1 Current Capacity Analysis

- A site can manually determine the number of replacements needed using its own experience with other credentials. Alternatively, estimate using a percentage.
- Calculate: Estimate the number of replacement tokens:  $\langle\# \text{ Provider Tokens}\rangle * 0.05 = \langle\# \text{ Replacement Tokens}\rangle$
- If a site is using PIV only, set  $\langle\# \text{ Replacement Tokens}\rangle = 0$ .

### 2.5.3.2 Planned/Expected Growth and Recommendations

Calculate: Determine the additional number of replacement tokens needed for subsequent years:  $\langle\# \text{ Provider Tokens Added}\rangle * 0.05 = \langle\# \text{ Added Replacement Tokens}\rangle$

If a site is using PIV only, set  $\langle\# \text{ Added Replacement Tokens}\rangle = 0$ .

## 2.5.4 Capacity Type: Token Renewals

Depending on where tokens are acquired, the digital certificates will need to be renewed every one or two years.

### 2.5.4.1 Current Capacity Analysis

Lifespan of Tokens:  $\langle 1 \text{ Year or } 2 \text{ Years}\rangle = \langle\# \text{ Lifespan of Tokens}\rangle$

### 2.5.4.2 Planned/Expected Growth and Recommendations

- Year 1 Calculate: Estimate the number of token renewals in Year 1:  $0 = \langle\# \text{ Token Renewals}\rangle$
- Year 2 Calculate: Estimate the number of token renewals in Year 2:
  - If  $\langle\# \text{ Lifespan of Tokens}\rangle = 1$  then  $\langle\# \text{ Provider Tokens}\rangle = \langle\# \text{ Token Renewals}\rangle$
  - If  $\langle\# \text{ Lifespan of Tokens}\rangle = 2$  then  $0 = \langle\# \text{ Token Renewals}\rangle$
- Year 3 Calculate: Estimate the number of token renewals in Year 3:
  - If  $\langle\# \text{ Lifespan of Tokens}\rangle = 1$  then  $\langle\# \text{ Provider Tokens}\rangle + \langle\# \text{ Provider Tokens Added}\rangle = \langle\# \text{ Token Renewals}\rangle$
  - If  $\langle\# \text{ Lifespan of Tokens}\rangle = 2$  then  $\langle\# \text{ Provider Tokens}\rangle = \langle\# \text{ Token Renewals}\rangle$
- Year 4 Calculate: Estimate the number of token renewals in Year 4:
  - If  $\langle\# \text{ Lifespan of Tokens}\rangle = 1$  then  $\langle\# \text{ Provider Tokens}\rangle + 3 * \langle\# \text{ Provider Tokens Added}\rangle = \langle\# \text{ Token Renewals}\rangle$
  - If  $\langle\# \text{ Lifespan of Tokens}\rangle = 2$  then  $\langle\# \text{ Provider Tokens Added}\rangle = \langle\# \text{ Token Renewals}\rangle$

- Year 5 Calculate: Estimate the number of token renewals in Year 5:
  - If <# Lifespan of Tokens> = 1 then <# Provider Tokens> + 4 \* <# Provider Tokens Added> = <# Token Renewals>
  - If <# Lifespan of Tokens> = 2 then <# Provider Tokens> + <# Provider Tokens Added> = <# Token Renewals>

**Note:** For federal sites using PIV only, each year will calculate to 0.

## 2.6 Workstation Capacity

While a USB- and/or PIV-capable workstation is not required for every provider, the site should ensure that a sufficient number of USB- and/or PIV-capable workstations are available for providers to use when digitally signing controlled substance medication orders.

### 2.6.1 Capacity Type: Provider Access Admin

The Provider Access Admin will require a workstation that is capable of plugging in the USB cryptographic token or PIV and accessing the digital certificate in order to conduct multi-factor authentication to activate or deactivate a provider's EPCS profile.

### 2.6.2 Capacity Type: Workstations with USB

The number of workstations that have an active USB hardware port, run the Electronic Health Record (EHR) locally, and are available for use by the Provider Access Admin.

