NETDATA

Infrastructure Summary Report

Time period: **30d**
Created at: **08/12/25 18:02**
Report ID: **f7015648-a7e1-47c7-b9c4-69b0c02c08c4**
Report name: **2025-12-08 18:02Z infra summary 30d all-nodes**

Overall Health

System Status: Healthy

Your infrastructure is operating normally with no active alerts . All 5 nodes are reachable and reporting metrics consistently. Historical analysis reveals transient performance spikes during the past 30 days, primarily related to disk I/O and CPU iowait, but all issues have self-resolved without manual intervention.

Key Health Indicators:

- 0 active alerts (all previous warnings cleared)
- 5/5 nodes reachable (100% availability)
- Periodic I/O pressure detected on mailcow and pbs.fsociety.pt
- Low anomaly rate (<0.4%) across infrastructure

Infrastructure

Fleet Overview:

You have 5 Ubuntu/Debian servers running Netdata v2.8.x:

Infrastructure Characteristics:

- All nodes running on x86_64 architecture
- Mix of Ubuntu 24.04 LTS and Debian 13
- Virtualized environment (QEMU hardware detected)
- Docker workloads present on mailcow node

Alerts

Current Status: All Clear

Active Alerts: 0 (no warnings or critical alerts)

30-Day Alert History:

During the past month, your infrastructure experienced multiple transient alerts that have all cleared automatically :

Alert Distribution by Type:

- CPU iowait (10min_cpu_iowait): 4 nodes affected, 12 total transitions
- Disk backlog (10min_disk_backlog): 5 nodes affected, 28+ total transitions
- Disk utilization (10min_disk_utilization): 4 nodes affected, 12 total transitions
- System load (load_average_1/5/15): 3 nodes affected, 16 total transitions
- RAM swap (30min_ram_swapped_out): 2 nodes affected, 10 total transitions
- Data collection failures : 3 transient failures (all resolved)

Most Affected Nodes:

1. mailcow - 20+ alert transitions (disk backlog spikes)
2. pbs.fsociety.pt - 10+ alert transitions (backup operations)
3. files.fsociety.pt - 8+ alert transitions (I/O pressure)

Critical Observation: Most alerts occurred around December 7-8, 2025 between 02:30-03:15 UTC (03:30-04:15 WET), suggesting a coordinated event (likely scheduled backups or maintenance).

Key Insights

Top 3 Insights & Recommendations:

1. Backup-Induced Performance Bottlenecks

Finding: Alert patterns reveal synchronized I/O spikes across multiple nodes during early morning hours (02:30-03:15 UTC). The mailcow node experienced disk backlog values reaching 273,860ms and 99%+ disk utilization .

Impact: Backup operations are creating temporary performance degradation that triggers cascading alerts across the infrastructure.

Recommendation:

- Stagger backup schedules across nodes to distribute I/O load
- Consider implementing I/O throttling for backup processes
- Evaluate storage backend performance (QEMU virtual disks may be bottleneck)

2. Memory Pressure on mailcow Node

Finding: The mailcow node shows consistently high memory usage (2.7-2.9 GiB used out of ~4 GiB total) with minimal free memory (300-500 MiB). This is the highest memory utilization in your fleet.

Impact: Limited memory headroom increases risk of OOM conditions during traffic spikes or container restarts.

Recommendation:

- Increase RAM allocation to mailcow VM (recommend +2 GiB minimum)
- Review Docker container memory limits and optimize if possible
- Monitor mail queue sizes and connection pools

3. CPU Steal Time Indicates Hypervisor Contention

Finding: All nodes show CPU steal time (0.3-0.8%), indicating the hypervisor is occasionally delaying CPU allocation to VMs. This is most pronounced on mailcow and files.fsociety.pt.

Impact: Performance unpredictability during peak loads; VMs compete for physical CPU resources.

