



# Data Center Services

## RATE METHODOLOGY

2021-23

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**DAS**  
DEPARTMENT OF  
ADMINISTRATIVE  
SERVICES



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# DCS RATE METHODOLOGY 2021-23

## **OVERVIEW**

### **METHODOLOGY SUMMARY**

#### **Objectives**

Data Center Services (DCS) uses a rate development process that enables successive refinement of budget planning and rate development. The methodology relies on a cost allocation process that determines what it costs to provide a unit of service. Cost allocation incorporates all fixed and variable costs to determine the total cost of providing a service. Rates are then calculated to recover actual costs for each service offering based on the following objectives:

2. Rates represent the true cost of delivering a service.
3. Each service line is run as a “business within a business.”
4. Federal A-87 compliant.
5. Forecasting based on historical billing and trending data.
6. Transparent rates scrutinized internally and externally.

#### **Value**

The primary value of cost allocation is for internal purposes to determine business costs and the allocation of these costs to services provided. Costs are initially assigned to business sections then the costs are reallocated through internal sales, reflecting that some DCS sections provide services internally to other DCS sections.

This accounting method also provides for opportunity cost analysis and enables comparison information for decision making when choosing among several closely related options for providing service.

Another major value is that the process provides a vehicle for transparency to the enterprise in how rates are established and what impacts rates.

### **BACKGROUND**

In the 2005-07 biennium at the inception of DCS (formerly State Data Center), operations were primarily financed by assessments from the original 11 participating agencies based on those agencies' IT budgets. Some additional revenues were rate-generated as DCS absorbed functions that had been part of the Department of Administrative Services (DAS) Information Resources Management Division (IRMD), primarily the General Government Data Center and the Data and Video Services.

By the 2007-09 biennium revenues were rate-based. As the rate model was in its infancy early rates were designed to cover its costs, and adjustments were made as necessary to ensure revenue was adequate to cover expenses. In addition, state voice services, a rate-based service, was transferred to DCS. This model continued through the 2009-11 biennium as DCS continued to refine its rate setting methodology.

# DCS RATE METHODOLOGY 2021-23

In the 2011-13 biennium two major changes affected the DCS rate methodology:

1. A full-cost allocation methodology was adopted that would allow better differentiation of costs to services which produced more accurate service-specific rates for the 2013-15 biennium.
2. Organizational changes created Enterprise Technology Services (ETS), comprised of ETS and DAS functional units that had been part of other DAS divisions. These functional units of E-Government, Application Delivery Services and the Technology Support Center brought services to the new organization that were a combination of funding methods including embedded employees, assessment, fee-for-service and self-funding.

For the 2013-15 biennium the decision was made to continue the funding models that came to DCS through the reorganization. With the onset of the 2015-17 biennium, revenues were fee-for-service, Pass-Through, and assessment.

In the February 2015 Legislative Session, House Bill 3099 transferred duties, functions and responsibilities related to information resources, information systems, geographic information systems, geographic data, telecommunications, and related services from the DAS Director to the Office of the State Chief Information Officer (OSCIO). Under the direction of the OSCIO, DCS underwent a reorganization transferring Security functions and staff to the Enterprise Security Office (ESO) and the Voice vendor provided service solution, Geospatial and E-Government into newly formed Enterprise Shared Services (ESS). Application Delivery Services and the Technology Support Center were transferred back to DAS Chief Information Office (CIO).

In the February 2016 Legislative Session, additional functions and staff were transferred from DCS. Billing, Budget, and Finance staff transferred to DAS Business Services (DBS) and DAS Shared Financial Services (SFS). With this change, the responsibilities, creation, calculation, and distribution of rates were transferred to DBS.

During 2017-19 several operational changes took place that may impact rates, assessment, and/or billing in 2019-21:

1. Process changes were implemented to move Telecom and Network Pass-Through in the direction of direct billing. This would provide for the vendor to invoice the customer directly. It is estimated that most Network customers will be fully converted by the end of 2017-19. Telecom Pass-Through is currently still under review. Placeholders for the Telecommunications Customer Premises Equipment and Related Services contract (TC PERS) and Managed Enterprise Services for \$1.1 million and \$800,000 respectively are included in the rate model, non-specific to any customers.
2. Approval was granted to transfer accounts payable and billing functions and staff back to DCS effective July 1, 2019. The cost for these functions and staff will become part of the administrative overhead assessment.
3. DBS and DCS evaluated and re-balanced the DCS budget. This allowed for DCS to align the existing budget with the actual expenditures in each program. This re-balance was overall a net zero impact to its budget.

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In 2019-21 ETS was renamed to Data Center Services (DCS) and continues to use the full-cost allocation methodology for calculating rates for revenue recovery. A couple of items that could impact DCS rates in the future include:

1. SB 5502 which is DAS' budget bill, requires OSCIO to migrate all Executive Branch agencies to an OSCIO managed and secured Enterprise Office 365 system by July 18, 2021.
2. DAS introduced an updated statewide policy for use of cloud services. The long-term impact to the DCS rates and operations are speculative currently.
3. The state of Oregon began migration to a new phone system(s) that will no longer be managed or billed by DCS.

## METHODOLOGY CHANGE HIGHLIGHTS

### 2019-21 Rate Methodology

1. Office 365 Migration.
2. New Colocation Service.
3. Combined mainframe storage with Enterprise storage and discontinued billing for local attached storage. The local attached storage is being re-visited for remote sites for 2021-23.
4. New vendor managed voice services managed by OSCIO. Customers migrated off the CenturyLink contract. Some Pass-Through may still exist in 2019-21 for Long Distance, Conference Calling, and Toll-Free Numbers until the expiration of the contract extension on July 19, 2020.
5. Discontinued network 5% fee for Pass-Through administration, July 2018.
6. Production Control support services moved from charge for service to assessment.
7. Converted Mainframe Disaster Recovery Test Day from a charge for service to Pass-Through for the site license and billable hours for set-up and tear down.
8. Midrange methodology changes to align with X86 server methodology:
  - a. Combined WebSphere and WebLogic into one service: Application Server Service.
  - b. Converted the billable unit for System Utilization/iSeries/UNIX from a Resource Unit to server core and memory.
  - c. Converted the billable unit for DBMS Services from a Resource Unit to server core.
9. Labor for service delivery of unsupported systems, for example Windows 2003, will be billable.
10. X86 SQL Maintenance: Change unit from GB SQL Server Memory to Server Core.

