

Enterprise Data Center (EDC)

Managed Services (MS) Deployment Process

Application Management Team
Version 5.2

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Version History

Date	Version	Modified By / Approved By	Section(s)	Comment
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10/19/2007	4.4	C. Reber	All	Updated format to new template. Updated URL links.
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1 EDC MS Deployment Introduction

1.1 EDC MS OVERVIEW

This document describes the deployment and change processes for deployments within the Commonwealth Technology Center Enterprise Data Center (CTC/EDC) Managed Services (MS) area.

The EDC provides a secure, high-performance, reliable, and stable environment for e-government applications. The process for planning, launching, and changing applications within the EDC Managed Services area is designed to ensure the stability within the environment.

1.2 EDC MS BASE DEPLOYMENT PROCESS

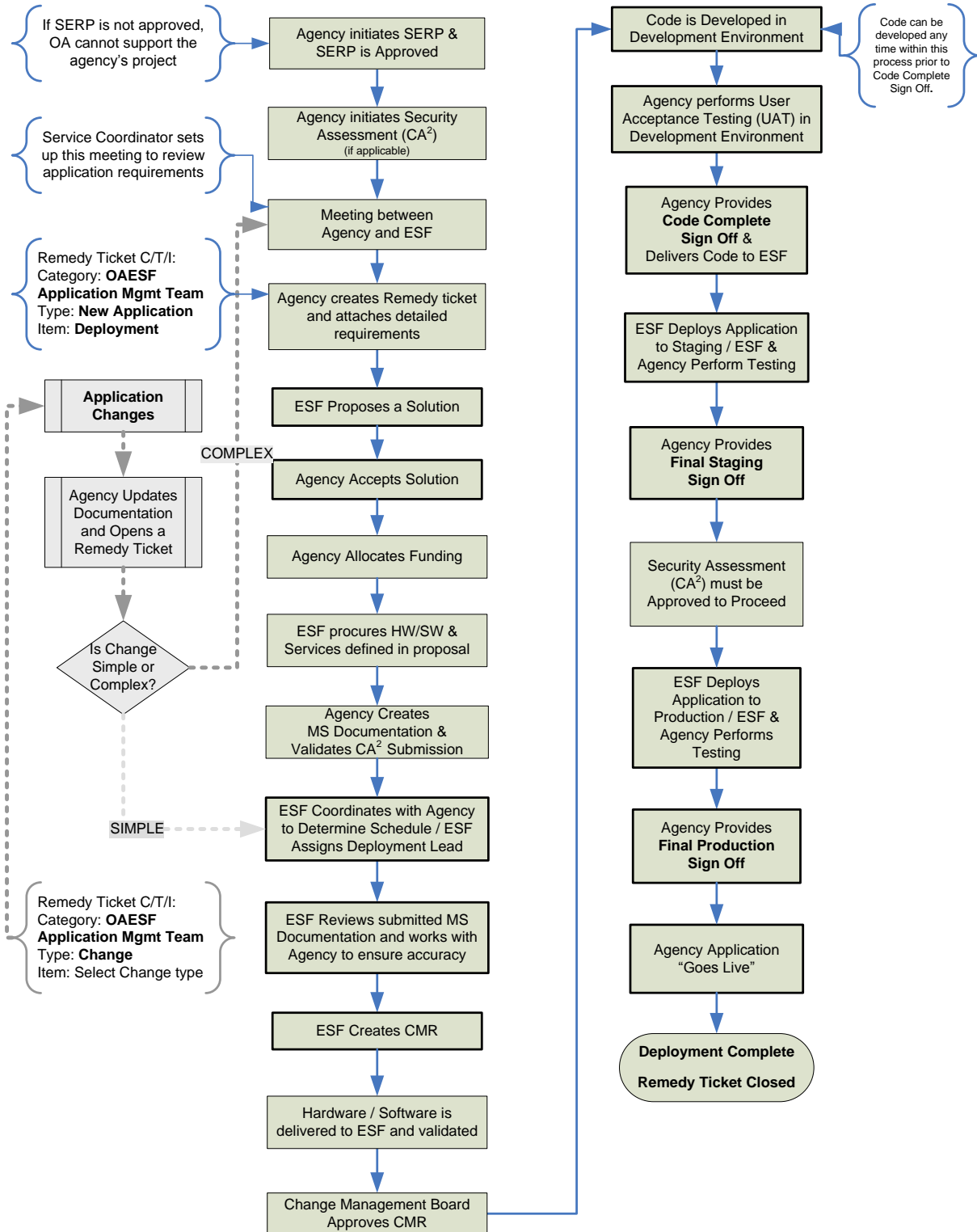
The Enterprise Data Center (EDC) uses a repeatable, prescriptive deployment model for application deployments and changes within the managed “host” environment. This document describes the deployment model, which includes procedures that must be followed and the circumstances under which a variation from the standard will be considered. The “base” deployment model is designed to address most of the significant environment and application changes that will occur at the EDC; however, exception handling is also discussed.

