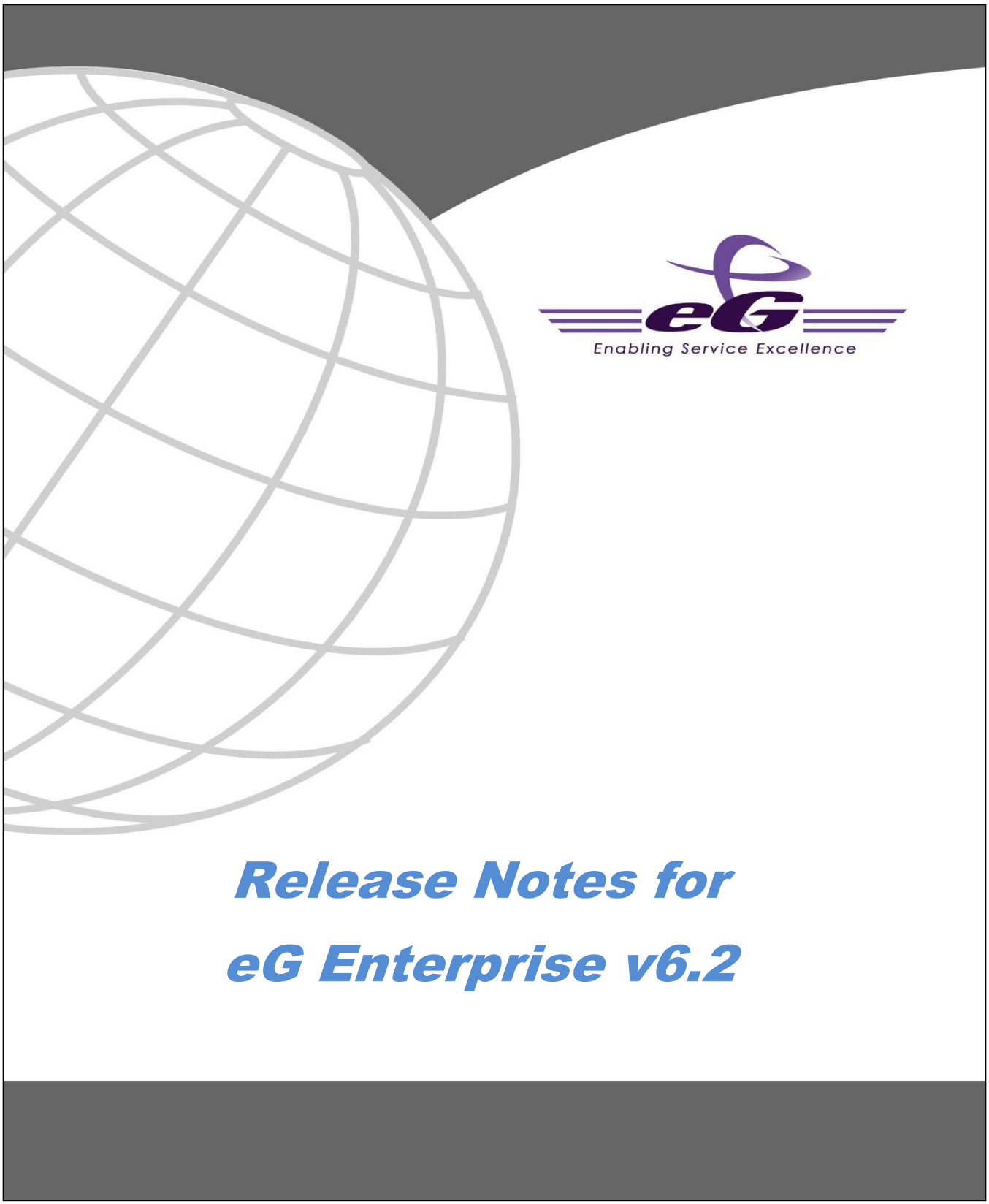

Release Notes for eG Enterprise v6.2

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Release Notes: eG Enterprise v6.2

Version 6.2 is a major release of the eG Enterprise Suite. This document provides a detailed list of new features, enhancements, bug fixes, and optimizations that have gone into this release.

1.1 Monitoring Enhancements

1.1.1 Citrix Monitoring Enhancements

The following enhancements are made to the eG Enterprise's Citrix Monitoring capabilities in v6.2:

- **Citrix Logon Simulator:** For years, Citrix logon slowness has been the most difficult problem for Citrix administrators to handle. Since there are over a dozen interactions between Citrix components (StoreFront, Delivery Controller, XenApp servers, License server) and other non-Citrix components (Active Directory, virtualization platform, etc.), Citrix logon issues are difficult to address. The Citrix logon simulator is the newest addition to eG Enterprise's capabilities.

  Citrix administrators can now point this utility to a Citrix StoreFront server or a NetScaler front-end. As its name implies, the Citrix logon simulator simulates a user logging into the Citrix farm, seeing a list of enumerated applications or desktops and launching an application or a desktop. This simulation is done periodically and the success/failure of the simulation and the time taken for each step in the simulation are tracked and reported. Using the results, administrators can identify times when Citrix logon is slow and they can clearly see why – is it due to user authentication, application enumeration, or application/desktop launch? Since the simulation is done periodically, the Citrix logon simulator can alert administrators to potential issues proactively – even during times when no users are actively logged on to the server farm. The Citrix logon simulator is simple to set up – no recording/replay is necessary, all that an administrator has to do is point to the URL used to logon to the Citrix farm and provide the credentials used to simulate the logon.

- **Monitoring active/idle times of Citrix sessions:** Users often use Citrix to access productivity applications – e.g., work from home, remote access, etc. As a result, Citrix administrators are often asked to report on what percentage of time the user was idle during the session. eG Enterprise v6.2 now adds active and idle time tracking for Citrix user sessions. This information is reported in real-time as well as for historical analysis. Reports provided by eG Enterprise document the percentage of active and idle time in each user session. Active/idle time information is provided for Citrix XenApp (7.x, 6.5) and XenDesktop sessions as well as for Microsoft RDS sessions. Starting with eG Enterprise v6.2, the idle session duration of a user is reported in the detailed diagnosis of the *Sessions logging out* measure reported for user sessions in VDI environments too.

- **Support for Citrix XenServer 7:** eG Enterprise v6.2 adds support for the Citrix XenServer 7 hypervisor.

- **Monitoring I/O activity for XenServer VMs:** In version 6.2, eG Enterprise exploits new metrics available from XenServer 6.2 onwards to provide additional insights into I/O activity by different VMs. Metrics reported per VM include the number of I/O operations in progress, I/O operations in wait state, I/O requests in queue for processing, and read and write I/O activity. Comparing these

values across VMs helps administrators identify VMs that are bottlenecked on I/O and VMs that are causing most of the I/O activity.

- **GPU monitoring enhancements:** eG Enterprise v6.2 provides deeper insights into GPU processing:
    - For shared GPUs, detailed diagnosis at the hypervisor level points to VMs that are responsible for GPU usage.
    - Within the VMs, as part of the inside view of the VMs, eG Enterprise now reveals the application processes that are utilizing GPU and the relative GPU usage levels. This information helps administrators easily identify the applications that are benefiting from the usage of GPU technology.
    - eG Enterprise also provides an overview of GPU capacity and usage at the hypervisor-level, so as to enable administrators to figure out inconsistencies in GPU sizing at the hypervisor and VM level. The number of physical GPUs per each GRID card is reported alongside the number of vGPUs per card. The maximum users per card is also reported, so that you can figure out if your vGPU allocation is aligned with the demand for GPU resources. The remaining capacity of vGPUs per board is also revealed, so that you can quickly identify an over-allocation (if any) of GPU resources to VMs.
    - The GPU memory per VM and the maximum number of displays per VM are reported, so that you can determine whether/not the VMs have been sized with sufficient GPU memory to support the displays.
    - Also, the encoder and decoder utilization on each GPU per VM is now reported using which administrators can be alerted to situations where graphics processing is a bottleneck.
    - eG Enterprise also provides an overview of GPU capacity and usage at the hypervisor-level, so as to enable administrators to figure out inconsistencies in GPU sizing at the hypervisor and VM level. The number of physical GPUs per each GRID card is reported alongside the number of vGPUs per card. The maximum users per card is also reported, so that you can figure out if your vGPU allocation is aligned with the demand for GPU resources. The remaining capacity of vGPUs per board is also revealed, so that you can quickly identify an over-allocation (if any) of GPU resources to VMs. The GPU memory per VM and the maximum number of displays per VM are reported, so that you can determine whether/not the VMs have been sized with sufficient GPU memory to support the displays. Additionally, monitor encoder and decoder utilization for GPUs. eG Enterprise 6.2 provides out-of-the-box support for monitoring Tesla® M60 GPU accelerator from NVIDIA®.
    - From v6.2, eG Enterprise provides detailed diagnosis for the *Compute process* measure reported by the **Xen Grid GPUs** and **Grid GPUs – ESX** tests, if the hypervisors are monitored in an agentless manner.
- **Measuring resource usage by delivery groups configured on a Citrix Delivery Controller:** A delivery group is a collection of machines selected from one or more machine catalogs. The delivery group specifies which users can use those machines, and the applications available to those users. Version 6.2 of eG Enterprise makes it possible to review resource usage (CPU, memory, disk IOPS) and HDX bandwidth usage by delivery groups. Using this information, administrators can quickly identify the most resource consuming delivery groups and the ones that need additional capacity.
- **Identifying sub-optimal Citrix Provisioning services configurations:** In a PVS server, the Threads Per Port configuration governs the quality of communication between the Stream service and target devices. This setting indicates the number of threads in the thread pool that service UDP packets received on a given UDP port. Larger number of threads allow more target device requests to be processed simultaneously, but it consumes more system resources. If there are more threads, but less system resources, request processing is bound to suffer, as the excess threads will simply

block waiting for I/O. This is why, the optimal configuration is to have more cores and less threads - i.e., the number of threads per port should be lesser than the number of cores. A sub-optimal configuration would be to have less cores and more threads per port. In version 6.2, eG Enterprise quickly indicates to administrators whether a threads per port configuration is optimal or sub-optimal.

- **Citrix NetScaler Insight integration improvements:** With version 6.2, eG Enterprise leverages its tight integration with Citrix NetScaler Web Insight to automatically discover the media types and web content types accessed by users. For each type of media and web content that is auto-discovered, eG then reports the total number of requests received for each of that media/web content type, and the bandwidth used when processing the requests. This reveals the most requested media and content types, and the ones that consume bandwidth excessively. Additionally, eG Enterprise also monitors cache performance by capitalizing on NetScaler Web Insight's ability to track and analyze the traffic flowing through NetScaler VPX/MPX to cache servers and origin servers. The count of cache hits and misses are reported, and the bandwidth savings owing to caching are also highlighted. Also, in this version, the count of user sessions and applications launched via each NetScaler appliance is reported, the load on each appliance measured, and the overloaded appliances pinpointed.

  When monitoring ICA sessions on a NetScaler appliance, this version additionally reports the count of client and server side retransmits experienced by each ICA session, thus pointing to the user whose requests suffered the maximum retransmits. Besides the above, the client and server-side latency of L7 packets flowing through the NetScaler appliance is also reported. If a user complains of slowness when accessing a virtual desktop through NetScaler, these latency measures will tell you whether the L7 packet flow is what is causing the slowness.

