Data Center Infrastructure
Reliability, Availability, and Maintainability Status Report

Prepared for COMPUTER MEGACORP, INC.

In-House Data Center Locations:
Location1
Location2

Co-Lo/MSP Vendor(s):
VendorNameHere1
VendorNameHere2

Primary IaaS/PaaS Vendor(s):
VendorNameHere1
VendorNameHere2

- Alternatively, put locations and vendors on the Report Overview page &&
- Limit this to no more than 9 total locations/vendors (max 3 for each grouping).

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This report was prepared by Info-Tech Research Group for COMPUTER MEGACORP, INC. on 2013-10-10.

Data is comprised of X responses. Including responses by: NAME

Report Overview

Report Purpose and Benefits

- Report overall ability to meet target service levels.
- Review and assess service level status per service delivery model.
- Identify specific problem areas per location and vendor.

What is in this Report

- **Summary Dashboard:** Summary of service level status across all service delivery models in this report.
- **Score Details:** Service level status per service delivery model and location or vendor.
- **Recommendations:** Action items to address service level status issues.

Your Data Center Locations and Service Providers

In-House Data Center Locations:
Location1
Location2

Co-Lo/MSP Vendor(s):
VendorNameHere1
VendorNameHere2

Primary IaaS/PaaS Vendor(s):
VendorNameHere1
VendorNameHere2

Table of Contents

The individual report pages are identified in this flowchart and are hyperlinked if you wish to skip ahead.

Note to Designer:
- Base flowchart on actual pages in this report.
- Add **hyperlinks** to the respective pages.
- Only show **Co-Lo and IaaS/PaaS** in this flowchart and in this report if those service delivery models have been selected by the client. This impacts some of the copy as well.
- Please add **"%change from previous year"** to the report pages. Let's discuss what our options are from a design perspective.
- You have complete freedom over the layout of this page.

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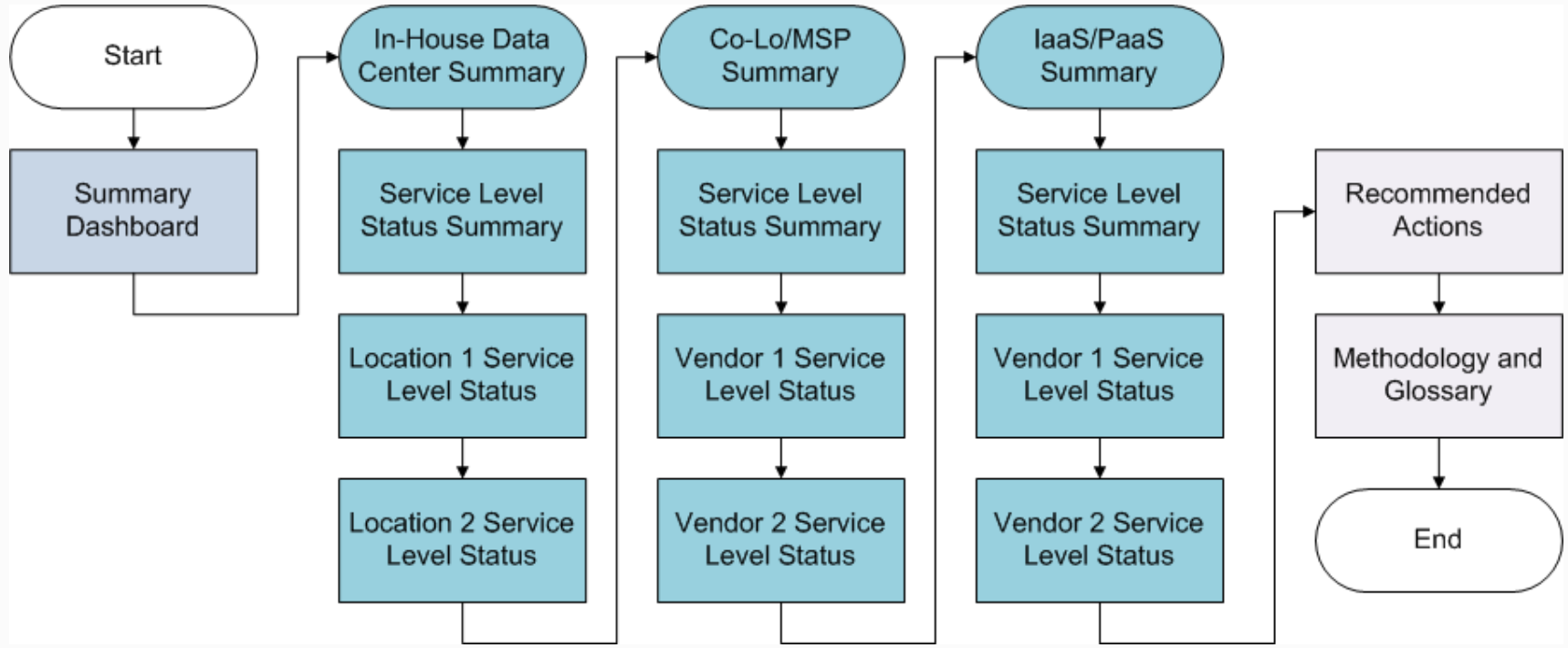