Applications are deployed at the EDC in tiers. The EDC environment is large and comprehensive, and consequently, often differs considerably from development environments operated by vendors or agencies. Therefore, special measures must be taken to ensure that an application is compatible with the hosting environment in which it will live. In addition, to ensure application stability and integrity, only “customer-authorized” changes are permitted and these changes must first be tested by the developer prior to their introduction to the EDC Production Environment.

Click here to review all [Deploying in Managed Services](#) documents.

1.2.1 EDC Managed Services Application Deployment Process Diagram

ESF Managed Services (MS) Application Deployment Process



2 Managed Services Deployment Process

The “base” deployment model described in the following sections is designed to address most of the significant environment and application changes that will occur at the EDC.

2.1 PREREQUISITES

2.1.1 Agency Initiates SERP

Prior to requesting EDC deployment support, the agency initiates and gains approval of the [Service Engagement Request Process \(SERP\)](#). If SERP is not approved the OA cannot support the Agency’s project.

2.1.2 Agency Initiates Security Assessment (CA²) (if applicable)

The agency is also required to initiate the Security Assessment (CA²) for the application. Please refer to the Commonwealth Application Certification and Accreditation (CA²) URL at www.sqca.state.pa.us to complete the assessment and obtain approvals. At least 2 weeks is required to complete the Security Assessment process. This process should be completed well in advance of EDC deployment planning.

NOTE: The Network Security Unit of the Bureau of Infrastructure & Operations administers the Firewalls, and DNS structure for the entire Commonwealth, including the Enterprise Data Center (EDC).

2.1.3 Meeting between Agency and EDC

The Service Coordinator (SC) sets up a meeting between the agency and the EDC. The agency provides their requirements and EDC reviews the requirements to determine a solution for the deployment. Estimates of scheduling requirements are also discussed.

2.2 AGENCY REQUESTS EDC SERVICES AND PROVIDES REQUIREMENTS

2.2.1 Agency Defines the Requirements and Creates a Remedy Ticket

The agency creates a Remedy ticket with the EDC Application Management Team (AMT) to initiate the process for deployment. Requirement documentation must be attached to the Remedy ticket.

2.2.2 EDC Proposes a Solution

After all agency requirement information is reviewed, EDC proposes a solution to meet the requirements.

2.2.3 Agency Accepts the Solution Proposal

The agency reviews the solution and accepts the proposal. Note: This “give and take” process is handled in multiple communications until a final agreement is accepted by both the agency and the EDC.

2.2.4 Agency Allocates Funding

The agency allocates funding to support the requirements specified in the accepted solution proposal. Allocated funds are transferred to EDC prior to the procurement of hardware, software, and services.

2.2.5 EDC Procures Hardware, Software, and Services

After allocated funds are transferred, EDC procures the hardware, software, and services defined in the accepted solution proposal.

2.2.6 Agency Creates the MS Documentation / Security Assessment (CA²) is Validated

The agency is **required** to use the **EDC Documentation Template** available in [Deploying in Managed Services](#). This documentation is critical, is required prior to the start of the deployment process, and

ensures that EDC can provide proper support for the Agency deployment. If incomplete documentation is submitted, it can change the deployment dates and can cause delays for an extended period.

The submission of the Security Assessment (CA²) by the agency is also validated.