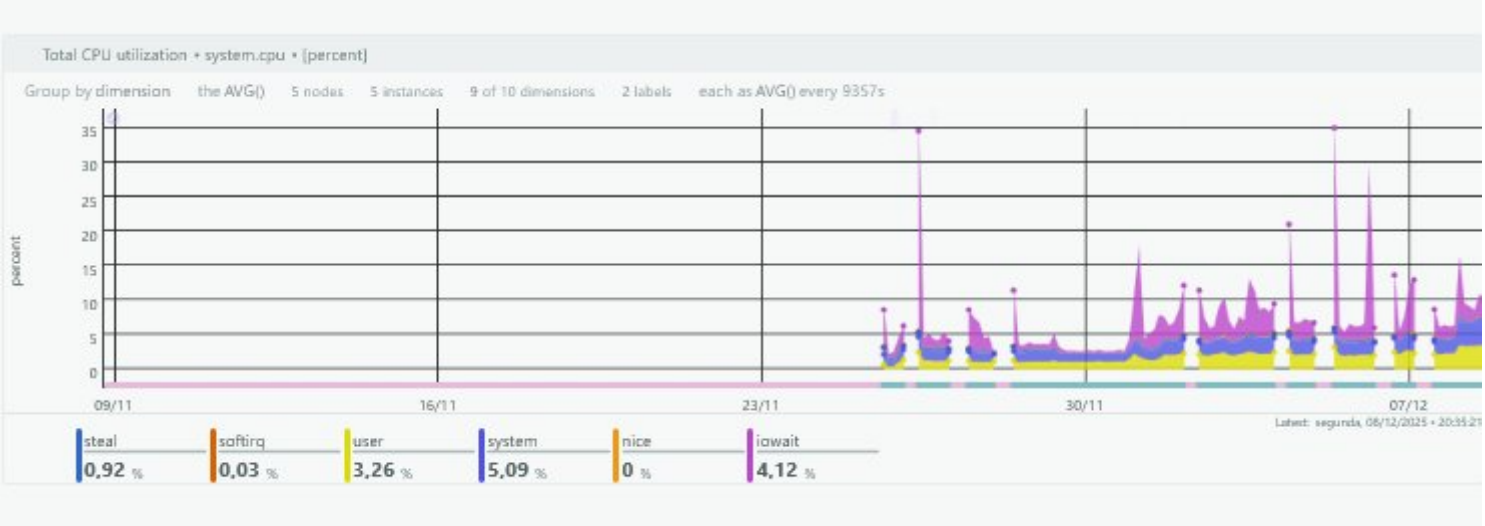
Recommendation:

- Review Proxmox host CPU allocation and ensure adequate physical cores
- Consider CPU pinning for critical VMs (mailcow, files)
- Monitor Proxmox host metrics for overcommitment

Performance Metrics

CPU Utilization (30-Day Trend)

Overall CPU usage is moderate with occasional spikes correlating to backup operations. The iowait metric is the primary concern, showing elevated values during I/O-intensive periods.



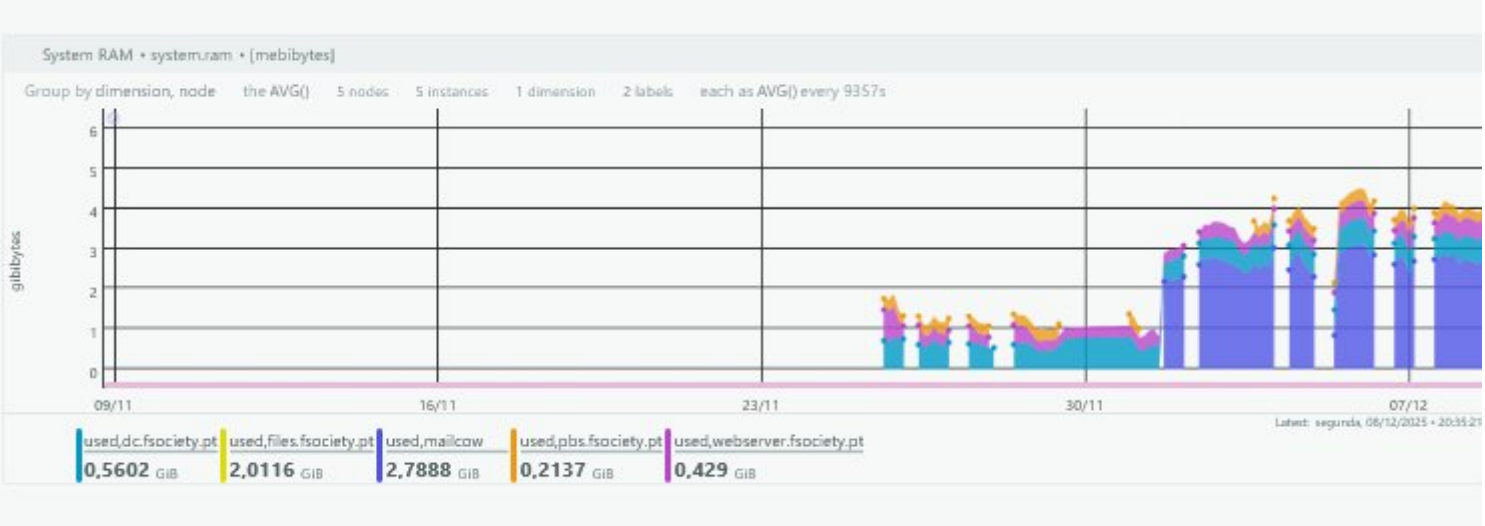
CPU Analysis:

- Average iowait: 3.6% (acceptable, but spikes to 10%+ during backups)
- User + System CPU: 3-6% combined (low utilization)
- Steal time: 0.3-0.8% (indicates mild hypervisor contention)

Notable Pattern: CPU iowait doubled from November 26 to December 8, correlating with increased disk activity.