Service Level Status Summary Dashboard

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view across service delivery models, and is followed by a more-detailed examination for each service delivery model.

0-60% of Targets Met 61-99% of Targets Met 100% of Targets Met Target Not Met Target Met

Overall Status by Service Delivery Model
(% of Targets Met)

In-House Co-Lo/MSP IaaS/PaaS

Status by Location/Vendor
(% of Targets Met)

In-House Data Center Locations:

Location1

Location2

&& Note to Designers: Replace all references to "Location" and "Vendor" with the names supplied in the survey.

Co-Lo/MSP Vendor(s):

VendorNameHere1

VendorNameHere2

Primary IaaS/PaaS Vendor(s):

VendorNameHere1

VendorNameHere2

Note to Designers: Where you see a circle color status, please indicate actual % of targets met in addition to color-coding (% in a circle?).

For the Service Delivery Model column (and the same column in the later slides – e.g., location/vendor columns), feel free to ditch the circle if too busy and just show % of targets met. &&

Silo	Service Delivery Model	Reliability (MTBF - hrs.)		Availability (Uptime %)		*Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers	In-House	2000	2500	99.5	99.5	10	12
	Co-Lo/MSP	1500	1750	98.5	97.0	6	6
	IaaS/PaaS	1000	500	99.0	98.0	1	1
Storage	In-House	2000	2200	99.5	99.6	10	9
	Co-Lo/MSP	1500	1700	98.5	98.0	6	12
	IaaS/PaaS	1000	500	99.0	99.5	1	1
Databases	In-House	2000	1500	99.5	99.0	10	12
	Co-Lo/MSP	1500	1700	98.5	99.0	6	4
	IaaS/PaaS	1000	500	99.0	99.0	1	1
Data Center Network	In-House	2000	2200	99.5	99.5	10	10
	Co-Lo/MSP	1500	1700	99.5	99.5	6	12
Power and Cooling	In-House	2000	1500	99.5	99.5	10	12
	Co-Lo/MSP	1500	500	99.5	99.5	6	8

*MTRS for critical incidents

Get to Action

For in-house data centers, work with the business to determine target service levels. This not only clarifies expectations, but also strengthens IT's understanding of business requirements, and vice-versa. For vendors, the SLA dictates the service levels you are paying for, so it's important to track whether the vendor is meeting those service levels and use this data to hold the vendor accountable.

Service Level Status Summary for In-House Data Centers &&Display only for multiple locations

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view for in-house data centers, and is followed by a more-detailed examination for each in-house data center location.

Overall Status by Location
(% of Targets Met)

Location 1 Location 2 Location 3

Reliability, Availability, Maintainability Status by Location (% of Targets Met)

Location 1:
- Reliability
- Availability
- Maintainability

Location 2:
- Reliability
- Availability
- Maintainability

Location 2:
- Reliability
- Availability
- Maintainability

Note to Designers:
- Client might have only 1 or 2 of the three service delivery models.
- Bar charts not useful here because of the range of values for RAM.
- &&