2.2.6.1 Deployment Documentation Requirements

Documentation must be submitted to the EDC, at least **two (2) full weeks** before the scheduled Staging deployment date, to allow sufficient time for both the customer and the EDC team to prepare a Change Management Request (CMR) for the weekly Enterprise Change Management Board (CMB) review committee meeting. This step is required to receive approval for deployments and changes to the Production network environment. A CMR is created for Managed Services customers after all documentation is completed by the agency and reviewed and accepted by the EDC.

For complex applications, or when the deployment process is unclear for a given application, additional time (approximately 30-45 days) should be included in the project timeline.

2.3 EDC CONFIRMS SCHEDULE - BUILDS AND DEPLOYS THE REQUIREMENTS

2.3.1 EDC Determines the Schedule and Assigns the Deployment Lead

The EDC Deployment Manager coordinates with the agency to confirm the deployment schedule. The schedule is based on EDC staff availability and the amount and type of infrastructure required for the deployment. Advance notice should be provided to ensure that EDC has personnel available to assist agencies in meeting deployment deadlines.

The Deployment Manager and the Deployment Lead create an EDC “customer-based” project plan, which includes the sequence of project tasks that should be incorporated with the deployment cycle. In addition, as the deployment plan is developed, the EDC Team is available to meet with agency project managers to address deployment logistics, especially for large or complex deployments.

2.3.1.1 Pre-Deployment Timelines

Final EDC documentation needs to be submitted by close of business Monday - 2 weeks prior to the Staging deployment week.

User acceptance should be scheduled and completed in the development environment prior to 1 week before the Staging deployment. Final code, deployment procedures, and Code Complete sign off needs to be submitted by close of business Monday 1 week prior to Staging Deployment week.

2.3.2 EDC and Agency Review the submitted MS Documentation

After the schedule is determined, the EDC reviews the submitted MS documentation (created by the Agency using the EDC MS Documentation Template) and works with the agency to ensure the accuracy of the requirements.

2.3.3 EDC Creates the Change Management Request

A Change Request ticket is required for a **new application deployment** and for **changes to an existing application**. Types of changes requested for an existing application may include changes to; the production network environment or infrastructure, access rights, database schema, or server permissions.

A request for change must be submitted in a specific ‘time frame’ to allow sufficient time for both the customer and the EDC Team to prepare a formal Change Request ticket, which will then be reviewed in the weekly Enterprise Change Management (CM) Review Committee meeting. **NOTE:** Documentation **must** be provided to the EDC on the **scheduled** date so delays can be avoided.

In general, documentation must be submitted to the EDC at least two (2) full weeks before the requested changes are to be applied. Additional time should be included in the project timeline for the EDC to complete the documentation process for more **complex** changes. This will help to facilitate the process in

time for a Change Review meeting held prior to the Staging week. Refer to *Appendix A – MS Deployment Process Scenarios* for details.

2.3.4 Hardware / Software is Delivered to EDC

The hardware and software defined in the accepted solution proposal is delivered to the EDC.

2.3.5 Change Management Board Approves the CMR

The Change Management Board reviews the Change Management Request and provides approval, based on the submitted requirements and the deployment schedule. Refer to section 3 for additional details.

2.3.6 Code is Developed in the Development Environment

Application development and prototyping is performed within the development environment. This may be onsite, at the agency location, or at a third party location. Code can be developed at any time within this process prior to “Code Complete” sign off.

Note: It should be stressed that the EDC team can prove to be a valuable asset during the development phase of the process. They will assist the design team in producing maximum security and stability to the application. Please refer to **EDC Application Development Guidelines** document in the [Document Library](#).

2.3.7 Agency Performs User Acceptance Testing in the Development Environment

Prior to approving an application for EDC deployment, developers and customers should arrange for the targeted users of the application to have access to the completed application. User Acceptance Testing (UAT) should be thorough and complete, with all discovered bugs corrected and changes implemented. When the development process nears “Code Complete” status, the final code and deployment procedures must be delivered to the EDC deployment lead assigned to the deployment. Please refer to **EDC Application Development Guidelines** document available in the [Document Library](#).