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## **2021-23 Rate Methodology:**

DCS plans to continue the full-cost allocation methodology. No other significant changes are anticipated except the AT&T and CenturyLink (now Lumen) contracts have been extended for remaining voice services.

## **RATE DEVELOPMENT PROCESS**

### **DEVELOPMENT PRINCIPLES**

1. The methodology uses cost and usage forecasts to determine rates. Forecasts rely heavily on historical trends that may be offset by other information not reflected in history.
2. Rates are identified in terms of billable units. The billable unit is the metric used to measure how the service is consumed and varies with the service provided. The explanation of the methodology in the “Service Line Methodologies” section of this document describes the reason for the metric used for that service.
3. Rates are based on a per unit cost, with a fundamental equation of:

$$\text{Rate per Billable Unit} = \frac{\text{Total Cost of Service}}{\text{Number of Forecast Billable Units}}$$

### **DEVELOPMENT ASSUMPTIONS**

#### **Depreciation**

Per Federal A-87 Guidelines, depreciation on current assets is built into rates in addition to estimated depreciation for forecasted capital purchases.

#### **Maintenance**

Five percent annual increase is used for maintenance renewals cost projections.

#### **Personal Services**

Personal services projections are based on DAS guidelines for forecasting personnel costs.

#### **Working Capital**

Thirty days working capital has been built into service rates and assessment.

#### **Policy Option Packages**

Policy Option Packages (POP) submitted by DCS is incorporated in the preliminary rates plus Pass-Through. This allows the impact of the POP to be included in the preliminary DAS Price List of Goods and Services for each state agency to use in preparing their preliminary budgets.

If a POP is denied or withdrawn, rates will be adjusted.

POPs submitted for the 2021-23 biennium that have a potential impact on DCS rates:

- POP #131-Colocation Service: The purpose of the package is to continue the expansion of the new Co-location Service at the Oregon State Data Center (SDC). This service enables existing agency facilities to increase their recovery resiliency and utilize services not currently available in their own data center. This will also increase utilization of the SDC as a shared resource, avoiding agency specific infrastructure upgrades or relocating to a more costly third-party data center space. Establishes two full-time limited duration positions.

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- POP #127-DCS Lifecycle Replacement: The purpose of this package is to continue providing the Data Center Services' (DCS) computing, storage, backup, and network services by establishing sufficient funding necessary to comply with the 5-year lifecycle replacement plan of the hardware and software. Equipment over 5 years or past 'end of life' by the vendor results in higher rates of failure negatively impacting agency operations and ultimately the delivery of services to citizens. Inclusion of replacing mission critical tools that have surpassed the end of their useable life and are no longer supported was also necessary to ensure the services are monitored.
- POP #132-Disaster Recovery: The purpose of this package is to create a resilient site to ensure stability and reliability in the architecture for production systems and enable continuous agency operations. A resilient site offers availability of systems should the primary data center become unavailable. The resilient site would provide agencies the capability of utilizing a second physical location for computing systems to operate and prevent service interruptions from both planned and unplanned outages. Included three full-time permanent positions.

## Forecasted Growth Assumptions

1. 24 months of computing and storage usage data were compiled from the billing system for each customer for the 2017-19 biennium. Customers were divided into two cohorts, Cohort A and Cohort B (See Appendix C). Both cohorts were provided a response period to provide their forecasted usage if they could provide a defensible explanation for growth.
  - a. Face to face meetings were conducted with each of the Cohort A customers to analyze and develop forecasts for 2021-23. 24-month usage charts for each service including annual growth rates, recommended forecast, and methodology were provided.
  - b. Cohort B customers were provided the 24 months of usage data including minimum and maximum usage, biennium growth rate, and a suggested 2021-23 forecast with methodology.
2. Management estimates were used in some instances. These estimates were based on other information that the manager had relating to the service environment, the customer base, and future developments.
3. SQL based off actual usage.
4. If no feedback was received by a customer, the default forecasting methods below were used.

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## X86 Systems Server

Service Offering	Default Forecasting Method
Appliance Hosting	June 2019, no growth.
CPU Resource	June 2019, no growth
Memory Resource	June 2019, no growth
Server Instance	June 2019, no growth
Server Clustering	December 2019, no growth
MS SQL Maintenance	April 2019, no growth

## Mainframe

Service Offering	Default Forecasting Method
Batch Processing	2017-19 monthly average, no growth
TSO Processing	June 2019, no growth
CICS Processing	2017-19 monthly average, no growth
DB2 Processing	2017-19 monthly average, no growth
zVM Guest Instance	2017-19 monthly average, no growth

## Midrange

Service Offering	Default Forecasting Method
Application Server Service	June 2017, no growth or 2017-19 monthly average
DBMS Service, DB2 on UNIX and Oracle on UNIX	Per program manager on 4/7/2019, no growth
Secure File Transfer Service, UNIX	June 2019, no growth
System CPU	Per program manager 4/7/2019, no growth
System Memory	Per program manager 4/7/2019, no growth
Virtual Operating System Service, iSeries	Per program manager 4/7/2019, no growth
Virtual Operating System Service, UNIX	Per program manager 4/7/2019, no growth

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## Data Storage

Service Offering	Default Forecasting Method
Enterprise Storage (Includes Mainframe Storage)	June 2019, no growth

## Backup

Service Offering	Default Forecasting Method
Backup	June 2019 or 2017-19 monthly average, no growth

## Network Services

Service Offering	Default Forecasting Method
LAN	June 2019, no growth
Wireless Services	June 2019, no growth
Fiberstrand	June 2019, no growth

## Enterprise Email

Service Offering	Default Forecasting Method
Office 365	June 2019, no growth
Mail Hub	June 2019, no growth

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## Pass-Through

Service Offering	Default Forecasting Method
Pass-Through, X86 software	2017-19 Dollars Billed w/3.8% Standard Inflation + SHI 2% VCAF fee
Pass-Through, Midrange software	2017-19 Dollars Billed w/3.8% Standard Inflation + SHI 2% VCAF fee
Pass-Through, Mainframe software	2017-19 Dollars Billed w/3.8% Standard Inflation + SHI 2% VCAF fee
Pass-Through, Storage software	2017-19 Dollars Billed w/3.8% Standard Inflation
Pass-Through, Service Operations SSL Certs	July 2017 – February 2019, budget provided by program manager
Pass-Through, Disaster Recovery	2017-19 Dollars Billed w/3.8% Standard Inflation
Pass-Through, Network	2017-19 Domain Registrations only
Pass-Through Voice	October 2019 customer usage w/3.8% Standard Inflation