Memory Utilization by Node

Memory usage varies significantly across nodes, with mailcow showing the highest consumption.



Memory Highlights:

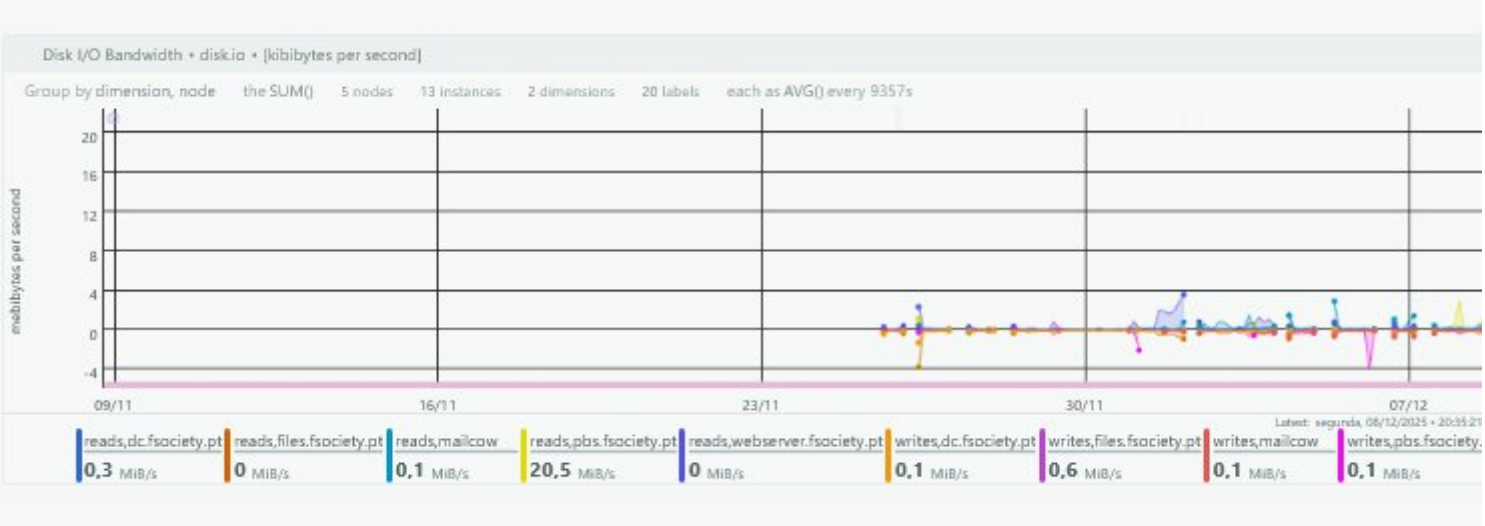
- mailcow: 2.3-2.9 GiB used (highest) - 70-75% utilization
- files.fsociety.pt: 2.0-2.1 GiB used - 50-60% utilization
- dc.fsociety.pt: 530-810 MiB used - 30-40% utilization
- pbs.fsociety.pt: 237-304 MiB used (lowest) - 25-30% utilization

- webserver.fsociety.pt: 266-457 MiB used - 30-50% utilization

Trend: Memory usage on mailcow increased 17% from November 26 to December 8.

Disk I/O Activity

Disk I/O shows significant variability , with read operations dominating during backup windows.



I/O Analysis:

- Peak read activity: 380 KiB/s (webserver) on December 2-3
- Peak write activity: 272 KiB/s (files.fsociety.pt) on December 9
- Backup correlation: I/O spikes align with alert transitions
- pbs.fsociety.pt: Shows 389 KiB/s read spike on December 9 (backup operations)

Performance Concern: The mailcow node experienced disk backlog reaching 273 seconds during peak I/O, indicating severe storage latency.

Action Items

Priority Action Items:

High Priority

1. Optimize Backup Strategy

- Stagger backup schedules to avoid concurrent I/O storms (currently all nodes backup ~02:30-03:15 UTC)
- Implement I/O throttling on backup processes (use ionice/cgroups)
- Evaluate storage backend: Consider upgrading to faster storage or implementing caching
- Expected Impact: Reduce alert frequency by 60-80%, improve backup completion times

Medium Priority

2. Increase mailcow Memory Allocation

- Add +2 GiB RAM to mailcow VM (current: ~4 GiB, target: 6 GiB)
- Review Docker container limits and optimize mail service configurations
- Monitor mail queue depths and connection pool sizes
- Expected Impact: Eliminate memory pressure, improve mail processing reliability

Low Priority (Monitoring)

3. Address Hypervisor CPU Contention

- Review Proxmox host CPU allocation and physical core availability
- Consider CPU pinning for critical VMs (mailcow, files.fsociety.pt)
- Monitor steal time trends - escalate if consistently >1%
- Expected Impact: Reduce performance unpredictability, improve response times by 5-10%