Silo	Service Delivery Model	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers	Location 1	2000	2500	99.5	99.5	10	12
	Location 2	1500	1750	98.5	97.0	6	6
	Location 3	1000	500	99.0	98.0	1	1
Storage	Location 1	2000	2200	99.5	99.6	10	9
	Location 2	1500	1700	98.5	98.0	6	12
	Location 3	1000	500	99.0	99.5	1	1
Databases	Location 1	2000	1500	99.5	99.0	10	12
	Location 2	1500	1700	98.5	99.0	6	4
	Location 3	1000	500	99.0	99.0	1	1
Data Center Network	Location 1	2000	2200	99.5	99.5	10	10
	Location 2	1500	1700	99.5	99.5	6	12
	Location 3	1500	500	98.5	98.5	6	8
Power and Cooling	Location 1	2000	1500	99.5	99.5	10	12
	Location 2	1500	500	99.5	99.5	6	8
	Location 3	1500	1200	98.5	98.0	6	4

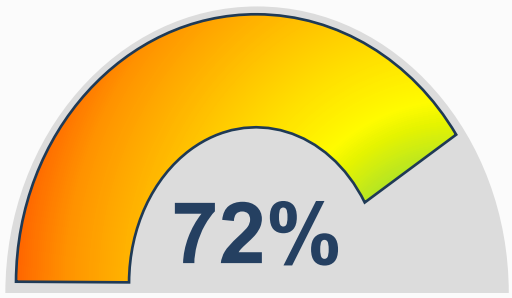
Get to Action

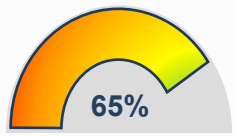
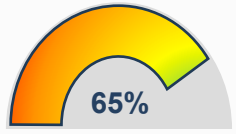
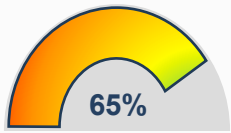
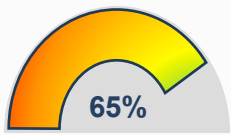
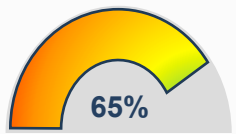
Consider the primary services or purpose of each location to further evaluate the status. For example, a location that hosts financial applications should have more rigid processes and more success at meeting target service levels than a location providing less-critical services.

In-House Location 1 – Service Level Status

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view across service delivery models, and is followed by a more-detailed examination for each service delivery model.

Location 1 Overall Status
(% of Targets Met)



	Silo Subcategories	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers 	Physical Standalone Servers	2000	2500	99.5	99.5	10	12
	Physical Hosts	1500	1750	98.5	97.0	6	6
	Logical Servers	1000	500	99.0	98.0	1	1
Storage 	SAN	2000	2200	99.5	99.6	10	9
	NAS	1500	1700	98.5	98.0	6	12
	Tape	1000	500	99.0	99.5	1	1
Databases 	Transactional	2000	1500	99.5	99.0	10	12
	Analytical	1500	1700	98.5	99.0	6	4
	&&intentionally blank – only 2 categories						
Data Center Network 	Core Network	2000	2200	99.5	99.5	10	10
	Storage Area Networ	1500	1700	99.5	99.5	6	12
	Virtual Network	1500	500	98.5	98.5	6	8
Power and Cooling 	Power	2000	1500	99.5	99.5	10	12
	Cooling	1500	500	99.5	99.5	6	8

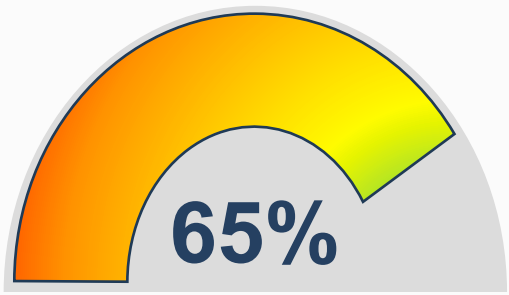
Get to Action

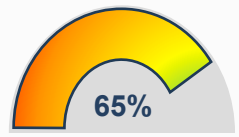
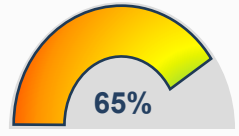
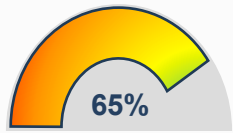
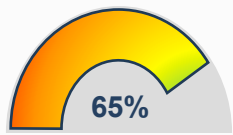
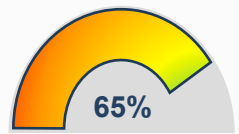
Investigate people, process, and technology root causes for silos not meeting target service levels. For example, if the issues are primarily people and processes, is this due to process gaps, inconsistent process management, or a training and communication issue? Leverage Info-Tech's assessment reports for each silo to help your analysis.