## Other

Service Offering	Default Forecasting Method
Colocation	September 2019 customer usage
Billable Hours	2017-19, no growth

## **RATES AND RATE BUILDING**

### **TYPES OF REVENUE RECOVERY**

Four basic recovery types are used:

1. Service Rate
2. Assessment
3. Hourly Rate
4. Pass-Through

### **RATE UNIT MEASUREMENTS**

Rates are applied in five different ways, depending on the service provided:

1. Standard monthly rate per unit: Representing a unit of service that the customer has requested. These rates represent services such as a server instance, or allocated storage and generally remain static unless the customer requests a change.
2. Volume usage per month: Representing services that are based on a variable volume of usage, and the usage is measured at a given point of time in the month. These rates typically apply to services such as backup.
3. Cumulative usage: Representing services that are based on actual usage throughout a month. These rates are typically system usage such as a Central Processing Unit (CPU) minute.
4. Hourly: Representing the use of IT professional services and applied at an hourly rate of staff time used. See Hourly Rates section for more information.
5. Pass-Through: Representing services that the cost to DCS is passed directly through to the customer. See the Pass-Through section for more information.

### **SERVICE RATES: COMPONENTS AND METHODOLOGY**

Service rates are a fixed charge per unit of quantity. These rates are applied to DCS services which are billable. Each service offering has a unique unit and rate (cost per unit).

DCS uses a service build-up cost model to calculate its rates. The cost of each service provided to the state includes the costs of component services required to deliver it.

There are three basic components to a service rate:

1. Internal Costs
2. External Costs
3. Compensation Costs

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## Internal Costs

Internal costs are generated by one DCS service to support another DCS service. These costs are generally staff hours or use of products or services. A prime example of this type of cost is Server services include X86 Infrastructure staff support. Similarly, all programs requiring the use of a server and storage to run their applications for operating tools are charged for the use of these resources.

Some internal costs are applied only to a specific project. Some internal costs are applied only to a specific DCS service line. They may be apportioned into all the services of the service line, or just to a specific service offering.

## External Costs

External costs are those costs paid to vendors or other state charges. Examples include professional services, facilities, utilities, telecom, supplies, training, travel, licensing, maintenance, depreciation, and interest on capital-owned assets.

Some external costs are applied to a single project (direct costs). Most are indirect and apportioned over multiple (or all) projects/services within DCS service line.

Indirect costs are those which are apportioned to multiple services. All indirect costs (Internal and External) are apportioned onto projects/services in proportion to the direct costs of each receiving service.

## Compensation Costs

The cost of staff hours is built into the service rates.

First, “unbillable time” for necessary sustenance activities (such as holidays, personal leave, training, and process improvements) is set aside. A standard template based on the staff type is used for each service line. Below is a sample of a Represented Non-Exempt employee type:

Work hours per biennium	4160	40-hour x 52-week x 2 years
Less holidays	- 160	10 days per year x 2 years
Less vacation	-240	10 hours per month x 2 years after 5 years employment
Less sick leave	-162	6.75 hours x 24 months
Less personal/governor days	-64	4 days per year x 2 years
Less training/professional development time	-64	Minimum goal per DAS policy 107-04-010 10 hours per year
Biennial hours at work	3470	4160 hours minus 666 hours
Estimated # of days	434	3470 hours/8 hours/day
Less paid break time	217	.5 hours/day x 434 days
Staff meetings	-120	5 hours/month

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Administrative time	-240	10 hours/month
Being supervised	-48	2 hours/month
Product research & development	-52	26 hours/year
Business continuity planning	-24	1 hour/month
Business development	-104	52 hours/year
Business procedure development	-24	1 hour/month
Post project reviews	-6	3 hours/year
Audits	-12	1 hour/month
Biennial hours available for work	2623	3470 Biennial hours at work (-) minus 217

The total compensation cost within a service line is divided by the remaining “billable” hours to calculate a compensation cost per billable hour. This represents a blended average of the various employees and any staff augmentation contractors in that group, so that all customers are treated equitably (i.e., no one pays more for the same service just because DCS chose to fulfill it with contractors).

Billable hours (and hence compensation costs) are assigned to the services.

Hours may be estimated for a specific project.

Alternatively, for many services, the total hours required to manage and deliver the service are apportioned to all the customers of the service based on forecasted units (volume) consumed by each customer. Hours are applied to services using one of the following methods:

1. Hours per unit
2. Total hours spread across all forecasted units
3. Percent of total hours by headcount

### **ASSESSMENT: COMPONENTS AND METHODOLOGY**

The intent of the assessment is to fund the fixed costs related to operating and maintaining the State’s core infrastructure and enterprise services.

The spread of the 2019-21 Assessment Model is the standard DAS model (Flat Assessment times Agency FTE).

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Fixed costs included in assessment:

1. Network Core Infrastructure comprised of the State Network Access Charge (SNAC) costs.
  - a. Network connection less than 1 MB through 100-999 MB.
  - b. Wireless Point to Point.
  - c. Consumer Wireless.
2. Administrative Overhead
  - a. Administrative duties including reception and administrative support staff.
  - b. Policy, process, standards, and procedures coordination and facilitation, including Information Technology Infrastructure Library (ITIL) service management processes:
    - i. Asset management.
    - ii. Business relationship management.
    - iii. Business and strategy management, including development, planning, process architecture and engineering, strategic and business improvement coordination, management of efficiency efforts such as consolidations.
    - iv. Capacity management.
    - v. Change management.
    - vi. Configuration management.
    - vii. Incident and problem management.
    - viii. Procurement and contract management, including negotiation and facilitation.
    - ix. Service continuity management.
    - x. Service level management.
    - xi. Service portfolio and catalog management.
    - xii. Supplier management.
  - c. Staff supervision.
  - d. Production Control for application and system monitoring.
  - e. DAS operating transfers charged to DCS are allocated to programs based on FTE. Any program funded by the assessment will include a portion of the DAS operating transfers.
  - f. DCS self-support rent for its common area and print plant are allocated to programs based on FTE. Any program funded by the assessment will include a portion of the self-support rent. (See Appendix D for allocation detail.)

