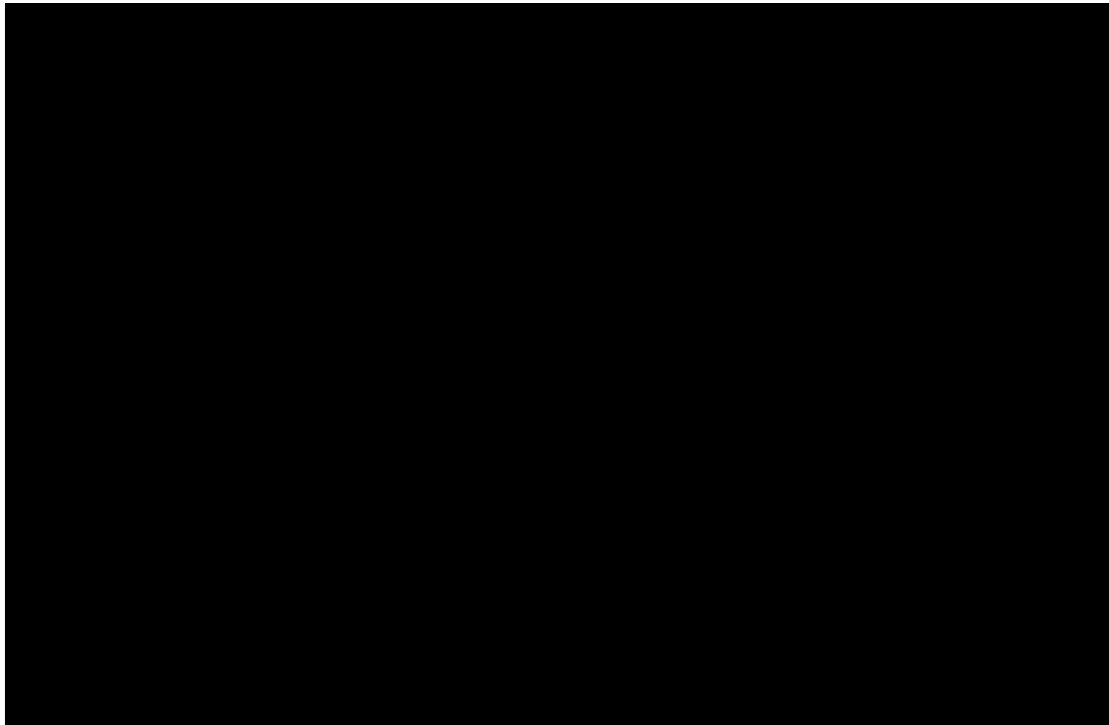# VOLUME 2, SECTION 2.2:

NETWORK MANAGEMENT

2.2 NETWORK MANAGEMENT [C.3.3.1, M.3.3]

GSA needs a contactor who regularly exceeds customer expectations. █

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

In this volume, Section 2.2, Network Management, we provide an overview of the Level 3 Network. It demonstrates the Level 3 excellence in the following functional areas:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

2.2.1   Configuration Management

In an extremely complex network management system, change control is clearly a mission-critical function. Recognizing the importance of this function, with respect to both our core network and the services provided to the GSA Networx Program and its agency users, Level 3 has a rigorous and disciplined set of procedures, systems, tools and a team to address configuration management. [redacted]

[redacted]

[redacted]

██

███████████████████████████████████

2.2.1.1 MANAGEMENT APPROACH [C.3.3.1.2.2]

Configuration management across the Level 3 Network and services requires well established processes and a disciplined organization. Our objective is to manage change control across every component that could possibly impact the mission critical nature of the Level 3 services. ████████

██

███

██

███

██

███████████████████████████████████

██

███

██

███

██

██

████████████████████████████████████

███

███

The Level 3 Team's end-to-end change management process for configuration control begins with the receipt of a change request and ends with its successful disposition. ███████████████████████████

███

███

███

████████████████████████████████████

Notification of Affected Agencies: ████████████████████████

██

██

███

███

███

██

██

██

██

██

██ No change request will be approved without the proper agency, PMO, or agency user notification.

The Change Request initiator ensures that the information contained in the change request is accurate. All notifications are made based upon the information contained in the change request. As with any large scale network, there are situations where broad changes to the network will be required.

██

██ The Level 3 CPO

will provide the PMO and affected agencies with notification at least 20 business days in advance of these large projects. ██████████ ██████████ the Level 3 Change Management Process will facilitate proper approvals, and maximum notification of affected agencies and optimize network management.

2.2.1.2 CONFIGURATION MANAGEMENT TECHNICAL CAPABILITIES [C.3.3.1.2.2]

2.2.1.2.1 Systems and Tools

2.2.1.2.2   Network Configuration Database

For the (3)Enterprise℠ program, Level 3 will have a network configuration ███████ that will contain information required for all services offered. ██ ██ ██

2.2.1.3 CONFIGURATION MANAGEMENT OPERATIONAL CAPABILITIES [C.3.3.1.2.2]

A ▮▮▮ is the input required to schedule a change. The criteria outlined in this section used in determining whether a change request is needed to support work efforts in the operating environment. This ensures that any change in the production environment that could cause a network impact is properly communicated to the affected agencies.

