

# NetMaster update, Network Security

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Session **EH**



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# Today's Agenda

**1** NetMaster & Network Security

**2** Roadmap Overview

**3** What's New with NetMaster

**4** The Future of NetMaster

**5** Q&A / Open Floor

# **A preview: CA NetMaster<sup>®</sup> and network security**

# The State of Network Security Today

Almost **all hack attacks involve the network** in some way, shape, form or manner.

- **7 out of the top 10 top cyber-related threats** were network related<sup>1</sup>
- **100% of the Top 10 of the World's (known) Largest Cyberattacks**<sup>2</sup> were network related
- **+67% 2017-2018: pace is accelerating**
- Remote access attacks represent **88%<sup>4</sup> of all hack attempts**

## Sources

<sup>1</sup> ENISA Threat Landscape Report 2018

<sup>2</sup> Outpost24, "Top 10 of the world's largest cyberattacks", Dec. 03, 2018

<sup>3</sup> Accenture, "The Cost of Cyber Crime", March 6, 2019

<sup>4</sup> Verizon Risk Team, "Data Breach Investigations Report"

<sup>5</sup> <https://www.newsbtc.com/2017/02/14/top-6-countries-targeted-cyber-attackers/>

## The Threat

- 2/3 of total data records compromised in 2017 were the result of inadvertent insider activity
- Malicious Attacks – 50% of all data breaches
- The average time to identify and contain a data breach is **279** days
- **206** days to identify that a data breach has occurred and **73** days to contain

## The Cost

- The worldwide average cost of a data breach is **\$3.9 million**<sup>5</sup>
- In the US, the average cost exceeds **\$8 million**<sup>5</sup>
- The full impact of GDPR is not represented in those numbers



# Mainframe's Response

Not a surprise that IBM and vendors are working to address the issue...

- **zERT** introduced in Sept 2017; NetMaster was the first MF network management solution to support zERT (2018)
- **Pervasive Encryption** announced July 2017
- **Data Privacy Passports/TDO** announced September 2019 as part of z15
- **TLS 1.3** introduced September 2019 in z/OS 2.4
- **Secure Z** – announcements forthcoming from IBM, expect efforts to enhance and address in coming months



# What you've told us is still needed in Mainframe Network Security

## Where we are today...

- ✓ **Too much data** from **numerous sources**
- ✓ **Data** is in many different locations
- ✓ **Issues** are hard to identify
- ✓ **Products** which do not **integrate** with other security systems or applications
- ✓ **Interfaces** which are outdated, hard to use
- ✓ No integration between **network** and **security** functions
- ✓ Lack of **automation**