In-House Location 2 – Service Level Status

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view across service delivery models, and is followed by a more-detailed examination for each service delivery model.

Location 2 Overall Status
(% of Targets Met)



	Silo Subcategories	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers 	Physical Standalone Servers	2000	2500	99.5	99.5	10	12
	Physical Hosts	1500	1750	98.5	97.0	6	6
	Logical Servers	1000	500	99.0	98.0	1	1
Storage 	SAN	2000	2200	99.5	99.6	10	9
	NAS	1500	1700	98.5	98.0	6	12
	Tape	1000	500	99.0	99.5	1	1
Databases 	Transactional	2000	1500	99.5	99.0	10	12
	Analytical	1500	1700	98.5	99.0	6	4
Data Center Network 	Core Network	2000	2200	99.5	99.5	10	10
	Storage Area Networ	1500	1700	99.5	99.5	6	12
	Virtual Network	1500	500	98.5	98.5	6	8
Power and Cooling 	Power	2000	1500	99.5	99.5	10	12
	Cooling	1500	500	99.5	99.5	6	8

Co-Lo/MSP Service Delivery Model – Service Level Status &&Display only for multiple vendors

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view for in-house data centers, and is followed by a more-detailed examination for each vendor.

Overall Status by Vendor
(% of Targets Met)

Vendor 1 Vendor 2 Vendor 3

Reliability, Availability, Maintainability Status by Vendor (% of Targets Met)

Vendor 1:
- Reliability
- Availability
- Maintainability

Vendor 2:
- Reliability
- Availability
- Maintainability

Vendor 2:
- Reliability
- Availability
- Maintainability

Note to Designers:
- Client might have only 1 or 2 of the three service delivery models.
- Bar charts not useful here because of the range of values for RAM.
- &&

Silo	Service Delivery Model	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers	**Vendor 1**	2000	2500	99.5	99.5	10	12
	Vendor 2	1500	1750	98.5	97.0	6	6
	Vendor 3	1000	500	99.0	98.0	1	1
Storage	**Vendor 1**	2000	2200	99.5	99.6	10	9
	Vendor 2	1500	1700	98.5	98.0	6	12
	Vendor 3	1000	500	99.0	99.5	1	1
Databases	**Vendor 1**	2000	1500	99.5	99.0	10	12
	Vendor 2	1500	1700	98.5	99.0	6	4
	Vendor 3	1000	500	99.0	99.0	1	1
Data Center Network	**Vendor 1**	2000	2200	99.5	99.5	10	10
	Vendor 2	1500	1700	99.5	99.5	6	12
	Vendor 3	1500	500	98.5	98.5	6	8
Power and Cooling	**Vendor 1**	2000	1500	99.5	99.5	10	12
	Vendor 2	1500	500	99.5	99.5	6	8
	Vendor 3	1500	1200	98.5	98.0	6	4

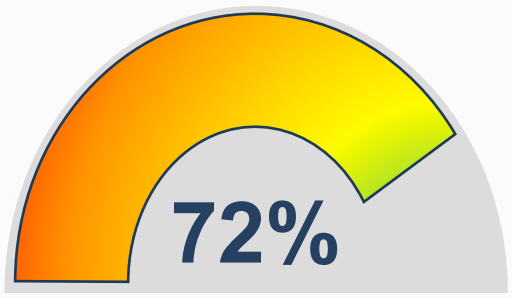
Get to Action

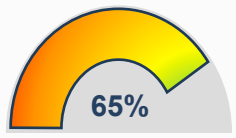
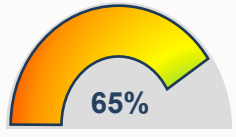
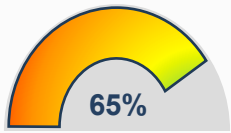
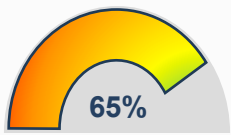
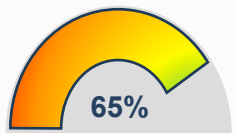
Review silos as well as vendors where targets are not being met. For example, if all vendors are meeting targets except for the Servers silo, the issue may be your technology or processes in that area. However, if the issue is primarily with one vendor, use this comparison to drive a service level discussion with that vendor.

