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5 EIS Services Verification Test Plan [L.30.2.4; E.2.2]

Verizon has provided this initial Enterprise Infrastructure Solution (EIS) Services Verification Test Plan (VTP) based on the test methodology defined in RFP Section E.2.2, (comprising test scenarios, test cases, test data sets, and acceptance criteria) in response to the Request for Proposal (RFP) for each of the proposed EIS services. Verizon will draw on its extensive experience to provide service verification, reliability, and quality.

5.1 Overview

This VTP describes Verizon's solution to the Government verification and acceptance testing requirements for EIS. The plan provides:

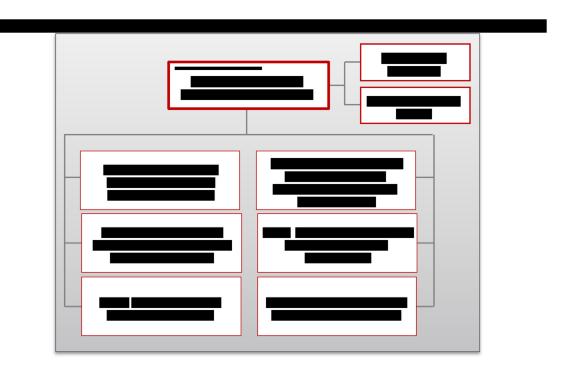
- A general description of the organization that is used to provide responsive testing support to government users.
- A description of the methodology that is used to support Government testing.
- An initial EIS service verification test plan for all services.
- Acknowledgement that Verizon agrees to comply with all applicable requirements of RFP Section E.2.
- Acknowledgement that Verizon recognizes the Government's rights in the verification and acceptance Process.

5.2 Verizon Testing Support for the Government

Verizon has been successfully providing communications services to Government customers since 1988, including nearly ten (10) years of highly successful testing and verification procedures under the Networx contract. Verizon will draw on this experience to provide EIS services verification testing procedures that are comprehensive and effective over the life of the contract. Verizon has established a Government Customer Service Organization with over 1,100 employees providing dedicated provisioning, network management, project management, and testing teams that deliver quality services for EIS ordering agencies. Verizon utilizes an extensive automated test infrastructure that verifies that existing and new services are tested in accordance with requirements. Verizon has established a dedicated organization that has the resources needed to provi-



sion and test government services required under EIS. This specialized organization is manned by experienced employees; virtually every person involved with EIS testing and acceptance is part of one cohesive group that has been performing its function for years in support of Networx and other government contracts.



5.3 General Testing Requirements [E.2.2.1]

Verizon will meet the EIS Services testing requirements for verification and acceptance testing of awarded EIS services defined in RFP Section C.2. The following describes the general methodology to be used to test the types of EIS services requiring verification testing that Verizon has proposed.

The methodology and approach Verizon will use to verify EIS services is based on the parameters defined in RFP Section C.2. The test plans for each individual service are included in Proposal Section 5.8. The scenarios, test cases, test data sets, and acceptance (Pass/Fail) criteria for each service are summarized in the test plans. (Note: The test plans in this initial submission are abbreviated due to the page limitations of the EIS service plan in this response; additional details can be included in plan updates. Verizon understands that additional verification test plans will be required for any new

service during the life of the contract and will meet this requirement as it has for Networx.)

Table 5.3-1 lists the services from RFP Section C.2 that do not require verification testing in accordance with RFP Section E.2.2.1.

Table 5.3-1. EIS Services Identified as N/A for Verification Testing

, and the second			
EIS Services	Explanation		
Managed Wireless Service (MWS)	User Initiated		
Web Conferencing Service (WCS)	User Initiated		
Audio Conferencing Service (ACS)	User Initiated		
Video Teleconferencing Service (VTS)	User Initiated		
Managed Network Service (MNS)	There are no fixed KPIs for this service; Verification testing may be required in the specific Task Order.		
DHS Intrusion Prevention Security	There are no fixed KPIs for this service; Verification testing may be		
Services (DHS IPSS)	required in the specific Task Order.		

Verizon will create individual verification test plans for Managed Network Services or DHS Intrusion Prevention Security Services (IPSS) if required by the specific Task Order (TO).

Three components of the test methodology will be used to support EIS:



5.3.1.2 Verification Testing Verizon has categorized proposed EIS services into five (5) Service Verification categories:	on test
•	



