



HP Network Node Manager i Software

Network Bandwidth Utilization for NNMi Global Network Management and Standalone Environments

NNMi 9.1x Patch 1

This document provides examples of the expected network utilization for the NNMi release 9 .1 Global Network Management and standalone environments. Although measurements were averaged from multiple samples of live environments, it should be noted that the information provided is to be used as a guideline only. It is also important to note that the large majority of NNMi traffic is SNMP and ICMP except for Global Network Management traffic, which is TCP. Even though other network traffic is likely to increase (ARP, RARP, etc.) by using NNM or any other network management software, the scenarios below only measure traffic generated directly by NNMi.

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Introduction

This white paper documents the amount of network traffic generated by NNMi during different periods of common use. With this information, NNMi users can generally extrapolate how much network traffic may be used by NNMi in their network. NNMi is used in many different ways and each network is different. This information is, therefore, only applicable for general consideration. The first section (Standalone NNMi Network Utilization) documents network utilization of standalone NNMi (non-GNM). The second section (GNM Network Utilization) documents utilization into the GNM Global Manager.

Standalone NNMi Network Utilization

Configuration

Network bandwidth was measured using the following scenarios against 1,500 discovered nodes. All settings were the default settings except for changes explicitly listed below. ICMP polling was enabled for 1808 addresses at the 5min default interval. Fault and performance polling were set to the 5min default polling interval. All traps were link up/down traps. Rediscovery interval was set to 10 days (with the exception of the rediscovery scenario) so that no discovery would occur during the other scenarios.

Standalone System – Initial Discovery

This test measured utilization during initial discovery of 1,500 nodes.

- No traps were being received by NNMi during this time.
- All polling was turned off.

Averages of 1,116.156 packets and 2.605 Megabits per second were measured for this scenario.

Standalone System – Rediscovery

All polling was disabled during the rediscovery of the 1,500 nodes. This measured the utilization of a rediscovery cycle. This measurement was taken during the first rediscovery cycle, which will typically use the most bandwidth. Over time, rediscovery will spread out over your configured rediscovery period and average bandwidth for rediscovery will decrease.

Averages of 1,065.466 packets and 2.474 Megabits per second were measured for this scenario.

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Standalone System – SNMP Status Polling

This scenario measured utilization during status polling on ~11k polled interface objects.

- No traps were being received by NNMi during this time.
- All polling except SNMP status polling was turned off.
- Discovery was turned off during this period.

Averages of 16.206 packets and .016 Megabits per second were measured for this scenario.

Standalone System – Performance Polling

Utilization was measured during performance polling for the same ~11k interface objects polled during status polling scenario.

- No traps were being received by NNMi during this time.
- All polling except SNMP performance polling was turned off.

Averages of 252.366 packets and 1.161 Megabits per second were measured for this scenario.

Standalone System – ICMP Status Polling

Utilization was measured during ICMP polling on 1,808 polled addresses.

- Only ICMP traffic was measured—all other traffic was excluded.

Averages of 12.025 packets and .005 Megabits per second were measured for this scenario.

Standalone System – Traps

This scenario measured utilization under a steady state trap load. A link down/up trap was sent at a rate of 10 per second.

- Only link up/down traps were sent from interface 1 (which was polled by NNMi), and were randomly sent from all 1,500 nodes.
- Link up/down traps caused the following NNMi actions that resulted in additional ICMP and SNMP traffic:
 - Rediscovery of each node that sent a link down trap
 - Immediate status poll of each interface that sent a trap
- Some trap de-duplication was occurring so not every trap caused the secondary NNMi actions.

Averages of 86.124 packets and .250 Megabits per second were measured for this scenario.

Standalone System – Custom Polling

Utilization was measured during custom polling of 11K interfaces (if%util was polled).

Averages of 103.241 packets and .189 Megabits per second were measured for this scenario.

GNM Network Utilization

Configuration

The Global Network Management (GNM) feature of NNMi allows for central collection of several remote network management stations. The network utilization measurements documented herein reflect this particular test environment. All traffic measurements were taken at the GNM Global Manager, which contained a total of 30,000 nodes. All traffic originated from three different Regional Managers, each Regional Manager managed from 6,000 to 25,000 nodes. No direct discovery or polling occurred on the Global Manager. Across the three Regional Managers there was a total of 420,000 fault and performance polled interfaces, 400,000 node components (sometimes referred to as node health components) and 30,000 IP addresses.

GNM Steady State Scenario

During this scenario all of the polled objects mentioned in the Configuration section above were polled at the default interval of 5 minutes. The Global Manager had completed discovering (transferring) all the topology data from the three Regional Managers.

Averages of 328.774 TCP packets and 2.284 Megabits per second were measured in the lighter loading scenario.

GNM Heavy Load Scenario

During this scenario 80,000 of the 420,000 interfaces were fault and performance polled every minute. The remaining interfaces were fault and performance polled every 5 minutes.

Averages of 270.559 TCP packets and 1.816 Megabits per second were measured during this scenario.

GNM Discovery Scenario

This scenario measured the bandwidth during an initial discovery of a 25,000 node remote. This is the period directly after configuring the Regional Manager to the Global Manager when all topology information is being transferred from the Regional to the Global. Initial discovery on the Regional Manager was completed. No other Remote Managers were connected to the Global Manager during this period.

Averages of 400.567 TCP packets and 2.788 Megabits per second were measured during this scenario.

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(<http://www.apache.org>)

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(<http://www.extreme.indiana.edu>)

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