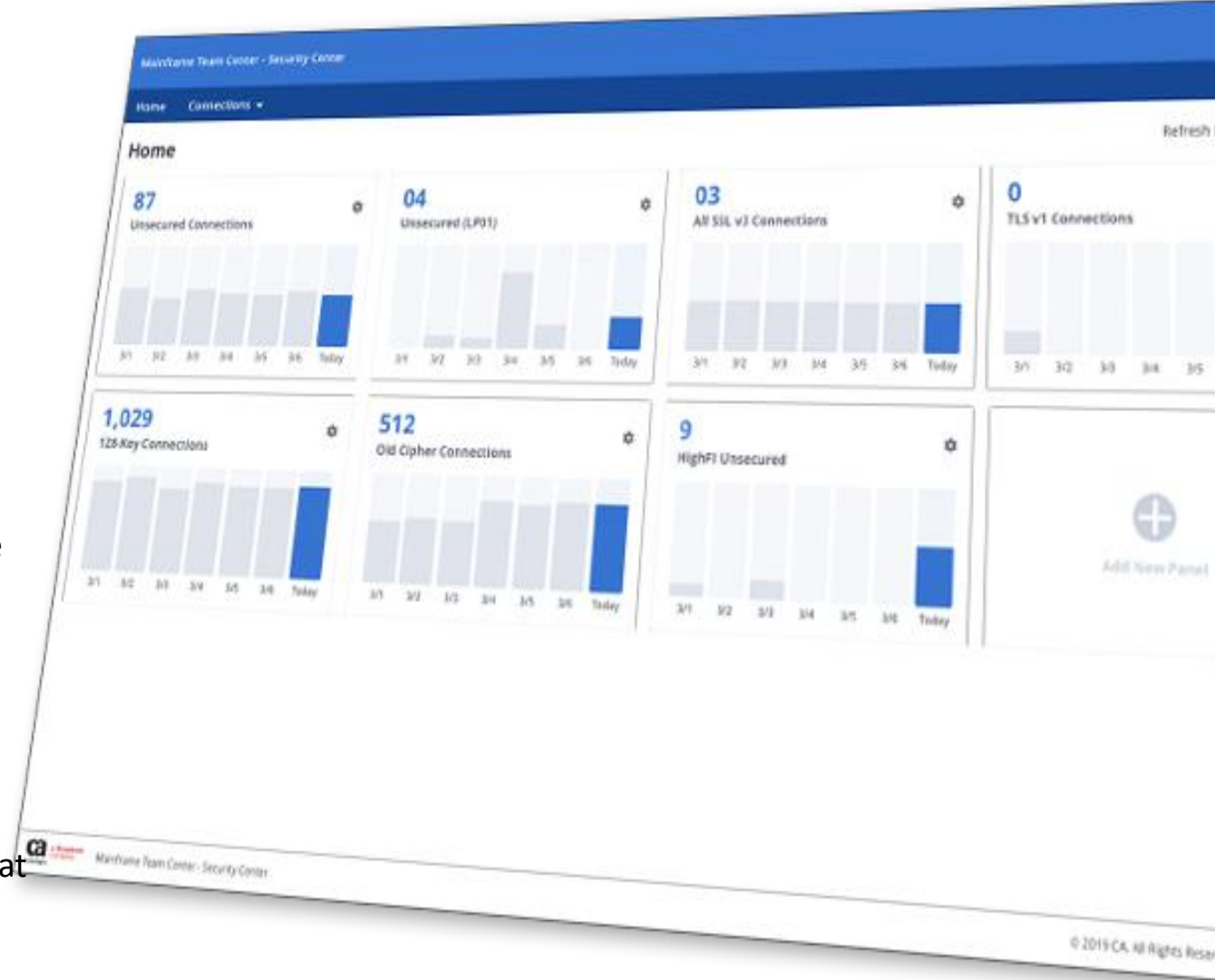
## What we're exploring...

- ✓ Combine network data with **zERT** and other **key security metrics**
- ✓ **Quickly correlate & map** data
- ✓ **Designed for** non-network (InfoSec) professionals *and* network engineers
- ✓ **APIs** to free your data and enable cross-discipline integration
- ✓ **Interfaces** designed to be flexible for different team members
- ✓ Quick **drill down** & data **in context**
- ✓ Security **event triggers + response**

# Introducing CA NetMaster® Security Center

A “one stop shop for mainframe network security” teams

- **Consolidated, configurable interface** which users can leverage to surface the network security information
- **Provide context for zERT data** with other network and network security data
- **Allows for digging deep** into security related data to perform sophisticated analytics
- **Collaboration between network management and MF security teams**—using a single interface which can be configured to provide data & capabilities unique to each team.
- **Integration with Broadcom/CA Mainframe Security** offerings to provide seamless data sharing to key security solutions.
- **Availability:** Proof of Concept has been created, working on developing MVP in 1H2020, and GA by end of 2020.
- **Call for Customer Validation Partners:** join our validation program at [validate.broadcom.com](https://validate.broadcom.com) and work with us as we continue to build Security Center.





# NetMaster Roadmap

A look at what's available now, what's under development today,  
and what we're considering for the future...