- **Monitoring Citrix NetScaler authentication errors using Syslogs:** By parsing NetScaler syslog files, the eG Enterprise is now capable of capturing and reporting authentication errors. Administrators can also drill down from this error count to understand the nature of the errors and the reason why they occurred.

1.1.2 Virtualization Monitoring Enhancements

1.1.2.1 Monitoring Nutanix Acropolis Hypervisor

Nutanix hyper-converged infrastructure (HCI) is being widely adopted by businesses to cut down CAPEX and OPEX costs and increase the flexibility to scale as needed by the business. While hyper-convergence offers several benefits such as reducing infrastructure footprint and simplifying operations, performance monitoring is an inherent challenge. IT teams need visibility into every layer of the closely-coupled HCI architecture (including storage, compute, network and virtualization). The business-critical nature of server and desktop workloads that Nutanix HCI supports makes it imperative for IT operations to monitor key performance metrics, identify and triage performance anomalies quickly, and ensure smooth operations of business services.

With eG Enterprise, you get comprehensive In-N-Out monitoring of your Nutanix enterprise cloud platform. Through native integration with Nutanix Prism via REST APIs, eG Enterprise offers visibility into the performance of the Nutanix Acropolis Hypervisor (AHV), the controller VMs (CVMs) on each hypervisor, virtual machine status and resource usage levels, storage disks, and network infrastructure.

1.1.2.2 VMware Horizon Monitoring Enhancements

eG Enterprise v6.2 adds several enhancements for VMware Horizon monitoring:

- **Support for VMware Horizon 7 and Monitoring of Blast sessions:** The BLAST Session protocol allows files on a remote computer to be manipulated - i.e., to be deleted, renamed, or printed on the remote. Owing to the improved remote file management capabilities that Blast offers,

VMware now supports the Blast protocol too for user communication with virtual desktops. Because of this, there is a need to know which users have connected to virtual desktops via Blast and how the experience of each user is. This is why, in version 6.2, eG auto-discovers the users who are connected to their virtual desktops via the Blast protocol, and measures the bandwidth usage, frames processing ability, throughput, and time taken to establish each user's session. In the process, bandwidth-hungry, latent sessions can be accurately isolated. These metrics are now also reported for users connected to their VMware RDS hosts via the Blast protocol.

- **Dynamic discovery of Blast/PCoIP sessions:** eG Enterprise now auto-discovers user sessions to VMware Horizon Connection server (when a VM/virtual desktop hosted on the server is brokered by the VMware vSphere ESX server) and whether these sessions use PCoIP or Blast protocols. The corresponding metrics are automatically tracked and reported for each protocol, without requiring any specific configuration by administrators.
- **Capturing errors in desktop launches, provisioning, and replication:** In version 6.2, eG polls the VMware View Events database at periodic intervals to collect the count and details of errors that occurred when launching and provisioning desktops, and failures that occurred during replication. The details of these errors enable administrators to identify the desktops that were impacted and the users who experienced the failure. Using the details of the replication failure, administrators can clearly understand where the failure occurred and the reason for the same, and can troubleshoot accordingly.
- **Tracking application launch times on VMware Horizon RDS hosts:** Version 6.2 auto-discovers applications that are launched on a VMware RDS server and reports the average time taken to launch each application. This way, the monitor accurately pinpoints applications that are having trouble launching.
- **Application/Service crash on a VM can be detected:** With eG Enterprise v6.2, users can easily identify the applications hosted on the VMs and the system services of the VMs that crashed unexpectedly. Apart from the applications/services hosted on the VMs that crashed, users will also be alerted to the erroneous applications/services on each VM and the applications/services that hanged on each VM frequently. This way, eG can alert users to the VM on which the applications/services were error-prone the most. Similarly, users can also identify the applications hosted on the Windows servers and the system services of the Windows servers that crashed unexpectedly.
- **Support for 'Total' descriptor:** Earlier, the **Horizon Application Launch** and the **Horizon Desktop Launch** test associated with the VMware Horizon Connection Server will not appear in the eG layer model if no applications/desktops were launched during a measurement period. To avoid the disappearance of the tests from the eG layer model, starting with v6.2, the **Horizon Application Launch** and the **Horizon Desktop Launch** tests would report metrics for an additional 'Total' descriptor.
- **New monitoring capabilities:** From v6.2, eG Enterprise adds monitoring for VMware Horizon Security Server and the VMware Identity Manager.

1.1.2.3 Microsoft Hyper-V Monitoring Enhancements

Microsoft Hyper-V is often deployed in production in a cluster-mode. In such infrastructures, cluster shared volumes are used to provide a shared disk that is accessible for read and write operations by all nodes in a Windows server failover cluster. Performance bottlenecks in the storage layer can affect the performance of all VMs and applications running on the Hyper-V servers. Hence, monitoring I/O activity on the cluster shared volumes is critically important.

eG Enterprise v6.2 adds monitoring of the direct and redirected I/O (read and write) operations on each cluster shared volume (CSV) and the throughput and I/O processing speed of each cluster volume.

Since CSV uses SMB to redirect traffic to the co-ordinating node in the cluster, eG Enterprise also measures

the I/O operations, throughput, latency, and I/O queue length of each SMB server share and SMB client share. Additionally, the volume cache mapped to each CSV is monitored and the rate at which data is read from the cache is reported to indicate cache slowness (if any). The I/O performance of the volume manager and logical CSV associated with each CSV is also measured periodically, and administrators proactively alerted to probable processing bottlenecks.

Also, eG Enterprise now presents detailed diagnosis of VMs and processes that are having high IOPS and keeping the hypervisor disk busy. In the Outside View of VMs, the number of errors encountered by each VM disk and the count of flush operations performed are reported. Monitoring of network adapters on the Hyper-V servers has also been enhanced. These enhancements provide proactive alerting of Hyper-V issues and diagnosis to help quickly identify the cause of problems.

1.1.3 New Capabilities and Enhancements for Monitoring Web and Java Applications

1.1.3.1 Real User Monitoring Enhancements

The toughest performance issues for IT administrators to deal with are the ones where users complain that their application is slow. To troubleshoot such complaints, administrators need visibility into the real user experience that users are seeing.

eG Enterprise includes synthetic monitoring capability to emulate a specific request to an application and reports availability and performance. Synthetic monitoring checks application performance even when there is no load on an application and therefore, can highlight performance issues in advance. However, synthetic monitoring is based on emulating a fixed sequence of requests to the application. So it does not represent the actual workload.

This is where eG Enterprise's real user monitoring (eG RUM) capability comes in. This technology relies on injecting a small Javascript code snippet into every page of a web application. When the client browser executes this snippet, performance metrics relating to the request and its response are sent back to the monitoring system. By tracking every single request and response for a web application, eG RUM detects requests that were slow to be responded to. Version 6.2 includes a simplified drilldown into each slow request to help administrators identify the cause of slowness – whether it is the client, the network, the content or the server-side processing. This information helps administrators determine the next steps for resolving slowness. Besides highlighting the source of slowness, eG RUM also alerts administrators to JavaScript errors that occur during request processing. This enables quick and effective troubleshooting.

1.1.3.2 New Java Business Transaction Monitoring Capability

If the eG RUM highlights slowness on the server-side, administrators will need to determine if the slowness is caused by the application code, by inefficient SQL and third party API calls or by infrastructure issues (e.g.., virtualization platform overload, storage bottlenecks, infrastructure service slowness such as Active Directory issues and so on). To determine if application slowness is caused by the application code or by inefficient SQL queries or third party API calls, eG Enterprise version 6.2 introduces Java **Business Transaction Monitoring** (BTM).

Based on byte-code instrumentation of the Java code, eG BTM employs A 'tag-and-follow' technique to trace the complete path of each business transaction. When doing so, it auto-discovers the applications the transaction travels through, and automatically ascertains what remote service calls were made by the transaction when communicating with the servers. This knowledge is then translated into an easy-to-understand cross-application transaction flow in the eG monitoring console.

Once the transaction path is determined, the eG BTM measures the total response time of each transaction, the time spent by the transaction on each application server, and the time taken for processing every external

service call (including SQL queries).

Using these analytics, the eG BTM precisely pinpoints the slow, stalled, and failed transactions to the web application. Intuitive icons and color-codes used in the graphical transaction flow enables administrators to accurately isolate where – i.e., on which application server – the transaction was bottlenecked and what caused the bottleneck – an inefficient or errored query to the database? A slow HTTP/S call to another application server? a time-consuming POJO / JMX method execution? a slow SAP JCO/async call? By quickly leading administrators to the source of transaction failures and delays, the eG BTM facilitates rapid problem resolution, which in turn results in the low downtime of and high user satisfaction with the web application.

eG BTM is effective when application slowness is caused by code level issues. When an infrastructure-level problem is responsible for application slowness, eG Enterprise's unified monitoring capabilities and automated root-cause diagnosis are necessary.

1.1.4 Database Monitoring Enhancements

Following are the enhancements made in v6.2 with respect to eG Enterprise's capability to monitor the databases:

- **Monitoring Progress database servers:** Progress RDBMS® is an open, flexible, scalable, and highly available database solution, used by many enterprises worldwide for efficient data storage and easy retrieval purposes. eG Enterprise v6.2 provides in-depth insights into the health and overall performance of Progress database servers. The user session load on the database server, the locking/latching activity of each user, and the speed with which the database server processes queries issued by the users is measured, and anomalies brought to light.
- **Monitoring SQL mirroring:** Database mirroring involves redoing every insert, update, and delete operation that occurs on the principal database onto the mirror database as quickly as possible, as any delay can cause data in the principal and the mirror databases to go out of sync, thus resulting in significant data loss during a failover. To avoid this, eG Enterprise v6.2 tracks the transactions started on a SQL server instance, measure the rate at which transaction log data is sent to the mirror server for synchronization, and reports the time taken by the mirror server to apply the data, so that bottlenecks in database mirroring can be proactively detected and the source of the bottleneck isolated.
- **Enhanced database backup details monitoring:** Previously, the **SQL Backup Details** test did not provide the time at which the backup started and the time at which the backup ended. From version 6.2, the detailed diagnosis is reported for the **Backup type** measure which includes the start time of the backup, end time of the backup, the user who started the backup and the server on which the backup has started. This way, administrators can keep track of all the backups happening in the monitored environment.
- **Configuration tests for IBM DB2 UDB servers:** eG Enterprise Suite version 6.2 is capable of reporting configuration metrics related to the agent pool, worker threads, client connections on each node, manager settings of the DB2 server, fenced processes, SSL security, the build, service number of the instance and the workload.
- **Detailed insights into the status of Oracle instances:** From version 6.2, the detailed diagnosis of the *Availability* measure reported by the **Oracle Instance Status** test provides the reason for the Oracle instance unavailability.