2.3.8 Code Complete Sign Off is Provided

“Code Complete” sign off provides acknowledgement, from an agency contact and a development team contact, that the application code is completed and has been successfully tested in the Development environment. The application will only be migrated to the Staging environment upon submission of the EDC Deployment Sign Off Form. The scheduled date should be identified and recorded for the anticipated start of the deployment. Sign offs are recorded on the **EDC MS Deployment Sign-Off Form** available [Deploying in Managed Services](#).

2.4 STAGING AND PRODUCTION TESTING OF THE APPLICATION

2.4.1 EDC Deploys Application to Staging and Testing is Performed

The EDC Staging environment is scaled to a “relative” production size and it emulates the environment that will host the application within the EDC. Staging provides the opportunity to identify and resolve any differences between the Development/Test environment and the Production environment prior to the release of the application. Stress testing, failover testing, resource-utilization benchmarking, test deployments, and deployment/operation procedures are all identified and tested while the application is in the Staging environment.

2.4.1.1 Staging Timelines

Monday and Tuesday of the Staging week are reserved for EDC deployment into the environment. Wednesday through Friday of the Staging week is reserved for agency testing of the deployed application. Noon on Friday of the Staging week is the deadline, for approving an application for deployment during the following Production week. The EDC Sign Off Form also contains a section that requires timeline coordination with the EDC Deployment Lead for production change scheduling.

Wednesday and Thursday afternoons are reserved for failover testing from a web cluster and SQL cluster perspective. A notification will be sent prior to beginning any failover testing to ensure that the agency is fully aware of any disruptions they may encounter during application testing.

Applications should be referenced via the staging URL namespace of www.<sitename>.beta.state.pa.us, based on agency needs.

2.4.2 Staging Sign Off is Provided

A 3-tiered sign-off is required to ensure that all parties agree the application is ready to be deployed in the Production environment. Sign offs are recorded on the **EDC MS Sign-Off Form** available [Deploying in Managed Services](#).

The Agency Application Owner (customer) is responsible for affirming that the application satisfies its business requirements and is ready to be deployed to the Production environment. The code developer provided sign off to indicate that they have met the customer's requirements and that the application is ready to be deployed. Finally, the OA-EDC Application Management Team (AMT) verifies that the application has passed the Staging environment tests, and is suitable for deployment within the Production environment.

2.4.3 Security Assessment (CA2) must be Approved

The Security Assessment performed by **Commonwealth Application Certification and Accreditation (CA²)** at www.sqca.state.pa.us (formerly ECSA) must be **approved** to move the deployment to the next step.

2.4.4 EDC Deploys Application to Production and Testing is Performed

The Production environment is the actual "host environment" for production-released applications. The EDC team strongly encourages the use of clustering for all components that support it. As mentioned above, operations procedures and other documentation for the perpetual support of the application are placed on file for EDC staff reference.

Reuse of existing DNS names will need to be prepared with either redirects or dual support as the DNS changes are replicated across the Internet. Without these mitigation techniques, replications can often take a week to become fully available across the Internet.

Applications should be referenced via the Production URL namespace of www.<sitename>.state.pa.us, based on agency needs.

2.4.4.1 Production Timelines

Monday and Tuesday of the Production week are reserved for EDC deployment into the environment. Actual time used for production deployment should be coordinated with the EDC resource deploying the application, as per Staging sign off procedures. Wednesday through Friday of the Production week are reserved for agency testing of the deployed application. Noon on Friday of the Production week is the deadline for approving an application for public release or 'Go-Live'.

Public release of the application can be scheduled for anytime after the Production sign off, such as the following Monday immediately following the successful Production deployment. Usually the content or background of an application will dictate the public release strategy. For example, an application for Groundhog Day might be announced to the public via press releases on Groundhog Day, but it has been in Production for some time.

2.4.5 Production Sign Off is Provided

The 3-tiered approval process is also required for the final Production installation. Production environment approval should be abbreviated, because the same test procedures used for Staging deployment/sign-off are followed. This final check ensures that all parties agree and are satisfied that the application performs as expected, and has been fully deployed to the Production environment. Sign offs are recorded on the **EDC Sign-Off Form** available at [Deploying in Managed Services](#).