# Roadmap for CA NetMaster®

Timeline as of 21 October 2019

		Delivered	Planned	Under Consideration
Product/ Releases		NetMaster 12.2 GA	NetMaster 13.0 INC 00	NetMaster
Marquee Features/ Business Value		<p><b>GA of NetMaster 12.2</b> finalize NetMaster 12.2 as release complete, improved documentation, QA/testing</p> <p><b>MTC-NM improvements</b> with support of SmartTrace and one click download of PCAP files</p> <p><b>Network cryptographic attributes</b> for TCP and EE connections through implementation of zERT 2.3 allowing for transparency and compliance with corporate network security standards</p> <p><b>SmartTrace Enhancements</b> with added support of SMC, OSA Express devices via OSAENTA support, increased max tracing size, packet direction information</p>	<p><b>Security Center</b> enhancing network security awareness with a consolidated one-stop-shop for network security information.</p> <p><b>Enhancements to NetMaster MTC-NM</b> web interface, including network data integration with third party reporting tools.</p> <p><b>NetMaster APIs</b> to simplify access and integration of network data and capabilities through APIs.</p> <p><b>NetMaster z/OSMF</b> enabling simplified installation and maintenance of NetMaster leveraging z/OSMF.</p>	<p><b>NetMaster Network Diagnostics</b> for storage and system management teams.</p> <p><b>Enhanced Integration with Broadcom products</b> providing network data and capabilities across products.</p> <p><b>Enhanced NetMaster Performance Data</b> to provide insights of resource consumption at the application and feature level.</p> <p><b>NetMaster Automated Diagnostics &amp; Analytics</b> to aid network management &amp; remediation of well understood network issues.</p>
		Current Release	Mainframe Economics Skills Management	Business Agility Security & Compliance

# What's New with NetMaster

A look at NetMaster features we've delivered over the course of the past 12 months...



# Features at a Glance

The latest developments for CA NetMaster®

- ✓ **12.2 GA: release complete;** work beginning on 13.0.
- ✓ **Continuous Delivery Support:** Starting with R12.2 and continuing into R13.0, NetMaster has adopted continuous delivery.
- ✓ **New Web Interface (Mainframe Team Center—Network Management) Features:** new improved engine provides clear network information at a glance; integrated alert notifications; command integration (without having to swap to 3270 interface); SmartTrace (full support via the web interface)
- ✓ **zERT Support:** Data Display & Event Detector support
- ✓ **12.1 to 12.2 PAX:** Simplified upgrade process
- ✓ **NetMaster Enhanced Analytics:** integration w/Mainframe Operational Intelligence
- ✓ **OSAENTA Support:** OSA Express Device Tracing within SmartTrace™
- ✓ **SMC Support**

# Delivered

Feature	Description	Benefit
<b>12.2 GA Release</b>	Finalizes NetMaster 12.2 as release complete with numerous enhancements.	Additional QA/testing to NetMaster's 12.2 feature complete release, additional capabilities (beyond those listed above) included SMC support, significant enhancements to NetMaster (support of new protocols, enhanced UNIX support for USS commands, updated and improved messages and error reporting, and numerous optimizations to NetMaster performance).
<b>Continuous Delivery Support</b>	Adoption of continuous delivery for NetMaster 12.2 and future versions.	Immediate access to latest enhancements, ability for customers to decide when/if to enable new features and capabilities, continuous support with enhanced testing.
<b>MTC-NM Improvements</b>	As the web interface for NetMaster, Mainframe Team Center – Network Management, has been improved with enhanced support of SmartTrace including the ability to download PCAP information quickly and easily.	Allows network engineers, using the web interface to create, edit, start, stop, and delete SmartTraces, while allowing for the simple downloading of PCAP information with a single click of the mouse within the web interface.
<b>zERT Support</b>	First in market to offer zERT cryptographic attribute information for secured network traffic, including algorithm, key length, protocol, and numerous other key attribute information with a sophisticated implementation.	Understand not only that your traffic is secured, but how it is secured, NetMaster offers network security professionals the ability to identify potential security compliance issues, while aiding network management team to meet audit requirements.