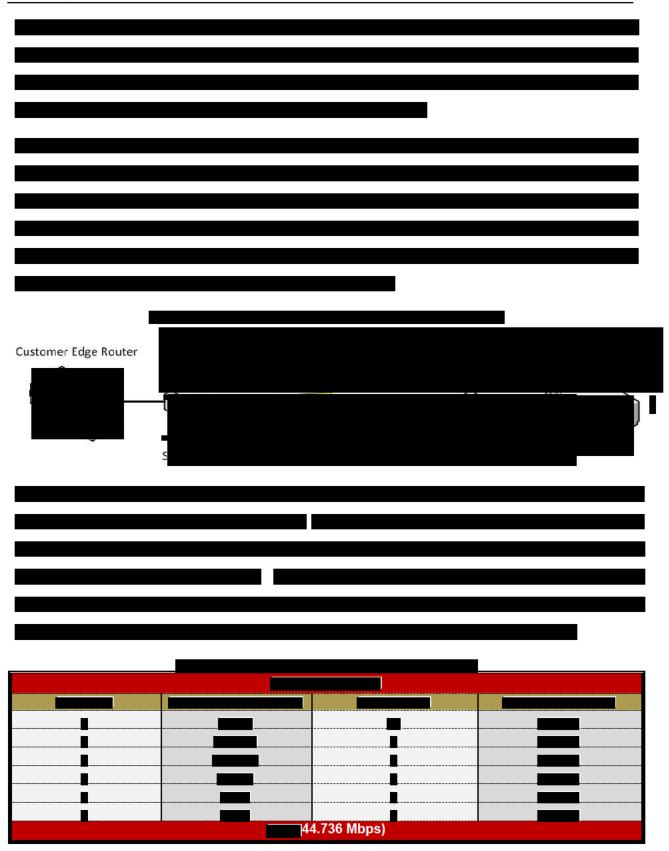


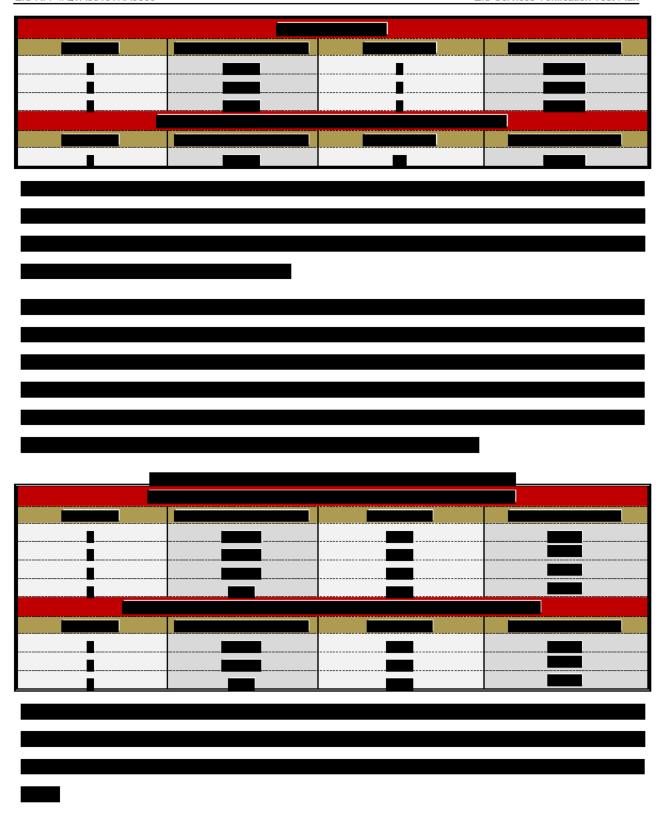
Table 5.3.1.2-1 lists the service testing categories in depth.

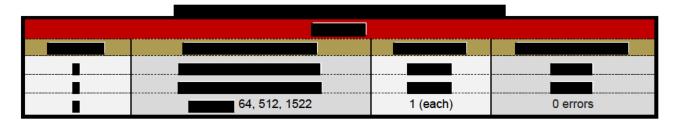


5.3.1.2.1 Provisioned Services

Provisioned Services					







Other Tests for Provisioned Services. The Verizon Government Program Management Service Delivery Organization has published the standardized procedures that are used for provisioned services into a Workbook to verify that all of the test engineers conduct verification testing in accordance with these procedures and Verizon standard commercial practices. This workbook includes standardized repeatable test procedures for a wide variety of switched, analog, and other services that cannot be included in this EIS Service Test Plan due to the page limitations of the response.

Tests for Access Services. Access Arrangements will be tested using normal templates that are used to verify the access connections that are a component of the EIS Service (T1, DS3, OCN, etc.)

5.3.1.2.2 Complex Services

Complex Services						
ccs	CHS	cscs	MNS	ucs		
MTIPS	MSS	MMS	DHS	IPSS		

Complex services require individualized test procedures. The general process for service verification is as follows:

- Identification of specific verification testing as documented in the Task Order.
- A detailed checklist, or handoff document, is created and incorporated into the Task Order Project Plan (TOPP) and is used to verify that the tested service meets the requirements of the service description, Key Performance Indicators (KPIs), TO documentation and cutover/activation acceptance criteria.

These services may include the use of provisioned access paths that will be tested in accordance with the methodology described in the previous section.

5.3.1.2.3 Cloud Services

Cloud Services				
laaS	PaaS	SaaS	CDNS	

These services require two sets of testing:

- FedRAMP Authorization. Verizon is currently FedRAMP-authorized by DoD and HHS.
- Verification that the tested service meets the requirements of the service description, KPIs, TO documentation and cutover/activation acceptance criteria. The specific test cases, parameters to be measured, test procedures, and the acceptance [pass/fail criteria is described in Proposal Volume 2, Section 5.8.3].

Verizon offers Cloud Services, as referenced in the National Institute of Science and Technology (NIST) Special Publication (SP) 800-145 dated September 2011, supporting a wide variety of deployment models. Verizon offers the three standard Cloud Services: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS), plus Content Delivery Network Service (CDNS).

Verizon's portfolio of Cloud Services adhere to the rigorous FedRAMP Assessment and Authorization (A&A) program. The conformity assessment process validates Cloud Services to confirm that they meet the compliance and controls requirements. The A&A process includes comprehensive verification and testing of over 300 security controls and key artifacts such as policies, standard operating procedures (SOPs), architecture, infrastructure, and test plans. The requirements for FedRAMP testing are documented in the detailed test plan, the Security Assessment Plan, and the Security Assessment Report (SAR). Testing is conducted in accordance with Federal Cloud Computing Initiative (FCCI) guidelines and NIST Federal Information Processing System (FIPS) publications.