Co-Lo/MSP Vendor 1 – Service Level Status

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view across service delivery models, and is followed by a more-detailed examination for each service delivery model.

Vendor 1 Overall Status
(% of Targets Met)



	Silo Subcategories	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers 	Physical Standalone Servers	2000	2500	99.5	99.5	10	12
	Physical Hosts	1500	1750	98.5	97.0	6	6
	Logical Servers	1000	500	99.0	98.0	1	1
Storage 	SAN	2000	2200	99.5	99.6	10	9
	NAS	1500	1700	98.5	98.0	6	12
	Tape	1000	500	99.0	99.5	1	1
Databases 	Transactional	2000	1500	99.5	99.0	10	12
	Analytical	1500	1700	98.5	99.0	6	4
Data Center Network 	Core Network	2000	2200	99.5	99.5	10	10
	Storage Area Networ	1500	1700	99.5	99.5	6	12
	Virtual Network	1500	500	98.5	98.5	6	8
Power and Cooling 	Power	2000	1500	99.5	99.5	10	12
	Cooling	1500	500	99.5	99.5	6	8

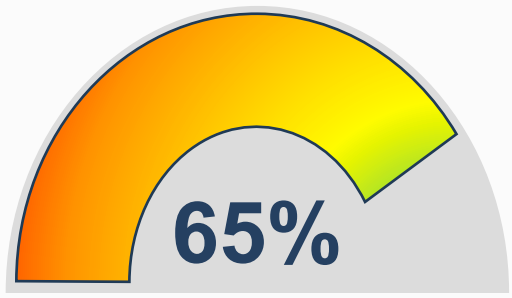
Get to Action

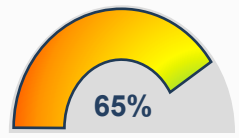
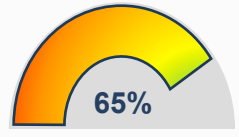
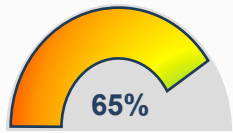
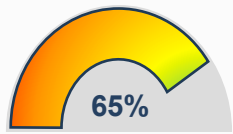
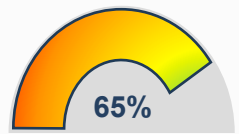
Look for trends as well as comparisons across silos and vendors to identify potential issues. For example, if the storage silo is typically stable but outages have become an issue recently, investigate what has changed in that environment, and whether this is a long term issue.

Co-Lo/MSP Vendor 2 – Service Level Status

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view across service delivery models, and is followed by a more-detailed examination for each service delivery model.

Vendor 2 Overall Status
(% of Targets Met)



	Silo Subcategories	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers 	Physical Standalone Servers	2000	2500	99.5	99.5	10	12
	Physical Hosts	1500	1750	98.5	97.0	6	6
	Logical Servers	1000	500	99.0	98.0	1	1
Storage 	SAN	2000	2200	99.5	99.6	10	9
	NAS	1500	1700	98.5	98.0	6	12
	Tape	1000	500	99.0	99.5	1	1
Databases 	Transactional	2000	1500	99.5	99.0	10	12
	Analytical	1500	1700	98.5	99.0	6	4
Data Center Network 	Core Network	2000	2200	99.5	99.5	10	10
	Storage Area Networ	1500	1700	99.5	99.5	6	12
	Virtual Network	1500	500	98.5	98.5	6	8
Power and Cooling 	Power	2000	1500	99.5	99.5	10	12
	Cooling	1500	500	99.5	99.5	6	8

IaaS/PaaS Service Delivery Model – Service Level Status &&Display only for multiple vendors

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view for in-house data centers, and is followed by a more-detailed examination for each vendor.