#### 2.6.2.1 Current Capacity Analysis

Number of USB enabled workstations: <#Provider Access Admin USB Workstations>

#### 2.6.2.2 Planned/Expected Growth and Recommendations

None Provided

### 2.6.3 Capacity Type: Workstations with Smart Card Reader

The number of workstations that have an active smart card reader to insert a PIV, run the Electronic Health Record (EHR) locally, and are available for use by the Provider Access Admin.

**2.6.3.1 Current Capacity Analysis**

Number of Smart Card enabled workstations: <#Provider Access Admin Smart Card Workstations>

**2.6.3.2 Planned/Expected Growth and Recommendations**

None provided.

**2.6.4 Capacity Type: Remote Desktop with USB Pass-through**

The number of workstations that have an active USB hardware port, run the EHR from a remote desktop (RDP, CITRIX, Terminal Service, etc.) with USB pass-through enabled, and are available for use by the Provider Access Admin.

This section is only needed for sites that are using USB cryptographic tokens.

**2.6.4.1 Current Capacity Analysis**

Number of USB enabled Remote Desktops: <#Provider Access Admin USB Remote Desktops>

**2.6.4.2 Planned/Expected Growth and Recommendations**

None Provided

**2.6.5 Capacity Type: Remote Desktop with Smart Card Pass-through**

The number of workstations that have an active smart card reader to insert a PIV, run the EHR from a remote desktop (RDP, CITRIX, Terminal Service, etc.) with smart card pass-through enabled, and are available for use by the Provider Access Admin.

This section is only needed for sites that are using PIV.

**2.6.5.1 Current Capacity Analysis**

Number of smart card enabled Remote Desktops:  
<#Provider Access Admin Smart Card Remote Desktops>

**2.6.5.2 Planned/Expected Growth and Recommendations**

None provided.

**2.6.6 Capacity Type: Thin Client with USB Pass-through**

The number of thin clients that have an active USB hardware port, run the EHR from a remote desktop (RDP, CITRIX, Terminal Service, etc.) with USB pass-through enabled, and are available for use by the Provider Access Admin.



This section is only needed for sites that are using USB cryptographic tokens.

### 2.6.6.1 Current Capacity Analysis

Number of USB enabled Thin Clients: <#Provider Access Admin USB Thin Clients>

Total Provider Access Admin USB: <#Provider Access Admin USB Workstations> + <#Provider Access Admin USB Remote Desktops> + <#Provider Access Admin USB Thin Clients> = <#Provider Access Admin USB>

Ratio of Workstations to Provider Access Admins: <#Provider Access Admin USB Workstations> / <# Provider Access Admins> = <# Provider USB Workstation Ratio>

### 2.6.6.2 Planned/Expected Growth and Recommendations

None Provided

### 2.6.7 Capacity Type: Thin Client with Smart Card Pass-through

The number of thin clients that have an active smart card readers to insert a PIV, run the EHR from a remote desktop (RDP, CITRIX, Terminal Service, etc.) with smart card pass-through enabled, and are available for use by the Provider Access Admin.

This section is only needed for sites that are using PIV.

### 2.6.7.1 Current Capacity Analysis

Number of USB enabled Thin Clients: <#Provider Access Admin Smart Card Thin Clients>

Total Provider Access Admin Smart Card: <#Provider Access Admin Smart Card Workstations> + <#Provider Access Admin Smart Card Remote Desktops> + <#Provider Access Admin Smart Card Thin Clients> = <#Provider Access Admin Smart Card>

Ratio of Workstations to Provider Access Admins: <#Provider Access Admin Smart Card Workstations> / <# Provider Access Admins> = <# Provider Smart Card Workstation Ratio>

### 2.6.7.2 Planned/Expected Growth and Recommendations

None provided.

## 2.6.8 Capacity Type: EPCS Enabled Providers

EPCS-enabled providers will require a workstation that is capable of plugging in the USB cryptographic token or PIV card and accessing the digital signing certificate in order to conduct multi-factor authentication to digitally sign a controlled substance medication order.

### 2.6.8.1 Current Capacity Analysis

None Provided

### 2.6.8.2 Planned/Expected Growth and Recommendations

None Provided

## 2.6.9 Capacity Type: Workstations with USB

The number of workstations that have an active USB hardware port, run the EHR locally, and are available for use by the Provider.