FedRAMP-Certified. The HHS awarded the Verizon Enterprise Cloud Federal Edition (EFCE) an Authority to Operate (ATO) under the FedRAMP Program Office. This will provide Government agencies easy and secure migration of mission-critical workloads

to the cloud, while reducing the time, costs, and resources required to evaluate the security of Cloud Services.

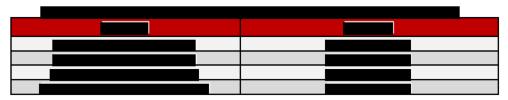
The Verizon ECFE is an laaS solution as defined by NIST. The EFCE is supported by an enterprise-class computing architecture that is delivered from two strategically located cloud-enabled data centers

All of the EFCE customers are Federal Government entities and are only granted access to the services through a formal contracting process such as EIS. The contracting process establishes a relationship between Verizon and the customer that clearly defines the customer's intended use of the service, authorizes the use of ECFE, and confirms the proper allocation of resources. ECFE gives Government customers the capability to provision virtual servers, storage, virtual load balancers and virtual firewalls for the deployment of their specific applications. Authorized government agencies will be able to take advantage of Verizon's FedRAMP authorization to facilitate the ATO. Verizon will provide additional details about the EFCE in its response to Fair Opportunities (FOs) and TOs for Cloud Services.

5.3.1.2.4 User-Initiated Services

User-Initiated Services				
MWS	wcs	ACS	VTS	

These services are initiated by the user on demand and it may not be possible to conduct a test each time that the user activates the service. Verizon proposes to provide operator or technical help assistance as needed.



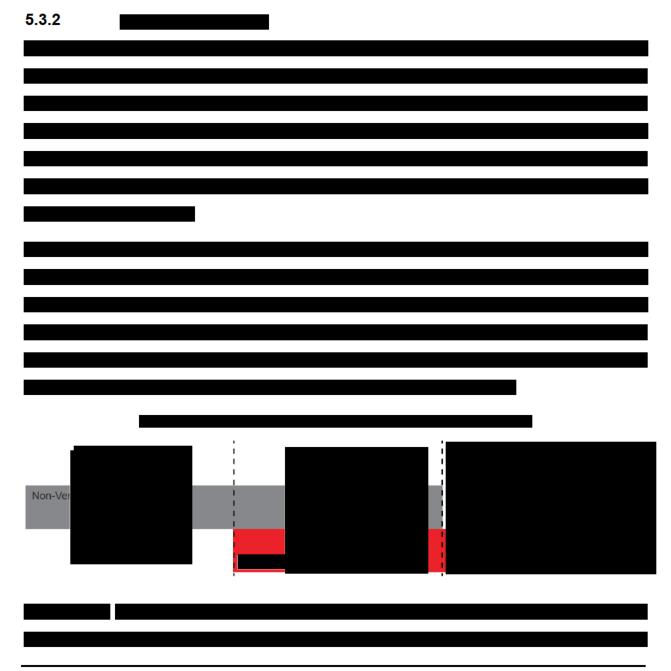
5.3.1.2.5 Service Related Equipment and Cable and Wiring

User-Initiate	ed Services
Service Related Equipment	Cable and Wiring



There are no specific KPIs that govern Service Related Equipment or Cable and Wiring. The ordering agency will specify any requirements for a verification test plan in the Task Order.

A valid way to check SREs and C&W is to test the service that uses the SRE or C&W from end-to-end, as it is not possible to meet the service specifications without valid SRE or C&W.



5.4 Additional Testing and Equipment

Verizon will allow an agency representative to witness or participate in the verification process on request. Verizon will also conduct any additional testing required by the ordering agency as defined in the TO or TOPP. Verizon will provide necessary test equipment, data terminals, load boxes, test cables, and any other hardware or software that is required for verification testing. Verizon will also conduct joint testing with an

agency that prefers to use its own equipment and/or applications during acceptance testing or at the CTC. There is no requirement for the Government to provide any resources for standard verification testing.

5.4.1 ADDITIONAL TESTING

Verizon has been maintaining dedicated test beds for the US Government since 1992, and will provide dedicated agency or network test beds as required by a given TO. This enables the agency to confirm that complex applications or networks are thoroughly tested prior to deployment. This concept works especially well with Fair Opportunities that have long-term life cycle engineering requirements. Dedicated test beds enable Verizon engineers to maintain nodes with the current release in a lab environment. Any new releases are tested prior to being introduced into the live network.

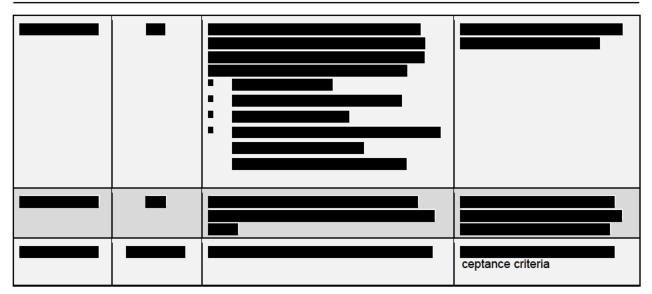
5.4.1.1 Customer Test Center (CTC)

The Verizon CTC provides a means for an agency to obtain additional testing that may be required prior to, or after, a TO is issued. The CTC provides a unique opportunity for customers to conduct trials for new services or products on live production connections prior to deployment at no additional charge.

5.5 Test Scenarios [E.2.2.2]

Test	RFP	Description	Acceptance Criteria
Scenario No.	Section No.	Description	





Verizon has provided a test plan for each EIS service that requires verification testing in accordance with the Table in Section E.2.2.2.1 shown above. The plans include test scenarios that correspond to the KPIs in Section C.2. The Dark Fiber Test Plan is in accordance with section C.2.1.6.4.