[Content redacted]

2.2.1.4   MANAGING THE RANGE OF NETWORX SERVICES

The Level 3 Change Management process covers the complete range of services and accounts for any potential impact across various layers of service. Any software or hardware related changes to the network are managed through our Change Management Process. ███████████

██

████████████████████████████████████

2.2.1.5   MEETING THE NEEDS OF A LARGE, HETEROGENEOUS, AND GEOGRAPHICALLY DISTRIBUTED USER COMMUNITY

Change management across the Level 3 Network and services requires well established processes and a disciplined organization. Our objective is to manage change across each and every component that could possibly impact the mission critical nature of The Level 3 services. ███████████

██

2.2.1.6   ENSURING THE PERFORMANCE AND QUALITY OF NETWORX SERVICES

Our change management process provides for logging, tracking, documenting, impact analyses and managing maintenance to all (3)Enterprise services. ███████████████████████████

██

██

██

██

███

██████████████████████████████

███████████

2.2.1.7 IMPROVING THE QUALITY OF (3)ENTERPRISE SERVICES TO ITS CUSTOMERS

One of the primary functions of Change Management at Level 3 is to enable for seamless growth, enhance features, improve overall service and quality while minimizing impact to Networx services.

2.2.1.8 MINIMIZING THE IMPACT OF NETWORX SERVICES CHANGES TO GOVERNMENT OPERATIONS

██

██████████████ The mission of the ██████████████████████ Team is to effectively manage the coordination and communication of change in the production environment while taking to the absolute minimum, the impact of change on affected agencies. This focus on change management ensures integration of this function within the Level 3 Contractor's Program Office (CPO.)

2.2.1.9 PLANNING FOR FUTURE GROWTH

The primary function of configuration management is to utilize a process which permits seamless growth not only on the Level 3 Network but on our customers' networks. Level 3 can assist the GSA and its agency customers in growing their networks while minimizing the impact to the agencies' existing networks.

2.2.1.10 MEETING CHANGES IN GOVERNMENT NEEDS

Level 3 fully understands the importance and need to make changes for our Government customers. █████████████████████████████████████

██

██████████████ Our process provides the rigor and discipline necessary to minimize the risk of change while at the same time providing the flexibility and adaptability the GSA Networx Program agency users require.

2.2.1.11 ENSURING REAL-TIME ACCESS TO INFORMATION REGARDING THE HEALTH AND PERFORMANCE OF MISSION-CRITICAL SERVICES

Level 3 meets this requirement, as demonstrated in the Fault Management section as well as the Network Services and Monitoring and Management section.

2.2.2 Accounting Management Technical Management Operating Capabilities

2.2.2.1   MANAGING THE RANGE OF NETWORX SERVICES

Level 3 provides reporting and data for services where network fraud and abuse detection apply. Level 3 can also supply utilization data for applicable services and work with Government customers to format the reports in an acceptable manner.

2.2.2.2 MEETING THE NEEDS OF A LARGE, HETEROGENEOUS, AND GEOGRAPHICALLY DISTRIBUTED USER COMMUNITY

The Level 3 wide array of systems providing accounting management data are built to support reporting irrespective of size, scope or location. Level 3's philosophy ████████████████ reinforces development of capabilities which enable us to gather significant and pertinent data to the services Level 3 offers.

2.2.2.3 ENSURING THE PERFORMANCE AND QUALITY OF NETWORX SERVICES

Level 3 collects data pertinent to insuring that all services see embody performance and quality.

2.2.2.4 IMPROVING THE QUALITY OF (3)ENTERPRISE SERVICES TO CUSTOMERS

As a leader in VoIP services Level 3 is always looking to improve the quality of its service offerings. Whether enhancing feature sets, improving E911 performance or growing our reporting capabilities in fraud and waste detection, Level 3 will always look to supply our Networx customers with improving service quality.

2.2.2.5 MINIMIZING THE IMPACT OF NETWORX SERVICES CHANGES TO GOVERNMENT OPERATIONS

Please refer to Section 2.2.1 where we speak in great detail about our robust Change Management process.

2.2.2.6 PLANNING FOR FUTURE GROWTH

The Level 3 Network including its reporting systems built and designed to support scalable environments minimizing costly and timely projects which are the result of poor planning or reactive measures to unexpected growth.

2.2.2.7 MEETING CHANGES IN GOVERNMENT NEEDS

Level 3 will work with GSA Networx program customers to adjust for changing needs including ad hoc reporting, dynamic utilization reports or

reporting for unique instances. Although most standard reporting will be available online, customers will be able to work with ██████████ ████████████████████████ to address any needs for special reporting.

2.2.3   Fault Management

2.2.3.1   MANAGEMENT APPROACH [C.3.3.1.2.4]

This subsection provides the Level 3 fault management capabilities for the GSA Networx Program services. ████████████████████████████ ██

These functions include monitoring and fault detection, isolation, and troubleshooting of faults affecting contract service, and repair.