# GA of NetMaster 12.2

*Simplified upgrades for existing NetMaster 12.1 customers; enhancements & new features*

## DELIVERED RELEASE



## BENEFITS

- Additional capabilities and features only available in 12.2
- Introduction of key new network security encryption data through the support of zERT
- Significant testing and QA has been conducted as part of the CA/Broadcom GA process
- Simple to upgrade existing NetMaster deployments

## WHAT'S IN 12.2

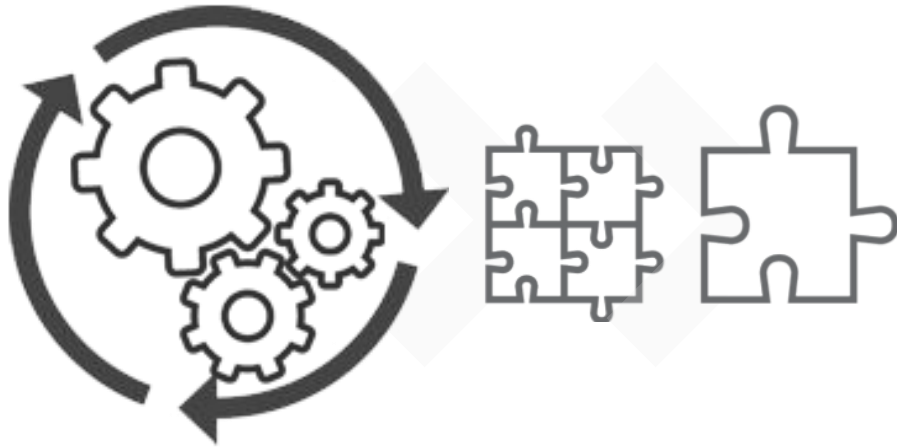
- **Key enhancements to MTC-NM**, including additional SmartTrace functionality and the ability to download PCAP files with single click
- **Enhanced network encryption insights** with support for z/OS Encryption Readiness Technology (zERT) and data about how traffic has been encrypted
- **Additional SmartTrace enhancements** including support for OSAENTA ethernet frames, packet direction information, support for SMC packet decoding, and increased maximum packet trace sizing.
- **SMC Support** including SMC-R and SMC-D, with key metrics and statistics
- **Improvements for NetMaster**, including support for PCI standard compliance, support for new security protocols, enhanced UNIX support for USS commands, updating messages, improved error reporting, etc.
- **Advanced Machine Learning capabilities** with adaptive thresholding to proactively flag abnormal patterns, advanced visual analytics for ML-enhanced reports and dashboards and historical data analysis leveraging CA Mainframe Operational Intelligence.
- **Enhanced documentation** reorganized based on customer feedback to provide streamlined access to key/critical information, 12.1 to 12.2 feature comparison, additional videos to leverage the full capabilities of NetMaster
- **Simplified upgrade from 12.1 to 12.2** upgrade with a single PAX file.



# Continuous Delivery Support

*Adoption of Continuous Delivery for NetMaster 12.2 and all versions moving forward.*

## DELIVERED RELEASE



## PAIN POINTS

- Current incremental release program is implemented inconsistently leading to confusion about the definition of what an INC release is.
- A desire to select features of interest without dependencies which force installation and implementation of undesired features
- Faster access to latest for required testing prior to deployment

## SOLUTION

- Continuous delivery which provides simplified access to latest releases
- New features by default are “switched off”, customers decide what to enable/implement
- Consistent support for continuous delivery across all Broadcom mainframe offerings