### 2.6.9.1 Current Capacity Analysis

Number of USB-enabled workstations: <#Provider USB Workstations>

### 2.6.9.2 Planned/Expected Growth and Recommendations

None Provided

## 2.6.10 Capacity Type: Workstations with Smart Card Reader

The number of workstations that have an active smart card reader to insert a PIV card, run the EHR locally, and are available for use by the Provider.

### 2.6.10.1 Current Capacity Analysis

Number of smart card enabled workstations: <#Provider Smart Card Workstations>

### 2.6.10.2 Planned/Expected Growth and Recommendations

None provided.

## 2.6.11 Capacity Type: Thin Client with USB Pass-through

The number of thin clients that have an active USB hardware port, run the EHR from a remote desktop (RDP, CITRIX, Terminal Service, etc.) with USB pass-through enabled, and are available for use by the Provider.

**2.6.11.1 Current Capacity Analysis**

Number of USB-enabled Thin Clients: <#Provider USB Thin Clients>

Total Provider USB: <#Provider USB Workstations> + <#Provider USB Remote Desktops> + <#Provider USB Thin Clients> = <#Provider>

Ratio of USB Thin Clients to Provider Access Admins: <<#Provider USB Thin Clients> / <# Providers> = <#Provider USB Thin Client Ratio>

**2.6.11.2 Planned/Expected Growth and Recommendations**

None Provided

**2.6.12 Capacity Type: Thin Client with Smart Card Pass-Through**

The number of thin clients that have an active smart card reader to insert a PIV, run the EHR from a remote desktop (RDP, CITRIX, Terminal Service, etc.) with smart card pass-through enabled, and are available for use by the Provider.

**2.6.12.1 Current Capacity Analysis**

Number of smart card enabled Thin Clients: <#Provider Smart Card Thin Clients>

Total Provider Smart Card: <#Provider Smart Card Workstations> + <#Provider Smart Card Remote Desktops> + <#Provider Smart Card Thin Clients> = <#Provider>

Ratio of Thin Clients to Providers: <<#Provider Smart Card Thin Clients> / <# Providers> = <#Provider Smart Card Thin Client Ratio>

**2.6.12.2 Planned/Expected Growth and Recommendations**

None provided.

## 3.0 Findings Summary

Based on the previous capacity analysis, sites should determine if there are any capacity issues that should be addressed before proceeding with the implementation of EPCS capabilities. Sites should also determine if any capacity issues may arise in the foreseeable future so that plans to address them can be made.

### 3.1 Area/Item Monitored: Ratio of EPCS Credentialing Roles to Providers

#### 3.1.1 Capacity Requirements

At a minimum, a site will require two individuals: one to hold the Provider Profile Admin role and one to hold the Provider Access Admin role. However, in order to be responsive when providers are being provisioned, or when renewing certificates, it is recommended to have a backup for each of the roles.

A configuration to consider is to assign both Profile Admin role and Provider Access Admin role to a set of three individuals. Both roles can be assigned to an individual. However, the same individual cannot act in both roles for the same provider. This will provide a level of backup for both roles.

Sites should consider the ratio of EPCS Credentialing Roles to the number of providers in order to maintain desired service levels.

#### 3.1.2 Percentage (%) Increase Needed Per [Time Period]

The ratio of EPCS Credentialing Roles to Providers is driven by the number of providers.

Use the ratios calculated in the five-year projection to determine if additional individuals are needed for the roles (continued next row).

- Year 1
  - <# Provider Profile Admin Ratio>
  - <Provider Access Admin Ratio>
- Year 2
  - <# Year 2 Provider Profile Admin Ratio>
  - <# Year 2 Provider Access Admin Ratio>

- Year 3
  - <# Year 3 Provider Profile Admin Ratio>
  - <# Year 3 Provider Access Admin Ratio>
- Year 4
  - <# Year 4 Provider Profile Admin Ratio>
  - <# Year 4 Provider Access Admin Ratio>
- Year 5
  - <# Year 5 Provider Profile Admin Ratio>
  - <# Year 5 Provider Access Admin Ratio>

### 3.1.3 Capacity Thresholds

If a site has established its own ratio for number of IT support personnel to users, utilize that ratio here. If not, consider using a common industry ratio of 250 users per IT support staff in each of the admin roles.