Note 1. The average service test plan that Verizon provided for the Networx contract was approximately 5 pages long. For EIS Verizon is proposing 28 services, which would require approximately 140 pages for the individual service test plans if they were done to the same level of detail. Verizon has written the *initial* plans in Proposal Volume 2, Section 5.8 as succinctly as possible in order to keep this overall EIS Service Test Plan within the 50 page allowance for the RFP. Verizon will *update* these test plans after contract award, as needed.

Note 2. The KPIs listed in RFP Section C.2 are designed to measure the quality of the service over a long period of time after implementation (as indicated in the Government's answers to questions 364 and 608 in Amendment 3). Verizon will indicate the KPIs that are not applicable during turn-up in the individual service test plans in Proposal Volume 2, Section 5.8.

5.6 Test Cases [E.2.2.3]

The test cases for each service are included in the corresponding test plan located in Proposal Volume 2, Section 5.8.1.



The Verizon Government Program Management Service Delivery Organization maintains a set of standardized templates that is used by the test engineers to confirm that the verification tests cases are conducted consistently and accurately.

Example: Test Case for testing a DS3 Loop as part of a Test Plan

The test plan for VPNS in Proposal Volume 2, Section 5.8 includes a set of Installation Test procedures which has the test case for conducting a Loop Acceptance Test for a DS3 physical path.

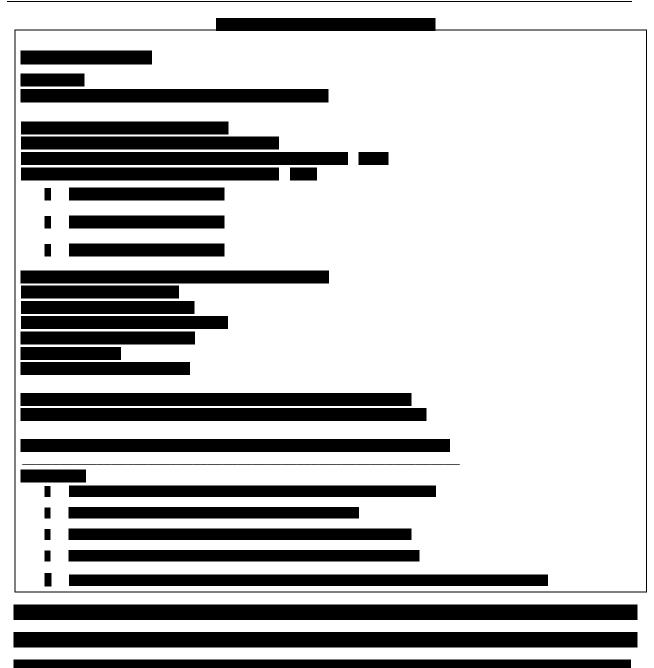


Figure 5.6-1 illustrates a sample template that would be used to test a DS3 loop (in gray in **Table 5.6.-1** above) for VPNS. The test engineer is required to run this test case in order to verify that the path is error free:

- 2^23-1) 5 minutes (Conforms to CCITT recommendation O.151)
- (2^20-1) 5 minutes (Conforms to Bell bulletin No. 114)
- (2¹⁵⁻¹) 5 minutes (Conforms to CCITT recommendation O.151

The Government Program Management Service Delivery Organization has established a set of templates in a workbook to verify that the test cases are executed correctly by the test engineers.

Figure 5.6-1 illustrates the Government Compliance Template for this specific case.



5.7 Test Data Sets [E.2.2.4]

Verizon will test all test cases defined in the EIS Test Plan using the test data sets defined within this plan. The data sets vary from standardized automated test programs to extensive hand-off documents for specialized services. The EIS service tests will be run on the actual circuits or service locations that have been ordered by the agency and will be "real world" by definition. Simulations are generally not required for service testing

since the verification and acceptance testing will be done on the actual application that the Government has ordered.

5.7.1 EXAMPLE: DS1 TEST

The six (6) test cases use a series of 1s and 0s generated by automated or hand carried test equipment. There is no requirement to run the same patterns with different sets of data. Some of the complex services may have a requirement for contractor-provided data sets. Verizon will comply with the requirement to provide those data sets if and when it is required. **Table 5.7.1-1** outlines the test cases data sets and results.

Table 5.7.1-1. Example: DS1 Test.

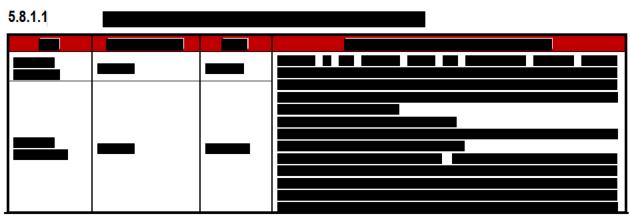
Test Case	Test Data Sets	Results
1	QRSS (15 min)	PASSED
2	All ones (01 min)	PASSED
3	All zeros(01 min)	PASSED
4	3 in 24 (05 min)	PASSED
5	1 in 8 (05 min)	PASSED
6	2 in 8 (05 min)	PASSED

5.8 EIS Service Test Plans

The draft test plans for all of the EIS services are included in this section. Verizon understands that a new plan will be required for any new services that are proposed and/or awarded during the life of the EIS contract. If a variance is discovered, Verizon will communicate this to the customer.