1.1.5 Network Monitoring Enhancements

The following enhancements are made to the eG Enterprise's network monitoring capabilities in v6.2:

- **Monitoring F5 Analytics:** Analytics (also called Application Visibility and Reporting) is a module on the BIG-IP® system that lets you analyze performance of web applications. In version 6.2, eG

integrates with the Analytics module to offer users the same deep visibility into web application performance that the Analytics module offers. Metrics on transaction processing, latencies, throughput are now available for applications, virtual servers, pool members, and URLs. Additional statistics about application traffic running through the BIG-IP system are also reported. This way, eG Enterprise is a go-to solution for all the F5 monitoring needs of an infrastructure.

- **Enhanced monitoring of F5 Local Traffic Manager (LTM):** In version 6.2, the eG agent additionally monitors the resource usage of, the HTTP request load, and network health of the F5 Traffic Management Module (TMM). Also, F5 virtual servers experiencing CPU contentions and slowness in request processing and connection handling can be identified. Moreover, TCP and UDP connections to the F5 LTM are now monitored and connection failures and latencies are highlighted.
- **Support for the Cisco IP SLAs:** Cisco IP SLA is a part of Cisco IOS software that allows administrators to analyze IP service levels for IP applications and services by using active traffic monitoring—the generation of traffic in a continuous, reliable, and predictable manner—for measuring network performance. Cisco IOS IP SLAs can perform network assessments, verify quality of service (QoS), ease the deployment of new services, and assist with network troubleshooting. eG agents can now report on the status of the monitoring operations performed by an IP SLA, and see detailed metrics reported by the IP SLA for each operation and operation type. This includes metrics such as the round trip time of each operation, packet loss, average latency, count of delayed packets, and packets out of sequence. With this integration, eG Enterprise has deeper network visibility.
- **Specialized monitoring for Cisco Nexus switches and Dell M series switches**: The switch hardware can now be monitored. The state of power supply units, voltage sensors, fans, etc., can is tracked. CPU, memory and NVRAM are monitored to determine utilization levels. Monitoring of network bandwidth through each interface of the switches is also supported.
- **Monitoring of Palo Alto Firewalls** includes reporting on the HA status of the firewall, tracking of session load on the firewall, utilization of the GlobalProtect gateways, and auto-discovery of virtual systems protected by the firewall.
- **Specialized monitoring for Hewlett-Packard Routers** including hardware monitoring to determine if the router is handling more power than it should and whether there are excessive voltage fluctuations, CPU and memory monitoring to determine utilization levels of the router and monitoring of network traffic through tunnels.
- **Monitoring the Bluecoat SG Proxy:** Blue Coat ProxySG proxy appliance securely isolates general-purpose servers from direct access, acting as an intermediary between web applications and the external clients who attempt to access them. To ensure clients uninterrupted access to critical web applications, version 6.2 of eG Enterprise offers complete monitoring support to the Bluecoat ProxySG. Using the metrics collected, idle connections, bottlenecks in HTTP connection processing, latencies in ICAP transactions between the Proxy and the ICAP server, resource contentions, and hardware failures on the proxy can be detected.
- **Monitoring RSA Authentication Manager:** RSA Authentication Manager is a multi-factor authentication solution that verifies authentication requests and centrally administers authentication policies for enterprise networks. eG Enterprise v6.2 performs in-depth monitoring of the authentication manager, and in the process, points to delays in the processing of service authentication requests, report ineffective cache usage, and captures authentication failures.
- **Monitoring Hitachi Compute Blade:** Hitachi Compute Blade 500 is an enterprise-class blade server platform. To ensure the high uptime of the blade and the virtualization benefits it provides, eG Enterprise v6.2 periodically monitors the health, power supply status, current voltage and power consumption of the server and each chassis on the server, the operational status of the memory and fan modules, and the colors emitted by the LED switches, and promptly reports abnormalities.

- **Monitoring HP ESKM:** The HP-Enterprise Secure Key Manager (ESKM) is a complete key management solution to secure server, storage and cloud against losses, mishandling, and administrative and operational attacks, with KMIP standardized interoperability and HPE Secure Encryption. eG Enterprise v6.2 provides a complete monitoring model of the ESKM. By periodically monitoring the CPU and memory utilization of the HP ESKM, it pinpoints abnormal resource utilization, if any. Also, the request processing capability of the HP ESKM is analyzed in–depth to figure out how well the requests for security keys have been processed. In the process, delays in request processing can be detected and rectified before users are subjected to authentication failures with the servers/cloud that they are trying to access.
- **Monitoring Ruckus Zone Director:** The Ruckus Zone Director is a centrally managed Smart Wireless LAN (WLAN) system developed specifically for small-to-medium enterprises (SMEs) that require a robust and secure WLAN that can be easily deployed, centrally managed and automatically tuned. eG Enterprise v6.2 performs in-depth monitoring of the Ruckus Zone Director and pinpoints the resource utilization of the Ruckus Zone Director and the unauthorized client devices on the Zone director. In addition, by monitoring the Ruckus Zone Director, administrators can not only figure out the overloaded Ethernet, the discrepancies detected in the data transmission and reception in the Ruckus Zone Director, user-wise data transmission and reception but also figure out the uptime of the Ruckus Zone Director, the data transmission/reception statistics of the Access points.
- **Support for Context in SNMP v3 Polling:** An SNMP context name or "context" in short, is a collection of management information accessible to an SNMP entity. An item of management information may exist in more than one context and an SNMP entity potentially has access to many contexts. A user may be associated with many contexts i.e., different views and the user should be able to poll the MIBs using all the contexts for accessing the relevant information from the SNMP MIBs. In earlier versions, if the username provided for monitoring the SNMP tests using SNMP v3 was associated with multiple contexts, the eG agent was not able to poll the SNMP MIBs and collect the required metrics. Starting with v6.2, you can configure SNMP tests with a CONTEXT to enable the eG agent to poll the SNMP MIBs and gather performance metrics.

1.1.6 SAP Monitoring Enhancements

The following enhancements are made to the eG Enterprise's SAP Monitoring capabilities in v6.2:

- **SAP TREX monitoring:** eG Enterprise v6.2 is capable of monitoring TREX (Text Retrieval and information Extraction) – the Search and Classification Engine of SAP. Version 6.2 of the eG Enterprise Suite performs in-depth monitoring of the SAP TREX and in the process, reports whether the TREX web server is running, pinpoints the number of indexes that were stored from a location other than the storage base path, corrupted indices in the Fast Search Infrastructure, captures time delay in servicing requests, tracks the memory utilization of the TREX server, pinpoints the threads/queues that are idle, running, sleeping, suspended etc., reports the status of each index, and also reports the workload and the utilization of the global dictionary.
- **Enhancements to SAP WAS monitoring:** Version 6.2 of the eG Monitor for SAP web application server monitors the current workload on the server and points administrators to the type of sessions that is contributing the most to the workload. The locking activity on the server is monitored. The workload of the ICM is measured and sizing inadequacies of the ICM is revealed. HTTP responses are tracked and error responses are reported. The status of the central services processes is monitored and abnormalities revealed.

1.1.7 Storage Monitoring Enhancements

The following enhancements are made to the eG Enterpirse's Storage Monitoring capabilities in v6.2:

- **Monitoring support for Hitachi VSP and Hitachi VSP Gx00 Series:** From version 6.2, eG Enterprise is capable of monitoring **Hitachi VSP** and **Hitachi VSP Gx00 Series** storage devices.

Administrators can monitor the availability, hardware health, I/O processing ability, and cache usage of the storage device and promptly report abnormalities.

- **Support for monitoring redundant controller on EMC VNX storage servers:** In some environments, dual controllers are deployed for the EMC VNX storage servers. Earlier, when the EMC VNX storage containing dual controllers were monitored, the eG agent could not fetch the metrics if the controller for which the IP has been specified while configuring the tests was down. To avoid such failures, from v6.2, users are required to input the IPs of both the controllers while the tests are being configured. If there are two controllers – *SP A* and *SP B* in the monitored environment, then the IP address of *SP A* can be specified in the **CONTROLLER IP** text box and the IP address of *SP B* can be specified in the **ADDITIONAL CONTROLLER IP** text box.
- **Enhancement to NetApp Unified Storage monitoring:** Version 6.2 of the eG Monitor for NetApp Unified storage server provides users with the option to exclude/include the volumes and aggregates from the scope of monitoring while the **Busy Snapshots** test was being configured. A comma-separated list of volumes can be provided in the **INCLUDE VOLUMES** and **EXCLUDE VOLUMES** parameters to include and exclude the volumes from the scope of monitoring. Likewise, a comma-separated list of aggregates can also be provided in the **INCLUDE AGGREGATES** and **EXCLUDE AGRREGATES** respectively.
- **Configuration tests for Dell PowerEdge VRTX:** Version 6.2 of the eG Enterprise suite is capable of reporting configuration metrics related to the Dell PowerEdge VRTX. Using these configuration tests, administrators can identify the type and name of the RAC, the chassis model, the version of the RAC, the model of the system, the name of the vendor etc.

1.1.8 Other Monitoring Enhancements

The following enhancements are made to the eG Enterprise's Monitoring capabilities in v6.2:

- **Monitoring the WildFly application server:** The WildFly is a widely used Java application server that provides a J2EE certified platform for developing and deploying enterprise Java applications, web applications, and portals. Version 6.2 of eG Enterprise provides deep insights into the availability, accessibility, and processing ability of the WildFly application server, helps proactively detect connection latencies and processing bottlenecks, and even points to the exact servlet that is obstructing speedy processing of requests.
- **Monitoring the eG Agent:** Version 6.2 provides a specialized monitoring model for the eG Agent component, and points to deficiencies in agent operations. Using this model, you can quickly detect breaks in manager-agent communication, be forewarned of overload conditions, spot inconsistencies in JVM heap sizing of the agent, and capture agent-related errors/warnings from the error logs.
- **Monitoring support for new platforms:** From version 6.2, eG Enterprise provides monitoring support to Windows 2016 (Nano Server and Containers are not supported yet), Microsoft SQL Server 2016, and Exchange 2016. All monitoring capabilities of the previous versions are available to this version as well.
- **Enhancements to Active Directory monitoring:** In version 6.2, the eG Monitor for Active Director (AD) servers tracks changes to security groups, firewall policies, and registry settings, alerts administrators when changes are made, and also provides details of the changes made and who made them; this enables administrators to analyze the impact of the changes on AD server performance. In addition, eG Enterprise also captures new application/packages/updates installed on the AD server, storage masses newly installed on the server, and the number of times security logs were cleared along with details of who cleared them, and alerts administrators to these changes, so that unauthorized/unwanted changes can be detected. Moreover, in this version, eG Enterprise also captures and reports replication failure events logged in event logs and alerts administrators when attempts to update group and user policies and/or to apply a group policy to

the AD server fail.

