



Consolidated Technology Services • WA

The State Data Center Migration Guide

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Contents

DOCUMENT REVISION HISTORY	3
INTRODUCTION	5
PURPOSE OF THIS GUIDE	6
DOCUMENT STRUCTURE.....	6
ASSUMPTIONS	7
STATE DATA CENTER MIGRATION TASKS	7
APPENDIX A – REFERENCED DOCUMENTS	22
APPENDIX B – MIGRATION CHECKLIST	23
REFERENCES.....	25

Document Revision History

Description of Change	Page	Date Revised	Reviser
First version (1.0)	All	2/25/14	Team
Minor Revisions (1.1)			
- Added Service Desk email address	7	2/27	Nya
- Updated titles of Network Models B & C	8	2/27	Nya
- Updated SLA step to reference to "Terms of Service". Also changed "update" to "create".	14	2/27	Nya
- Corrected "IA" to "IAA"	14	2/27	Nya
- Added "(optional)" on step 25 and indicated this step applies to Customers using the move vendor	14	2/27	Nya
- Added new step for end of migration notification	18	2/27	Nya
- Added "Terms of Service" to SLA step in checklist	21	2/27	Nya
- Added signature rows	21	2/27	Nya
Minor Revisions (1.2)			
- Corrected form titles for facilities documents and added Network Questionnaire - Part 2 for customers selecting Network Model B, C or D	9	3/5	Nya
- Corrected form title for facilities document	12	3/5	Nya
- Corrected form title for facilities document	14	3/5	Nya
- Corrected form title for facilities document	15	3/5	Nya
- Corrected form titles for facilities documents and added network questionnaire	19	3/5	Nya
Minor Revision (1.3)			
- Split Colocation On-boarding Form task from Issue Quote and moved earlier in the process	9	4/2	Nya
- Added step for "Complete Elevations"	13	4/3	Nya
Minor Revision (1.4)			
- Moved "Schedule Regular Status Sessions" to occur after the High Level Consult	11	4/29	Nya
- Moved Connectivity Cut Sheet requirement to #16	12	4/29	Nya
- Added SDC High Level Migration Strategy Form to #9 High Level Strategy	10	4/29	Nya
- Added Security Review Disposition form to step for "Combined High Level Consult"	11	4/29	Nya
- Added new step to "Begin Elevation Planning"	12	4/29	Nya
- Redefined process for #18 Create the Detailed Design and Bill Of Materials	13	4/29	Nya
- Redefined process for #22 Complete Elevations	14	4/29	Nya
- Added Authorized Approver form and updated the process for "Complete SDC Facility Access Requirements".	15	4/29	Nya
- Appendix B – Migration Checklist. Moved Schedule Regular Migration Status Session(s) from step 9 to Step 12 to match step in guide.	21	6/3	Doug

Description of Change	Page	Date Revised	Reviser
Minor Revision (1.5)			
- Added reference to FAQ and added FAQ link.	6	11/10	Senthil
- Added link to the list of CTS Customer Account Managers.	8	11/10	Senthil
- Added reference to WA-Notification email distribution list.	8	11/10	Senthil
- Changed text of "MP2 Service Desk Request Template (Word)" to "MP2 Service Desk Request Ticket (Word)".	8	11/10	Senthil
- Added a link to "Network Questionnaire Part 2".	11	11/10	Senthil
- Changed text of "Customer On-boarding Form (Word)" to "Colocation On-boarding Form (Word)".	11	11/10	Senthil
- Removed reference to the move vendor at High Level Consult (HLC) Meeting. Consult with move vendor comes in a later step.	12	11/10	Doug
- Replaced reference to "SLA" with reference to "TOS" and moved to occur after acceptance of the quote.	15	11/10	Doug
- Updated reference and link to the "CTS Data Center Facilities Equipment Tracking Log".	16	11/10	Doug
- Changed text of "CTS Service Desk Ticket" to "Physical Migration Service Desk Request template (Word)".	16	11/10	Senthil
- Rephrased step regarding "Prepare Facilities" to be more clear.	17	11/10	Heidi
- Added detail regarding process performed by CTS' Network Control Center (NCC).	18	11/10	Doug
- Inserted new step to Discontinue OB2 A la Carte billing.	20	11/10	Doug
- Modified all document links to contain direct links to the documents instead of the folder.	5 - 20	11/10	Senthil
- Restructured referenced document list to reflect order of appearance in this document. Added links to new documents referenced in this version. Added link to main ASK SDC Projects All General folder.	21	11/10	Senthil
- Minor spelling and grammar corrections.	Various	11/10	Senthil
Minor Revision (1.6)			
- Added the need for a final prep meeting five business days before a migration event.	18	12/8	Heidi
- Clarified the steps associated with migration notifications to indicate both CTS and the Customer provide notifications.	18-20	12/8	Heidi
- Updated the step for Customer Acceptance to include notification from Customer to CTS.	20	12/8	Heidi

Introduction

Since the 1960s the state of Washington has grown its information technology infrastructure in support of state business operations. Over this span of time, many data centers were opened across Thurston County. During the 2009 legislative session [ESHB 1216 \(PDF\)](#) gave DIS the authority to “lease develop or lease purchase a state data center and an office building,” with the intent to begin consolidations. On July 15, 2011 construction of a new State Data Center was completed. Consolidated Technology Services (CTS) began moving into the adjoined office building and took possession of the State Data Center (SDC) building. In July 2013 the OCIO published the [State Data Center \(SDC\) Plan Update \(PDF\)](#) outlining a strategy to migrate 100% of computing hardware in OB2 to the SDC and to develop a plan for migrating the remaining Thurston County data centers.