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## HOURLY RATES

Hourly rates are applied to IT professional services of staff time for specific requests by customers that are beyond the service expectations incorporated in the rate for that service. The normal service expectation may vary depending on the service. For example:

1. Repairing or troubleshooting disruption of services is part of the normal service expectation incorporated in the rate for services and no hourly rate would apply.
2. A change in an existing service requested by a customer is not incorporated in the rate for that service and an hourly rate would apply.

IT professional services hourly rates were derived by estimating the personal service and position related service & supply costs for staff providing the services. As personal service costs vary within each DCS program, the rates were blended to establish an average hourly cost for DCS.

1. Standard expenses incorporated in hourly rates are:
  - a. Personal services/compensation.
  - b. Office expenses.
  - c. Telecom.
  - d. Data Processing.
  - e. Travel.
  - f. Training.
  - g. Expendable Property.
  - h. Other S & S.
2. Solutions, support, and computing services:
  - a. Mainframe User Support: Provides support of user application interfaces to other subsystems within and outside of the mainframe.
    - i. DB2 to CICS applications, batch applications, WebSphere applications, and distributed applications (such as Cold Fusion and others).
    - ii. CICS to batch applications, DB2 services, Web Interfaces, and applications in other CICS regions/applications on other systems.
    - iii. Batch processing, diagnostics, connecting to other systems (File Transfer Protocol (FTP) for example).
    - iv. Terminal/Printer connections to applications within the mainframe.
    - v. Disk and tape resource usage required by applications.

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- b. Customer Service Modification/Termination of Services: Modifies a service from the standard service offering.
  - i. Add storage.
  - ii. Increase bandwidth.
  - iii. Add processor or memory.
  - iv. Customer application integration.
  - v. Enhance customer application.
- c. Consulting Service: Provides customized solutions to meet customer's requirements and to document customer supplied questions.
  - i. Capacity studies.
  - ii. Performance assessments such as voice and existing applications.
  - iii. White papers.
  - iv. Disaster recovery plans.
  - v. Audit responses.
  - vi. High-level designs for customer decision making.
  - vii. Hardware/software installation including documentation and brokerage of lifecycle services for new solutions, parallel environments (development, test, etc.), enhancements, and perfective/adaptive maintenance.
  - viii. Specialized solutions such as providing a documented solution for enhanced Federal Tax Information (FTI) data storage.
- d. Customer Service Setup: Applies to the initial purchase or new occurrence of an existing service offering such as deployment of a router to a remote site, standard configuration of an LPAR or a new server, or VPN configuration.
  - i. Requirements gathering.
  - ii. Design.
  - iii. Configuration.
  - iv. Coordination.
  - v. Deployment.
  - vi. Testing/Verification.
  - vii. Establish customized monitoring or performance procedures to meet customer requirements.

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## PASS-THROUGH COSTS

Pass-Through is a charge that is incurred by DCS then passed directly to the customer on a dollar-for-dollar basis. Pass-Through costs are not included in service rates.

1. Network Pass-Through: All Network Pass-Through is direct billed except for domain registrations.
2. Software Pass-Through: SSL's (Secure Socket Layer), unsupported software support, server software, scanning software, Windows, iSeries, Linux, database, and other Enterprise software purchased by DCS for the benefit of the customer.
3. Voice Pass-Through: Expenses include charges for AT&T and TSO labor and equipment. AT&T charges are scheduled to convert to direct billing from the vendor after July 2021.
4. Disaster Recovery Pass-Through: This service is obtained through a Vendor Managed Service Contract intended for disaster recovery and business continuity. See Vendor Managed Services, #2.

## VENDOR MANAGED SERVICES<sup>1</sup>

DCS may utilize vendor managed services to fulfill service requests beyond current service offerings (non-standard services) or as a resource management option to fill standard service requests for hosting, storage, and network. The rates charged to customers will depend on whether the service requested is a DCS standard service offering or a non-standard service offering.

1. Standard service offerings will be charged to the customer at the current DCS rate incorporating all components of the service, including computing, storage, network, and billable hours. Billable hours will be based on the Solution Services chart that estimate the number of hours required to build out a simple, moderate, or complex environment.
2. Non-standard service offerings for services outside the scope of the current DCS service catalog will be billed on a Pass-Through basis.

Exceptions to #1 and #2 above require review by the DCS Solutions Team and approval by the DCS Architecture Review Board (ARB).

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<sup>1</sup> These are not the same as Vendor Management Services under OSCIO.

## SERVICE LINE METHODOLOGIES

### COMPUTING SERVICES

#### Colocation

1. Description

Colocation services provides data center network connectivity and physical access. DCS will provide the physical building, cooling, power, bandwidth, and physical security. The customer provides servers and storage.

2. Assumptions

Estimated deployment of 30 racks during 2019-21 based on customer feedback and time needed to deploy.

3. Billable Units

Catalog item	Unit	How Unit Calculated
Colocation Service	Rack	Rates are calculated by determining all costs related to data center operation such as rent, power and maintenance.

4. Changes from 2019-21 Methodology

Change	Reason for Change
None	

#### Hosting: Mainframe

1. Description

The mainframe system collects computer processing data each time a user logs in to the computer, executes a job, runs reports, or does queries with online files. Usage information is assigned to customers based on where the usage information resides, application name, or username. The unit of measure for mainframe computing is the Computer Processing Unit (CPU) minute with usage data reported daily. Weekly full and daily incremental backups are provided in the mainframe storage rates.

Mainframe:

- a. Batch Processing
- b. CICS Processing
- c. DB2 Processing
- d. TSO Processing

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## 2. Assumptions

- a. Mainframe rates include staffing, S & S, capital outlay, and storage costs.
- b. Cost pools were used to allocate specific costs to appropriate services.
- c. There are multiple categories of CPU minutes, such as Batch, CICS, DB2 and TSO, that represent different workloads on the mainframe. The multiple categories were created to allow for more accurate spreading of costs and to ensure that customers using specific features were bearing those costs.
- d. Mainframe software that was part of the initial migration to DCS is considered part of the mainframe rates and not passed through. Maintenance, support, or upgrade costs for these software licenses are considered part of the mainframe rates. In cases where customer-purchased software can be identified to specific customers or if two or less customers are using specific software those maintenance, support or upgrade costs may be passed through to agencies using that software and the associated costs will be excluded from rates.
- e. New software licenses purchased on behalf of one or more specific user agencies are considered Pass-Through expenses to the customer(s). If all mainframe user agencies can access the new software licenses, then the purchase becomes part of the mainframe rates.