Overall Status by Vendor
(% of Targets Met)

Reliability, Availability, Maintainability Status by Vendor (% of Targets Met)

Vendor 1:
- Reliability
- Availability
- Maintainability

Vendor 2:
- Reliability
- Availability
- Maintainability

Vendor 2:
- Reliability
- Availability
- Maintainability

Note to Designers:
- Client might have only 1 or 2 of the three service delivery models.
- Bar charts not useful here because of the range of values for RAM.
- &&

Silo	Service Delivery Model	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers	**Vendor 1**	2000	2500	99.5	99.5	10	12
	Vendor 2	1500	1750	98.5	97.0	6	6
	Vendor 3	1000	500	99.0	98.0	1	1
Storage	**Vendor 1**	2000	2200	99.5	99.6	10	9
	Vendor 2	1500	1700	98.5	98.0	6	12
	Vendor 3	1000	500	99.0	99.5	1	1
Databases	**Vendor 1**	2000	1500	99.5	99.0	10	12
	Vendor 2	1500	1700	98.5	99.0	6	4
	Vendor 3	1000	500	99.0	99.0	1	1

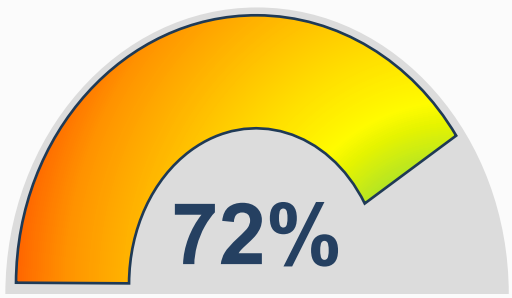
Get to Action

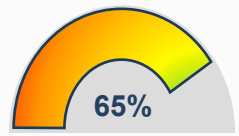
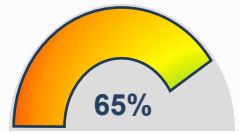
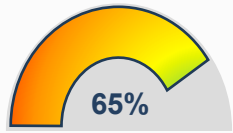
Where targets are not being met, in addition to reviewing internal processes for possible root causes, also review the workloads that are running in these environments and evaluate whether they are suitable for IaaS/PaaS. For example, data and transaction intensive applications where data latency may be an issue are not ideal for IaaS/PaaS and can create RAM challenges.

IaaS/PaaS Vendor 1 – Service Level Status

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view across service delivery models, and is followed by a more-detailed examination for each service delivery model.

Vendor 1 Overall Status
(% of Targets Met)



	Silo Subcategories	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers 	Production Servers	1000	500	99.0	98.0	1	1
	Test Servers	1000	500	99.0	98.0	1	1
	Development Servers	1000	500	99.0	98.0	1	1
Storage 	Primary Storage	2000	2200	99.5	99.6	10	9
	Archive and Backup Storage	1500	1700	98.5	98.0	6	12
	File Sharing Synchronization	1000	500	99.0	99.5	1	1
Databases 	Transactional	2000	1500	99.5	99.0	10	12
	Analytical	1500	1700	98.5	99.0	6	4

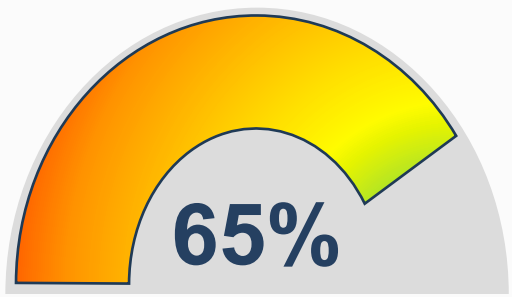
Get to Action

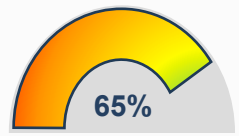
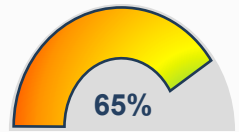
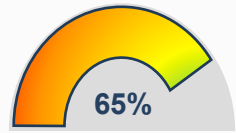
Extended outages in an IaaS/PaaS environment is often due to data issues – e.g., database failure – since servers themselves can be recovered quickly due to virtualization. If high availability is critical, ensure you have redundancy for storage systems and databases. If you need data storage to be part of your IaaS/PaaS environment, then lease storage from two separate zones.

IaaS/PaaS Vendor 2 – Service Level Status

Use this report to identify where target service levels are being met and where improvements are required to meet targets. This page provides an overall view across service delivery models, and is followed by a more-detailed examination for each service delivery model.