Consolidation of data centers is not unique to the state of Washington. Some of the key business considerations that typically drive data center migrations include:

1. Multiple regional data centers lack standardization, efficiencies and capacity for growth and are unable to meet end-to-end service level objectives. (Chawla, 2011)
2. Trends for data center growth are rising at compounding rates. Server workloads and densities are projected to increase by 10% year-over-year. Network bandwidth capacity demands are expected to grow by 35% , storage capacity growth by 50% and power costs are expected to increase by 20%, year-over-year. (Gartner, 2014)
3. Existing data center has obsolete infrastructure in terms of high power consumption, space taxing, unsupported equipment with poor availability/performance which does not integrate well with modern applications and technologies.
4. Current data center floor space is nearly 100% utilized, needs optimization to enable growth capabilities.
5. Regulatory requirements drive a need for relocation or redundancy.

Data center migrations are highly strategic projects that must be executed without impacting business operations, service levels, or data protection requirements.

Each customer environment is unique and will have its own challenges. One detailed migration strategy will not fit every environment. However, every solid migration strategy should aim for a near-zero disruption of business services. This objective drives the need to understand all the major subsystems of a data center which include:

- Nature and criticality of the applications that cater to different business services
- Servers, shared hosting environments, and databases that host the applications or business logic
- Disk storage for storing data and the frequency of access
- Networks that provide the access to the data
- Network security that protects the business data
- Physical security of the environment
- Performance and service level agreements

Purpose of this Guide

The purpose of this Migration Guide is to define the steps that Consolidated Technology Services (CTS) and Customers will take to complete readiness tasks necessary for the migration of systems into the SDC. It also contains the migration and post migration tasks needed to fully complete the migration effort.

Each Customer migrating systems into the SDC is asked to identify an Agency Implementation Coordinator (AIC) to serve as the primary Customer contact. While the AIC is not expected to be an expert in all areas, the AIC is responsible for coordinating the activities identified as Customer responsibility.

The activities are summarized in a checklist that will be used to track progress and when complete signifies readiness for migration scheduling. Completion of these activities is critical to migration success and will help to minimize any unplanned service disruption. When all readiness tasks are complete, the AIC will submit the completed checklist to the CTS Client Liaison. The CTS team will review and either a) confirm readiness or b) return the checklist for further work. After readiness is confirmed, migration work and related activities will begin as scheduled.

Throughout the migrations, CTS will need to manage many independent, yet concurrent, activities. These will need to be coordinated to look for interdependencies, conflicts, and ensure resource availability. A [Migration Calendar \(Web\)](#) has been published reflecting SDC migration activity to assist with looking for overlaps and/or available windows. This calendar is accessible for Customers with access to the State Government Network (SGN). An [FAQ \(Web\)](#) and other materials covering the migration to SDC can be found at [here \(Web\)](#).

Document Structure

As agencies progress through the Guide, they will see prerequisite tasks that:

- Must be completed internally by the Customer agency
- Must be completed by CTS staff
- Must be completed in coordination with CTS

Each task is prefaced with a table entry that identifies the primary party responsible for completing the work activity, the task number, and the task description. The table below provides a brief sample:

Party	#	Task Description
Both	1	Initiate Migration Planning

Each table entry will be followed by a more detailed description of the work to be accomplished for that task. Migration tasks have been organized in a general chronological order.

Note: All migration tasks have been built to include a wide range of scenarios and not all tasks apply to every migration. These tasks will be clarified with the appropriate parties during the planning phase.

Assumptions

This Guide makes the following assumptions:

1. CTS has:
 - readied the facilities
 - installed equipment enclosures
 - installed backbone and structured cabling outside the enclosures
 - prepared the network core
 - published colocation service information
2. The Customer will avoid (as much as possible) the transformation of existing systems to a new technology base. Simplifying migrations helps to ensure the objectives and timeframes of migration schedules can be met. Reducing transformation is desirable to ensure that systems that were operational prior to migration remain so afterward. If issues arise after migration is performed, it is much easier and effective to troubleshoot against known, working configurations. Configuration freezes should be discussed as part of preparations.

State Data Center Migration Tasks

Based on CTS' experience migrating systems and services into the SDC, key activities have been identified and fall into these broad categories:

- Identify business requirements
- Analyze and design infrastructure and application
- Identify migration options and plan
- Build infrastructure and roll-out applications
- Verify applications
- Decommission source data center infrastructure

The equipment being moved into the SDC is a combination of equipment managed by CTS and equipment owned and managed by Customers. Many of the tasks performed to support the migrations will be performed by the Customer in collaboration with CTS.

60-120 DAYS BEFORE MIGRATION		
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Both	1	Initiate Migration Planning
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Discussions regarding migration to the SDC are likely to evolve from a variety of circumstances. Customers who express interest to CTS staff will be asked to contact the Service Desk to initiate formal planning. If CTS has not heard from a Customer that needs to migrate into the SDC (such as a customer in the existing aging state data center), CTS will contact the Customer to initiate planning.

Both	2	Open a Service Request Ticket
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To initiate planning, the Customer or the CTS Client Liaison will submit the [MP2 Service Desk Request Ticket \(Word\)](#) to servicedesk@cts.wa.gov. The resulting ticket created by the CTS Service Desk will be used as the 'Parent' ticket to track the entire migration process. The Infra Request Number will be given to the Customer agency.