- **Enhancements to SharePoint monitoring:** Earlier, if each SharePoint server in a farm was monitored, the farm related metrics (e.g., metrics on farm status, site availability, site collections, usage analytics, etc.) were collected and stored separately for each monitored server in the eG database. Besides cluttering the database, this was also increasing processing overheads. To avoid both, all tests mapped to the SharePoint server now support an additional **FETCH FARM MEASURES** parameter. By default, this parameter is configured to collect farm-related metrics from only that server that is provisioned as a *Central Administration* site, and not from the member server being monitored. To enable metrics collection from the Central Administration site, the eG agent should be vested with *Domain user* privileges.
- **Receiving Syslog messages in eG Enterprise:** With eG Enterprise v6.2, any eG agent on Windows can be configured to receive Syslog messages from network devices/applications. These messages can be analyzed and displayed in the eG Enterprise console.
- **Enhancements to BizTalk Server 2010 monitoring:** Version 6.2 of eG Enterprise tracks the total number of receive ports on a BizTalk server and the receive ports that were disabled recently. This version also highlights the count of the send ports, the send ports that were stopped and the send ports that were unelisted. Using these statistics, administrators can identify the ports on which the load is high and capacitate the future load on the BizTalk server.
- **Enhancements to monitoring the eG Manager:** Earlier, while monitoring the eG Manager, the status of the eG agents communicating with the eG Manager would be reported irrespective of whether the eG agents are stopped or are not running. With eG Enterprise version 6.2, while monitoring the eG manager, alerts can be suppressed for the eG agents that are currently in the *Not Running* state. To achieve this, while configuring the eG Agents test, in the **EXCLUDE AGENTS** text box, specify a comma-separated list of *Not Running* eG agents for which alerts are to be suppressed.
- **Change in the unit of measurement of uptime:** Earlier, the measurement unit of the *Total Uptime* measure reported by all the Uptime related tests was *Seconds*. This measure is now displayed in the Year, Month, Days, Hours, Minutes and Seconds format.
- **Support for SNMP traps associated with multiple OIDs:** Where the eG agent is configured as an SNMP trap receiver, the Application Traps test and the Network Traps test were earlier unable to capture trap events that were associated with multiple OIDs. The eG agent is now able to capture all the traps, provided all the OIDs corresponding to that trap event are configured against the **OIDVALUE** parameter while configuring the Application Traps test and the Network Traps test.

1.2 Improved Analytics

1.2.1 Introducing Performance Ratings

Typically, in order to know the overall performance of a server, IT administrators should keep track of all metrics reported by eG Enterprise for that server. An executive on the other hand, may want to quickly determine server status, without having to look through hundreds of metrics. This is where performance ratings introduced in v6.2 help.

Administrators can define a performance rating as an aggregate metric that is based on a number of other metrics collected and reported by an eG Enterprise agent. For instance, the user experience of a Citrix user can be defined based on the logon time of the user, the screen refresh latency of the user, the profile size of that user and the network latency seen by that user. By looking at a single metric that takes a percentage value between 0 and 100, an executive can easily determine if that user is happy or dissatisfied. Likewise, a stress rating for a server can be based on its CPU utilization, memory utilization, disk space available and disk

activity level.

A Performance Rating test helps you to:

- quantify the overall performance of an entity using a sub-set of metrics that eG reports for that entity;
- Helps ascertain, at a glance, whether/not performance of that entity is within desired levels
- Receive a single alert when the performance rating dips, instead of a flood of alarms, thereby enabling you to rapidly detect performance degradations;
- Instantly pinpoint which parameter/measure caused the overall performance of the entity to slide
- Highlight the key performance indicator of a server, user, service on dashboards;

There are 3 out-of-the-box performance rating tests available in eG Enterprise 6.2.

1. Citrix User Experience Rating (applicable for Citrix XenApp 7.x servers)
2. Citrix XenApp User Experience Rating (applicable for Citrix XenApp 4/5/6.x servers)
3. VDI User Experience Rating (applicable for virtual desktop environments)

Administrators can customize these tests or easily build new ones to meet their desired criteria.

1.2.2 Improved Analysis with Conditional Aggregation

Aggregate metrics in eG Enterprise help administrators get a farm-wide view (rather than a server by server view of the target infrastructure). Previously, eG Enterprise allowed users to use only mathematical functions like Avg, Sum, Min, Max, etc., for computing the aggregate measure values for new aggregate tests. However, these aggregation functions can hide problem conditions. For instance, say you create an aggregate test to report the average CPU usage of a Windows server farm comprising of 4 Windows servers. If 3 out of the 4 servers register a CPU usage of 40% each, and one server registers 80%, then the average CPU usage for that farm will be 50%. This seemingly low aggregated CPU usage value does not reveal the fact that a single Windows server is seeing more than 80% of CPU resources.

To allow administrators greater flexibility and visibility into the health of the target infrastructure, eG Enterprise v6.2 introduces the concept of Conditional Aggregation. This is most useful when administrators only want to know the count or percentage of components that fulfil a defined condition or conditions. For instance, administrators may just want to know how many Windows servers are consuming over 80% of the CPU resources. Conditions are also useful when administrators want aggregate measures to report status values and not aggregated measure values; this will help the administrators determine how the fulfilment of a condition has impacted the health of the aggregate component. For example, an administrator may want the CPU usage measure to report the value Critical, if over 50% of the components in the aggregate are consuming over 80% of their individual CPU resources. The newly introduced conditional aggregation capability helps in this case.

1.3 Management Console Enhancements

1.3.1 Admin Interface

Several enhancements in the eG administrative interface have been introduced in version 6.2 to improve and enhance the usability of the monitoring solution.

- **Revamp of zone, service, segment, and group configuration:** Previously, eG Enterprise imposed many restrictions on how components in an infrastructure can be grouped. For instance,

once a component is added to a zone, the same component cannot be added to any other zone. Likewise, if a component is added to a zone, then to create a segment using that component, the segment should also belong to the same zone.

It has been observed that different users use these groupings in different ways. In some cases, zones are used to segregate monitored infrastructures. In other cases, this concept is used to group components for reporting. To cater to these diverse requirements, eG Enterprise v6.2 avoids restrictions in zone, segment, service and group configurations. Administrators can now add a component to more than one zone. Zone components will now continue to be available for segment/service/group creation; you no longer have to add the segment/service/group to the zone prior to using the zone components.

- **Configuring default descriptor thresholds:** Global threshold tests in eG Enterprise have threshold settings that are the same across all components/servers monitored (i.e., they cannot be set differently for different component/servers). Prior to v6.2, the thresholds also had to be the same for all descriptors of this test (e.g., for all processors of a server). Version 6.2 allows for the threshold settings to be set differently for different descriptors even for global threshold tests. This capability reduces the number of false alerts that the monitoring system can generate. For example, the inside view of a VM reports the CPU usage per processor and an overall summary value. With this new capability, thresholds can be disabled for all processors of a VM and only the summary value can be set to generate alerts – this way an administrator is alerted only if the VM as a whole is experiencing high CPU utilization.
- **Changes to User Experience Dashboard settings:** In version 6.2, the eG administrative interface has been enhanced to allow the addition, modification, and deletion of measures displayed in the User Experience Dashboard. You can also define the maximum number of records to be displayed in the dashboard by default and the refresh frequency of the dashboard.
- **Export/Import of custom components and tests:** In version 6.2, the export/import configuration capability of the eG manager has been extended to user-defined component types and tests. In other words, the component types and tests that were configured using the Integration console module of eG Enterprise can now be exported from one eG manager and imported into other eG managers of a multi-manager environment.
- **Remote agent – vSphere/ESX hosts mapping in manager discovery:** Starting with eG Enterprise v6.2, the remote agents assigned to a vCenter can be viewed while the vSphere/ESX hosts are discovered. When **vSphere/ESX HOSTS** option is chosen from the **Choose a virtual platform to discover** and the **View remote agent mapping** option is chosen from **What would you like to perform?** in the **MANAGER DISCOVERY - VIRTUAL PLATFORM SETTINGS** page, all the vCenters are listed along with the count of the remote agents and the name of the remote agents. Further drilling down each vCenter, the component associated with each remote agent is listed. This way, administrators can view the remote agents that are currently monitoring the discovered vSphere/ESX hosts with ease!
- **Auto-discovering Citrix Storefront servers via the Citrix NetScaler:** Starting with eG Enterprise v6.2, Citrix Storefront hosts can be discovered using the Citrix NetScalers managed in the target environment.
- **PDF/CSV support for cleanup frequencies:** Earlier, you could not save the cleanup frequencies that were configured for detailed diagnosis data reported by specific tests using the **DATA MANAGEMENT - DETAILED DIAGNOSIS DATA PURGE PERIODS** page. From version 6.2, you can save the cleanup frequencies as **PDF/CSV** and can even print the cleanup frequencies.
- **Show/hide the list of unconfigured tests during signout:** Prior to version 6.2, whenever users tried to logout of the eG administrative interface, the **LIST OF UNCONFIGURED TESTS** page appeared by default. This default setting can be overridden in v6.2, so that administrators who find this list distracting can hide it from the eG administrative interface. A new flag **ShowUnconfigTestsOnSignout** has been introduced in the **eg_services.ini** file (in the

EG_INSTALL_DIR>\manager\config directory) to optionally hide this list. If this flag is set to **No**, then the **LIST OF UNCONFIGURED TESTS** page will not appear.

- **Enhancements to building configuration tests using Integration Console:** Earlier, configuration tests had to be built using the Java API supported by the eG Integration Console. From v6.2, configuration tests can be built using other interfaces as well - i.e., Script/Batch, SQL query, Perfmon, SNMP and JMX.

1.3.2 Monitor Interface

Following are the list of enhancements in v6.2 that have been incorporated in the eG monitor interface:

- **User Experience Dashboard enhancements:** In version 6.2, the **User Experience Dashboard** displays the login time, duration, and idle time of each user who is logged into a Citrix XenApp / Microsoft RDS / VDI server. Administrators therefore can quickly identify the users who have been idle for an unusually long time. Also, the dashboard now allows you to filter user logins on the basis of a chosen zone. This way, you can analyze the user experience of only those users who are logged into VDI/XenApp/Terminal servers that are part of a chosen zone.

  If the eG manager integrates with an Active Directory server, then optionally, you can configure the dashboard to display a list of AD groups to choose from. By selecting a particular AD group, you can have the dashboard display the user experience metrics of only those currently logged in users who are part of the chosen group. If the eG manager integrates with an AD server, the location of the users can be retrieved and displayed in the User Experience dashboard. This dashboard can now be exported as a PDF/CSV file.

- **Support for Key Performance metrics view from eG Monitor Home page:** Earlier, the **COMPONENTS** page listed the components managed in the monitored environment along with the state of the components. From version 6.2, this page has been enhanced to show the key performance metrics of each component belonging to the chosen **Component Type**. A new **Metrics View** icon has been introduced in this page for including this capability. This icon which when clicked will provide a page where all the key performance metrics of the components are listed. Additionally, users can also configure the metrics that they consider to be important in this page. By default, the **COMPONENTS** page which when clicked will list the key performance metrics of the chosen component type. If users want to set the list of components managed in the monitored environment as default when the **COMPONENTS** page appears, then they can do so by setting the **ListView** flag under the **[MONITOR_DASHBOARD]** section of the **eg_ui.ini** file to **Yes**.

- **Single-click access to list of network devices and their state:** With eG Enterprise version 6.2, the network devices configured for monitoring can be viewed with a single click of the button from the eG monitoring console. To do so, just click the Network Devices option available under the Hosts/Applications tile. The **NETWORK DEVICES** page will appear listing all the network elements managed in the monitored environment. The above-mentioned *Metrics View* capability has been extended to this page too.