The Level 3 Network Management organization encompasses several functions as noted in the organizational flow ████████████████████

████████████████████████████████████

████████████████████████████████████

██████████████████████████████

       ████████████████████████████████

████████████████████████████████████

████████████████████████████████

████████████████████████████████

████████████████████████████████████

████████████████████████████████████

████████████████████████████████████

██████████████████████████████
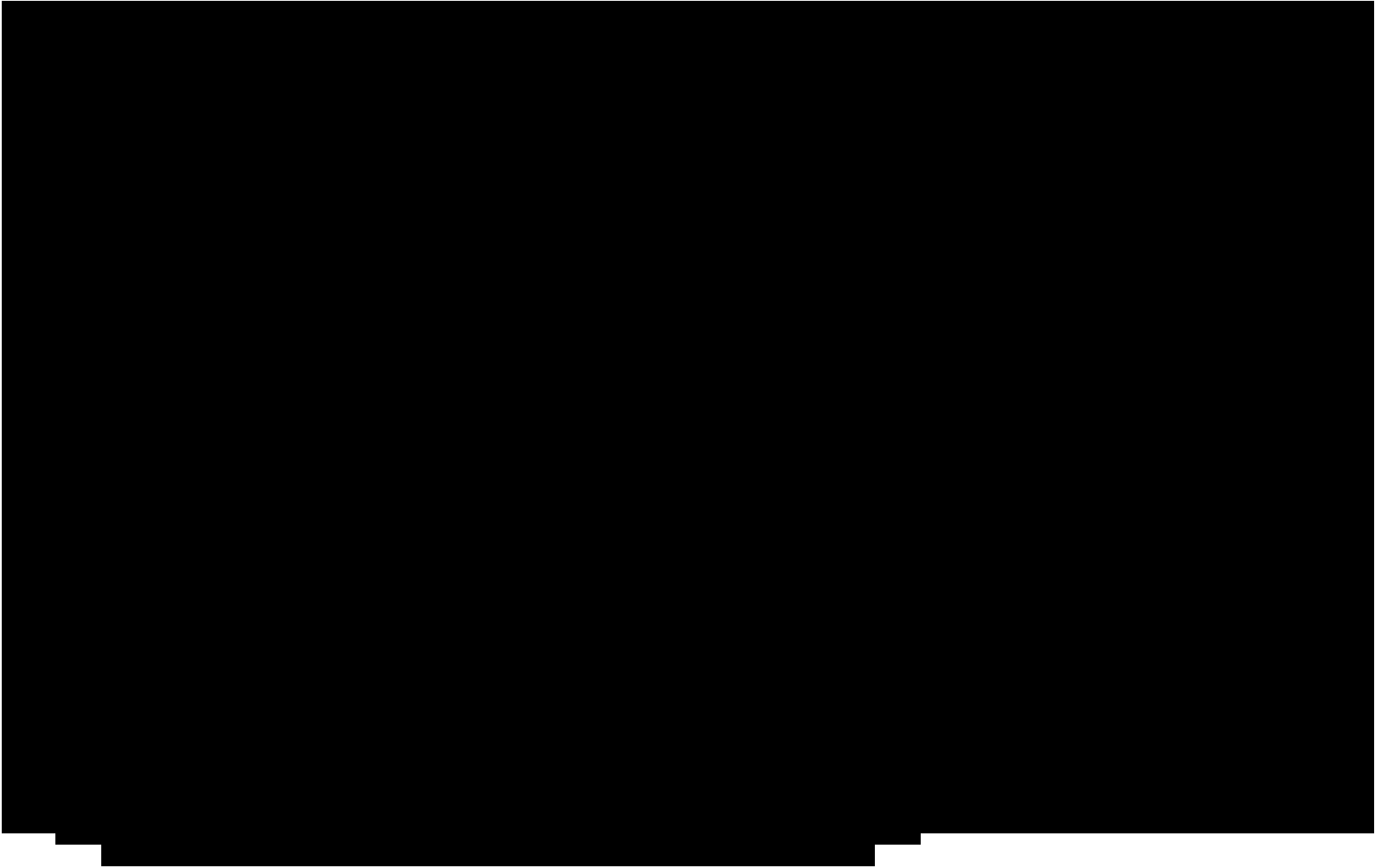
2.2.3.1.1   Customer Fault Management

The Level 3 tools, processes, and procedures have been developed and refined with the ultimate goal to provide the highest quality of service. ███ ██ ███████████████████████████████████ Level 3 will resolve each service outage for any Networx service within 8 hours for restoration requiring dispatching of personnel except for non-domestic SDPs.

███

███

The success of our tools and processes hinges on the assignment of qualified staff drawn from our pool of expert technicians. ████████████

██

██

██████████████████████████████████████

██

██

██

███

██████████████████████████████████████

███████████████████████████████████████

███

███

██

████████████████████████████████

Proactive monitoring means that network problems will be discovered by the ████████ staff before a user is aware of the problem or before the problem becomes significant and affects users. █████████████████