Once sign off has been completed for the Production installation, 24/7 monitoring and backup begins on the application and all related services in the Managed Services environment

2.5 COMPLETED APPLICATION IS RELEASED TO PRODUCTION

2.5.1 Agency Application “Goes Live”

After Final Production sign off is received by EDC, the new application (or application changes) can “go live” in the production environment. The deployment is completed and the Remedy Ticket is closed.

3 Change Procedures

After an application has been deployed to Production, updates will need to take place from time to time. The standard method for these changes is to follow the procedures detailed in the previous sections and outlined below:

- Documentation is drafted and submitted
- Code is developed and tested
- Meetings are scheduled to discuss and plan the updates
- Update is installed in Staging first, tested thoroughly, and signed off
- Update is then applied to Production, tested thoroughly, and signed off

However, there are times when an **accelerated schedule** is necessary which will require the following exception procedures to be implemented.

3.1.1 Agency Exception Contacts for Critical or Minor Changes

Each agency should identify “Exception Contact(s)” that may authorize minor and critical changes to their applications. Membership within the two (2) Exception Groups (i.e., minor and critical) may be the same, and they may include the application contacts, based on agency discretion. The EDC will maintain both Exception Contact lists. Membership to these Exception groups is limited to Commonwealth employees, and changes to the lists must come from the Agency Contacts for the application.

As noted below, implementation of minor or critical changes often bypasses the normal deployment process, which increases the risk of potentially destabilizing the target application and others in the environment. This increased risk requires that the designated Exception Contacts fully understand the potential impact of the requested changes, and that they are empowered to make the business decision for an exception change.

The “Application Contact” designated by the agency will be responsible for authorizing regular deployment process approvals.

3.1.2 Exceptions to the Deployment Process for Critical Changes

The EDC Environment is monitored on a 24x7 basis, and staff are available either onsite or through remote access to assist in the event of a critical change. If an agency has a critical change (see below), they should submit a Remedy ticket between the hours of 7:00 AM and 7:00 PM and contact the Call Center between the hours of 7:00 PM and 7:00 AM, which will forward the message to the correct staff members for prompt attention.

Criteria for Critical Changes:

1. **Health, Safety, Welfare** - Any compromise to the public health, safety, or welfare to an individual or group
2. **Security Violation** – Information which is required to be secured is found not to be properly protected
3. **Site and/or Server Compromised**—The compromise of a site or server by a dangerous virus, or defacement; which could be used to violate additional sites or servers
4. **Full Site Unavailable**

Even if a change is critical, we recommend the standard deployment process be followed, including Staging. However, full test cycles might not be performed for each component in an effort to speed the implementation of a critical change. For example, instead of a 48-hour stress test, a much shorter test might be performed based on the changes required.

Once the critical changes are deployed into Production, a full testing of the components will be scheduled to ensure a consistent level of quality for all the components. These unplanned changes to the Staging and Production Environments can be implemented outside of the scheduled deployment schedule.

Documentation on the critical changes, impact, justification, and the procedures for implementing these modifications are required as part of the Critical Change Request.

It is expected that less than 10% of the changes made to stable applications will qualify as exceptions.

NOTE: Authorization to implement a critical change is needed by a Critical Exception Contact selected by the agency, as described above. In addition, the EDC Manager will need to provide approval to make this change after having a chance to review the documentation submitted to EDC.

3.1.3 Exceptions to the Deployment Process for Minor Changes

Many changes to the environment may be minor from a risk perspective, but will produce substantial business/operational benefits for agency customers.

Changes to existing applications residing within the EDC that may be made without following the standard deployment process include:

1. New and/or updated HTML files.
2. New and/or updated documents, such as .doc,.xls or .pdf formatted files.
3. New and/or updated graphics files in GIF, JPEG, TIFF, and or BMP formats.

Please note that any code changes such as ASP, ASPX, DLL, etc., would never be considered a minor change. Any issue with code, has the possibility of causing catastrophic failure of the application or environment and should always be fully tested in Staging as per the standard schedule.

These changes still require approval by a Minor Exception Contact from the sponsoring agency to acknowledge the change has been tested in a development environment, and is “minor” (i.e., it will not result in a noticeable or negative change within the hosting environment). Documentation explaining the nature and location of the file modifications needed must be included as part of the Minor change request.