### 3.1.4 Threshold Response Strategy (Action to Take upon Reaching Thresholds)

If any of the Provider Profile Admin or Provider Access Admin ratios exceed the threshold, plan to assign and train another individual for the role in the year the threshold was exceeded.

## 3.2 Area/Item Monitored: Cryptographic Tokens

### 3.2.1 Capacity Requirements

Each individual assigned the Provider Access Admin Role and each EPCS-enabled provider will require a cryptographic token with a digital signing certificate.

The initial quantity of tokens needed will be the <# Provider Access Admin Tokens> + <# Provider Tokens>.

A site should also consider maintaining a percentage of reserve tokens to address those lost or stolen: <# Replacement Tokens>.

### 3.2.2 Percentage (%) Increase Needed per [Time Period]

Beyond the provisioning for initial startup, a site will want to have a set of cryptographic tokens available to provision new providers and to replace lost tokens.

The <# Provider Tokens Added> identifies the number of tokens a site will need to have to provision providers each of the subsequent years.

A site should consider increasing the number of reserve tokens as the number of base tokens rises each year: <# Added Replacement Tokens>.

### 3.2.3 Capacity Thresholds

At the beginning of the year, a site should consider having on hand sufficient tokens to provision new providers and maintain a reserve for lost or stolen tokens.

### 3.2.4 Threshold Response Strategy (Action to Take upon Reaching Thresholds)

Acquire new tokens.

## 3.3 Area/Item Monitored: Disk Capacity

### 3.3.1 Capacity Requirements

Three main files account for the majority of disk space consumed by EPCS activity: BUSA Audit Log, ORDER DEA Archive Info, and PKI Digital Signatures.

A site should have sufficient disk space to account for existing disk consumption as well as the new activity.

<# Year 1 EPCS Audit Space> + <# Year 1 EPCS Order Archive Space > + <# Year 1 EPCS PKI Space> + 365 \* <#Disk Space Used Increase>

### 3.3.2 Percentage (%) Increase Needed per [Time Period]

Use the calculated disk space to estimate consumption over the following years:

- Year 2
  - <# Year 2 EPCS Audit Space> + <# Year 2 EPCS Order Archive Space > + <# Year 2 EPCS PKI Space> + <# Installed Patch Size> + 365 \* <#Disk Space Used Increase>
- Year 3
  - <# Year 3 EPCS Audit Space> + <# Year 3 EPCS Order Archive Space > + <# Year 3 EPCS PKI Space> + <# Installed Patch Size> + 365 \* <#Disk Space Used Increase>

- Year 4  
 $\langle \# \text{ Year 4 EPCS Audit Space} \rangle + \langle \# \text{ Year 4 EPCS Order Archive Space} \rangle +$   
 $\langle \# \text{ Year 4 EPCS PKI Space} \rangle + \langle \# \text{ Installed Patch Size} \rangle + 365 * \langle \# \text{ Disk Space Used Increase} \rangle$
- Year 5  
 $\langle \# \text{ Year 5 EPCS Audit Space} \rangle + \langle \# \text{ Year 5 EPCS Order Archive Space} \rangle +$   
 $\langle \# \text{ Year 5 EPCS PKI Space} \rangle + \langle \# \text{ Installed Patch Size} \rangle + 365 * \langle \# \text{ Disk Space Used Increase} \rangle$

### 3.3.3 Capacity Thresholds

The threshold is available disk free space. A site should consider adding disk capacity when 85% to 90% of disk capacity has been consumed:  $\langle \# \text{ Disk Space Available} \rangle - \langle \# \text{ Reserved Free Disk Space} \rangle \leq 10\% \text{ to } 15\% \text{ of } (\langle \# \text{ Disk Space Available} \rangle + \langle \# \text{ Disk Space Used} \rangle)$ .

### 3.3.4 Threshold Response Strategy (Action to Take upon Reaching Thresholds)

If any of the projections of disk space consumed exceeds the threshold of available disk space, plan on adding more disk capacity in that year.

## 3.4 Area/Item Monitored: Backup Capacity

### 3.4.1 Capacity Requirements

Corresponding to the additional disk space being consumed, a site will need to ensure that it has sufficient backup capacity.