## 3. Billable Units

<b>Catalog item</b>	<b>Unit</b>	<b>How unit Calculated</b>
Batch Processing	CPU minute	CPU minutes per month
CICS Processing	CPU minute	CPU minutes per month
DB2 Processing	CPU minute	CPU minutes per month
TSO Processing	CPU minute	CPU minutes per month

## 4. Changes from 2019-21 Methodology

<b>Change</b>	<b>Reason for Change</b>
None	

# DCS RATE METHODOLOGY 2021-23

## Hosting: Midrange

### 1. Description

Midrange Systems are systems that run in the UNIX (“AIX”) or IBM System (“iSeries”) environment. Rates in Midrange Systems include those for hosted computing as well as for specific services including managed database environments, web application servers, and secure file transfer protocol (SFTP) services. These systems provide high reliability that support many critical applications. Midrange Middleware supports and simplifies complex distributed applications. It includes web servers, application servers, messaging and similar tools that support application development and delivery. Weekly full and daily incremental backups and storage for iSeries LPARs are included in the iSeries service.

Midrange:

- a. System CPU Resource Allocation
- b. System Memory Resource Allocation
- c. Virtual Operating System Services, iSeries
- d. Virtual Operating System Services, UNIX
- e. Application Server Service
- f. DBMS Service, DB2 on UNIX
- g. DBMS Service, Oracle on UNIX
- h. Secure File Transfer Service, UNIX

### 2. Assumptions

- a. Customers are charged allocated resources for CPU and Memory, DBMS, Secure File Transfer, and OS
- b. Customers are charged for utilization of the Application Server Service

# DCS RATE METHODOLOGY 2021-23

## 3. Billable Units

Catalog item	Unit	How unit Calculated
System CPU Resource Allocation	Server Core	Allocated server core per month
System Memory Resource Allocation	GB Server Memory	Allocated GB Memory per month
Virtual OS Services iSeries	Instance	Per server instance per month
Virtual OS Services UNIX	Instance	Per server instance per month
Application Server Service	MB	MB application data transferred per month
DBMS Service, Oracle on UNIX	Oracle Server	Allocated server core per month
DBMS Service, DB2 on UNIX	DB2 Server Core	Allocated server core per month
Secure File Transfer on UNIX	GB	GB of UNIX SFT data space allocated per month

## 4. Changes from 2019-21 Methodology

Change	Reason for Change
Changed DBMS service, Oracle Server Core. No longer = 2 vCPU.	To correct how the units were calculated in 2019/21. Should be per server core not per 2 vCPU.
Billable hours for server set-up changed to a flat rate of 3 hours per server.	3 hours is what is currently used for quotes and having a set number of hours will help customers with budget planning.
None	

## Hosting: X86 Server Windows and Linux

### 1. Description

Infrastructure as a service available as shared multi-tenant environments and Remote/Field office hosting. DCS will deploy and maintain the right environment for the state agency business needs. Increasingly this can mean a combination of deployment models to create environments where application and workloads are deployed, considering the architectures best suited for their performance, availability, and value. DCS will offer an optimized infrastructure to meet client needs which benefit agencies as follows:

- a. Proven methodology to define, design and deliver the right configuration.
- b. Fully managed environments and the ability to migrate as needed across environments.

## DCS RATE METHODOLOGY 2021-23

- c. Virtualize existing physical servers, build entire custom hosted infrastructure, or provide managed server.

Windows and Linux based servers can be standalone or in a shared environment. Key strategies in this environment are:

- a. Virtualization wherever possible because of cost efficiencies, lower power and footprint requirements, higher availability, and improved disaster recovery restoration.
- b. Ensure server size is appropriate for requirements and usage.
- c. Centralization and elimination of remote servers where possible.
- d. Reduce power utilization.
- e. Drive application compatibility with DCS standards.
- f. Unit counts for virtual instances include CPU, RAM, and allocated storage for each server instance.

Windows and Linux:

- a. Appliance Hosting Services: Hosting of a non-standard asset. A specialized server that is designed for ease of installation and maintenance. Server appliances have their hardware and software bundled in product, so all applications are preinstalled. The appliance needs little configuration and is designed to run with little or no support.
  - i. Physical Appliance
    - Appliance Hosting Rate Only. (Cannot determine OS, CPU, and RAM.)
    - Ongoing oversight of the operation of non-standard physical assets by DCS.
    - Coordination of subcontract for services such as specialized space, network connectivity, operator services.
  - ii. Virtual Appliance
    - CPU, RAM, and Storage only. (No server instance will be billed.)
- b. Server Instance: Includes the hardware platform/OS instance which also includes, patching, antivirus, OS health monitoring, file transfer, OS network bandwidth and OS backup. Requires CPU and RAM to use.
- c. System CPU Resource Allocation: The number of CPU server cores associated with a server instance in increments of 1 CPU core.
- d. System Memory Resource Allocation: The amount of memory associated with a server instance; in increments of 1 GB RAM.

## DCS RATE METHODOLOGY 2021-23

- e. **Server Clustering Services:** A set of connected servers working closely together to provide improved performance and/or availability over a single server, such as high-availability or fail-over clusters. Computer clusters may be configured for different purposes ranging from general purpose business needs such as web-service support to computation-intensive scientific calculations. Additional support services required to create and maintain a server cluster. Charged per server.
- f. **MS SQL Maintenance:** Provides MS SQL Software Assurance support for Enterprise and Standard edition licenses. It is billed per CPU/Core and the unit counts are updated every 3 – 6 months via the Microsoft Assessment Tool. The initial purchase of the license is incurred by the agency. It is not a Pass-Through purchase through DCS.

### 2. Assumptions

Usage forecasts were based on historical information and growth percentages. Costs were cost pooled to reflect the cost to support each service. These costs include personal service, hardware, software, and maintenance.