- **Enabling/Disabling SAP Alerts menu from the eG monitor interface:** Earlier, the **SAP Alerts** menu appeared in the **Alarms** tile of the eG monitor interface even in environments where SAP servers were not monitored. From v6.2, this menu is disabled by default in the eG monitor interface. If you wish to enable the **SAP Alerts** menu, then you can do so by setting the **Enable_SAP_Menu** flag in the **[SAP]** section of the **eg_ui.ini** file (in the <**EG_INSTALL_DIR>\manager\config** directory) to **True**.

- **Component search made easy:** Earlier, when multiple components of a component type were monitored, searching for a component required scrolling down the **Component Name** list box in the eG layer model page of the monitor interface. Starting with version 6.2, a search capability has been provided to the **Component Name** list box where the name of the component can be typed and the list will populate only the result set of the search.

1.3.3 Reporter enhancements

Along with a few new reports, several new enhancements have been incorporated in v6.2.

- **VM Tools Report:** Citrix XenServer and VMware vSphere provide tools that must be installed on VMs to improve the functionality of the VMs – for memory management, I/O handling and so on. If the VM tools are not installed on a VM or have not been kept updated, the VMs may not be performing optimally. The VM tools report helps administrator identify VMs on which the XenSever/vSphere Tools may not be installed or may not be updated.
- **Application Billing Report:** Virtualization enables enterprises to provide end-users with on-demand access to business-critical applications/services, and to even charge them a fee for the services so provided. Enterprises offering such pay-per-use services are often interested in auditing user activity on their virtualized environments, so that they can identify the applications used, assess the extent of usage per user, and can bill the users accordingly. In addition, administrators may also want to determine the resource footprint of a user when a particular application was accessed, so that users who consistently engage in resource-intensive activities can be identified and their usage policies fine-tuned accordingly. The Application Billing report addresses all these requirements. Using this report, administrators can determine which applications are accessed the most in a given timeline, by whom, for how long and how many times the application was accessed by a user. This information provides valuable inputs for billing.
- **NetScaler Virtual Server Uptime Report**: Uptime is a key measure of the general health and availability of the virtual servers configured on a Citrix NetScaler appliance. Periodic uptime values that the eG agent reports for target virtual servers can alert you to an unscheduled reboot that might have occurred recently. However, to figure out whether such a reboot was a one-off occurrence and can be ignored, or happens frequently and should be investigated, you need to analyze uptime historically. To enable such an analysis for critical virtual servers on a NetScaler appliance in an IT infrastructure, eG Enterprise provides the NetScaler Virtual Server Uptime report. The highly available/unavailable virtual servers can be instantly identified and the duration of their unavailability can be quickly determined using this report. Based on this analysis, administrators can isolate those virtual servers that suffered many unexpected reboots and those that experienced prolonged breaks in availability, and can mark those servers for deeper investigation.
- **Outbound Domain Details Report:** Administrators of an organization may often wish to know the domains to which most email messages are sent and the size of messages sent to each domain. The Outbound Domain Details report helps administrators in this regard. With the help of this report, administrators can identify the individual domains to which the mails were sent, the number of mails sent to each individual domain and the total size of the mails. Using this report, administrators can rapidly figure out if their users engaged in mail correspondence with legitimate domains only or if their mail activity is suspect - i.e., were many mails sent to domains that seem phony? is the mail size unusually large? This way, the report points to probable mail server abuse/hacking, based on which administrators can fine-tune firewall policies.
- **Active Sessions Report**: One of the key challenge in monitoring large virtualized environments is to keep track on the user sessions that are currently active on the servers of the environment. The **Active Sessions** report provided by the eG Enterprise helps administrators to figure out the maximum/minimum number of user sessions that were active and the average number of user sessions that were active on the servers. Using this report, administrators can clearly identify the workload behavior of the server in terms of active sessions and further plan the capacity of their environment accordingly.
- **Enhancement to User Session Details Report:** Earlier, the User Session Details report could be generated for one/all users who are part of Active Directory groups configured on an AD server. Where many AD groups existed, the user list was long, making user selection difficult. To provide eG users with a shorter user list to work with and ease user selection, this report now allows you to

pick the AD group to which the user of interest belongs. This populates the User list with the names of only those users who belong to the chosen group. With the list now displaying just a few users, picking a user becomes a breeze!

- **CSV support for all data reports:** Earlier, the data of comparison reports could alone be saved as CSV files. In this version however, CSV support has been extended to all the reports.
- **Excel support for Application Launch Report:** Previously, the data of an Application Launch report could be saved only as a CSV file. Now, this report can be generated in XLSX format too.
- **Scheduling report emailing on a specific day of the week:** Prior to version 6.2, it was not possible for the user to choose the days on which a report can be mailed to a specified recipient. A new **Day(s) of the Week** option has now been introduced in the **Mail** list box that appears when you schedule the report. Upon selecting this option, you can select the exact day(s) of the week on which you want the report to be printed/mailed, from the **Mail on** list.
- **Including real-time measures in System Capacity Analysis report:** Prior to version 6.2, the System Capacity Analysis report revealed only the *95th Percentile* and the *Avg* values for resource usage. In this version however, additionally, the value reported during the current measure period for each measure is also included in this report in a separate *Current* column. This enables administrators to compare the past and present resource usage levels and figure out whether resource usage has been consistently high or has experienced only sudden/infrequent surges. Based on these inferences, near-perfect capacity plans for the future can be drawn.
- **Hiding the applications that were not launched from the Application Activity Report:** Earlier, the Application Activity report was generated for all the applications pertaining to the chosen component irrespective of a particular application was launched or not in the chosen time period. Now, if you set the **ShowApplicationNotLaunchApps** flag in the **[MISC]** section of the **eg_report.ini** to *Yes*, then all the applications that were not launched in the chosen time period are ignored.
- **Sorting option in the Application Activity Report:** Earlier, all reports generated in the foreground could alone be sorted based on the columns in the report. But the **Application Activity** report when generated in the background and saved as a PDF did not have any sorting capability. From this version, to provide sorting capability to the **Application Activity** report saved as a PDF, a **Sort by** list has been included in the **More Options** pop up window. Selecting an option (**%Time in use** or **Number of Unique users**) from this list will sort the report when generated as PDF.
- **Rearranging the selection in Comparison Reports:** Earlier, users were not allowed to reorder their selection while generating **Comparison Reports**. Now, users are allowed to rearrange their selection with a simple drag and drop.

1.3.4 Command Line Interface Enhancements

From version 6.2, the eG CLI supports associating a group and zone to a component at a single shot while adding the component. Likewise, the group and zone association can be deleted while deleting a component.

1.4 Licensing Enhancements

In v6.2, following enhancements have been made to the eG Licensing:

- **Licensing simplification:** Aggregate components are used in eG Enterprise to provide farm-wide views of performance in eG Enterprise dashboards. Different organizations may want to view performance in different ways - some by type, some by geographies, and some by business unit. Previously, aggregate components could only be monitored using remote agents. Therefore, for every aggregate component that was added, a Premium Monitor license was required which was quite expensive from the user perspective. This limited the flexibility that eG Enterprise users had in creating and using aggregate components. With version 6.2, aggregate components are treated

in the same way as network devices. They are monitored using external agents and therefore, there is no need of an additional license for each aggregate component. Every deployment will probably require just a single additional external agent for performing aggregation., The limit on the number of aggregate components is determined by the processing capacity of the external agent. This change provides eG Enterprise users with great flexibility in configuring and using aggregate components in eG Enterprise dashboards.

Another licensing change is that implementing synthetic monitoring using client emulation no longer requires an add-on module for the eG manager – i.e., the eG manager supports client emulation out of the box. Additional external agents and record/replay agents (e.g., Itexis AppsMon) will still be needed for each location from where client emulation is set up.

- **Improved mail alerts for licensing violations:** Previously, if a named user license or concurrent license violation is detected in the past 14 days, then, eG will send a mail alert only at the 7th occurrence of the license violation and freeze the eG user interface thereon leaving less time for the users. From version 6.2, for every violation occurring in the past 14 days, mail alerts are sent to the users.
- **Easy identification of the number of concurrent user licenses consumed during last month:** Earlier, MSPs were finding it difficult to identify the number of concurrent licenses used during the previous month and bill them accordingly. Staring with v6.2, to ease the pain of the MSPs in billing, the day on which maximum number of concurrent user licenses were used during the last month and the maximum number of concurrent licenses used on that day are displayed in the **Total License usage** tab of the **LICENSE INFORMATION** page.

1.5 Scalability Improvements

Database handling has been optimized so repetitive actions (inserts, queries, etc.) happen faster. Our benchmark shows a 60-80% reduction in database operation time with this change. In turn, this will allow the eG manager to handle a larger number of agents reporting to it. Thread synchronization in the eG manager has been reduced thereby enabling it to be more responsive under high load. Handling of configuration files in the eG manager has also been optimized.

1.6 Bug Fixes and Optimizations for the eG Agent

1.6.1 Citrix Monitoring

- In older versions, the detailed diagnosis for the *Load evaluator index* measure of the **Server OS Machines** test (mapped to the Citrix Director and Citrix XA/XD Site 7.x components) reported zeros for many columns. This issue has been fixed.
- In prior versions, some columns of the detailed diagnosis for the Group policy processing duration measure reported by the **Citrix Session Start-up Details** test (mapped to Citrix XenApp 7.x component) reported zeros despite valid values available in the eG backend database. This issue has now been fixed.
- Prior to version 6.2, in XenServer environments, if VMs were migrated from a host to another, the tests belonging to the Inside View layer were reporting VM related metrics for the host that originally contained the VMs. This issue is now resolved.
- Earlier, the *Application enumeration* measure reported by the **Citrix XML Access** test for a Citrix XenApp 7.x server reported an incorrect value. This is no longer the case.
- Prior to version 6.2, the **User Logon Performance** test of the Citrix XA/XD Site 7.x and the Citrix Director 7.x components wrongly reported the value 0 for all measures except the *Average Logon Duration* measure. This issue is now fixed.

- Previously, the detailed diagnosis of the *Inactive vDisks* measure reported by the **PVS Sites** test for a Citrix Provisioning server component was showing the state of the vDisk instead of the name of the vDisk in the vDisk column. This issue is now resolved.
- In prior versions, the eG agent consumed abnormally high CPU when monitoring **Citrix Storefront** servers. The eG agent has now been optimized to address this issue.
- Prior to v6.2, the **Load Balancing Service Group Members** test did not report metrics for Citrix NetScaler v10.x. This has been fixed.
- Previously, the **Application Process Launches** test for Citrix XenApp 7.x server incorrectly reported the *Avg time to launch application* when the eG manager and the XenApp server were in different time zones. This issue is now resolved.
- Earlier, the **Application Process Launches** test did not list all the processes that were launched on the Citrix XenApp 7.x server. This issue is now fixed.
- In older versions, while the **Citrix XA Applications** and the **Citrix XA Users** tests of the Citrix XenApp 4/5/6.x component were configured for monitoring, the **APPS REDISCOVERED PERIOD** parameter was set to 15 minutes i.e., the published applications were discovered every 15 minutes. From version 6.2, this rediscovery period has been changed to 1440 by default to minimize discovery overheads.
- Earlier, in large environments with multiple domain controllers, when the Citrix Director 7.x/ Citrix XA/XD Site 7.x servers were monitored, the user authentication with the domain controller took a long time to complete if the default UDP port was used. This resulted in the tests timing out. To ensure that the user authentication with the domain controller is done at a faster pace, from v6.2, the user authentication is done via the TCP port, by default. In addition, the user authentication timeout and retries to a single domain controller has also been reduced. By default, the maximum number of retries to authenticate a user is 1 and the timeout for user authentication is 10000 (in milliseconds). To override these default settings, you can use the **kdc_timeout** and **kdc_max_retries** flags in the **[AGENT_SETTINGS]** section of the **eg_tests.ini** file.
- Prior to v6.2, in some environments, the **Citrix Users** test of the Citrix XenApp 7.x server did not report metrics when the **USE WMI** flag was set to **Yes**. This issue has now been fixed.
- Earlier, many errors were noticed in the Application Event log when the password specified during configuration of tests related to the Citrix Provisioning servers contained more than 16 characters. This issue is now fixed.