██

██

███

██

██

██

███
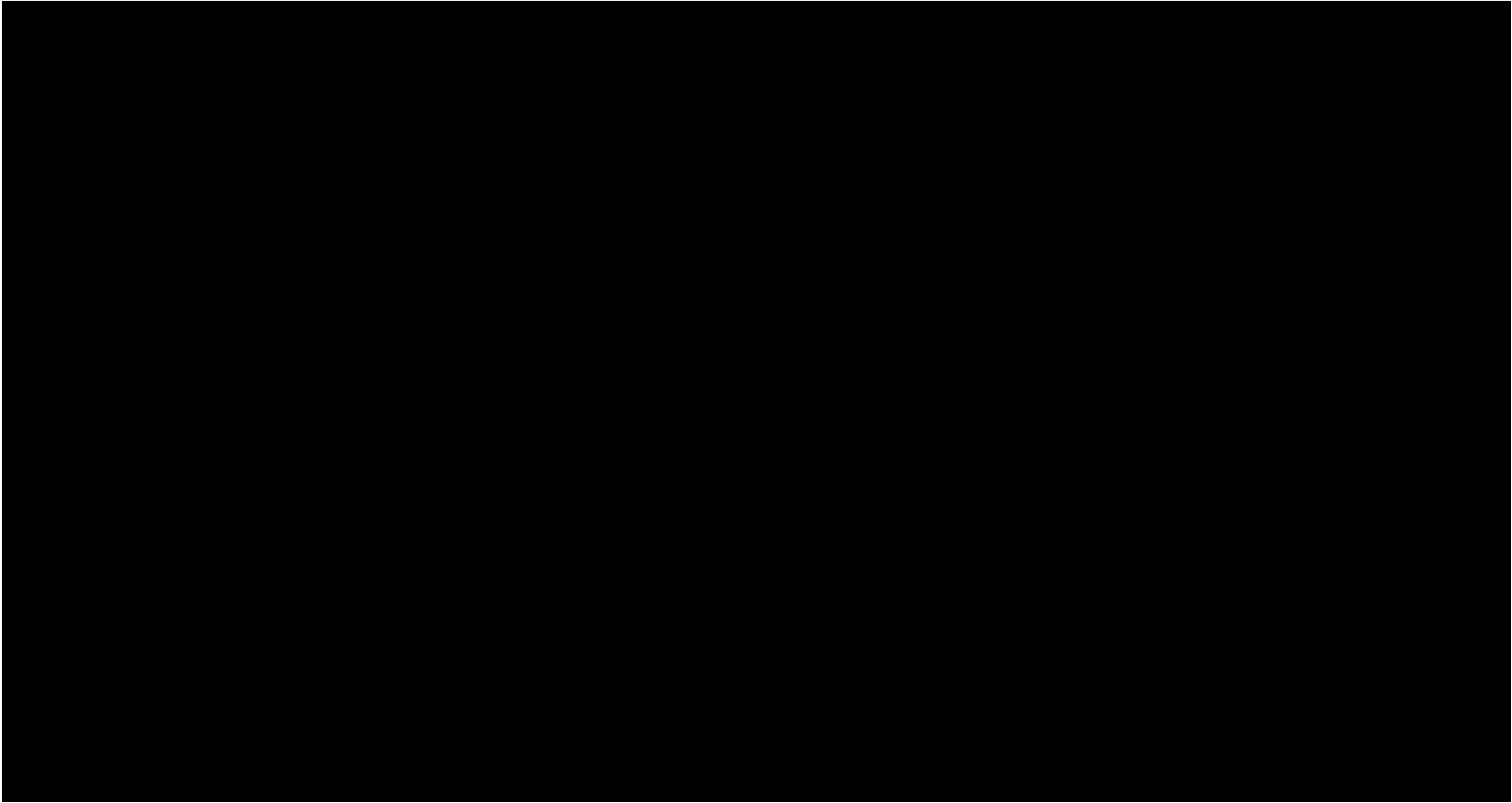
2.2.3.1.2   Event Management and Escalations

Event management is the process used to resolve customer and network events. Contacts and procedures for escalating faults will be posted to the (3)Enterprise portal. ████████████████████████████████

████████████████

████████████████

████████████████████████

████████████████████████

██

███

██

██

████████████

2.2.3.2   MANAGING THE RANGE OF (3)ENTERPRISE SERVICES

The Level 3 Network, provisioning systems, order management systems, and associated databases were built from the ground up beginning at the company's inception. The tight integration of all these components provides the company with efficient systems for network management and customer care, as well as the tools necessary to continually improve our network and monitor the wide array of services offered by Level 3.

██

███

███

██

████████████████████

██

██

██

██

██

████████████████████████████████

2.2.3.3 MEETING THE NEEDS OF A LARGE, HETEROGENEOUS, AND GEOGRAPHICALLY DISTRIBUTED USER COMMUNITY

The foundation of Level 3 services is a network which is unique in today's telecommunications landscape. Strategically, the Level 3 Network was designed and built "from the ground up" as a single, consistent, and high-performance platform. ████████████████████████████████

██

██

██████████████████████████████████

2.2.3.4 ENSURING THE PERFORMANCE AND QUALITY OF (3)ENTERPRISE SERVICES

Our operational approach fosters an environment that promotes customer advocacy through performance measurements and continued business process improvements. ████████████████████████

██

██

██

██

██

███ Our performance management program not only supports the goal of constant improvement within the company, but also ensures the Government will be

provided effective reports of performance against the requirements within the RFP.

2.2.3.5 IMPROVING THE QUALITY OF (3)ENTERPRISE SERVICES TO ITS CUSTOMERS

The Quality Control Program (QCP) is accomplished by ensuring that all areas affecting the quality of service delivery are identified and defined, and that adequate plans and procedures are implemented to measure and ensure requirements compliance including all applicable SLAs detailed in the Networx RFP Section J.13. ██████████████████████████████ ████████

██████████████████████████████████████

████████████████

██

████████████████████████████

██

██████████████████████████

██

██████████████████

In summary, Level 3 management and the ████ are dedicated to insuring quality and performance in all areas within operations in order to provide an unrivaled Customer Service experience. Our mantras include the following:

- Measurement drives the continuous improvement cycle
- Data tells a story that management uses to make decisions
- Statistical techniques separate the noise from the facts
- Drive service improvements to the optimum level for the business

2.2.3.6 MINIMIZING THE IMPACT OF (3)ENTERPRISE SERVICES CHANGES TO GOVERNMENT OPERATIONS

As described in the configuration management section Level 3 uses process discipline and a rigorous change management review procedure to minimize the impact of service changes to Government operations. ███████

███
███
███
███
███
███
██
███████████████████

2.2.3.7 PLANNING FOR FUTURE GROWTH

The Level 3 Network was the first international network in the world built to be continuously upgradeable and fully optimized for Internet Protocol.