### 3. Billable Units

Catalog item	Unit	How Unit Calculated
Appliance Hosting Services	Physical Appliance	Per Appliance. No additional charge for CPU, RAM, or Storage
	Virtual Appliance	Assessed CPU, RAM, and Storage only
Server Instance	Instance	Per virtual server instance  Includes hardware platform/OS instance which includes patching, antivirus, OS health monitoring, file transfer, OS network bandwidth and OS backup. Requires CPU and RAM to use.
System CPU Resource Allocation	Server Core	Server entitlement of one processor core
System Memory Resource Allocation	GB RAM	Server memory entitlement of 1 GB RAM
Server Clustering Services	Server	Per server per month
SQL Service	GB SQL Server Memory	Per SQL DB Server

# DCS RATE METHODOLOGY 2021-23

## 4. Changes from 2019-21 Methodology

Change	Reason for Change
Restructured cost pools for server instance, CPU, and RAM.	So that the server costs scale up in relation to the size of the CPU & RAM. This would remove the subsidization that is provided to customers utilizing large environments but not bearing their appropriate portion of the costs.
Billable hours for server set-up changed to a flat rate of 3 hours per server.	3 hours is what is currently used for quotes and having a set number of hours will help customers with budget planning.

# DCS RATE METHODOLOGY 2021-23

## DATA STORAGE SERVICES

### Enterprise Storage

#### 1. Description

- a. Enterprise Storage: Enterprise data storage services provide highly available, secure (encrypted at rest), and reliable disk storage for use by system operating systems, applications, application data, and for user files. This service is available to physical and virtual systems and includes redundancy and auto tiering. Storage is always associated with a Compute service offered by DCS.
- b. This service does not provide:
  - i. File backups or restore capability (See Backup Services).
  - ii. Data replication to disaster recovery sites or other hosts.
  - iii. Storage-based snapshots.

#### 2. Assumptions

- a. Customers will be charged for allocated usage attached to the SAN.
- b. Storage is only offered with DCS computing service.
- c. Remote servers are not charged for enterprise storage. For performance reasons, storage supplied to the remote ESXI Host, and the VM(s) running on that Host, is local to the remote server – not Enterprise Storage.
- d. Mainframe backups are included in the mainframe storage rate.

#### 3. Billable Units

Catalog Item	Unit	How Unit Calculated
Enterprise Storage	Enterprise Storage GB	GB Per Month
Mainframe Storage	Mainframe Storage GB	GB Per Day

#### 4. Change from 2019-21 Methodology

Change	Reason for Change
None	

# DCS RATE METHODOLOGY 2021-23

## Cloud Service Support

### 1. Description

Cloud Service supports General Cloud Management, Workload Analysis, Compute and Services, Identity and Access Management, Security, Connectivity, and Disaster Recovery support. Primary functions include, but are not limited to, requirement gathering, vendor relationship and contract management, maintenance/patching, performance monitoring, ID management, firewall security, security and antivirus, and virtual network, routing, and connectivity.

### 2. Assumptions

- a. Cloud related budget represented as a percentage of the total X86 computing budget -  $\$2,392,1700/\$16,669,648 = 14\%$
- b. DCS estimating 500 cloud servers plus 3,562 on-prem = 4,062. 500 cloud servers represent 12% of the total.
  - i. DOJ 120 servers for Child Support
  - ii. DHS Child Welfare, number uncertain
- c. Nine X86 computing positions identified to support cloud services. 12% of their compensation costs were used in the total costs in assumption #1. 12% is based off assumption #2.
- d. Microsoft core licensing estimated at \$658,000 per year.
- e. Network connectivity covered in core assessment.
- f. Server rates were not adjusted down to compensate for this additional revenue. The assumption is that any loss of revenue due to on-premises migrations to the cloud will be offset by this fee.
- g. If DCS must go to an E-board in 2021-23 to cover any unanticipated expenses, the revenue from this charge would help to support the request.
- h. Security costs, such as firewalls, storage archive data, and flat rate set-up charges were not taken into consideration at this time. More data needs to be collected as this new business environment unrolls to assess the impact to these types of costs.

### 3. Billable Units

Catalog item	Unit	How Unit Calculated
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# DCS RATE METHODOLOGY 2021-23

Cloud Service Support	% of vendor invoice	Cloud related budget represented as a percentage of the total X86 computing budget
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## 4. Changes from 2019-21 Methodology

Change	Reason for Change
None	New service in 2021/23

## DATA BACKUP SERVICES

### Backup Services

#### 1. Description

- a. Backup Services: Backup services create reliable copies of data, related software and supporting configurations for the purpose of reproducing data from a specific point in time in the event the original is lost, erased, damaged, or changed in error. On-site and off-site disk backup: Daily backups are stored on disk for X86 Server and UNIX/AIX environments. Backups are retained on-site for 30 to 60 days while a second copy of the backup is stored off-site for 30 days. Agencies can request different retention periods if required.
- b. This service does not provide:
  - i. Data archiving. Data archiving is used for long-term retention of inactive data that must be maintained for regulatory compliance and includes indexing and search capabilities. The backup service is intended to be used to restore corrupted or destroyed data only. There are exceptions when mandatory legal requirements apply.
  - ii. Disaster recovery of the hosting server environment. If the data being backed up is from systems or applications hosted by DCS, this function may be provided as an option under that service.
  - iii. Mainframe and iSeries backup is not included as part of this service.

#### 2. Assumptions

- a. The Mainframe and iSeries environments back up to virtual tape with a local copy stored on-site and a second set sent to an off-site secure storage location. This is not charged at the backup service rate. iSeries is included in the service rate and mainframe is charged in the storage rate.

# DCS RATE METHODOLOGY 2021-23

- b. The unit is the amount of data stored in the backup infrastructure, before taking into account deduplication.
- c. The amount of data in the backup infrastructure generally exceeds the amount of data in production. Based on customer defined retention rules, there is often a “full backup” (matching the same amount of data in the production environment) and multiple “delta backups” (the changes to the system since the last full and accumulated delta backups).

### 3. Billable Units

Catalog Item	Unit	How Unit Calculated
Backup Services	Backup GB	Backup GB per Month

### 4. Change from 2019-21 Methodology

Change	Reason for Change
None	

## DATA NETWORK SERVICES

### Local Area Network (LAN)

#### 1. Description

Management of the State’s network backbone and contracts for telecommunications.

- a. Local Area Network (LAN): Charges are based on the number of switches (per 12 port switch). LAN services include the purchase, administration, and management of the Local Area Network switching. This provides network connectivity between the point of demarcation at the customer site to desktops, printers, and other computing devices. This service does not include cabling.
- b. Wireless Services: Wireless LAN (inside building). Charges are based on the number of devices. Wireless services include the purchase, administration, and management of the Local Area Network switching. This provides network connectivity between the point of demarcation at the customer site to desktops, printers, and other computing devices. This service does not include cabling.