The 'Parent' ticket will be used to capture information such as Customer contact information, a description of the inquiry (i.e. ready to migrate to SDC), the timeframe of the desired migration, and the Customer's basic constraints for migration.

Support work request tickets (aka 'Child' tickets) will be affixed throughout the migration process as required by the change management processes followed by the CTS technical teams supporting the migrations.

Customer	3	Identify Move Team and Customer Contact(s)
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All Customer data will be updated and archived in Customer folders on the [SDC Projects](#) page of the CTS Agency Shared Knowledge (ASK) SharePoint site.

The Customer AIC will identify the staff resources needed for migration activities and populate each move team member's AD account into the associated distribution list (i.e. CTS DL SDC Projects ATG).

CTS will utilize the distribution list for both email communication and access to information sharing on the SDC Projects page.

CTS maintains a distribution list to notify its customers of incidents, Internet and Web related occurrences, and technical bulletins. The SDC Projects will publish bulletins using this process. The customer AIC should determine which members of the customer team should be on this email distribution list and follow the instructions described in the [WANotification ListServ Subscription for CTS Customers \(pdf\)](#) to ensure they are receiving the necessary notifications.

A list of [CTS Customer Account Managers \(PDF\)](#) assigned to each agency can be found [here \(PDF\)](#).

Both	4	Schedule and Conduct Migration Orientation Session
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The CTS Client Liaison will schedule a Migration Orientation Session that includes the Customer AIC and move team members and CTS. Likely CTS attendees will include Customer Relationship Manager, Enterprise Projects, Service Owners, and a representative from Facilities, Network, and Enterprise Security.

This initial session will lay the ground work and provide general scope and direction for the pending migration. The team will review the State Data Center Migration Guide, discuss service options, perceived issues and risks, and work towards achieving an initial high-level understanding of current business and technical requirements.

Dependent on the volume of equipment to be moved into the SDC, the steps in this Guide may be iterative to support multiple migration events.

Both	5	Determine Connectivity Requirements in SDC
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CTS and the Customer will collaboratively determine which of the five CTS-identified network models best meet the Customer’s business needs. These business needs can be met by one or a combination of these models. Model A provides an option that the majority of environment is owned and operated by the Customer. Each model progressively reduces Customer-managed equipment and increases consolidation into CTS Managed Services. Model E provides for a CTS fully-managed environment.

	Colo - Carrier of Choice	Colo with SGN	Colo with Network Access (L3) provided by CTS	Full Network Infrastructure Consolidation	CTS Fully Managed Infrastructure
	A	B	C	D	E
Option Description	The Customer hosts and operates their compute infrastructure (servers, storage, network security and other appliances), their Network Access Layer and Network Routing Services, but contract with a non-CTS 3rd party provider for Network Services and for Internet Access.	The Customer hosts and operates their compute infrastructure (servers, storage, network security and other appliances), their Network Access Layer and internal Network Routing Services, but contract with CTS as the Network Services Provider to state resources and for Internet Access.	The Customer hosts and operates their compute infrastructure (servers, storage, network security and other appliances) and manages the Network Access Layer, but contracts with CTS to provide Network Routing Services for their internal services and uses CTS as the Network Services Provider to state resources and for Internet Access.	The Customer hosts and operates their compute infrastructure (servers, storage and other appliances) but leverages CTS network infrastructure for the Network Access Layer and Network Routing Services and uses CTS as the Network Services Provider and for Internet Access.	Customer’s applications operate on fully hosted CTS services such as Virtual Server Hosting to the CTS Private Cloud.
Customer Characteristics	Customers who do not make use of CTS hosted services, but have a need for a purpose-built facility within which to operate their computing infrastructure and who rely on 3rd party providers for network connectivity, would use this Colocation Service model. An example would be an organization whose systems are fully self-contained and managed by internal staff and who contracts thru K20 - UW/GigaPop for network services.	Customers who rely on CTS for network connectivity to state resources but manage their internal network access layer and routing within the enclosure would use this Colocation Service model. An example would be an organization that leverages CTS network services for transport between their corporate sites and to other state services. These Customers manage their own TCP/IP and Routing protocols.	Customers who rely on CTS for network routing services but manage their own LANs and access layer switching in their enclosure(s) would use this Colocation Service model. Customers may operate multiple network segments within an enclosure. Customers manage their own LAN and desktop services.	Customers who wish to focus on managing their server & application infrastructure. Customers L2/L3 Network services and facilities management are provided by CTS.	Customers who wish to focus on managing their server & application infrastructure and have CTS manage their data communications infrastructure.
Connection	Carrier of Choice	Ability to connect to the SGN, IGN and PGN	Ability to connect to the SGN, IGN and PGN	Ability to connect to the SGN, IGN and PGN	Ability to connect to the SGN, IGN and PGN

	Colo - Carrier of Choice	Colo with SGN	Colo with Network Access (L3) provided by CTS	Full Network Infrastructure Consolidation	CTS Fully Managed Infrastructure
Management	Customer manages all network infrastructure	Customer manages all agency network infrastructure	Customer manages Layer 2 network CTS manages Layer 3	CTS manages Layer 2 and Layer 3 network infrastructure	CTS manages all network Infrastructure
SGN Access	No SGN Access	Direct Access to SGN	Direct Access to the SGN	Direct Access to the SGN	Connectivity to the SGN
Access to CTS Service Catalog	No access to Services from the SGN	Access to CTS Services Catalog	Access to CTS Services Catalog	Access to CTS Service Catalog	Access to CTS Service Catalog

Customers can find more information about the network connectivity models on the CTS website in the Service Catalog under [Colocation \(Web\)](#).