1.6.2 Virtualization Monitoring

- Prior to version 6.2, the **Browser Activity - VM** test was not reporting metrics while obtaining the inside view using the eG VM agent. This has been fixed.
- Previously, in VMware environments, if the name of an ESX user started with a special character, tests that reported user-wise statistics did not work. This issue has been fixed.
- Typically, *Has the ESX server been rebooted?* measure reported by the **Uptime – ESX** test is computed by comparing the previous uptime and the value reported during the current measurement period. If the value of the current measure period is lesser, then the eG Enterprise reports that the ESX server was rebooted. The ESX server periodically syncs its time with the Active Directory server. This caused the time of the ESX server to go back and forth. In older versions, if the ESX server time is behind that of the AD server, eG Enterprise incorrectly alerted that the ESX server was rebooted. To avoid such incorrect alerts, grace period has been provided for time synchronization with the Active Directory server. This grace period is set using the **ClockSyncTimeForEsxUptime** flag in the **eg_tests.ini** file. By default, this flag is set to **5 minutes**. Once the grace period is set, alert will not

be generated if the time f the ESX server lagged the time of the AD server. If this flag is set to -1, then the grace period will not be considered.

- In earlier versions, automatic discovery of application topologies took up to 6 hours to complete. The eG agent has been now optimized to report topology changes every hour.
- The detailed diagnosis of the *Compute processes* measure reported by the **GPU -VM** test for hypervisors has been changed so that it will report only processes that are utilizing GPU above 0%. This behavior is governed by the **ShowOnlyGPUUtilProcess** flag that is available in the **eg_tests.ini** file. By default, this flag is set to **yes** indicating that only the processes with a GPU utilization of more than 0% is listed in the *Compute processes* measure.
- In older versions, to collect metrics for the **Hardware Sensors** test associated with the VMWare vCenter server, eG Enterprise performed a refresh and reset operation on the data collected every 30 minutes. v6.2 allows administrators the flexibility to change the frequency of refresh and reset to conserve resources. A new **TimeToResetHardwareForESX** parameter is now available in the **[AGENT_SETTINGS]** section of the **eg_tests.ini** file (in the **<EG_INSTALL_DIR>\manager\config** directory). By default, this parameter is set to 30 (minutes). You can change the value of this parameter to suit your needs. If you do not want to perform the refresh and reset operation on the collected data, then set the value of this parameter to -1.
- Previously, in some environments where Microsoft RDS License server was monitored, empty files were created on the Microsoft RDS License server consuming high disk space. This issue is now resolved.

1.6.3 Microsoft Windows and Unix

- Earlier, the **CPU Core Sensors** test executing on Microsoft Windows environments reported incorrect values for the measures. This has been resolved.
- In older versions, the **Disk Activity** test and **Disk Activity – VM** test reported incorrect values for the *Disk service time*, *Disk queue time* and *Disk response time* measures. This issue is now resolved.
- Earlier, the **Windows Scheduled Tasks** test executing on Microsoft Windows servers did not report metrics. This is no longer the case.
- In older versions, the **Domain Time Sync** test mapped to the Microsoft Windows component reported inaccurate metrics in some environments. This issue has been resolved now.
- Earlier, the *Semaphore acquires* and the *Semaphore timeouts* measures reported by the **Net Logon** test executing on Microsoft Windows servers reported incorrect values. This issue is now fixed.
- Previously, the metrics reported by the **Security Log** test of the Microsoft Windows component swapped places - i.e., the count of the *Failure audits* measure was reported as the *Successful audits* measure and vice versa, in double-byte environments.
- Previously, the detailed diagnosis of the *Current connections* measure of the **TCP** test did not report connections with IPv6 addresses. This issue has now been fixed.
- Earlier, when the **Memory Usage** test was executed on a Red Hat Linux platform, in some cases, the used memory reported negative values since the sum of the buffer cache and the available memory was higher than the total memory. This issue is now fixed.
- In older versions, when an eG agent on an AIX server requested for a configuration file from the manager, if this file could not be written to the agent/config folder, this created a number of **eG_Mgr_<timestamp>.ini** files that consumed excessive disk space on the eG agent host. This issue has now been resolved.
- Previously, the 64-bit web adapter for Apache 2.4 server did not work on Red Hat Linux 6 operating

system. This issue is now fixed.

- Prior to v6.2, the web adapter for Apache did not detect Apache version 2.4 servers correctly. This resulted in incorrect entries being configured in the Apache startup files, resulting in failure of the Apache server on start up. This issue is now fixed.
- Earlier, **Secure FTP** test executing on Linux operating system did not report metrics when key based authentication method was used. From version 6.2, for this test to report metrics when the key file contains pass phrase, the **PRIVATE KEY PATH** and the **PRIVATE KEY PASS** should be configured. To this effect, two new parameters - **PRIVATE KEY PATH** and the **PRIVATE KEY PASS -** are now included in the test configuration page.
- Prior to version 6.2, the **Windows Usage** test of the Microsoft File component did not report metrics when eG enterprise was installed in Japanese locale. This issue is now resolved.

1.6.4 Database Monitoring

- Prior to version 6.2, the **Oracle Listener** test did not report metrics when the Oracle database server was installed using English language in double-byte environments. This is no longer the case.
- In older versions, the **Oracle Listener** test failed to report metrics if an alias name was configured for the Oracle Listener. From this version, this issue is now resolved by configuring an additional parameter "LISTENER NAME" while configuring the test. Specify the name of the Oracle Listener service associated with the managed oracle instance in the **LISTENER NAME** text box. By default, *none* is specified in this list box.
- Prior to version 6.2, the *Logon rate* measure reported by the **Oracle Logons** test (mapped to Oracle Database server) was incorrect. This is not the case any longer.
- Earlier, the **Oracle RAC Latches** and the **Oracle RAC ASM Disk Space** tests did not report metrics when the test was connected to the Oracle RAC Cluster using the Service name. This issue is now fixed.
- In older versions, for certain tests of the Oracle Cluster server, the **SERVICENAME** parameter was wrongly set to *none* instead of prompting the user to configure the parameter. This is no longer the case.
- Earlier, the **Oracle SQL Network** test did not report metrics when configured for an External Oracle server. This issue is now resolved.
- In previous versions, the tests developed using the Integration Console capability did not execute when the eG backend database was Oracle 12c. This has been fixed.
- Previously, **Oracle 9i Connection Cache** and **Oracle 9i Drivers** tests associated with the Oracle Application server did not report metrics. This issue has now been resolved.
- Previously, when a job was configured for monitoring in the **SQL Job Status** test of the Microsoft SQL server, the eG agent failed to collect metrics related to the first execution of that job. This issue is now fixed.
- In older versions, the *Memory grants pending* measure of the **SQL Memory** test associated with the Microsoft SQL server reported incorrect values.
- Earlier, the **SQL Cluster Process** test did not report metrics when the Microsoft SQL server was monitored in an agentless manner. This issue is now resolved.
- Previously, though the metrics were collected for the **SQL Error Log** test mapped to Microsoft SQL server, the metrics were not displayed in the eG monitoring console. This issue is now fixed.
- In older versions, the error log of the eG agent that was monitoring multiple Microsoft SQL database instances did not provide certain critical information such as host, instance and port, if errors were

encountered on a single Microsoft SQL database instance. This is not the case any longer.

- In older versions, the **HANA Connections** test failed to report individual set of results for every user who was connected to the SAP HANA database server but reported a single set of metrics for all the users in the 'TOTAL' descriptor. This issue is now fixed.

1.6.5 Web and Java Monitoring

- eG RUM relies on the Navigation API to track page views and capture page load time. Prior to v6.2, sometimes, the Navigation API incorrectly reported abnormally high values for page load time. To ensure that the eG agent ignored beacons with such page load time values, starting with v6.2, in the **PAGE LOAD TIME CUTOFF** text box, you can configure the maximum value for page load time. By default, this is set to 3600000 (ms). This implies that by default, the eG agent will disregard all beacons that carry page load time values higher than 3600000 milliseconds. You can change this value to suit your environment.
- Previously, the **HTTP** test for monitoring web applications reported metrics for the servers that supported TLSv1.2 protocol. This test when executed on servers that supported different TLS protocols, failed to report the metrics. To address this issue, from v6.2, the version of the protocol will now be received as an input from the administrator while configuring the **URL** of the **HTTP** test. That is why, the **System property** and **System property value** text boxes have been included in the **CONFIGURATION OF URL PATTERNS** pop up window of the **HTTP** test. In the **System property** text box, specify the protocol that should be used during https connection. Likewise, specify the SSL version of the web page(s) of the target web server in the **System property value** text box. For example, if the target website/web server is using *-Dhttps.protocol* and *TLS v1.3* as the version, then you should specify *-Dhttps.protocol* in the **System property** text box and *TLS v1.3* in the **System property value** text box. The default value specified in the **System property** text box and the **System property value** text box is set to *none*.
- In previous versions, when **Java Transaction Monitoring** was enabled, the requests were sometimes blocked for a time longer than the usual. This issue is now fixed by optimizing the request processing time.
- Earlier, when **Java Transaction Monitoring** was enabled and when an **URL tree** is drilled down to view the method-level analysis, the **% of time** column against the **SQL statements** listed under the **Component Level Breakup** exceeded 100%. This issue is now fixed.
- Previously, the **JVM Leak Suspects** test did not report metrics for the JBoss AS/EAP server. This is not the case any longer.
- Earlier, when a service/site was monitored using the **WebService** test, the test did not report metrics after the connection to the service/site was reset. This issue is now fixed.
- Prior to v6.2, in some cases, the values in some columns shown in the detailed diagnosis of the *Requests being processed* measure reported by the **Application Pool Workers** test associated with the IIS Web server were interchanged and incorrect. This issue is now resolved.

1.6.6 Application Server Monitoring

- Prior to v6.2, the **WAS JVM** test associated with the IBM WebSphere Application server did not report metrics. This issue has now been fixed.
- Before v6.2, the **WebLogic JDBC** test did not alert users to database connection pools that were down. This was because, default thresholds were not set for the *Pool availability* measure of the **WebLogic JDBC** test. This issue has now been addressed in this version.
- Previously, when an Oracle WebLogic server was installed on JRE1.8, the eG agent could not collect relevant metrics from the server. This compatibility issue has been fixed.