#### 2. Assumptions

All costs associated with equipment purchase, ongoing maintenance and support personnel are used to calculate the rate/assessment.

#### 3. Billable Units

# DCS RATE METHODOLOGY 2021-23

Catalog Item	Unit	How Unit Calculated
LAN Services	12 Port Switch	Per switch per month
Wireless Service	Device	Per device per month
Special Fiberstrand	Strand	Per strand per month (existing customers only)

#### 4. Changes from 2019-21 Methodology

Change	Reason for Change
None	

### State Core Network Assessment

#### 1. Description

Management of the State's network backbone and contracts for telecommunications.

- a. State Network Access Assessment: In this model, there will no longer be a SNAC for bandwidth. This rate was charged in 2013-15 and is now a part of the Core Network portion of the assessment.
  - i. Core Network Service
  - ii. Consumer Grade High Speed Wireless
- b. Wireless Point to Point (WPTP) Assessment: Sites in which there is a core network connection to a specific building and satellite (wireless) connections to other buildings within the vicinity. DCS will establish configuration standards for the wireless connections and the agencies will be responsible for the wireless infrastructure, installation, and maintenance. The core bandwidth connection charges will be apportioned based on the bandwidth required by the agencies in the vicinity connected to the Wireless Wide-Area Network (WAN) service.

#### 2. Assumptions - None

# DCS RATE METHODOLOGY 2021-23

### 3. Billable Units

Catalog item	Unit	How unit Calculated
Core Network Service	n/a	Assessment
Consumer Grade High Speed Wireless	n/a	Assessment
Wireless PTP Services	n/a	Assessment

### 4. Changes from 2019-21 Methodology

Change	Reason for Change
None	

# DCS RATE METHODOLOGY 2021-23

## PRODUCTION CONTROL

### 1. Description

Production Control maintains a 24x7x365 physical presence at the Enterprise Technology Services. Services include Mainframe and iSeries batch job scheduling and processing; monitoring system messages for warnings/alerts and taking client defined action for items such as: building alarms, x86 Computer Services, Network, Security, Storage, Mainframe, Midrange, DCS building security, and special applications; DR media coordination, hard drive and tape media destruction, GENTAX process monitoring, RACF and Datamart user Id resets and administration; TELNET updates, CAVIEW output archival system definitions maintenance; Mainframe and domain password resets.

Production Control is also responsible for facilities maintenance. The Facilities team is responsible for the day-to-day management and support of the SDC Infrastructure and the Raised Floor environment working closely with the DAS Facilities team. They oversee all raised floor equipment provisioning and decommissioning efforts. The team manages power and cooling availability, capacity management and reporting for the building. They also plan, coordinate, and facilitate hardware implementations of strategic information systems for the state. Responsible for the development of implementation plans that can involve cross agency cooperation, multiple jurisdictions, and multiple vendors.

### 2. Assumptions

Production Control supports the entire data center and provides statewide support.

### 3. Billable Units

Catalog item	Unit	How unit Calculated
Application Monitoring	n/a	Assessment
IT Professional Services	n/a	Assessment
System Monitoring	n/a	Assessment

### 4. Changes from 2019-21 Methodology

Change	Reason for Change
Recovery method changed to assessment only	Due to the nature of the support the recovery by assessment is consistent with other statewide services covered under the assessment.

# DCS RATE METHODOLOGY 2021-23

## ENTERPRISE EMAIL

### M365/Global Address List

#### 1. Description

Supports the Enterprise Microsoft 365 environment, Enterprise Shared Active Directory and Azure Active Directory Synchronization Services. Also implements and supports enterprise identity solutions such as Azure AD Connect and Microsoft Identity Manager. Responsible for the maintenance and operation of the State's Global Directory. Acts as a consultative resource to state agencies regarding Microsoft Office 365 and access to the State's Global Directory

Each account includes:

- a. M365 Apps such as Office, PowerPoint, Excel, OneNote, Teams, and Outlook
- b. Exchange Online services enable the sending, receiving, and reviewing of emails from Outlook clients, web browsers or mobile state issued devices. It incorporates calendaring and instant messaging within the email system and provides 100GB of storage.

#### 2. Assumptions

Infrastructure costs – hosting services, enterprise licensing agreements, networking, and storage rates to support the Enterprise Email services.

Agencies are assessed for the M365 E5 license based on the agency position count and are responsible for M365 licenses that are needed beyond the position count.

#### 3. Billable Units

Catalog item	Unit	How unit Calculated
M365 services	Per User Object	Per User
Global address book services	Email Address per user object	Per email address

#### 4. Changes from 2017-19 Methodology

Change	Reason for Change
SB 5502	Increased budget and forecasted usage needed to meet the requirements of SB 5502 to provide a state-wide email solution.

## **GLOSSARY**

### **Batch/Batch Processing**

A group of records or data processing jobs brought together for processing or transmission. Batch applications are processed on the mainframe without user interaction. A batch job is submitted on the computer; the job reads and processes data in bulk.

### **BURR**

DCS Billing Usage & Revenue Recovery System - Provides customer invoicing and usage reporting.

### **Clustering**

A set of connected servers working closely together to provide improved performance and/or availability over a single server, such as high-availability or fail-over clusters. Computer clusters may be configured for different purposes ranging from general purpose business needs such as web-service support, to computation-intensive scientific calculations.

### **CICS (Customer Information Control System)**

An online transaction processing program, that has become the most common set of tools for building customer transaction applications for large enterprise mainframe computing. CICS is a transaction server that runs primarily on mainframe systems under z/OS and z/VSE.

### **Cost Pool (Pooled/Pooling)**

A group of associated costs, that all relate to a specific service. Allows the association of direct and indirect costs to a specific service or, making it easier to determine the total amount of expenses involved with the provision of the service. Also known as cost center.

### **CPU (Central Processing Unit)**

A single computing component which reads and executes program instructions (a CPU carries out the instructions of a computer program by performing the basic arithmetical, logical, and input/output operations of the system).

### **DB2**

IBM relational database management system.

### **DBMS (Data Base Management System)**

A software system that uses a standard method of cataloging, retrieving, and running queries on data; manages and organizes incoming data, and provides ways for the data to be modified or extracted by users or other programs.

# DCS RATE METHODOLOGY 2021-23

## **Expedited Service**

A level of service above the standard, usually used for quick provision of service request, putting the expedited request ahead of other requests. Not currently provided as a formal service level.