The Customer will document their connectivity requirements for equipment moving to the SDC by filling out the [CTS Data Center Network Questionnaire – Part 1 \(Word\)](#).

Customers migrating into the SDC who choose Network Model B, C, or D will need to also fill in the applicable answers on [CTS Data Center Network Questionnaire – Part 2 \(Word\)](#). Customer responses may be dependent on consultation with CTS.

Once completed, the Customer will post the completed forms in the applicable Customer folder on the [SDC Projects](#) page of the ASK site and notify the CTS Client Liaison.

Customer	6	Document Business Requirements for Applications and Services
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While a data center migration may seem like a hardware infrastructure activity, there are also business impacts of the choices made as part of the migration. Agencies should plan mitigation strategies to reduce possible impacts to the applications migrating between data centers to minimize service disruptions. There may be opportunities to take advantage of cost savings, environmental clean-up or desired enhancements. However, large transformations make troubleshooting and timeframes more difficult to manage.

Evaluating business requirements may result in consideration of consolidation into CTS-managed services. If so, the Customer may open a service request ticket with CTS Service Desk for consultation with the respective CTS Service Owners (server hosting, storage, firewall, network, telephony, etc.) CTS will then meet with the Customer to share more detailed information about CTS Service offerings. Again, in-flight transformations can increase the complexity, risk and timeframes for migrations.

CTS	7	Update On-boarding Form
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CTS Colocation will prepare the [Colocation On-boarding Form \(Word\)](#). This form captures specific information that lists the Services to be provided to the customer, customer contact information, and more. Once created the form will be posted to the applicable Customer folder on the [SDC Projects](#) page of the ASK site.

Customer	8	Inventory Equipment
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CTS Facilities will plan the capacity necessary to support Customer migration activities. Details to be addressed include, but are not limited to, floor space management, power distribution, enclosure count and network and storage cabling.

The Customer will document their IT infrastructure inventory on the [CTS Data Center Facilities Customer Checklist \(Excel\)](#) spreadsheet to assist CTS Facilities with the capacity planning effort. CTS Facilities will utilize the Customer’s inventory information and update the [Data Center Infrastructure Management \(DCIM\) \(Wikipedia\)](#) tool to conceptualize the future design in the SDC. Customers needing infrastructure separation should communicate such request(s) now for consideration.

Note: Equipment not migrating to the SDC, but to be removed from OB2 by June 2015, will be entered on the [MP2 Exit Agreement \(Word\)](#) for tracking purposes. CTS will track the status of Customer decommissioning and/or removal activities until complete.

Customer	9	Determine High Level Migration Strategy
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Migration planning is instrumental to move success. Applications and infrastructure should be logically bundled, based on interdependencies, to streamline migration activities while minimizing business impact. Migration strategies should also address risks such as interdependent application complexity and unsupported (legacy) hardware compatibility.

Customers will need to assess and analyze their intended migration strategy to the SDC.

A Customer may choose the CTS-contracted move vendor. The move vendor will perform infrastructure move activities end-to-end. Move vendor engagement and guidance will structure future migration steps.

A Customer may conversely choose to not utilize the CTS-contracted move vendor. The Customer will be responsible for their move service. The Customer’s business requirements will structure future migration steps. Planning and oversight will be maintained by CTS in either case.

The Customer will summarize their agency’s move plan on the [SDC High Level Migration Strategy Form \(Word\)](#).

Both	10	Create a DRAFT High-Level Design
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A High Level Design (HLD) is the overall system design covering the system architecture and integration design. It describes the relationship between various modules and functions of the system. Data flow, flow charts and data structures are covered under HLD. It is normally a logical representation of the solution, but many physical components may be called out during this phase.

The amount of work needing to be done by CTS will vary based on the network model selected. If model B, C, or D is selected, CTS would need to assist in the creation of the HLD.

The Customer will create a HLD draft based on their unique business requirements and provide to CTS in the applicable Customer folder on the [SDC Projects](#) page of the ASK site.

Both	11	Schedule and Conduct a Combined High-Level Consult
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The Customer, or the CTS Client Liaison on behalf of the Customer, will submit a ticket to the CTS Service Desk to schedule a High Level Consult.

The Combined High-Level Consult serves as a collaborative brainstorming session centered on the HLD Draft. CTS Facilities, Enterprise Security Services, and Enterprise Data Network teams will work with the customer to begin discussions regarding network security, networking, and space management options.

CTS staff and the Customer will review the inventory and HLD Draft in an effort to identify migration issues. This discussion will assist the teams to understand interdependencies that will help to define future move groups. Some applications will need to be moved together while other applications can be unbundled and move independently.

CTS Enterprise Security Services will determine if there is a need for a Security Design Review. To aid with tracking the disposition of the review and next steps, the [CTS Security Review Disposition Form \(Word\)](#) will be placed in the applicable Customer folder on the [SDC Projects](#) page of the ASK site. If gaps are identified during the review, necessary steps to eliminate gaps will be defined in the Disposition Form.

Both	12	Schedule Regular Migration Status Session(s)
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CTS and the Customer will progress with detailed tactical planning sessions. For customers with multiple move events spanning a long migration window, the CTS Client Liaison will schedule regularly recurring meetings with the Customer AIC and any necessary team members to further review and complete readiness tasks and required documentation.