$\langle \# \text{ Year 1 Backup Cycle Space} \rangle + \langle \# \text{ Backup Space Used Increase} \rangle$

### 3.4.2 Percentage (%) Increase Needed per [Time Period]

Use the backup space calculated to estimate consumption over the following years:

- Year 2  
 $\langle \# \text{ Year 2 Backup Cycle Space} \rangle + 2 * \langle \# \text{ Backup Space Used Increase} \rangle$
- Year 3  
 $\langle \# \text{ Year 3 Backup Cycle Space} \rangle + 3 * \langle \# \text{ Backup Space Used Increase} \rangle$

- Year 4  
<# Year 4 Backup Cycle Space> + 4 \* <# Backup Space Used Increase>
- Year 5  
<# Year 5 Backup Cycle Space> + 5 \* <# Backup Space Used Increase>

### 3.4.3 Capacity Thresholds

The threshold is available backup free space. A site should consider adding backup capacity when 85% to 90% of disk capacity has been consumed: <# Backup Space Available> <= 10% to 15% of (<# Backup Space Available> + <# Space Used>).

### 3.4.4 Threshold Response Strategy (Action to Take upon Reaching Thresholds)

If any of the projections of backup space consumed exceeds the threshold of available backup space, plan on adding more backup capacity in that year

## 3.5 Area/Item Monitored: Workstation Capacity

### 3.5.1 Capacity Requirements

Providers and Profile Access Admins will require a workstation that can support plugging in the cryptographic token.

Sufficient workstations will need to be available to support the number of providers based on the type of token and type of workstation:

<# Provider USB Workstation Ratio>

<# Provider Smart Card Workstation Ratio>

<#Provider USB Thin Client Ratio>

<#Provider Smart Card Thin Client Ratio>

### 3.5.2 Percentage (%) Increase Needed per [Time Period]

As providers are added, the number of providers to workstations will increase:

<#Increase in Providers>

Sites will need to determine the rate at which they add workstations that support cryptographic tokens.



### 3.5.3 Capacity Thresholds

A site will need to determine its desired ratio of providers to workstation.

### 3.5.4 Threshold Response Strategy (Action to Take upon Reaching Thresholds)

If the ratio of providers to workstation exceeds the desired level, obtain additional workstations that are capable of supporting cryptographic tokens.

**Note:** This capacity plan is based on a simplified model to provide reasonable estimates. Sites should continue to use good capacity planning based on their actual experience.

## 4.0 Cost/Budget Management

Sites will need to consider the following when establishing annual budgets.

### Cryptographic Tokens

As part of the initial implementation, sites will need to determine the acquisition source for cryptographic tokens. The EPCS functionality has been certified using either of the following cryptographic tokens and certificates:

- IdenTrust
  - IGC Basic Assurance Unaffiliated Hardware
  - USB Token — HID USB Token with Device Only USB Token
- ORC
  - ECA Medium Token Assurance Identity/Encryption certificate
  - USB Cryptographic Token

Additional information can be found in the *EPCS Token Provisioning Guide*.

Utilizing the capacity analysis in Section 2.5, sites should budget for the acquisition of tokens and the renewal of token certificates.

## 5.0 Compliance-Related Planning

There are three critical files to EPCS that have specific retention requirements.

- **Order DEA Archive:** This is the archive of digitally signed orders required by the DEA regulations.
- **PKI Digital Signatures:** This contains the associated digital signatures for the signed orders.
- **BUSA Audit Log:** This contains the audit entries for EPCS activity.

There are three retention periods that a site will need to consider:

- DEA regulations require that the information in these files be retained for two years.
- Federal or other sites subject to National Archives and Records Administration (NARA) would be required to retain the information for six years under NARA General Records Schedule GRS 3.2-031, "System access records. Systems requiring special accountability for access."
- Any site-specific retention requirements, such as State regulations, over and above those previously noted.

A site will need to determine which requirement will set the retention periods for this information.

The EPCS functionality does not conduct any automatic archiving or purging. Sites need to ensure that any offline archive and purging activity takes into account the required retention requirements.