These changes can be applied to Staging and/or Production Environments as a direct file add/overlay within one (1) business day of receipt of the request and files by the EDC. Rollback support is available for these changes, as well as for all servers within the EDC Managed Services hosting environment.

It is expected that less than 10% of the changes made to stable applications will follow this Exception process.

NOTE: Data changes to the contents of a database can be made at anytime via a connection from the Agency’s location through a front-end of their choosing, such as a custom VB application, Access, MSQuery, etc. Schema or other database changes, outside of the regular user data, must always follow the standard deployment process. Authorization from a Minor Exception Contact is required to implement a minor change, as described above.

4 Appendix A – MS Standard Deployment Scheduling

Scenario:

In this scenario the sponsoring Agency and EDC has targeted a Staging deployment start date of March 17 and a tentative Production deployment date as March 24. *Note:* The **actual** Production deployment date will be identified after all the components are successfully deployed in Staging.

EDC MANAGED SERVICES PROCESS SCHEDULING

March 08						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						March 1
PRIOR TO THE BEGINNING OF THE SCHEDULING PROCESS THE AGENCY INITIATES THE SERP AND SECURITY ASSESSMENT (CA ²) PROCESS AND CREATES A REMEDY TICKET						
	2	3	4	5	6	7
WEEK 1 DOCO & CM	AGENCY DELIVERS FINAL MS DOCUMENT TO EDC (with CA ² Approval)		EDC CREATES CHANGE MANAGEMENT REQUEST (CMR)		EDC CHANGE MANAGEMENT BOARD (CMB) APPROVES CMR	
	9	10	11	12	13	14
WEEK 2 CODE DELIVERY / INFRASTRUCTURE	AGENCY DELIVERS CODE TO EDC	EDC BUILDS INFRASTRUCTURE AS SPECIFIED IN THE MS DOCUMENT			CODE COMPLETE SIGN OFF PROVIDED	
	16	17	18	19	20	21
WEEK 3 STAGING	EDC DEPLOYS APPLICATION TO STAGING		APPLICATION TESTED IN STAGING		STAGING SIGN OFF PROVIDED	
	23	24	25	26	27	28
WEEK 4 PRODUCTION	EDC DEPLOYS TO PRODUCTION (If Approved by CA ²)		APPLICATION TESTED IN PRODUCTION		PRODUCTION SIGN OFF PROVIDED	
	30	31				
	AGENCY APPLICATION "GOES LIVE"					

Monday, March 3

All Documentation for the deployment needs to be submitted to the EDC, at least two (2) weeks prior to the Staging deployment date of March 17. EDC reviews documentation for completeness. Any discrepancies in the documentation, or changes needed by the EDC will be identified in writing to the Agency. Completed documentation provides details of any/all required infrastructure changes, including DNS and Firewall changes. Security Assessment approval from Commonwealth Application Certification and Accreditation (CA²) is required.

Note: It is very important that documentation deliverables be received in a timely manner because the hard date for the deployment will need to be rescheduled if the documentation is incomplete or delayed.

Wednesday, March 5

The Change Management Request (CMR) will be prepared and submitted by the EDC prior to the Change Management Board (CMB) weekly review session.

Friday, March 7	The Change Management Board meets and reviews the submitted Change Management Request (CMR). The CMR is approved if all conditions are met.
Monday, March 10	The Agency delivers the completed code to the EDC by COB (5:00 PM).
Tuesday March 11	EDC begins to prepare the infrastructure (this includes server build activities) and tests the code in the Development environment.
Friday, March 14	Two-way Code Complete sign off must be provided by an Agency contact as well as a Development Team contact indicating that the application code has been completed and successfully tested in the Development environment. This application will only be migrated to the Staging environment upon submission of this form. The scheduled date should be identified and recorded for the anticipated start of the deployment.
Mon & Tue, March 17, 18	Application is deployed to the Staging environment.
Wed & Thu, March 19, 20	Application is tested in the Staging environment.
Friday, March 21	Three-way Staging signoff is provided by Development, Agency, and EDC indicating that the application is complete and running properly in the Staging environment. The Agency contact should approve after all business functions are confirmed to be functional within the Staging environment. The Development team should approve after all technical components have been confirmed to be functioning properly. The EDC team should approve after stress testing, intrusion analysis and supportability review is completed satisfactorily.
Mon & Tue, March 24, 25	Application is deployed to the Production environment. Security Assessment approval from Commonwealth Application Certification and Accreditation (CA ²) is required.
Wed & Thu, March 26, 27	Application is tested in the Production environment.
Friday, March 28	Three-way signoff is provided by Development, Agency, and EDC indicating that the application is complete and running properly in the Production environment. The Agency contact should approve after all business functions are confirmed to be functional within the Production environment. The Development team should approve after all technical components have been confirmed to be functioning properly. The EDC team should approve after stress testing, intrusion analysis and supportability review is completed satisfactorily.
Monday, March 31	Application is ready to 'Go-Live' for public release.