These meetings will be conducted on a regular basis and will be used to convey migration status, move scope, schedule, and objectives. CTS and the Customer will continually review and update the schedule, action item log and verify progress against the migration checklist.

The Customer is expected to attend prepared to discuss inventory of equipment, move order (what moves when), risks and issues, high level requirements and desired schedule and timeframe.

Customer	13	Update the Draft High-Level Design
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The Customer will update the HLD Draft based on feedback from the Combined High-Level Consult and complete all related re-architecture action items. Save the updated HLD in the applicable Customer folder on the [SDC Projects](#) page of the ASK site and notify the CTS Client Liaison.

Both	14	Schedule and Conduct an Enterprise Security Services Design Review
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If determined necessary during the high level consult, an Enterprise Security Services Design Discussion will be scheduled. If the Customer intends to relocate their environment “as is” (aka forklift) the high level design will be used to facilitate this discussion. If the Customer intends to transform an application(s) as part of the migration, the [Design Discussion and Review Planning Document \(Word\)](#) must be completed for each application.

Customer, or the CTS Client Liaison on behalf of the Customer, will submit a ‘child’ ticket to the CTS Service Desk to request an Enterprise Security Services Design Discussion with CTS Enterprise Security Services after all documents are received.

CTS Enterprise Security Services Design Discussion will focus on the Customer’s updated HLD and the completed Design Discussion and Review Planning Document. The review will assist with the Customer’s planned migration effort, while also ensuring each design is compliant with OCIO security requirements.

Based on information gathered during the discussion, CTS Enterprise Security Services may request a more detailed Network Security Design Review once the detailed design has been drafted.

Customer	15	Finalize the High-Level Design
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Based on recommendations from the Network Security Services Design Review, the Customer will edit their updated HLD and submit it their agency-specific High Level Design in the applicable Customer folder on the [SDC Projects](#) page of the ASK site and notify the CTS Client Liaison.

Both	16	Begin Elevation Planning
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IT infrastructure inventoried on the CTS Data Center Facilities Customer Checklist will be reviewed with the CTS Facilities team. Facilities will work with the customer’s technical lead to strategize equipment placement in assigned enclosure(s) based on power, cooling, structured cabling, network switches, ports, etc., requirements. The CTS Facilities team will enter detailed product information (e.g. make, model and product vendor name) into the Data Center Infrastructure Management (DCIM) tool and will provide to the Customer the exact location where each device will be placed in the enclosures.

SDC Facilities provides all cabling external to the enclosure.

For internal cabling, two options exist:

- Circuits/cables installed within the same enclosure can be completed by the Customer. The Customer will be responsible for providing the cables and ensuring the cables are installed per the TIA/EIA 568C, RCW19.28, and WAC296-46B series standard. The CTS Facilities team will provide oversight to ensure the standard is followed.
- Cables/circuits installed within the enclosure can be requested to be completed by CTS Facilities team at no charge. CTS will provide all cables and labeling. The Customer is required to complete the [CTS Data Center Facilities Connectivity Cut Sheet \(Excel\)](#) to document their required connections.

Both	17	Procurement Check-In
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CTS and the Customer will evaluate the HLD to ensure that the facilities and equipment necessary for migration are present and operational in the SDC. There may be circumstances where additional capacity and capabilities are required. Such discoveries are made at this juncture and if needed, a procurement process is activated with CTS Office of Legal Services (OLS) and the Customer’s procurement office.

Both	18	Create the Detailed Design and Bill Of Materials
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A detailed design is a complete solution to a problem. It details each system, sub-system and component as well as the connectivity and inter-connectivity required to implement the solution. A detailed design will enable all service areas to create a Bill of Materials (BOM) for their service area and create detailed project and work effort planning documents. It should be used as the document of record and updated to reflect any changes in the future in the “as-designed” documentation.

Based on the Customer’s finalized HLD and elevation planning, a Draft Detailed Design and Draft BOM will be created and posted to the applicable Customer folder on the [SDC Projects](#) page of the ASK site.

Both	19	Schedule and Conduct a Combined Detailed Design Consult
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The CTS Client Liaison will work with the Customer to schedule the detailed design consult with Enterprise Data Network, Enterprise Security Services, Facilities, and the Customer’s move team.

The Combined Detailed Design Consult serves as a collaborative brainstorming session focused on the Draft Detailed Design. CTS Facilities, Enterprise Security Services, and Enterprise Data Network teams will work with the Customer to further discussions regarding network security, networking options and space management based on specialized Customer requirements.

CTS and the Customer will jointly review the Draft Detailed Design to confirm consistency with the finalized HLD.

Customer	20	Schedule and Conduct a Network Security Design Review (if needed)
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If determined necessary during the Network Security Design Discussion that occurred earlier, the Customer will meet with Enterprise Security Services for a network security design review of the detailed design.

Customer	21	Finalize the Detailed Design and BOM
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The Customer will finalize the Detailed Design and the BOM based on any clarifications gained from the combined review session or the network security design review to set in motion a set of activities and procurements CTS will follow to assist with migration preparation.

Both	22	Complete Elevations
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The Customer will review and approve the elevations developed in collaboration with the CTS Facilities team. The final elevations will be posted to the applicable Customer folder on the [SDC Projects](#) page of the ASK site.