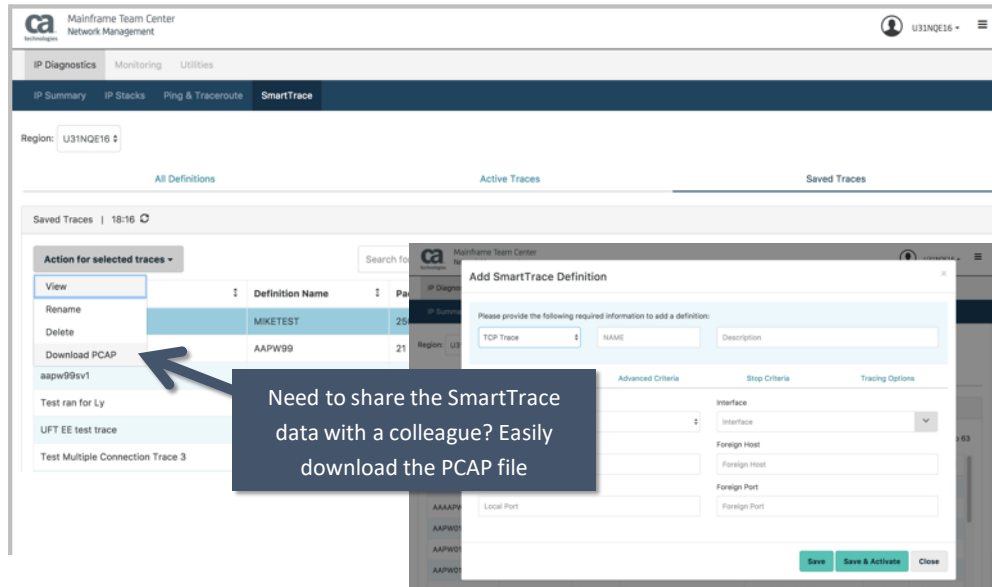
## BENEFITS

- Access to latest features for testing by customers immediately upon release
- Customer control of how/when to implement features based on their needs and priorities
- Simplified system to access updates for Broadcom mainframe offerings
- Optional for customers: customers can leverage CD for their products, or continue to leverage CARS and/or a GA-1 maintenance strategy—whatever makes sense for their needs
- Consistency across Broadcom mainframe offerings in how products are released and supported

# Web Interface Enhancements

*Improving MTC-NM with additional SmartTrace support, simplify PCAP file access/download*

## DELIVERED FEATURE



## PAIN POINTS

- Desire to be able to create, edit, view, start/stop, and delete SmartTraces without having to go to the 3270 interface.
- Importing trace data (PCAP) to a packet analyzer, like WireShark, can be tedious, requiring SFTP'ing data to client where analyzer is installed.

## SOLUTION

- Enable support of key SmartTrace functionality within the web interface, allowing customers to perform key actions without the need to drop back to 3270.
- Allow simple downloading of PCAP file directly from web interface to client machine for packet analysis.

## BENEFITS

- Enables additional SmartTrace functionality within web interface, bringing the web UI into greater parity with the 3270 interface, for users who prefer the web interface over 3270.
- Takes advantage of web interface to simplify access to trace data, allowing users to quickly download PCAP files to their laptops and reducing time/effort to then analyze the PCAP data with their preferred packet analyzer.
- Makes web interface more feature complete, adds enhancements unique to web interface which reduces effort/time needed for network engineers to perform packet analysis.



# zERT 3270 Data Display

*Access cryptographic attribute data for your TCP/IP and EE connections*

## DELIVERED FEATURE

```

DENM8149----- TCP/IP : EE UDP Connection Information -----
Command ==> Scroll ==> CSR
-----
  with SNA Request Header (RH) ..... 0      0      -      0%
  with SNA Request Unit (RU) ..... 0      0      -      0%
  Unanalyzed, due to truncation ..... 0      0      -      0%
  Unanalyzed, unrecognized ..... 0      0      -      0%

Interface Usage                      Packets In   Packets Out
HIPSOCKFF .....                      -           100%

IKE Tunnel Details
IKE Tunnel Id ..... 4
Version ..... 1.0
Exchange Rule ..... EE*5
Authorization
  Algorithm ..... HMAC_SHA1
  Method (Local) ..... PRESHARED_KEY
  Method (Remote) ..... PRESHARED_KEY
  Interval ..... 480
  Encryption ..... DES
  DH Group ..... GROUP_1
  Random Function ..... HMAC_SHA1
  Lifesize ..... 0
  Lifetime ..... 480

IPSEC Tunnel Details
IPSEC Tunnel Id ..... 5
FIPS mode ..... NO
Authorization
  Algorithm ..... HMAC_SHA1
  Protocol ..... ESP
  Encryption ..... DES
  PFS Group ..... NONE
  Lifesize ..... 0
  Lifetime ..... 240
  VPN Expiry ..... 1440
***** BOTTOM OF DATA *****
  