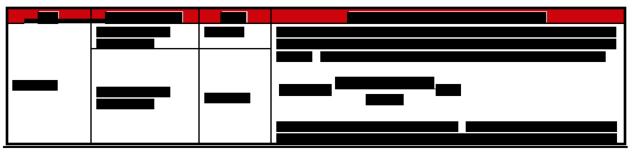
5.8.1 EIS TEST PLANS FOR PROVISIONED SERVICES

Provisioned Services					
VPNS	ETS	ows	PLS	SONETS	DFS
IPS	IPVS	DFS	CSVS	TFS	CSDS





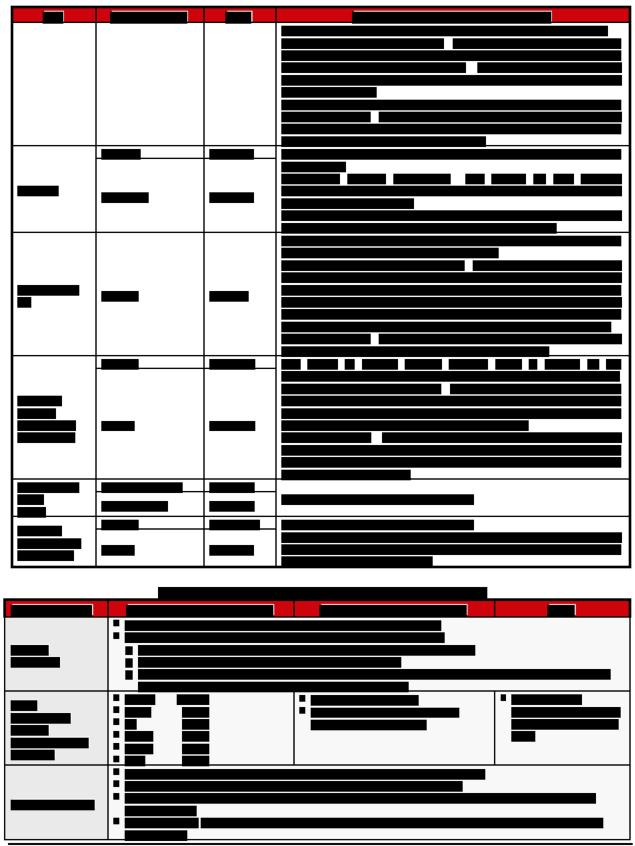
5.8.1.2 Ethernet Transport Service (ETS) Test Plan



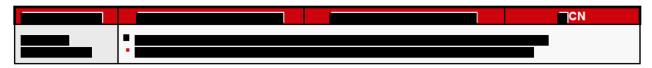
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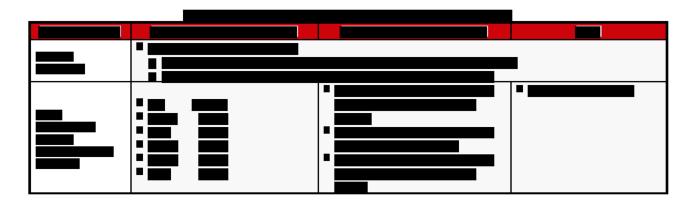