Special consideration should be given to the BUSA Audit Log. The Daily EPCS and Pharmacy Incident reports are generated from data in the BUSA Audit Log. The DEA can request a site produce activities that go back for two years. This includes the incident reports. In order to reproduce the incident reports, the audit records would have to be in the BUSA Audit Log or a site would have to restore from the offline archive.

## Appendix A: References

The following table summarizes the documents referenced in this document.

<b>Document Name</b>	<b>Description</b>	<b>Filename</b>
<i>EPCS Token Provisioning Guide</i>	Describes the process of acquiring and setting up USB tokens.	bepc010o_EPCS_Token_Provisioning_Guide.pdf

# Glossary

## **Authentication**

Verifying the identity of the user as a prerequisite to allowing access to the information application.

## **Certification Authority**

The organization that is responsible for verifying the identity of applicants, authorizing and issuing a digital certificate, maintaining a directory of public keys, and maintaining a Certificate Revocation List.

## **Certified Information Systems Auditor**

An individual who has been certified by the Information Systems Audit and Control Association as qualified to audit information systems and who performs compliance audits as a regular ongoing business activity.

## **Credential**

An object or a data structure that authoritatively binds an identity (and optionally, additional attributes) to a token possessed and controlled by a person.

## **Credential Service Provider**

A trusted entity that issues or registers tokens and issues electronic credentials to individuals. The Credential Service Provider (CSP) may be an independent third party or may issue credentials for its own use.

## **Digital Certificate**

A data record that, at a minimum:

- Identifies the certification authority issuing it;
- Names or otherwise identifies the certificate holder;
- Contains a public key that corresponds to a private key under the sole control of the certificate holder;
- Identifies the operational period;
- Contains a serial number and is digitally signed by the certification authority issuing it.

**Digital Signature**

A record created when a file is algorithmically transformed into a fixed-length digest that is then encrypted using an asymmetric cryptographic private key associated with a digital certificate. The combination of the encryption and algorithm transformation ensure that the signer's identity and the integrity of the file can be confirmed.

**Digitally Sign**

Affix a digital signature to a data file.

**Electronic Prescription**

A prescription that is generated on an electronic application and transmitted as an electronic data file.

**Electronic Prescription Application**

An entity that develops or markets electronic prescription software either as a stand-alone application or as a module in an electronic health record application.

**Electronic Signature**

A method of signing an electronic message that identifies a particular person as the source of the message and indicates the person's approval of the information contained in the message.

**Federal Information Processing Standard**

Federal standards, as incorporated by reference in § 1311.08 of this chapter, that prescribe specific performance requirements, practices, formats, communications protocols, etc., for hardware, software, data, etc.

**Key Pair**

Two mathematically related keys having the properties that:

- One key can be used to encrypt a message that can only be decrypted using the other key.
- Even knowing one key, it is computationally infeasible to discover the other key.

**Password**

A secret and typically character string (letters, numbers, and other symbols), that a person memorizes and uses to authenticate his/her identity.

**Private Key**

The key of a key pair that is used to create a digital signature.

**Public Key**

The key of a key pair that is used to verify a digital signature. The public key is made available to anyone who will receive digitally signed messages from the holder of the key pair.

**Resource and Patient Management System**

A decentralized integrated solution for management of both clinical and administrative information in these healthcare facilities. Flexible hardware configurations, over 50 software applications, and network communication components combine to create a comprehensive clinical, financial, and administrative solution; a solution that can stand alone or function in concert with other components as needed. Professionals in American Indian, Alaska Native, and private sector health facilities use RPMS every day to efficiently manage programs, maximize revenue generation, and most important, to provide high-quality care for patients.

**Token**

Something a person possesses and controls (typically a key or password) used to authenticate the person's identity.

## Acronym List

Acronym	Meaning
CAC	Clinical Application Coordinator
CSP	Credential Service Provider
DEA	Drug Enforcement Administration
EHR	Electronic Health Record
EPCS	Electronic Prescribing of Controlled Substances
FIPS	Federal Information Processing Standard
IHS	Indian Health Service
NARA	National Archives and Records Administration
NIST	National Institute of Standards and Technology
PIV	Personal Identity Verification
PKI	Public Key Infrastructure
RPMS	Resource and Patient Management System
USB	Universal Serial Bus



## Contact Information

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