```

## PAIN POINTS

- Difficult to determine encryption envelope attribute data for protected traffic
- Auditing secured traffic becomes an onerous and lengthy process
- No automatic alerting for non-compliant traffic

## SOLUTION

- NetMaster support for zOS 2.3's zERT encryption analysis data
- Provides insight into algorithm, key length, and other key encryption attributes through a simple interface
- Automated alerts can be set up for non-compliant traffic

## BENEFITS

- Understand not only if your traffic is encrypted, but how it is encrypted
- NetMaster event handlers can automate the detection of non-compliant secured traffic
- zERT information can be highly useful for compliance and audit purposes
- Aids in identifying potential security/encryption issues as soon as the application/system sends non-compliant data/traffic.

# The Future of NetMaster

Features and capabilities we're looking at potentially investing in for the coming 12-18 months...



# Planned

Feature	Description	Benefit
<b>Security Center</b>	A comprehensive one-stop-shop for network security information.	A simple, easy to use, yet information rich interface for network security team members. Easily filter and sort your network security data, with visualizations to aid in the identification of potential trouble spots.
<b>Enhancements to NetMaster MTC-NM</b>	Additional capabilities and features for NetMaster's web interface (Mainframe Team Center – Network Management).	Progress towards feature parity with NetMaster's 3270 interface, enhancements to security and web delivery platform.
<b>NetMaster API Enablement</b>	Adding of API support within NetMaster, allowing access to data and capabilities via API endpoints, as well as integration with CA's API Gateway.	Simplified access and integration of network data and NetMaster capabilities through standardized APIs, enabling the leveraging of key NetMaster data/capabilities by other applications/services.
<b>z/OSMF Provisioning</b>	Enable support for z/OSMF provisioning of NetMaster to install and configure deployments.	Leveraging z/OSMF, allow for the simple and rapid deployment of NetMaster installations and initial configuration across multiple LPARs and Sysplexes.

## Security Center

*One stop shop for network security information within a web interface*

### PLANNED FEATURE



### BENEFIT

- No need to access multiple panels or logs to access commonly needed network security information
- Easily export information needed for audit/compliance reporting needs
- Efforts for network engineers tasked with network security is simplified and optimized, allowing for reduced MTTR/RBroadcom for network security—a key factor in any security risk mitigation and resolution plan.

### PAIN

- Network Security professionals need an easy to access interface optimized to meet their needs
- Ability to quickly filter, sort, and link traffic data to alert triggers, encryption information, and usage statistics needed for network security audit and compliance needs.

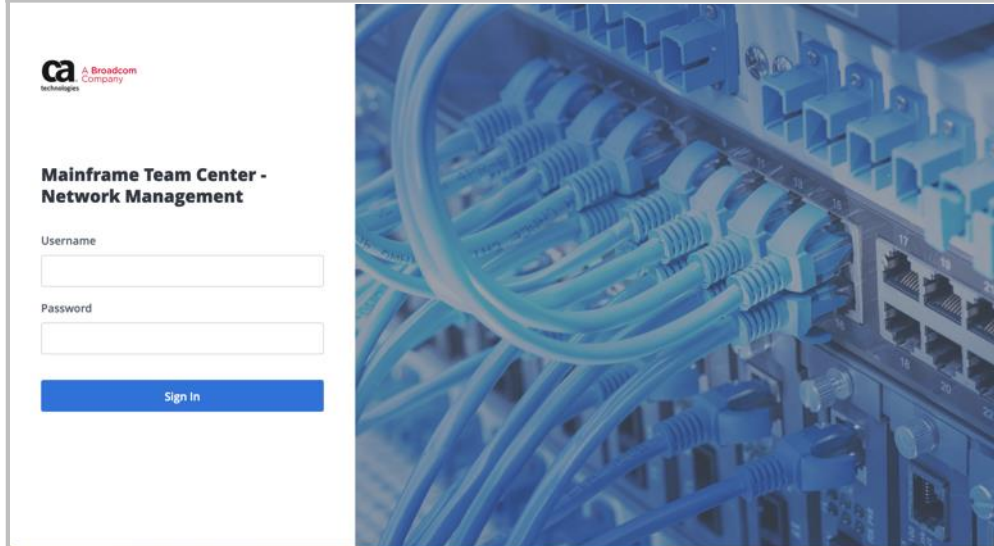
### SOLUTION

- A consolidated network security within NetMaster
- Provides detailed information, visualizations, and quick access to relevant security information.
- Available via NetMaster's web interface (Mainframe Team Center—Network Management)