5.8.1.3 OWS Test Plan





5.8.1.4 PLS Test Plan

KPI	Service Level	AQL	PLS Verification Test Methodology



5.8.1.5 SONETS Test Plan





5.8.1.6 DFS Test Plan







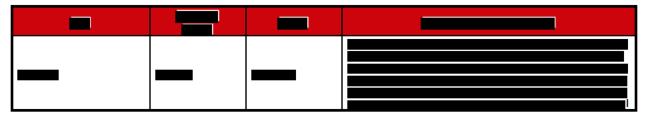
5.8.1.7 IPS Test Plan

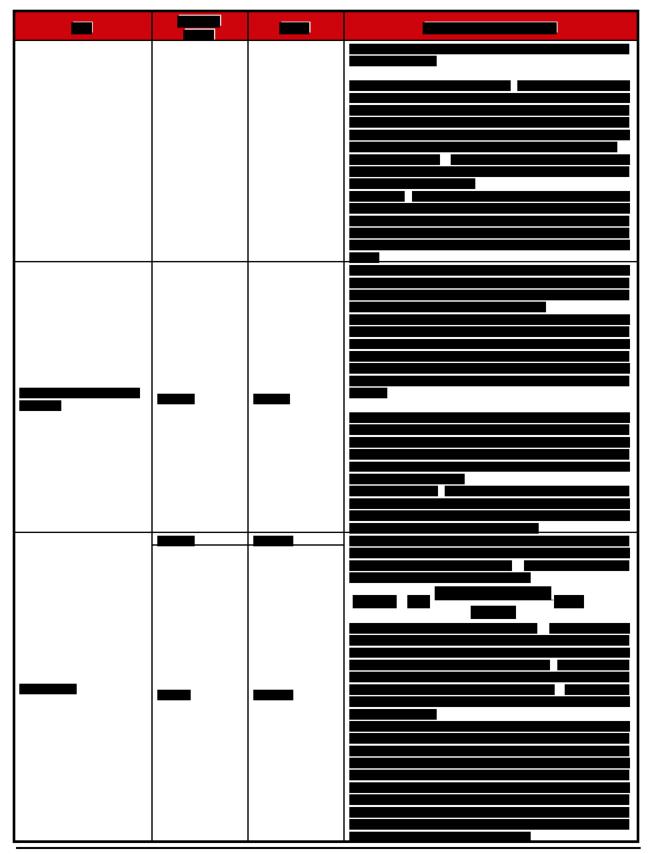




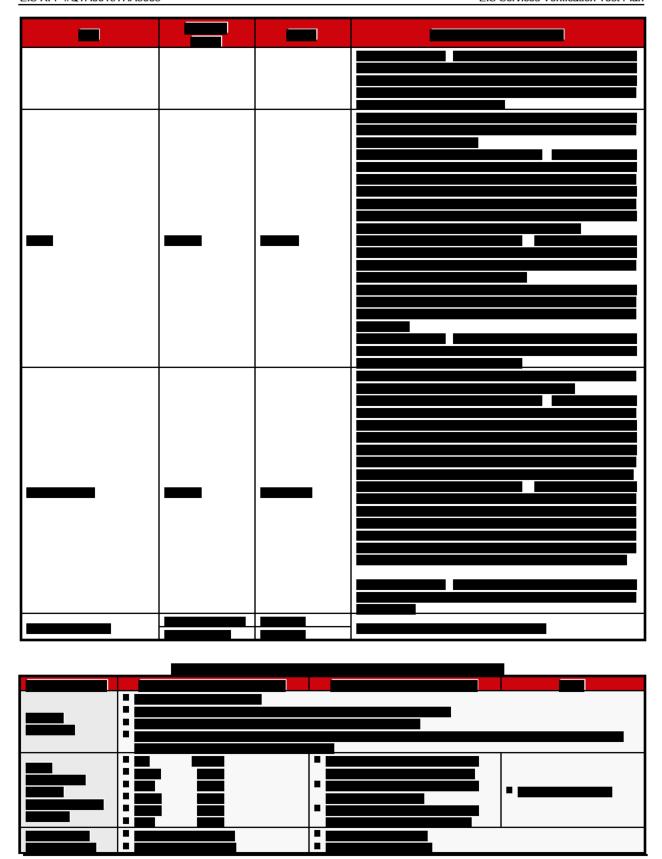


5.8.1.8 IPVS Test Plan









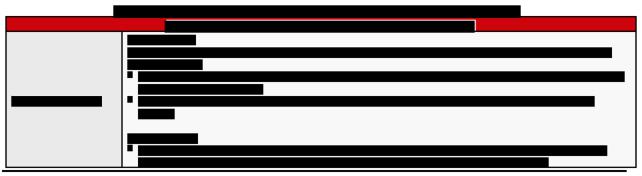


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5.8.1.9 CSVS & CSDS Test Plan









5.8.1.10 TFS Test Plan



5.8.1.11 Access Arrangements Test Plan

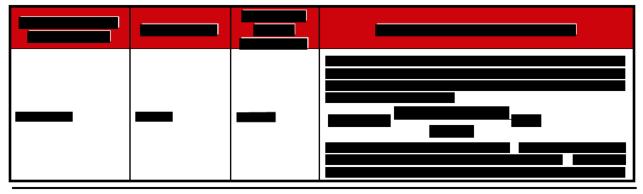
There are no specific KPIs for Access Services. Verizon has systematic and standard methods in place to verify that the Access Arrangments (AA) meet applicable government and industry standards for the type of access that is provided. The following table shows references to service test plan segments that can be used to verify that AA will meet contract requirements. A valid way to check an AA is to test the service that uses the access from end-to-end, as it is not possible to meet the service specifications without a valid AA.