CTS	23	Issue Quote
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CTS Colocation will develop a quote for the Colocation services required by the customer and send the quote to the customer for review and acceptance.

Customer	24	Accept Quote
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The Customer will review and accept the quote by sending an email to the CTS Colocation Service Owner.

Customer	25	Accept Terms of Service
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The Customer will accept the Terms of Service for the CTS Colocation service.

Both	26	Complete Move Vendor Statement of Work (Optional)
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For Customers who have chosen to utilize the CTS-contracted move vendor, the requested scope of work for each move activity will need to be documented in a Statement of Work prior to engaging the move vendor to assist with planning.

CTS will facilitate conversations with the move vendor and Customer to complete this task.

Both	27	Purchase Required Materials
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Based on the Detailed Design and BOM, CTS will purchase all required materials (i.e. cables, power cords, etc.) needed to support the Customer's migration. Lead times of 4-6 weeks for cables and 6-8 weeks for power are required. Depending on the size and scope of equipment needs, additional time may be required.

30-60 DAYS BEFORE MIGRATION

Both	28	Sign Interagency Agreement (optional)
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CTS developed an Interagency Agreement (IAA) to document roles and responsibilities regarding move activities for Customers choosing to use the Move Vendor. The IAA covers the work details, timing, special instructions and terms between CTS and the Customer. The IAA will need to be signed before migrations begin.

Customer	29	Complete SDC Facility Access Requirements
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It is important that all agencies and Customers installing equipment in the SDC fully understand, agree to, and follow the [Washington State Data Center Access and Security Procedures \(PDF\)](#). An SDC physical security team, comprised of an SDC Security Manager and an SDC Facility Manager, is responsible for the administration of access procedures. Customer staff, vendors, contractors, service providers and/or any other representative(s) requiring access to the SDC must be pre-authorized. An Authorized Individual (AI) is any person who has successfully completed the State Data Center Physical Access Authorization Process and is granted unescorted access privileges.

Customers must complete the [SDC Authorized Approver Form \(Word\)](#) for physical security authorization. The form documents the Customer’s authorization for physical access to assigned areas within CTS managed Data Center Facilities. Customers are responsible to provide CTS Physical Security signed approvals for this access. A secondary name is also recommended on the form in the event that the primary approver is not available. The [SDC Physical Security Access Form \(PDF\)](#), denoting an Authorized Individual (AI), is filled in by the CTS Physical Security Manager and signed by the Customer.

A [CTS Data Center Facilities Equipment Tracking Log \(Excel\)](#) is located at the SDC Security Control Center and is the primary means for documenting equipment installations and removals from the SDC. In the event of a large migration, it is highly recommended that customers pre-populate the log.

Both	30	Create Detailed Technical Migration Plan (Infra Work Plan)
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To guide the installation effort, CTS will work with the Customer to create a Detailed Technical Migration Plan for each migration event identified. For Customers who have chosen to utilize the CTS-contracted move vendor, the move vendor will assist with the creation of the plan.

SDC physical security procedures require just-in-time access requests. Prior to every visit to the SDC, the Customer will need to complete a [Physical Migration Service Desk Request template \(Word\)](#) that includes a [CTS Data Center Facilities Work Plan \(Word\)](#) to gain access to their enclosures. This plan will detail steps to be followed during the migration, as well as the specific date(s), time(s), responsible parties, and status timeframes for the migration as a whole.

Customer	31	Create Back-out Plan
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The Customer will create a back-out plan to be used in the event a problem arises that cannot be resolved during the migration window. Escalation contacts and Go/No Go timeframes will be identified as part of the back-out plan.

Customer	32	Create Test Plan
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Customers will develop a test plan to be executed immediately following the migration. The test plan ensures that migration work activity is complete and associated services and/or applications are operating as expected post-migration. Effective test plans verify that network connectivity, software applications, operating systems, etc. are functional as expected. Business users should likewise test for application business function.

It is highly recommended that each test plan be assessed early to ensure its integrity. Lessons learned and alternative test options can be implemented prior to the actual migration if issues are identified from this assessment.

Both	33	Schedule Migration
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The Customer and CTS will coordinate date(s) and time(s) for migrations. Several factors will be considered, based on Customer business requirements.

Considered factors include (but are not limited to):

- End User Impact
- Core Business Hours
- Staffing/Resources
- Maintenance Schedules
- Changes (e.g. network, system, etc.) occurring at the agency

Customers may decide to migrate during the day, overnight, or potentially over the weekend.

CTS	34	Prepare Facilities
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Based on the finalized [CTS Data Center Facilities Customer Checklist \(Excel\)](#), the CTS Facilities team will identify the enclosures to be utilized by the Customer. Facilities will install the necessary core infrastructure (power, non-standard enclosures, cabling, cooling, etc.) to ready the space for Customer migration capacity.

Both	35	Prepare for Necessary Network and Firewall Updates
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Based on customer requirements provided with the detailed design, the CTS Network and Enterprise Security Services will work with the Customer to prepare any necessary network configuration changes to ready the network for customer migrations. This may include VLAN renumbering and/or extensions to avoid numbering conflicts.

30 DAYS BEFORE MIGRATION

CTS	36	Submit Change Request for Migration
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CTS will submit a change request to the CTS Service Desk to be entered into CTS' Internal Change Management System (in Infra.) This change request will document the Customer's migration timeline from beginning to end.

Both	37	Confirm Readiness
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The Customer and CTS staff will verify all network cabling, firewall, and associated network configurations are either in place or are on schedule.