# MTC-NM Enhancements

*Additional features and capabilities for CA NetMaster's web interface*

## PLANNED FEATURE



## PAIN

- Network Security professionals need an easy to access interface optimized to meet their needs
- Ability to quickly filter, sort, and link traffic data to alert triggers, encryption information, and usage statistics needed for network security audit and compliance needs.

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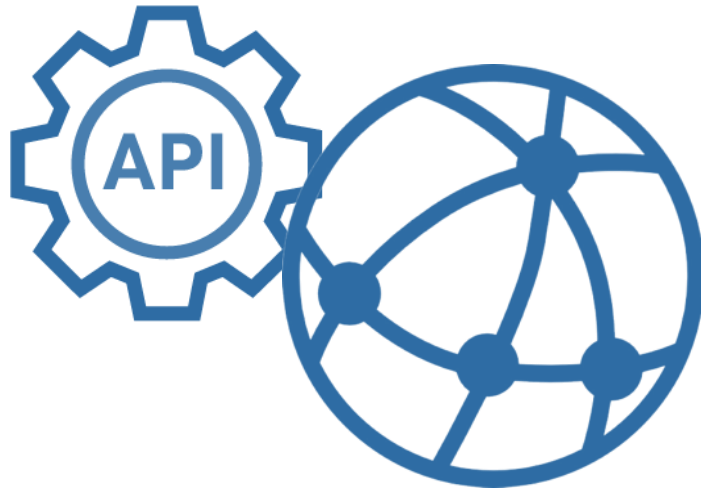
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# NetMaster API Enablement

*Providing access to NetMaster data and capabilities via APIs*

## PLANNED FEATURE



## PAIN

- Custom applications desire access to specific network data and capabilities to support operational needs.
- Integration between Broadcom mainframe offerings require enhanced access in order to provide content beyond the immediate domain to aid in correctly identifying and resolving issues.

## SOLUTION

- API enable NetMaster to create endpoints which provide network data and capabilities.
- Integration with CA's API Gateway in order to simplify integration efforts with a single endpoint/interface.

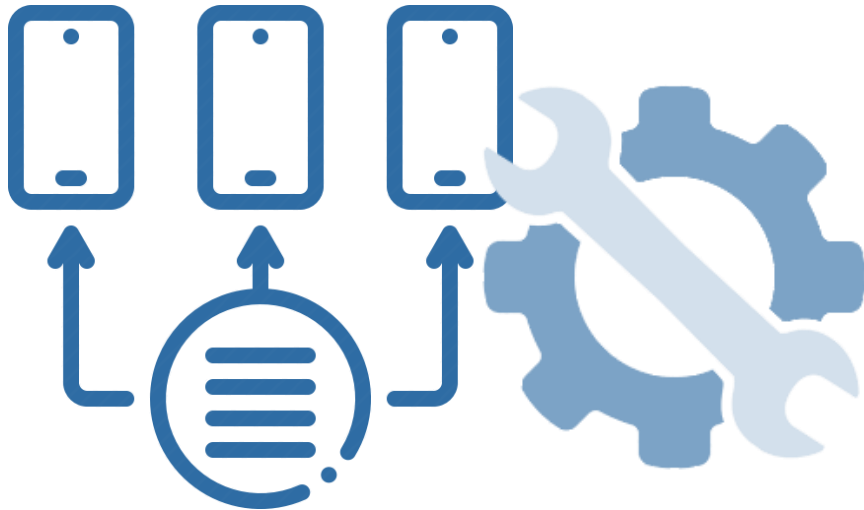
## BENEFIT

- Simplify integration of NetMaster with other Broadcom offerings as well as customer created custom applications.
- Allow for discovery of available API calls by integrating with CA's API Gateway.
- Allows NetMaster to take advantage of core services / capabilities for Broadcom mainframe offerings, enabling future integrated services for Broadcom mainframe customers.