- In older versions, cumulative value was reported for the *Completed requests* measure of the **WebLogic Work Managers** test associated with the Oracle WebLogic server i.e., the value reported by a measure period was being added to the value reported by the next measure period. From v6.2, this measure is fine-tuned to report the value collected by the eG agent during the last measurement period alone.

1.6.7 Microsoft Exchange Monitoring

- Prior to version 6.2, the **Exchange Queues** test reported metrics for each queue in the Microsoft Exchange server. In large environments where there may be thousands of queues, the **ENABLE/DISABLE DESCRIPTORS** page took too long to load. To curb this issue, eG now monitors the Exchange Queues from a different perspective. Henceforth, instead of reporting metrics for each queue in the Exchange server, this test will now report metrics for this test based on the state of the queues.
- Previously, the **Exchange MAPI Connectivity** test failed to report metrics when more than one backend database was associated with the Exchange 2007/2010 server being monitored. This issue is now resolved.
- Earlier, the **Exchange Database Details** test associated with the Microsoft Exchange 2010 server did not report metrics correctly. This issue is now fixed.

1.6.8 Microsoft SharePoint Monitoring

- Prior to v6.2, some tests in the SharePoint Objects layer did not report metrics during random measure periods. This issue is now fixed.
- Previously, the **Browser Usage Analytics** and **Site Usage Analytics** tests of the Microsoft SharePoint 2010/2013 server failed to report metrics. This issue is now fixed.
- Earlier, the *Total servers in farm* measure reported by the **SharePoint Farm** test (associated with the Microsoft SharePoint 2010/2013 server) invariably reported the value as *1* even though there were multiple servers in the farm. This is not the case any longer.
- In older versions, the *Total orphaned items* measure of the **SharePoint Databases** test associated with the Microsoft SharePoint 2010/2013 server reported incorrect value. This issue is now fixed.

1.6.9 SAP Monitoring

- In previous versions, the **Idoc Wait Monitor** test reported metrics only for a single logical system even if the monitored SAP ABAP Instance supported multiple logical systems. From version 6.2, this test reports the metrics for all logical systems.
- Sometimes, in double-byte environments, the **Work Processes** test associated with the SAP ABAP Instance component did not report metrics. This issue is now fixed.
- Prior to version 6.2, the **Multiple User Logons** test mapped to a SAP ABAP Instance consumed CPU excessively in cases where users attempted to logon more than once. To conserve resources, this test has now been disabled by default. in some SAP environments where a user attempted to log on more than once, the user sessions increased manifold causing an increase in resource utilization whenever the **Multiple User Logons** test executed. From version 6.2, in order to optimize the resource utilization, this test has been disabled by default.
- Earlier, the metrics reported by the **Kernel Config** test associated with the SAP Web Application server were incorrect. This issue is now fixed.

- Previously, if a connection was not available to a worker process in the **Work Processes** test of the SAP ABAP Instance, the value "0" was reported for the metrics. This issue has now been fixed and the state of the test now turns to 'Unknown' if the connection is not available.
- In older versions, some of the SAP ABAP Instance tests that were based on CCMS, reported metrics with outdated data i.e., metrics collected during previous measure cycles were reported. From v6.2, the SAP timestamp is considered to show the current data for the metrics.

1.6.10 Storage and Network Monitoring

- Prior to version 6.2, connection leaks were observed on the eG agent that was monitoring the IBM Integration Bus node. In this version, the connection leak is no longer observed.
- In older versions, **XIO Volumes** test (mapped to EMC XtremIO component) did not report metrics for a volume that was moved from one Data Protection Group to another. This is not the case any longer.
- Previously, if the **Network Interfaces** test failed to report input related metrics, the output related metrics were also not reported. This issue is now fixed.

1.6.11 Others

- Prior to v6.2, the **Client TCP** test and the **Client Service** test associated with the Microsoft Client Desktop server did not report metrics when the **ADAPTER DISCOVER SELECTION** flag was set to **Automatic** during test configuration.
- Previously, the **Active Directory Database** test of the Active Directory server was a descriptor based test which discovered all the instances in the database. From version 6.2, this test would report metrics for the *lsass* instance alone.
- In older versions, when an eG manager was in a timezone that was ahead of the eG agent's timezone, if the **executionTime** parameter was set for a test, the eG agent reported metrics for this test every second instead of the preconfigured frequency. This issue has been resolved.
- Typically, the **executionTime** parameter can be set for tests that need to execute at a specific time every day, or at the beginning of every hour. In older versions, this **executionTime** parameter when specified against a test in the **eg_specs.ini** file was case-sensitive. The test did not consider this parameter if users specified this parameter in the wrong case. From v6.2, this parameter is not case-sensitive.
- In previous versions, the *Access time* measure of the **NFS Directory** test on Windows was reported even when the *Availability* measure reported a '0' value This is not the case any longer.
- In older versions, the **NFS Directory** test did not report metrics for NFS servers v2, 3 and 4 on Linux and Solaris platforms. This is not the case any longer.
- In older versions, when the **Directory** test auto discovered large volume of files (say in lakhs), the CPU consumption on the agent host increased drastically. This was mainly due to the incompatibility of the API that was used to collect the metrics. To reduce the CPU consumption, a **USE NEW API** flag is set to **true** in the **eg_specs.ini** file. This new API method will seamlessly collect the metrics for larger files while consuming less CPU thus improving the performance of the eG agent.
- Prior to version 6.2, the eG agent could not run IC-based tests created using Powershell scripts that ran in the privileged mode. This is not the case any more.
- Earlier, the **UPS Status** test reported incorrect values for the Input frequency and Output frequency measures. This is not the case any longer.

- Previously, the detailed diagnosis of the measures was not uploaded to the eG manager if whitespaces filled the first 25 lines of data in the detailed diagnosis. This issue is now resolved.
- In older versions, in some cases, all SNMP based tests reported inaccurate metrics. This issue is now fixed.
- Previously, the **Mail Alerts** test was not listed in the eG layer model even though metrics were collected and stored in the eG backend database. This is no longer the case.
- Earlier, the user credentials provided while a test was being configured was not encrypted and was displayed in the agent error logs. This is not the case any longer.

1.7 Bug Fixes/Optimizations to the eG Manager

1.7.1 Admin

- In earlier versions, whenever the coordinates of a service topology were changed wherein the service comprised a segment created by a user, the coordinates of the segment topology of that user too changed in accordance with the service topology. This is not the case any longer.
- Previously, the count of the eG agents in the list of unconfigured agents in the **MANAGER NOTIFICATION** window did not reduce when an eG agent from that list was assigned to monitor a component added through the eG CLI. This is no longer the case.
- In older versions, tests mapped to the JVM layer of a Tomcat server continued to appear in the **UNCONFIGURED TESTS** list, even after those tests were configured. This issue is now fixed.
- In older versions, the segment topology that appears when the mouse pointer is hovered over an auto-discovered segment did not disappear even when the mouse focus was shifted to another segment. This issue is now fixed.
- Earlier, the **SPECIFIC TEST CONFIGURATION** page took too longer to load when many servers were managed. This page has now been optimized to load quickly.
- Previously, **MANAGER DISCOVERY** took a long time to discover the servers in environments comprising many components. The discovery process has now been optimized to discover quickly regardless of the size of the environment.
- In previous versions, when a Network device for e.g., an External Web server and an OS/Application server for e.g., a Linux server shared the same nickname, some of the tests corresponding to the OS/Application server disappeared from the eG administrative interface. This issue has now been resolved.
- Earlier, in the **AGENT DISCOVERY – ENABLE/DISABLE** page, the **Topology discovery** flag continued to be enabled even when **Agent discovery** was disabled. This issue has now been fixed.
- Earlier, the virtual topology auto-generation did not work in XenServer environments. This is resolved now.
- Previously, the **USER** parameter of a test could not be configured with a user name that contained the "$" symbol. This is not the case any longer.
- Prior to version 6.2, when components were added in bulk through the eG CLI, license violation check was not performed - i.e., you could add more components than what was permitted by your license. This issue is now fixed.
- Previously, in some environments, if the **NeedFullyQualifiedDomainName** flag in the **eg_services.ini** file was set to **true**, then each component that the manager auto-discovered was listed twice in the eG admin interface - one with the hostname and the other with the fully qualified domain name. This issue is now resolved.

- In older versions, when using the **MANAGER DISCOVERY – VIRTUAL PLATFORM SETTINGS** page to configure a VMware vCenter server for auto-discovering the vSphere servers it manages, if the password specified for the vCenter user contained an "&" symbol, then vSphere server discovery failed. This issue has been addressed in this release.
- Earlier, errors occurred when you tried to configure the tests associated with a component listed in the **Managed Component to be Configured for Monitoring** section of the eG Admin home page. This issue is now resolved.
- In older versions, in the **MANAGER NOTIFICATION** window, the count of agents that were not running did not include the count of the remote agents. This is not the case any longer.
- In older versions, the **Search** text box in the **ENABLE/DISABLE TEST DESCRIPTOR** page and the **ORGANIZATIONAL UNITS AND SECURITY GROUPS** pop up window (clicking the configure icon against a domain in the **AD USER REPORTS** page) did not return the expected results. This issue is now fixed.
- In older versions, the CPU utilization of the eG manager spiked suddenly when components were added via bulk operation (XML) using the eG CLI. This issue no longer occurs.
- Earlier, a user belonging to a domain group was not allowed to perform eG CLI related tasks. This is no longer the case.
- Previously, in large environments, when the eG manager computed thresholds using multiple threads, problems were noticed in threshold computation. This issue is now fixed.
- Earlier, in large environments where too many descriptors were available for a test and the **Available Descriptors** list in the **ENABLE/DISABLE TEST DESCRIPTOR** page was populated with the descriptors that were searched for using the **Search** text box, the descriptor from the **Available Descriptors** list could not be disabled. This issue is now fixed.

1.7.2 Monitor

- Previously, when the **Component Type** option was chosen from the **Filter by** list of the **Current Alarms** window, all the alarms were listed instead of the alarms pertaining to that particular component type. This issue is now fixed.
- Earlier, if a thin client/VDI user was searched using the **Search** text box in the eG monitor interface, then the search took too long to complete in large environments comprising multiple users. Likewise, the **VM Search** too took longer to complete when too many VMs/virtual desktops were hosted in the monitored environment. These issues have been fixed.
- Prior to version 6.2, the services and users listed in the **ASSOCIATED SERVICE(S)** section of the **COMPONENT DETAILS** pop up window were duplicated. This issue has now been fixed.
- Earlier, script errors were noticed in RUM dashboard when internet connection was not available to load the Geo map. This issue is now resolved.
- In older versions, when more than one component shared the same nickname, the detailed diagnosis page of those components would become empty once the page was refreshed or if the Timeline of the detailed diagnosis was changed. This issue is now fixed.
- In version 6.2, the look and feel of the **Live Measures** widget in **My dashboard** has been improved to suit the Light theme of the eG monitor interface.
- Prior to version 6.2, the horizontal scroll bar in the **AGGREGATES** tab page of the Service and System dashboard did not work. This issue is now fixed.
- Earlier, pages in the eG monitor interface took too long to load due a connection pool thread being held for a longer duration in the eG backend database. This issue is now resolved by optimizing the

connection pool of the eG backend database.