## **FTI (Federal Tax Information)**

Applies to individual's federal tax return information provided to agencies, and how this confidential data must be protected.

## **FTP (File Transfer Protocol)**

A standardized method of transferring files over the Internet. An application protocol used for transferring files to and from host computers.

## **Gb (Gigabit)**

A unit of data transfer equal to 1 billion bits per second. (A bit is a single character.) In network usage, refers to the volume of data that can be transmitted across a connection per second.

## **GB (Gigabyte)**

A unit of digital information storage 1 billion bytes. (A byte is 8 characters.) In computing usage, refers to a volume of data.

## **Interlata**

Calls between two Local Access and Transport Areas (LATAs); long distance calls.

## **LAN (Local Area Network)**

Networking of computing devices within the customers' physical locations and to the state network.

## **Mb (Megabit)**

A unit of network speed equal to approximately 1 million or specifically 1,048,576 bits. (A bit is a single character.) In network usage, refers to the volume of data that can be transmitted across a connection per second.

## **MB (Megabyte)**

The **megabyte** is a multiple of the unit byte for digital information storage or transmission with three different values depending on context: 1 million bytes generally for computer storage or transmission rates; 1,048,576 bytes generally for computer memory.

## **Methodology**

The set of practices used to develop DCS rates; the method.

# DCS RATE METHODOLOGY 2021-23

## **Middleware**

Middleware supports and simplifies complex distributed applications. It includes web servers, application servers, messaging and similar tools that support application development and delivery. Middleware sits "in the middle" between application software that may be working on different operating systems.

## **Midrange/Midrange Systems**

A class of server between the X86 Server systems Window/Linux servers and the mainframe system. DCS midrange systems are sometimes referred to as UNIX and iSeries systems.

## **NAS (Network Attached Storage)**

Dedicated storage device that is setup with its own network address and provides data storage services to other devices on the network.

## **OS (Operating System)**

Software that communicates with the hardware and allows other programs to run.

## **POP (Policy Option Package)**

A state of Oregon budgetary term for proposed changes to agency programs or agency initiative requests. These proposals are not part of the base budget of an agency.

## **PMBOK (Project Management Body of Knowledge)**

A guide and internationally recognized standard for project management practices.

## **Price List of Goods and Services**

DAS services and related costs that will be included in agency budget for charges from DAS for the biennium.

## **RAM (Random Access Memory)**

Temporary storage area of the server, used by the operating system, application programs and data in current use allowing for quicker access than other storage.

## **Remote/Remote Site**

Facility or location other than the Enterprise Technology Services.

## **SAN (Storage Area Network)**

A high-speed special purpose network or sub network that interconnects data storage devices with data servers.

## **Secure File Transfer Protocol (SFTP)**

A secure method of transferring files over the Internet. An application protocol used for securely transferring files to and from host computers.

## **Server Load Balancing**

A form of server clustering in which multiple servers are linked together to share job execution workload, cache, and request handling. "Load-balancing" clusters are configurations in which cluster-nodes share computational workload to provide better overall performance. For example, a web server cluster may assign different queries to different nodes, so the overall response time will be optimized.

## **Service**

For the purposes of this document, a generic term meaning supplying a utility or commodity as used in service provider or service delivery; does not refer to the formal definition of an DCS service as defined in the DCS Service Catalog.

## **Service Offering**

Individual services or products available under Service line services.

## **TSO/TSO Processing**

In the context of this methodology, TSO is Time Sharing Option on the mainframe and provides an interactive session with remote terminals. While essentially a type of batch job on its own, it provides the communication with a system that allows users to submit batch processing jobs, view data, monitor job flow, print, edit files, etc.

## **VSP/Hitachi VSP**

Hitachi Virtual Storage Platform, also known as VSP Supports automated storage tiering, known as Dynamic Tiering, to automate the movement of data between tiers to optimize performance.

## **Windows**

Brand name of Microsoft operating systems.

# DCS RATE METHODOLOGY 2021-23

## **APPENDIX A**

### **Limited-Service Offerings**

The following services are listed on the 2019-21 DCS Rate sheet but are not a service that are sold to new customers.

<b>Service</b>	<b>Reason</b>
Special Fiberstrand	Not a current service offering. Network Circuits installed in the Capitol Mall from 2007-11. Services provided to D0C and OHA.
zVM Guest Instance	Not a current service offering. Service provided to Agency 156040 Legislative Admin (OLIS) only.

**Special Fiberstrand** – The use of fiberstrands available from Telecommunications vendors for customers to establish their own optical connections between two locations. DCS will establish this connection by lighting up the dark fiber provided by a Telecommunications vendor.

**zVM Guest** – See Service Agreement

# DCS RATE METHODOLOGY 2021-23

## **APPENDIX B**

The State Data Center is a self-supported building and all facilities-related expenses (repairs, maintenance, yard service, etc.) are paid solely by DCS.

Calculations for the raised floor are based on the following square footage occupied by specific service lines. The allocated cost then becomes part of the service rates:

<b>Service Line</b>	<b>Percentage</b>
X86 Server	24.14
Mainframe	3.45
Midrange	2.46
Network LAN	10.84
Storage	21.67
Colocation <sup>2</sup>	37.44
Total	100%

DCS occupies office space in the data center and the print plant. The cost allocation for office space is based on FTE and becomes part of the service rates or assessment.

DCS rents additional space for warehousing and network maintenance. These costs are allocated by program and become part of the service rates or assessment.

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<sup>2</sup> OHA/MMIS will be billed for floor space occupied at the colocation rate.

# DCS RATE METHODOLOGY 2021-23

## **APPENDIX C**

DCS compiled 24 months of computing and storage usage data from the billing system for each customer for the 2017-19 biennium. Customers were divided into two cohorts, Cohort A and Cohort B:

### **COHORT A**

Dept of Administrative Services (DAS)	Oregon Dept of Forestry (ODF)
Dept of Consumer & Business Serv (DCBS)	Oregon Dept of Transportation (ODOT)
Dept Human Services (DHS)	Oregon Employment Dept (OED)
Dept of Corrections (DOC)	Oregon Health Authority (OHA)
Oregon Dept of Veteran Affairs (ODVA)	Oregon State Police (OSP)
Dept of Revenue (DOR)	Oregon Youth Authority (OYA)

**COHORT B:** All other customers