Approximately a week prior to migration, CTS will place the request on the Network Control Center (NCC) Calendar. The NCC Supervisor will assign the technician and updates the calendar entry with the name of the technician who will perform the cutover.

At least five business days prior to migration, the CTS PM will host a meeting of all parties assigned a role during the migration. This will include the Customer Business Lead, any Customer team members supporting the move, the CTS PM, and SDC Facilities. Additional attendees who may have a role include CTS NCC technicians, CTS Enterprise Data Networks, CTS Enterprise Security, and/or the Move Vendor technical lead(s) assigned to support the move.

Approximately three days prior to the confirmed migration date, CTS will host a pre-cut call with the NCC technician and Customer to ensure all teams are fully prepared to execute the install/change. Any issues elevated during the pre-cut call will be addressed and/or escalated in an attempt to keep to the identified schedule.

Both	38	Confirm Migration Schedule and Plan Go/No Go
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CTS will check-in with the Customer to verify, confirm and make final adjustments (if any) to the schedule and migration plan prior to the migration day. The Go/No Go decision will occur at this time.

CTS	39	Send Migration Notifications
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One day prior to Migration, the CTS PM will send out notifications describing the specifics of the next day’s migration activities. The notifications will include scope of the migration, migration team, escalation contacts, back-out window, etc.

This same notifications will be used on the day of the migration using “Reply All” to indicate move activities have begun.

MIGRATION DAY

Customer	40	Ready Move Team
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For Customers who have chosen to utilize the CTS-contracted move vendor, the move team will need to be present at the start of the scheduled equipment de-installation to the re-installation of equipment at the destination site. The Customer is to remain onsite with the vendor until the devices are restored to acceptable operating condition. Otherwise, the Customer will assemble their move team to begin the physical migration process.

Both	41	Send Notifications of the Start of the Move
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The Customer will notify its end users at the start of the move following internal processes.

The CTS PM will send the appropriate notifications at the start of the move by hitting “Reply All” on the notification messages sent the day before the migration. These messages will inform all stakeholders that the move has begun.

Customer	42	Execute Migration Plan
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The Customer will follow their Detailed Technical Migration Plan, to include disconnecting, transporting, and re-connecting servers. This activity may also be performed by the CTS-contracted Move Vendor with oversight by the Customer.

Customer	43	Perform System Testing
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After all equipment is in the SDC, the Customer will perform system testing, as identified in the test plan, to ensure components functionally meet business requirements. Interdependent applications should be tested at this time to ensure network performance and cooperation. If any issues are discovered, the Customer will troubleshoot the problem. If any issues cannot be resolved within the pre-defined window, the back-out plan will be initiated and the migration will be rescheduled.

Upon system testing completion, the Customer will notify their end user(s) to begin acceptance testing.

Customer	44	Perform User Acceptance Testing
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End user acceptance testing acts to verify necessary business functionality and to ensure proper functioning of the system. If the software works as required and without issues, the Customer can reasonably identify the system as stable.

The Customer will perform application-level validation as identified in the test plan. It is highly encouraged that validation occurs immediately after migration to avoid unplanned business impact. If issues are discovered that cannot be resolved within the pre-defined window, the back-out plan will be initiated, and the migration rescheduled.

Customer will notify CTS of completion of acceptance testing.

Both	45	Send Notifications of the End of the Move
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The Customer will notify its end users at the end of the move following internal processes.

The CTS PM will send the appropriate notifications at the end of the move by hitting “Reply All” on the notification messages sent at the start of the migration. These messages will inform all stakeholders that the move has completed.

POST-MIGRATION

Both	46	Disconnect OB2 A la Carte Billing
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To avoid duplicate billing to Customers, the CTS Colocation Service Owner will notify internal groups to stop or change the A la Carte billing.

Both	47	Standby Monitoring
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Depending on the complexity and criticality of systems migrated, the Customer and CTS may choose to have staffing resources available for immediate post-migration issue resolution. CTS and the Customer will create a contact list for reaching the appropriate network, storage, server admins, application support and Enterprise Security personnel. The various groups should be given documentation of the environment to appropriately answer questions and recommend intended solutions.

Both	48	Update As-Built Document
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Now that IT equipment is installed and functioning to expectation, CTS and the Customer will detail the as-built environment for documentation purposes. Both the detailed design document and the high level design document may need to be updated to reflect any changes that caused deviation from the original design. Effective As-Built documents depict deviations from documents, resource for future maintenance and planning, provide a snapshot of existing design and verify and confirm existing IT infrastructure.

CTS	49	Close Migration Service Request Ticket
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The Customer will sign the [SDC Migration Checklist \(Word\)](#) signifying migration completion and submit to the [SDC Projects](#) page of the ASK site. The CTS Client Liaison will then close the Parent Service Request Ticket. All Child tickets must be closed before the Parent ticket will be closed.