5.8.2 EIS TEST PLANS FOR COMPLEX SERVICES

Complex Services					
ccs	CHS	cscs	MNS	ucs	
MTIPS	MSS	MMS	DHS IPSS		

5.8.2.1 CCS Test Plan





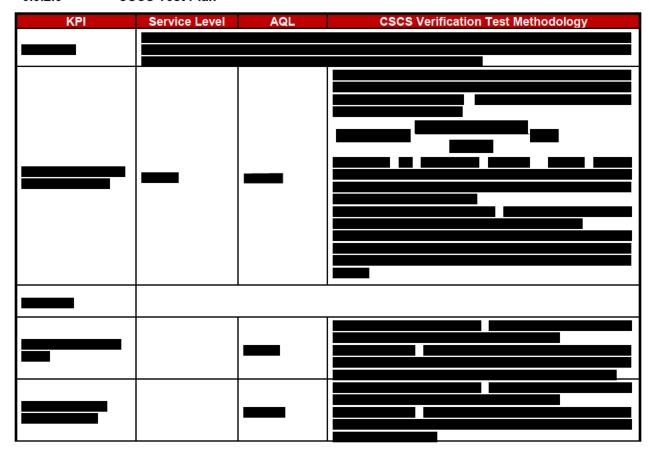
5.8.2.2 CHS Test Plan

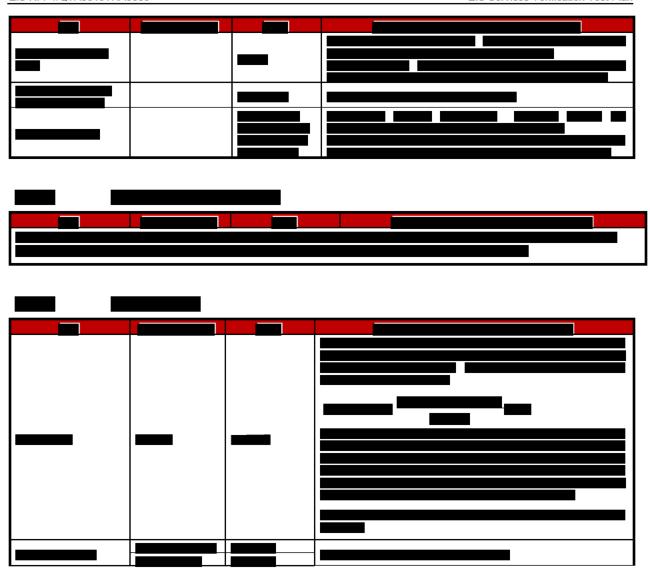






5.8.2.3 CSCS Test Plan



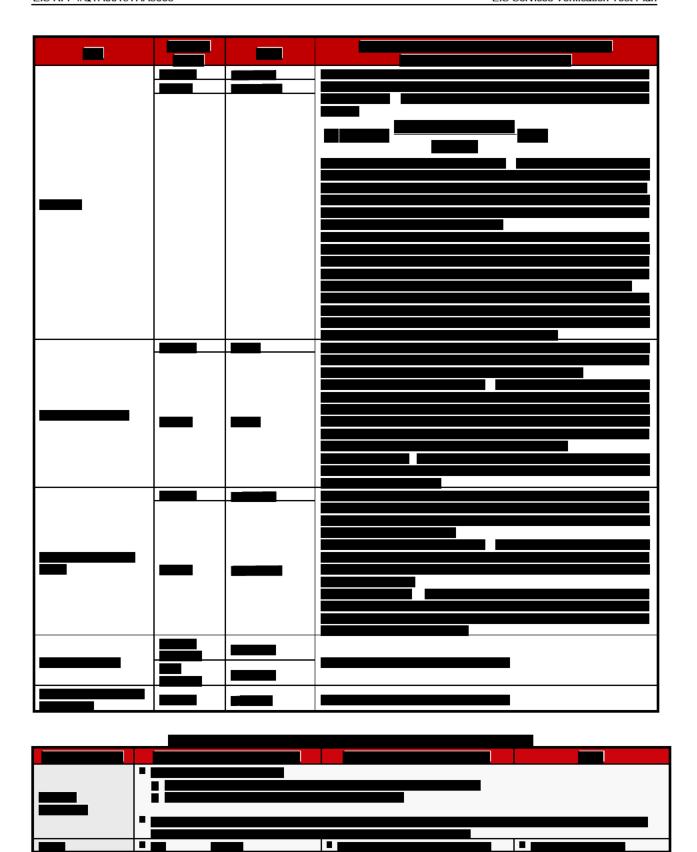


5.8.2.6 MTIPS Test Plan

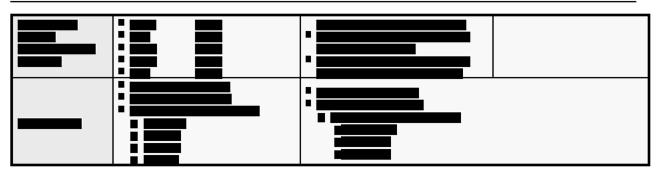
Note: The majority of orders will be for the MTIPS transport service which follows. The majority of the KPIS for the TIC portal are even related which means that they are not applicable during turn-up.







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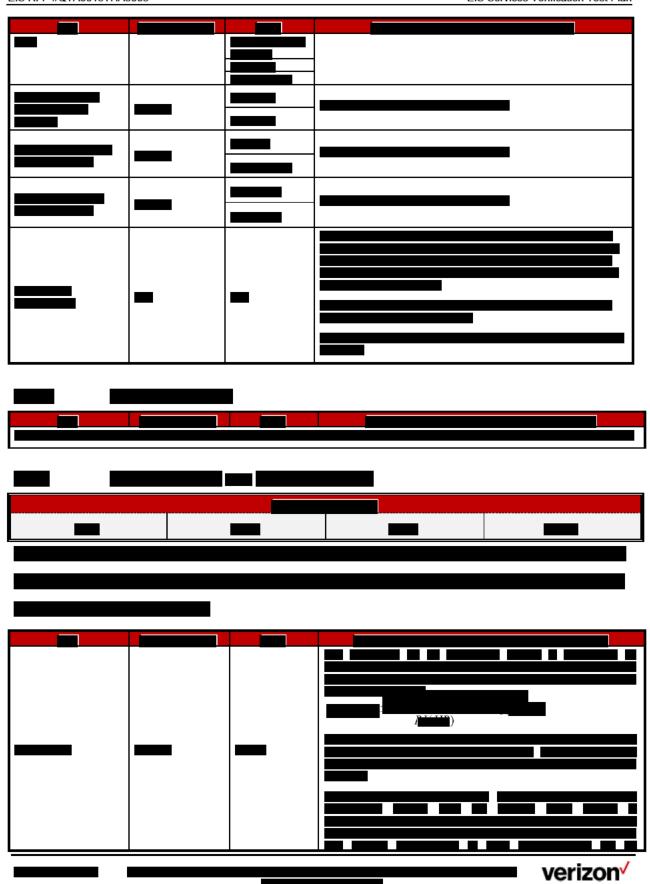


5.8.2.7 MSS Test Plan



5.8.2.8 MMS Test Plan





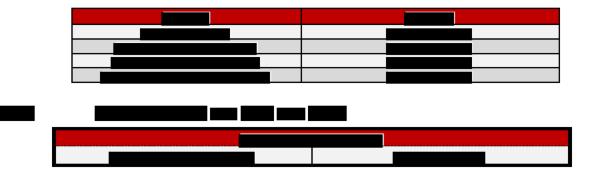


5.8.4 EIS TEST PLANS FOR USER INITIATED SERVICES

User-Initiated Services					
MWS	wcs	ACS	VTS		

Verification Testing is not appropriate for these services since they are initiated by the user on demand. (Amendment 4 to the EIS RFP authorized the contactors to identify any services in RFP Section C.2 to which testing is not applicable)

Verizon will provide assistance to any agency user that requires help to activate these services properly.



no KPIs for Service Related Equipment (SRE) and Cable and Wiring (C&W).