Vendor 2 Overall Status
(% of Targets Met)



	Silo Subcategories	Reliability (MTBF - hrs.)		Availability (Uptime %)		Maintainability (MTRS – hrs.)	
		Target	Actual	Target	Actual	Target	Actual
Servers 	Production Servers	1000	500	99.0	98.0	1	1
	Test Servers	1000	500	99.0	98.0	1	1
	Development Servers	1000	500	99.0	98.0	1	1
Storage 	Primary Storage	2000	2200	99.5	99.6	10	9
	Archive and Backup Storage	1500	1700	98.5	98.0	6	12
	File Sharing Synchronization	1000	500	99.0	99.5	1	1
Databases 	Transactional	2000	1500	99.5	99.0	10	12
	Analytical	1500	1700	98.5	99.0	6	4

Recommended Actions

This page summarizes current status and provides recommendations to improve reliability, availability, and maintainability status.

Reliability Status Summary

- Location 1
- Location 2
- Location 3
- Vendor 1 (Co-Lo)
- Vendor 2 (Co-Lo)
- Vendor 1 (IaaS/PaaS)
- Vendor 2 (IaaS/PaaS)

Recommendations to Improve Reliability

1. Ensure change control processes for critical systems are more focused on identifying/mitigating risks of failure than expediting application and system changes.
2. Hold staff and vendors accountable for process adherence and completion. This can be as simple as a signoff or notification. It's also an opportunity to inform management of process roadblocks so those issues can be addressed.
3. Review processes on a quarterly or bi-annual basis to detect and resolve new or potential roadblocks, and to continue to improve process efficiency.

Availability Status Summary

- Location 1
- Location 2
- Location 3
- Vendor 1 (Co-Lo)
- Vendor 2 (Co-Lo)
- Vendor 1 (IaaS/PaaS)
- Vendor 2 (IaaS/PaaS)

Recommendations to Improve Availability

1. Review components and dependencies for systems with availability issues to identify vulnerabilities such as:
   - Components with higher likelihood of failure based on previous outages or known issues.
   - Single points of failure (e.g., a database supporting multiple critical systems).
2. Prioritize vulnerabilities based on risk and impact. E.g., the database that supports multiple systems but lacks redundancy might rank higher than a virtual server that is more likely to fail but can be recovered quickly.
3. Incorporate projects that address prioritized vulnerabilities into your overall technology roadmap. A hybrid model that leverages IaaS/PaaS as well as a co-lo or in-house data center might be necessary to be cost-effective while achieving desired target service levels

Maintainability Status Summary

- Location 1
- Location 2
- Location 3
- Vendor 1 (Co-Lo)
- Vendor 2 (Co-Lo)
- Vendor 1 (IaaS/PaaS)
- Vendor 2 (IaaS/PaaS)

Recommendations to Improve Maintainability

1. Conduct a business impact analysis to determine recovery time objectives (RTO) based on system criticality. Tier 1, 2, and 3 systems should have different RTOs, and use that to guide maintainability targets (MTRS).
2. Set standard deadlines for troubleshooting, escalation, and failover for tier 1, 2, and 3 systems to ensure service is restored within established RTOs and overall MTRS targets.
3. Review current capabilities to meet the RTOs and MTRS targets, and identify gaps in staffing, process, and technology capabilities. Create an action plan to address capability gaps for both localized failures (e.g., hardware/software failures) as well as traditional disaster recovery scenarios.

Note to Designers: Make this page more graphical. &&

Get to Action

Track and analyse RAM, staffing, and process issues within each silo to further isolate problem areas. Leverage Info-Tech's assessment reports for each silo to assist your analysis.

Scoring Methodology and Definitions

Scoring

- **Service Delivery Model (SDM) Status Scoring =** % of targets met across all silos and locations/vendors for that SDM.
- **Location/Vendor Status Scoring =** % of targets met across all silos for that location/vendor.
- **Silo Status Scoring** = % of targets met for MTBF, Uptime, and MTRS for that silo.

Definitions

- The metrics in the report (e.g., Mean-Time-Between-Failures) are based on ITIL definitions.
- MTRS throughout this report is for critical incidents.