██
███
██
███████████████████████

2.2.3.8 MEETING CHANGES IN GOVERNMENT NEEDS

As the overseer, the █████ is responsible for maintaining and driving process improvement through established metrics. ██████████████
██
███
██

Process changes and improvements are driven by our metrics to further enhance the customer experience. ████████████████████████████

███

████████████

████████████████████████

████████████████████████

████████████████████████

████████████████████████

████████████████████████

███

████████████████████

2.2.3.9 ENSURING REAL-TIME ACCESS TO INFORMATION REGARDING THE HEALTH AND PERFORMANCE OF MISSION-CRITICAL SERVICES

Level 3 can also provide a solution (re: section 2.2.4) enabling the Government to receive important network data via our web portal which enables for viewing of key event data via a ticketing system interface. ██

███████████████████████████████████

██

███

████████████████████████████████████

██

██

█████████████████████████████████████

2.2.4 Performance Management Key Elements

Performance Management is a core competency of Level 3 and is a continuous life cycle process including: Design (process/metrics), Measure, Analyze, Improve and Optimize/Sustain. All activities related to Operational and individual performance fall under the realm of Performance Management.

2.2.4.1 ENSURING QUALITY PERFORMANCE AND THE OPERATIONS CONTROL OFFICE

Our operational approach fosters an environment that promotes customer advocacy through performance measurements and continued business process improvements.

███

████████████

2.2.4.2 PERFORMANCE AND QUALITY OF (3)ENTERPRISE CUSTOMER SUPPORT

The Quality Control Program (QCP) is accomplished by ensuring that all areas affecting the quality of service delivery are identified and defined, and that adequate plans and procedures are implemented to measure and ensure requirements compliance. █████████████████████████████████████ ████████

███████████████████████████████████

███████████

███████████████████████████████████████

███████████████████████

███████████████████████████████████████

███████████████████████

███████████████████████████████████████

███████████

In summary, Level 3 management █████████ are dedicated to insuring quality and performance in all areas within operations in order to provide an unrivaled customer service experience. Our mantras include the following:

- Measurement drives the continuous improvement cycle
- Data tells a story that management uses to make decisions
- Statistical techniques separate the noise from that facts
- Drive service improvements to the optimum level for the business

███████████████████████████████████
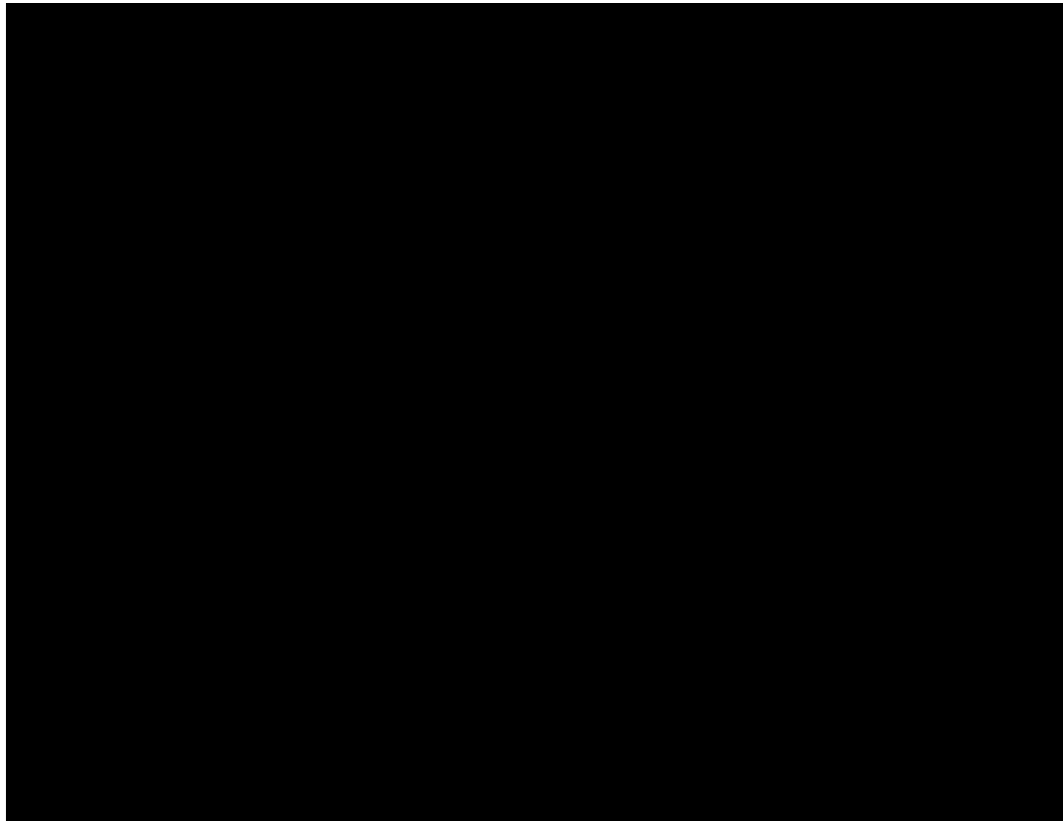
Our quality goals include, but are not limited to, the following:

- Meeting or exceeding SLAs

- Consistently delivering managed services that satisfy all Networx requirements

- Reducing program, technical, schedule, and cost risks

- Eliminating rework and attendant schedule delays

- Eliminating performance deficiencies and nonconformities with respect to the SLAs

- Continuously improving service quality

███

███

███

███

█████████████████████████████████
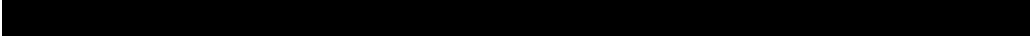
2.2.4.3 OPERATIONAL REVIEWS

The Level 3 conducts ███████ operational review meetings to provide timely insight into events that are impacting performance and customers' service experience. ████████████████████████████████

███

██

███

██

███

██████████████████

█████████████████████████████████████

██

██

██████████████████

███

██

██

██

███

██

█████████████████████████████

██

██████████████

2.2.4.4 CONTINUOUS IMPROVEMENT

██

██

██

██

████████████████████████████████████

██

██

██

██

██

██████████████████

██

███
███
███
███
███
███
███
███
███
███
███

██

██

██

██

██

██

██

██

██

██

██

██████████████████████████████████████

2.2.4.5 PROCESS

██

██

██

██

██

Process changes and improvements are driven by our metrics to further enhance the customer experience. ██████████████████████████████████ ██ ████████████

████████████████████████████████

██████████████████████████████████

██████████████████████████████████
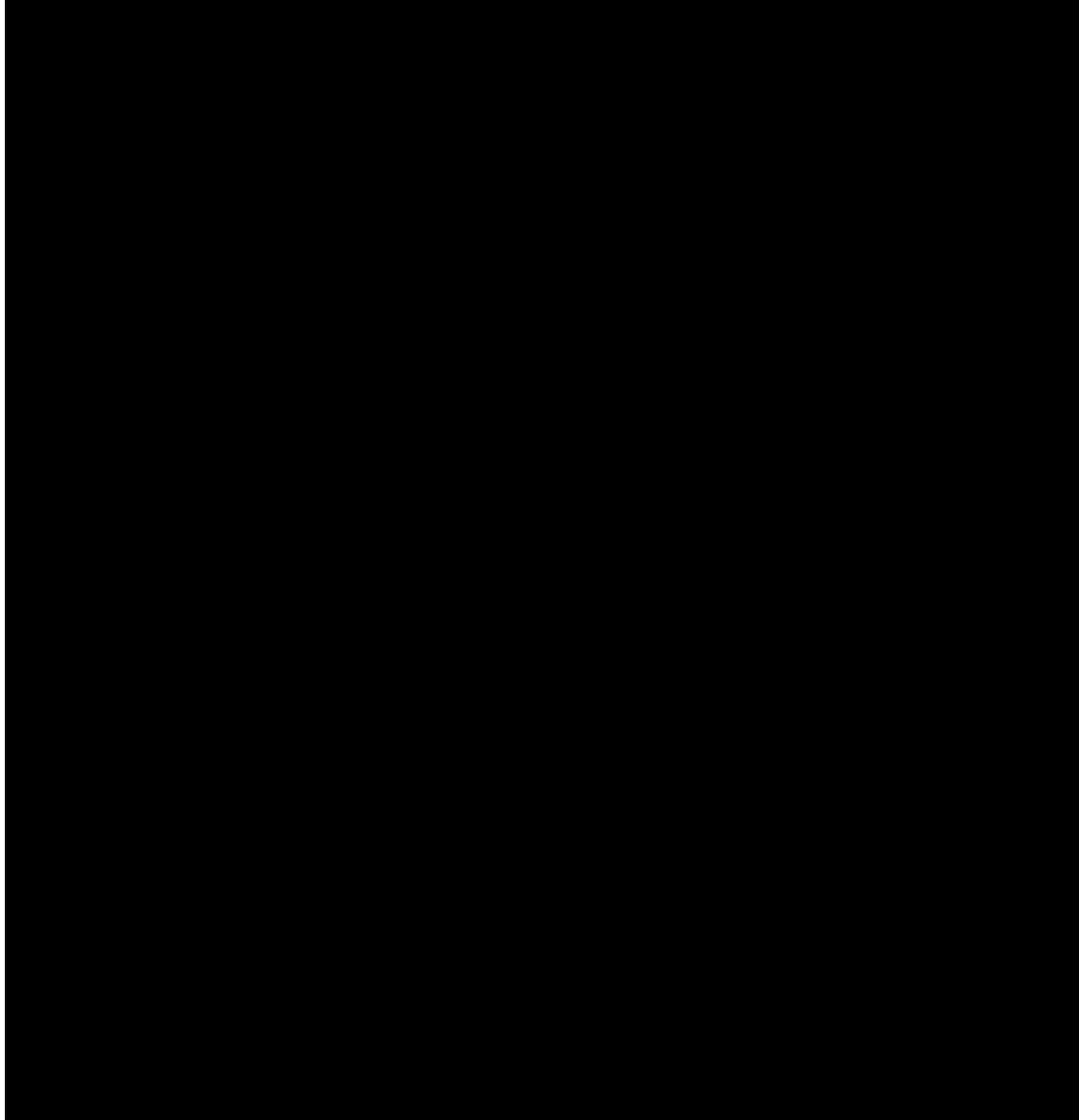
This methodology enables Level 3 to design, stabilize, and systemically improve any process.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