# z/OSMF Provisioning Support

*Easily deploy and configure NetMaster installations within your mainframe environment*

## PLANNED FEATURE



## PAIN

- Deploying any mainframe software in large/complex environments can be time consuming and costly.
- Once software has been deployed, configuring each installation only adds to time/cost considerations.

## SOLUTION

- Rapid and intelligent deployment of NetMaster leveraging z/OSMF provisioning
- Configuration by deployment, with multiple and custom configurations can be defined/made available
- All via a simple web interface

## BENEFIT

- Reduce the time and effort your mainframe configuration and installation teams must spend to deploy NetMaster.
- Will intelligently select correct files, fixes, PTFs depending on selection of components to be installed.
- Is configurable to allow different types of deployments based on your needs.
- Can apply custom configurations based on specific criteria.
- Significantly simplifies the process of deploying NetMaster in a mainframe environment.



# Under Consideration

Feature	Description	Benefit
<b>NetMaster network diagnostics for storage and systems management</b>	Basic network diagnostics capabilities embedded into the interface for storage and systems performance team members allowing teams to understand if a network issue likely exists or not.	Reduce the number of network incident false positives by enabling other domain team members to do basic network diagnostics—with data from any detected network issues piped to NetMaster’s network management interface.
<b>Enhanced Integration with Broadcom products</b>	Integrate the sharing of key network data to other Broadcom mainframe offerings, including security, performance, and automation offerings.	Share key network information with other products to provide additional context; pull data from other products to enhance the information available for network management/issue context.
<b>Enhanced NetMaster Performance Data</b>	Provide insights of NetMaster resource consumption at the application and feature level.	Understand how NetMaster is consuming resources to help identify potential issues and/or optimize NetMaster’s capacity use within your mainframe environment.
<b>NetMaster Automated Diagnostics &amp; Analytics</b>	Aid network management & remediation of well understood network issues by enabling automation combined with network analytics.	Get rid of the need to monitor and manage well understood issues through network analytics and automation, freeing up key resources to focus on higher priority needs.

**Join the NetMaster Validation Program!**

**Go to: <https://validate.ca.com> and look for the CA NetMaster<sup>®</sup> opportunities!**



# How You Can Get Involved

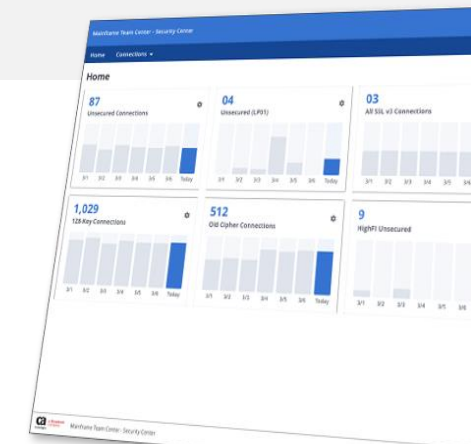
## Broadcom Communities Ideation

- Submit your ideas on [communities.ca.com](https://communities.ca.com)
- Vote and comment on ideas that are important to you
- Broadcom Product Management reviews ideas and updates status as they move through the lifecycle
- “Currently Planned” idea status indicates inclusion in Agile Backlog or Product Roadmap

## Customer Validation Program

- Register to participate in:
  - Live Demos / End-of-Sprint Review meetings
  - Private - Members Only - Online Community
  - Pre-Complete Release Feature Testing and Support
  - Upgrade Support From SWAT Team
- How to register: [validate.ca.com](https://validate.ca.com)

We're looking for Customer Validation Partners as we continue to develop Security Center! **Join our NetMaster validation program today.**



# Thank You

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