- Previously, the **USER VIEW** page did not load if users were randomly selected from the **User ID** list to view the result set at a quicker pace. This issue is now resolved.
- Prior to version 6.2, CPU consumption was high and memory leaks were detected when **My Dashboard** was published manually to the SCOM interface. This is not the case any longer.
- Earlier, the **TEST DETAILS** pop up window in the eG layer model page did not display the descriptors that were configured with group thresholds. This issue is now fixed.
- In older versions, when you click on a **Component Type** from the Monitor home page, the **COMPONENTS** page appeared even though only one component of that component type was managed. Henceforth, if only a single component of a type is managed, clicking on that type will lead you directly to the layer model of the managed component.
- Earlier, in environments where more number of components were managed, the eG monitor home page took too long to load. This page has now been optimized to load quickly regardless of the size of the monitored infrastructure.
- Prior to version 6.2, the sub-zones of a zone were not listed in the **ZONES MAP**. This issue is now resolved.
- Previously, when a test in the eG layer model contained too many descriptors, then a separate pop up window opened to list all the descriptors of a test. When a descriptor in that pop up window was clicked, the measures were not displayed. This is not the case any longer.
- Earlier, the **Table widget** of **My Dashboard** listed the descriptors for which measures were not reported. This is not the case any longer.
- Previously, the **Weather** widget of the **My Dashboard** displayed the weather of *Chennai* city as the default location. This is not the case any longer. By detecting the location of the browser using which My Dashboard is viewed, the **Weather** widget will appropriately display the weather.
- In older versions, after a refresh, the graphs in the **LIVE GRAPH** page failed to be refreshed. This issue is now fixed.
- Prior to v6.2, when a user viewed his/her user experience in the **User Experience Dashboard**, some widgets took too long to load. This issue is now resolved.
- Earlier, when an Oracle database server was installed on Linux, the **Windows Service** layer appeared in the layer model. This issue is now fixed.

1.7.3 Reporter

- Previously, component-based comparison reports could not be generated if the descriptors chosen for the comparison contained special characters. This is no longer the case.
- In versions before 6.2, if more than 100 components were managed in an environment and a **SYSTEM CAPACITY ANALYSIS BY COMPONENT** report was scheduled to be emailed as a CSV/PDF file or printed, only empty reports were generated.
- Sometimes, errors occurred in large environments comprising more than 100 components when administrators tried to save the generated **SYSTEM CAPACITY ANALYSIS BY COMPONENT** report as PDF, CSV or mail the report or schedule the report. This issue has now been resolved.
- If the **Report Type** chosen is **Trend Graph** and a **Graph Type** (Avg/Sum) was chosen for generating a **SYSTEM PERFORMANCE** report, and when the generated report is saved as PDF or printed, empty reports were returned previously. This issue has since been fixed.
- Earlier, if an **APPLICATION ACTIVITY** Report/**USER SESSION ANALYSIS** Report/**APPLICATION**

LAUNCH report was printed/saved as PDF, the report contained whole numbers with decimal points. This issue has since been addressed to contain decimal points only when valid integer values are present after the decimal point.

- In earlier versions, if the **Component type** and **Component** selections were *All* while generating **Snapshot** reports, the user was automatically logged out of the eG Reporter console. This issue has now been fixed.
- Earlier, while generating a **VIRTUAL MACHINES - VM CAPACITY PLANNING** report, the **Components** list was wrongly populated with both the aggregate and non-aggregate components of the chosen type. This is not the case anymore.
- In previous versions, while generating a zone based **User Activity** report, the **Search Components** in the **Components** list if used, was displaying the components of a different zone. This issue has now been resolved.
- In older versions, the **Virtual Machine** list in the **More Options** pop up window of the **VMotion** report was not populated with the virtual machines. This issue has now been fixed.
- Earlier, the **Search** option in the **SCHEDULE GENERATED AND SAVED** page did not work as expected. This is not the case any longer.
- Previously, the **Descriptors** list of the Comparison reports did not list the descriptors containing a tilde (~). This is no longer the case.
- Earlier, the **Descriptors** list of the Comparison reports did not list descriptors when **IIS Web Sites** test or **IIS Web Transactions** test was chosen from the **Test** list. This issue has now been fixed.
- In older versions, the **Comparison reports** could not be generated if the report was added as a favorite and scheduled to be emailed. This issue has now been resolved.
- Previously, if you have configured the eG Enterprise system to save the reports that are scheduled to be emailed on the eG manager host, the reports could not be emailed as per schedule to multiple recipients at a single shot. This issue has been fixed now.
- In older versions, if a report saved as a Favorite was shared with the **Public** and a new user was created after the share, the new user was not able to view the report in the **Favorites Shared by other Users** section of the **PERSONAL FAVORITES** page. This issue stands resolved now.
- Previously, when the *All Types* option was chosen from the **Component Type** list while generating a data **User Session Analysis** report, the **Summary** section was missing from the generated report. This issue is now resolved.
- In older versions, when a **User Session Analysis** report was scheduled to be emailed in the CSV/PDF format, only empty pages were emailed to the users. This is no longer the case.
- Earlier, if the name of a scheduled report contained double byte characters, a corrupted PDF file was emailed to users. This issue is now resolved.
- Earlier, the **KPI Health** report consumed CPU resources excessively when being generated. This report has now been optimized to minimize CPU usage.
- In older versions, the **Application Performance Report** could not be generated for a Microsoft Exchange 2007 server. This is not the case any longer.
- In older versions, when the **Physical Servers - Hypervisor Overview** report was emailed in the PDF format, the report was not readable owing to its small font size. This issue is now fixed.
- Earlier, if the graph corresponding to an alarm in the **History of Alarms** report was enlarged and a different value was chosen from the **Min** drop-down of the enlarged graph, the graph was not generated for the revised timeline. This issue is now resolved.
- In previous versions, if the **Event Summary** link of an **Executive Component Report** was clicked, the

expected **Event History** page did not load. This issue has now been fixed.

- Previously, if a zone specific **User Session Details** report was generated in an environment with more than 100 components, all the components in the target environment were listed in the **Components** list instead of zone specific components. This issue is now resolved.
- In versions before 6.2, if more than 100 components were managed in an environment and a **Snapshot** report was scheduled to be emailed as a CSV file, only empty reports were sent out to users. This does not happen any longer.
- Earlier, the **Applications Accessed** link in the **User Session Details** report was clicked, all the system processes running on the chosen Citrix/VDI server were unnecessarily listed along with the applications actually accessed by the user. In this version, only the accessed applications are listed.
- In older versions, if the **Show Legends** check box was selected when generating a **Cumulation** report, and such a report was scheduled to be emailed as a PDF/CSV file, then the PDF/CSV so emailed contained only an empty report. This issue has now been fixed.
- Earlier, the legends of the Y-axis of a **Cumulation** report in the eG Reporter console were different from the legends displayed in the PDF/CSV file that was emailed if the same report had been scheduled to be delivered by email. This issue has now been resolved.
- Previously, when a **Cumulation** report was generated and scheduled to be emailed to the users as a PDF or CSV file, then the graph line in the PDF/CSV so emailed was a dashed line and not a single contiguous line. This issue is now fixed.
- In previous versions, the report was not generated for the DB Server Availability of a Microsoft SQL server from the **REPORTS BY COMPONENT** node. This issue no longer occurs.
- Prior to version 6.2, when the data reports of the **User Session Details** report and the **User Activity** report was compared, data mismatch was noticed in the resource utilization related metrics. This was mainly due to the first measure period data being missed in the **User Session Details** report. To avoid this data mismatch and bridge the gap between the values displayed in the reports, two new flags have been introduced. Set the **isNeedSessionLookBack** flag under the **[CITRIX_USER_REPORT]** section of the **eg_report.ini** file to Yes and the **SessionLookBack** flag to **5** minutes to bridge the gap between the data reported in both the reports. When the **User Session Details** report is generated by enabling these two flags, session related metrics that are collected for the measure period before and after the session are also considered.
- Previously, the **Detailed diagnosis** page was empty and wrong date was displayed in the **Timeline** when this page was accessed using the DD icon in some of the generated reports (for e.g., Top Events report, History of Alarms report, History of Unknowns report etc). This issue is now resolved.

1.7.4 Others

- Where thousands of agents were managed by a single eG manager, concurrent connection requests to the manager failed frequently. The scalability of the eG manager has been enhanced in this version to handle more number of simultaneous connections.
- Prior to v6.2, if a component listened on multiple ports, then the eG Enterprise's discovery process (both manager and agent) discovered the same component on both the ports. To avoid this duplication and the additional license consumption it causes, the discovery process has been optimized in this version to discover a component on the port at which it listens first.
- Previously, where eG Enterprise was monitoring more than 100 components, the eG manager took too long to compute the state of the managed components. In the process, the eG manager's JVM consumed CPU resources excessively. To hasten state computation and conserve CPU resources, the eG manager has been optimized in version 6.2.

- When the eG manager was upgraded from v6.0.2 to v6.1.2, the Component type and component name were duplicated in the alerts that were sent out as SMS via the HTTP protocol. This issue is now fixed.
- Earlier, when a service was configured with many components, the topology of the service displayed in the eG user interface was incomplete. This has now been addressed.
- Prior to version 6.2, detailed diagnosis was not displayed in the eG mobile app. This issue is now fixed.
- Prior to version 6.2, metrics collected from **SAP HANA** database server were not inserted into the eG backend database server due to mismatch in the table column width. This issue is now fixed.
- Auto-reindexing capability is now enabled by default on the eG manager, so that the eG backend database can be automatically indexed and optimized on an on-going basis, without requiring human intervention.
- From version 6.2, both the **eG VM agent** and the **eG DB CLI** are bundled by default with JRE version 1.7.0.80.
- Previously, when multiple mobile numbers were configured for sending SMS alerts via the SMTP mail host, the alert was sent to one mobile number at a time causing delay to the administrators in receiving the alerts. From version 6.2, the alerts can be sent to all mobile numbers at a single shot. To do so, you have to set the **sendMultipleNumbers** flag under the **[MISC_ARGS]** section of the **eg_services.ini** file to **true**. By default, this flag is set to **false**.
- In older versions, if the **EgThresholdManager** took too long to compute thresholds for a test, then any of the other test operations could not be completed due to threads being held. This is not the case any longer.
- In previous versions, maintenance policies configured for specific tests/descriptors continued to apply even after those tests/descriptors were disabled. This is not the case any longer.
- Earlier, when the eG manager was installed in Linux and Solaris environments, the state of the eG manager was not retained upon restart. This issue is now fixed.
- Earlier, if users were interested only in real-time metrics and not in studying historical trends, they had no means to turn off trend computation completely. Version 6.2 provides users with this facility! In this version, eG Enterprise has introduced a new flag **DisableTrendComputation** in the **eg_services.ini** file. By default, this flag is set to **no**. To stop trend computation, set this flag to **Yes**.