2.2.4.6 PERFORMANCE MANAGEMENT TOOLS AND ARCHITECTURE

[REDACTED]
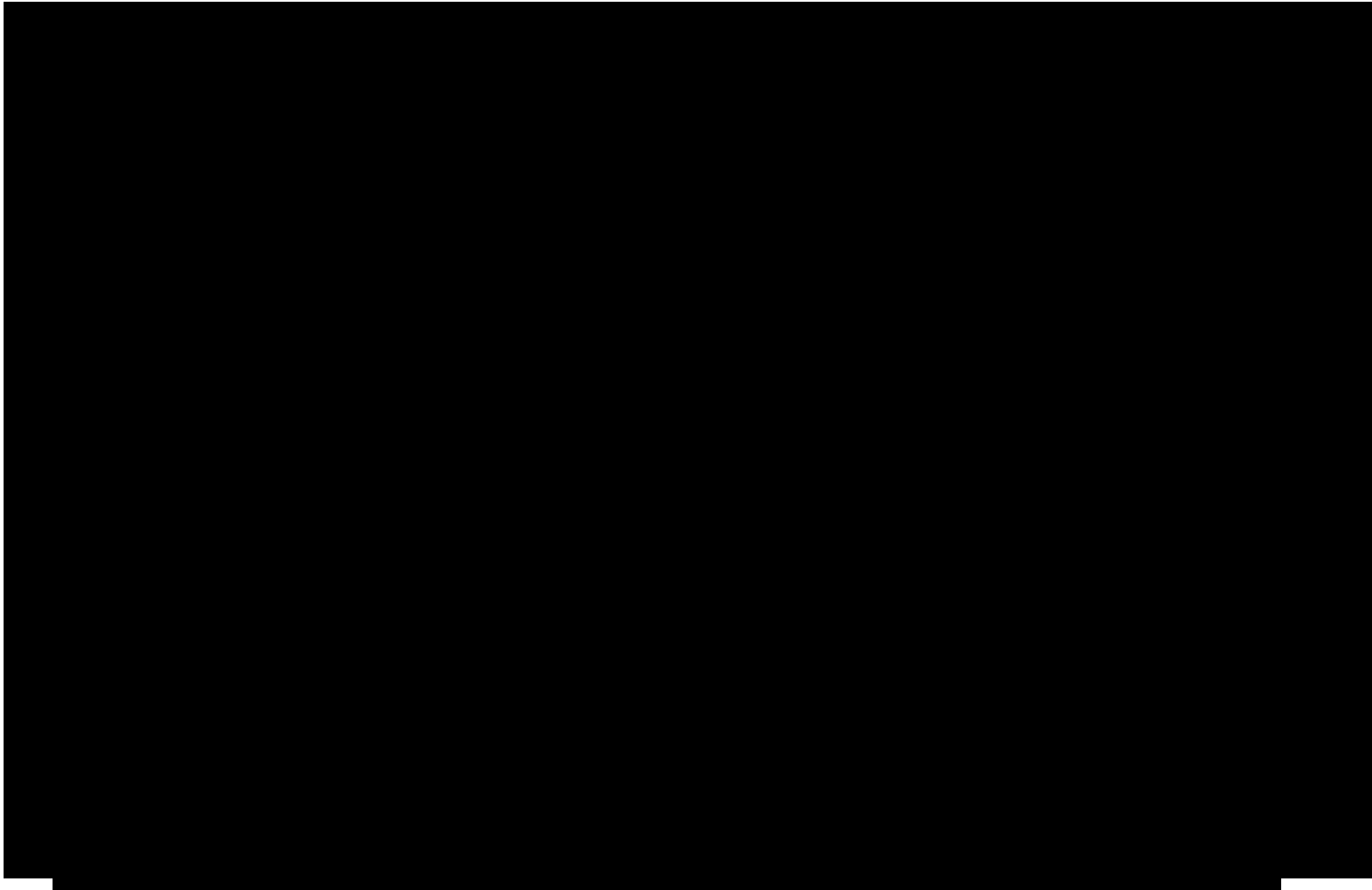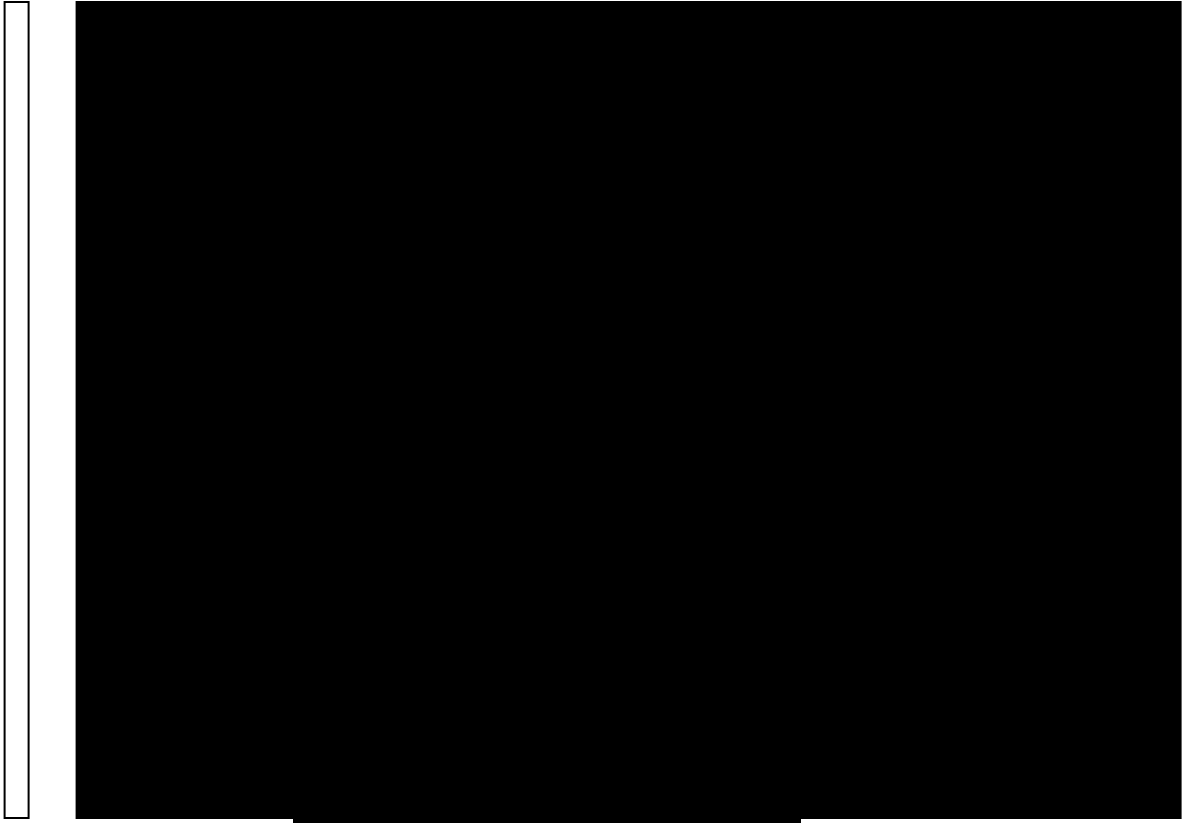
2.2.5 Network Services Monitoring and Management [C.3.3.1.2.5]