5.8.5.1 Service Related Equipment

There will not be a verification test plan for SRE unless the ordering agency requests one in the Task Order. The verification test will demonstrate that the application that uses the equipment works properly. Verizon will work with the government to develop a specific verification test plan for any task order that requires one.

5.8.5.2 Cable and Wiring

C&W implementations can be tested and verified by demonstrating that the applications using the C&W are functioning properly. Verizon will work with the ordering agency on site or on a cutover bridge to demonstrate that the C&W is functioning properly. Verizon complies with Section C.2.12, as well as any reviews required to confirm that the work meets codes. Verizon will work with the government to develop a specific verification test plan for any task order that requires one.

5.9 Test Results and Acceptance [E.2.2.5]

EIS Services Verification Testing Report. Verizon will provide an EIS Services Verification Testing Report (EIS Testing Report) that shows successful completion of testing defined in the EIS Test Plan.

Verification and Acceptance Testing. Verizon will complete verification and acceptance testing based on the acceptance criteria defined in the government accepted EIS Test Plan.

Government Compliance and Certification. Acceptance will include Government compliance and compliance requirements such as FedRAMP for cloud services, and the ATO for FISMA related security requirements for EIS services.



5.9.1 ATO FOR FISMA SECURITY REQUIREMENTS

Verizon conducts service verification and acceptance testing in accordance with the acceptance criteria defined in the Government-accepted EIS Test Plan prior to issuing a SOCN. Verizon will also successfully conclude additional Government testing requirements as defined in the TO prior to issuing a SOCN.

Verizon's EIS Testing Report will be provided as a component of the SOCN for all Provisioned Services. The SOCN will reflect successful completion of testing as defined in the EIS Test Plan as Verification Testing: PASS. This reporting will confirm that each service provisioned works properly according to the KPIs defined in RFP Section C.2 and the acceptance requirements defined in the EIS Test Plan. If verification testing fails in the process of access of port-level testing, the Service Order (SO) will not proceed to a scheduled activation. If verification testing fails during a planned activation, a SOCN will not be generated. If a SOCN is generated and the service fails during the 72 hour period following SOCN, the government has the right to reject the SOCN.

Acceptance will include Government compliance requirements such as FedRAMP for cloud services, and the ATO for FISMA-related security requirements for EIS services.

5.10 Acceptance Testing

Verizon understands that the Government has the right to conduct acceptance testing after it receives the report that the service has passed the Verizon EIS service verification testing. Verizon will not assign an effective billing date to an EIS Service until the agency accepts it in accordance with the agreed upon acceptance testing procedures described in the EIS Test Plan.

5.11 Billing Date and SOCN Requirements

Verizon understands that the Government has the right to perform additional tests to confirm proper operation of a delivered EIS service as defined by the TO. Verizon also understands that if the Government does not report a problem to the contractor during this test period, the effective billing date will be the completion date on the SOCN. Verizon will not begin billing for services if the Government rejects the services within three (3) days of receipt of a SOCN. Verizon understands that a longer period for test and ac-



ceptance may be specified in the TO. Verizon will issue a new SOCN for services after correcting the reasons for the rejection.

5.12 Service Acceptance

Verizon will consider the service accepted if the Government does not reject the service within the acceptance period defined above.

Verizon fully understands that the Government has the right to modify or cancel any orders that do not meet the agency's requirements during acceptance testing. Verizon has been operating under a similar set of rules as a Networx contractor. Unsatisfactory acceptance testing is a very rare circumstance for Verizon on Networx.

Verizon will comply with the following options if the Government rejects a service:

- 1. Repeat the verification and acceptance test process
- 2. Withdraw the service from acceptance testing
- 3. Facilitate the return of the services to their original provider
- 4. Replace the service in whole or in part
- 5. Withdraw the SO without penalty to the Government

If the Government exercises any of these options as a consequence of unacceptable acceptance testing results, all expenses incurred by the Government will be borne by Verizon. If the Government elects Option 1 (to repeat the testing procedure, as required in RFP Section E.2.2.5) Verizon will immediately initiate corrective actions to remedy the problem reported on the trouble ticket and will keep the Government informed of progress. Verizon understands that in such cases, the Government reserves the right to exercise Option 2, 3, 4, or 5 at any time. If the Government elects any of the options above other than Option 1, all expenses incurred by the Government, including recurring charges and Non-Recurring Charges (NRC) to return services to the previous network configuration, will be borne by the contractor.

Verizon will notify the Government of the details surrounding deficiencies and the steps that have been taken to overcome the deficiencies when Verizon is unable to complete acceptance testing due to circumstances beyond its control. Verizon will discuss these cases with the Government. Verizon understands that the GSA Contracting Officer (CO)



or the Ordering Contracting Officer (OCO) may waive the acceptance testing or extend the testing period on a case by case basis. Verizon understands that a waiver will only be considered when it is able to demonstrate that the problems are not Verizon's fault and that Verizon has taken all reasonable actions to correct all of the problems. Verizon understands that the GSA CO or the OCO will specify the grounds for a waiver. Verizon will continue to attempt to correct the deficiencies encountered in order to successfully accomplish the acceptance testing.

5.13 Deliverables [E.2.2.6]

Verizon has provided this draft EIS Test Plan to describe the testing of EIS Services based on test methodology described in RFP Sections E.2.2.2.1 – E.2.2.5. Updates will be submitted for any new services that are added to the contract with the modification proposal. Verizon will provide an EIS Testing Report as defined in RFP Section E.2.2.5 within three (3) days of service installation and testing.