5 Appendix B – EDC MS Deployment Sign Off Form

This form is used to record and acknowledge the approval of all parties when an application is code complete; agency deliverables are received at EDC; Staging deployment is complete; and Production deployment is complete. Please refer to the **EDC MS Sign-Off Form** available in [Deploying in Managed Services](#).

Sign off guidelines are as follows:

- Code Complete and Agency Deliverables Sign Off

Acknowledgement should come from an Agency contact as well as a Development Team contact when the application code is completed and tested in the Development environment. This application will only be migrated to the Staging environment upon submission of this form. The scheduled date should be identified and recorded for the anticipated start of the deployment.

- Staging Sign Off

Acknowledgement should come from an Agency contact, a Development team contact, and from the EDC Team to establish the 3-way sign-off that an application is complete and running properly in the Staging environment. The Agency contact should approve after all business functions are confirmed to be functional within the Staging environment. The Development Team should approve after all technical components have been confirmed to be functioning properly. The EDC Team should approve after stress testing, intrusion analysis and supportability review is completed satisfactorily.

- Production Sign Off

Once an application has been moved to production, one final sign-off should be established to confirm that the move to production was completed successfully. All parties (Developers, Agency, and EDC) should provide sign-off representing their specific areas of concerns. **The Agency should provide the requested time for update to the production environment in this section.**

NOTE: Copies of this “electronic-only” form should be distributed to the contacts at the completion of each sign-off. The EDC Team will keep the form as well, and additional inquiries about the sign-offs can be provided upon request by the EDC Team. Copies are kept online at the EDC within our internal SharePoint site, if a copy is requested later. In the future, this electronic form will be migrated to a web-based application with integrated AD security.

6 Appendix C – Documentation Links

Please refer to the MS Deployment documents at the links below:

[Deploying in Managed Services](#)

- The **EDC MS Deployment Process** overview and implementation guide describes the deployment steps for applications and changes being deployed to EDC Managed Services. EDC uses a repeatable, prescriptive deployment model when making changes to the managed hosting environment we provide to our customers. The Managed Services deployment model is described in detail, as well as expressing when this process needs to be followed, and when circumstances may warrant a variation outside of this process.
- The **EDC MS Document Template** must be completed by any agency that wants their application hosted in the Enterprise Data Center. The agency uses this document to provide the technical details of how their particular application functions.
- The **EDC MS Deployment Sign Off Form** is used to record and acknowledge the approval of all parties, including the agency, the development team, and EDC when an application release or update is code complete, staging complete and production complete. This sign off form needs to be provided for all deployments in Managed Services.
- The **EDC MS Process Flow and Calendar** provides an overview flow and calendar of the EDC deployment process for Managed Services.

[MS Document Library](#)

- **EDC Application Development Guidelines** provides an overview of best practices and guidelines for those who develop applications that will be hosted in EDC Managed Services. Using this document, the developer can determine what types of formats, database connections, etc., are supported within the environment.
- **EDC Application Release and Delivery Standards** provides details on the standards for delivery of application releases to the EDC environment for initial deployments, as well as for updates to existing applications.

[Change Management](#)

- The **EDC Change Management Process & Procedures** document discusses change procedures in detail. This process is intended for EDC internal use only, however, this document serves as an informational document for EDC customers.