At additional cost to the Government Level 3 will provide the Government with a near real-time alert feed from specified network elements. In addition to the alert feed, the customer will receive all current and standing alerts and system notifications. ████████████████████████████████

██

██

██

██

██

██

██

██

██

██

██

██

2.2.5.1   SYSTEM ARCHITECTURE

The high level system architecture ██████████████████████████
illustrates the Level 3 Network management system automation and
normalization of network alerts. ████████████████████████████
██
████████████████████████████████████

██

2.2.5.2   FEATURES

The following features will be available as part of the Level 3 monitor and
management solution provided to the Government:

▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮

▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮

2.2.5.3 MANAGING THE RANGE OF NETWORX SERVICES

Level 3 can also provide a solution enabling the Government to receive important network data for a range of Networx services via our web ▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ ▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮▮▮▮▮▮▮▮▮▮▮

2.2.5.4 MEETING THE NEEDS OF A LARGE, HETEROGENEOUS, AND GEOGRAPHICALLY DISTRIBUTED USER COMMUNITY

Regardless of size, scope or location Level 3 can work with the GSA Networx Program agencies to define and present the necessary network monitoring information specified by the agency. Level 3 can work with the specific agency requesting this optional service to define its specific needs.

2.2.5.5 ENSURING THE PERFORMANCE AND QUALITY OF (3)ENTERPRISE SERVICES

Level 3 would utilize many of its applications, processes, procedures, personnel and its culture of operational excellence to monitor and manage specific Networx customers' networks. All items described throughout the Network Management section would be brought to bear to service this optional product for the customer.

2.2.5.6 IMPROVING THE QUALITY OF (3)ENTERPRISE SERVICES TO CUSTOMERS

By working with the various GSA Networx Program agencies to build customer Network Services Monitoring and Management solutions Level 3 can ultimately give the customer the ability to improve the management and quality of their services. Level 3 has a number of systems ████████████ ████ and industry accepted forms of data transfer to improve the quality of services.

2.2.5.7 MINIMIZING THE IMPACT OF (3)ENTERPRISE SERVICES CHANGES TO GOVERNMENT OPERATIONS

The Level 3 Network Management software ██████████████████ ███████████ has built-in safeguards for any actions that could impact the state of the network. Level 3 only enables highly qualified technicians access to the Network Monitoring and Management systems and requires ticketing for accountability and auditing purposes. ████████████████████████ ███ ███ ██████████████████

2.2.5.8 PLANNING FOR FUTURE GROWTH

As our systems were generally built from the ground up, a coordinated effort was made to account for network growth and the associated system needs. ██ ███ ███ ███ ██████████████████████████████

2.2.5.9 MEETING CHANGES IN GOVERNMENT NEEDS

As stipulated previously Level 3 can at additional cost modify, add, change, or move reporting mechanisms to suit the customers' needs for the purpose of meeting changes, improving service, analyzing trends, or insuring stability of services.

2.2.5.10 ENSURING REAL-TIME ACCESS TO INFORMATION REGARDING THE HEALTH AND PERFORMANCE OF MISSION-CRITICAL SERVICES

Level 3 can provide (as discussed above) the Government with a near real-time alert feed from specified network elements. In addition to the alert feed, the Customer will receive all current and standing alerts and system notifications.