Appendix A – Referenced Documents

The following documents can also be found in the [All General Information](#) directory of the ASK SharePoint site or on the [SDC Projects](#) site:

[ESHB 1216 \(PDF\)](#)

[State Data Center \(SDC\) Plan Update \(PDF\)](#)

[Migration Calendar \(Web\)](#)

[FAQ \(Web\)](#)

[MP2 Service Desk Request Ticket \(Word\)](#)

[WANotification ListServ Subscription for CTS Customers \(pdf\)](#)

[CTS Customer Account Managers \(PDF\)](#)

[CTS Data Center Network Questionnaire – Part 1 \(Word\)](#)

[CTS Data Center Network Questionnaire – Part 2 \(Word\)](#)

[Colocation Onboarding Form \(Word\)](#)

[CTS Data Center Facilities Customer Checklist \(Excel\)](#)

[MP2 Exit Agreement \(Word\)](#)

[SDC High Level Migration Strategy Form \(Word\)](#)

[CTS Security Review Disposition Form \(Word\)](#)

[Design Discussion and Review Planning Document \(Word\)](#)

[CTS Data Center Facilities Connectivity Cut Sheet \(Excel\)](#)

[Washington State Data Center Access and Security Procedures \(PDF\)](#)

[SDC Authorized Approver Form \(Word\)](#)

[SDC Physical Security Access Form \(PDF\)](#)

[CTS Data Center Facilities Equipment Tracking Log \(Excel\)](#)

[Physical Migration Service Desk Request template \(Word\)](#)

[CTS Data Center Facilities Work Plan \(Word\)](#)

[CTS Data Center Facilities Customer Checklist \(Excel\)](#)

[SDC Migration Checklist \(Word\)](#)

Appendix B – Migration Checklist

Both	1	Initiate Migration Planning	<input type="checkbox"/>
Both	2	Open a Service Request Ticket	<input type="checkbox"/>
Customer	3	Identify Move Team and Customer Contact(s)	<input type="checkbox"/>
Both	4	Schedule and Conduct Migration Orientation Session	<input type="checkbox"/>
Both	5	Determine Connectivity Requirements in SDC	<input type="checkbox"/>
Customer	6	Document Business Requirements for Applications and Services	<input type="checkbox"/>
CTS	7	Update On-boarding Form	<input type="checkbox"/>
Customer	8	Inventory Equipment	<input type="checkbox"/>
Customer	9	Determine High Level Migration Strategy	<input type="checkbox"/>
Both	10	Create a Draft High-Level Design	<input type="checkbox"/>
Both	11	Schedule and Conduct a Combined High-Level Consult	<input type="checkbox"/>
Both	12	Schedule Regular Migration Status Session(s)	<input type="checkbox"/>
Customer	13	Update the Draft High-Level Design	<input type="checkbox"/>
Both	14	Schedule and Conduct an Enterprise Security Services Design Review	<input type="checkbox"/>
Customer	15	Finalize the High-Level Design	<input type="checkbox"/>
Both	16	Begin Elevation Planning	<input type="checkbox"/>
Both	17	Procurement Check-In	<input type="checkbox"/>
CTS	18	Create the Detailed Design and Bill Of Materials	<input type="checkbox"/>
Both	19	Schedule and Conduct a Combined Detailed Design Consult	<input type="checkbox"/>
Customer	20	Schedule and Conduct an Enterprise Security Design Review (if needed)	<input type="checkbox"/>
Customer	21	Finalize the Detailed Design and BOM	<input type="checkbox"/>
Both	22	Complete Elevations	<input type="checkbox"/>
CTS	23	Issue Quote	<input type="checkbox"/>
Customer	24	Accept Quote	<input type="checkbox"/>
Customer	25	Accept Terms of Service	<input type="checkbox"/>
Both	26	Complete Move Vendor Statement of Work (Optional)	<input type="checkbox"/>

Both	27	Purchase Required Materials	<input type="checkbox"/>
Both	28	Sign Interagency Agreement (optional)	<input type="checkbox"/>
Customer	29	Complete SDC Facility Access Requirements	<input type="checkbox"/>
Both	30	Create Detailed Technical Migration Plan (Infra Work Plan)	<input type="checkbox"/>
Customer	31	Create Back-out Plan	<input type="checkbox"/>
Customer	32	Create Test Plan	<input type="checkbox"/>
Both	33	Schedule Migration	<input type="checkbox"/>
CTS	34	Prepare Facilities	<input type="checkbox"/>
Both	35	Prepare for Necessary Network and Firewall Updates	<input type="checkbox"/>
CTS	36	Submit Change Request for Migration	<input type="checkbox"/>
Both	37	Confirm Readiness	<input type="checkbox"/>
Both	38	Confirm Migration Schedule and Plan Go/No Go	<input type="checkbox"/>
CTS	39	Send Migration Notification	<input type="checkbox"/>
Customer	40	Ready Move Team	<input type="checkbox"/>
Customer	41	Send Notification of the Start of the Move	<input type="checkbox"/>
Customer	42	Execute Migration Plan	<input type="checkbox"/>
Customer	43	Perform System Testing	<input type="checkbox"/>
Customer	44	Perform User Acceptance Testing	<input type="checkbox"/>
Customer	45	Send Notification of the End of the Move	<input type="checkbox"/>
CTS	46	Disconnect OB2 A la Carte Billing	<input type="checkbox"/>
Both	47	Standby Monitoring	<input type="checkbox"/>
Both	48	Update As-Built Document	<input type="checkbox"/>
CTS	49	Close Migration Service Request Ticket	<input type="checkbox"/>

Signature

Date

Print Name & Title

Agency Name

References

Chawla, A. (2011). A Successful Data Center Migration – Cradle to Grave. Infosys. Retrieved January - February 2014 from <http://www.infosys.com/consulting/information-management/white-papers/Documents/data-center-migration.pdf>.

Gill, B. (2013). Opportunities for Midsize Enterprises in Colocation, Hosting and the Cloud. Gartner. Retrieved January 2014 from <http://gartner.com>.