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DNS Naming Best Practices - DRAFT

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Overview

This document summarizes the best practices to follow for naming computers and services for all new and upgraded systems for the Executive Branch of the State of Minnesota.

To make any DNS-related requests, open a ticket with the MN.IT Services service desk requesting DNS support.

Background

The *DNS Naming Standard* requires that all executive branch names be under the domains:

- state.mn.us
- mn.gov
- minnesota.gov

It further requires that the contents of these domains be kept in synch.

Existing uses of other domains may continue, but all new uses must be in the above domains.

As implemented by MN.IT Services, the DNS is presented as two different views: one visible from computers within MNET and the other presented to the Internet as a whole. The selection of views is automatic based on the source IP address of the originating request. Also as implemented, the state.mn.us domain is considered the “master” and the mn.gov and minnesota.gov domains are updated as needed to match state.mn.us.

The *Web Sites and SSLs* resource document covers this split in more detail.

If there is some reason to have names not accessible from the Internet as a whole, we can exclude entire domains from the Internet view. For example:

- *hidden.agency.state.mn.us*

These names are not replicated to mn.gov or minnesota.gov and are not visible from the Internet as a whole. In particular, the domain:

- *int.state.mn.us*

is not replicated, so that if you request domains under that one such as:

- *project.int.state.mn.us*

The names under *project* won't be replicated. Note that hosts should not be placed directly into the int.state.mn.us domain: there should always be a project component to the name.

Automation synchronizes the contents of state.mn.us domain to the mn.gov and minnesota.gov domains, from the within MNET view to the Internet view, and the creation of the PTR records.

In many cases, we can provide you with direct administrator access to your domain (in state.mn.us).

New Applications or Systems

MN.IT Services recommends that any new applications or systems be placed into new domains under state.mn.us. For example:

- *new.hidden.agency.state.mn.us*

By placing them in a new domain, it will be easier to isolate naming and therefore migrate systems in the future.

MN.IT Services is considering expanding internal DNS server support. Contact MN.IT Service service desk to request current information in this area.

External-Facing Names

This section covers names that are intended to be used by customers, citizens or anyone in the “outside world.”

Web Servers

All new and upgraded web services should be presented as:

- *mn.gov/path*

The best practices for the *path* portion are covered in the *Mn.gov Path Best Practices* document.

To be clear: this name is the full name and is not a suffix or domain. In other words, all future web services will be presented through a reverse proxy, which will fan out the services to the actual servers.¹ The *Web Sites and SSLs* resource document covers some of the implementation details of this approach.

SharePoint Collaboration Services

These names have been set at:

- connect.mn.gov
- inside.mn.gov
- partners.mn.gov
- people.mn.gov

Email Addresses

These will remain in their current form of:

- *first.last@state.mn.us*

Service Names

MN.IT Services provides a variety of services that need names that remain unchanged for the long term. These names will normally be in the state.mn.us domain. Note that these are not services for people so much as they are for computers. A partial list of such names is given here.

DNS Authoritative Servers²

- ns1.state.mn.us
- ns2.state.mn.us
- ns3.state.mn.us

Network Time Protocol Servers

- ntp.state.mn.us
- ntp2.state.mn.us
- ntp3.state.mn.us
- ntp4.state.mn.us

Internal Names

These are names used by computers for providing services to other servers or internal customers.

Unless otherwise specified, these names are not replicated from the state.mn.us domain to the mn.gov and minnesota.gov domains. Further, these names are only visible from locations on MNET and are not visible to the Internet as a whole. Because of this lack of visibility to the Internet, most servers will receive RFC 1918 addresses (specifically, in the 10.0.0.0/8 range).

Because of the single-instance specified in the previous paragraph, the PTR records for these names will point back to the state.mn.us domain.

¹ As well as handle other functions including SSL termination, IPv6 to IPv4 conversion, application firewalls and web performance improvements.

² Note: these are not used when configuring resolvers.

Considerations

When designing name formats for the internal names, the following were considered:

- It should be possible to easily tie a name back to the responsible group.
- It should be possible to determine the production status of the computer by inspecting the name only.
- Information on a topic should only appear once in the name.
- Names should be easy to type.
- The format should resist simple typographic errors (insertion, deletion, replacement, transposition).

Applications

Applications receive application ids, but not names in the DNS itself.

Desktops

Name format to be specified by desktop group.

Servers

Note: we need to review this section with the Windows NetBios 15-character limit in mind. This is a proposal and by no means an agreed-upon final version.

The domain int.state.mn.us has been set aside for internal server usage. The contents of this domain are excluded from synchronization (not replicated to mn.gov and minnesota.gov as well as being visible only on the inside view).

Usage should follow one of these sets of forms:

- *computer-name.system.int.state.mn.us*

or:

- *computer-name.system.int.state.mn.us*
- *computer-name.test.system.int.state.mn.us*
- *computer-name.integ.system.int.state.mn.us*
- *computer-name.dev.system.int.state.mn.us*

In both cases, *system* is the name of the overall system (for example, "iam" for identity and access management) and *computer-name* is the name of a computer.

The *computer-name* will be in one of two forms, the choice of which depends on which of the above form groups is selected. Computer names should contain only lower-case letters (a-z), the digits 0-9, and the dash ("-") character.

In the first case, the production status of the computer is part of the computer name. In this case, the form is:

- *cust-applid-status-purpose-seq*

where:

- **cust**: an abbreviation for the customer on whose behalf the computer is provided
- **applid**: the application id for the application running on the computer. It is "mixed" if the computer is running multiple applications.
- **status**: is the production status. One of:
 - **prod**: production
 - **test**: test
 - **integ**: integration

- **dev**: development
- **tier**: the tier of the computer. Both generic and specific tier names are provided. The more specific one should be used if appropriate.
 - **web**: web tier (generic)
 - **app**: application tier (generic)
 - **esb**: enterprise service bus
 - **fnet**: Filenet document servers
 - **db**: database tier
 - **hba**: HBase database server
- **seq**: a sequence number to distinguish this computer from otherwise identically-named ones. It starts at one and is incremented by one as needed. It is expressed as decimal with no leading zeros.

The second case is the same as the first, but with the production status and its trailing dash removed (as that information is in the domain name).

Management Infrastructure

Computers that provide management and support infrastructure can be placed in the mgmt.state.mn.us domain. The contents of this domain are excluded from synchronization (not replicated to mn.gov and minnesota.gov as well as being visible only on the inside view). Table 1 lists the currently defined forms.

Table 1: Management Infrastructure Naming

purpose	name pattern
Adtran CSUs	CITY.adtran.mgmt.state.mn.us
ATS units	CITY.ats.mgmt.state.mn.us
Ekinops units	CITY#.ekinops.mgmt.state.mn.us
ONS 454s	CITY454-itg.ons454.mgmt.state.mn.us
PDU	LOCATION-#.pdu.mgmt.state.mn.us
RICs	NEARDEVICE-CUST-FARDEVICE-CUST.ric.mgmt.state.mn.us NEARDEVICE#-CUST-FARDEVICE#-CUST.ric.mgmt.state.mn.us
UPS units (not in data centers)	CITY#.ups.mgmt.state.mn.us
Widebanks	CITY#.wb.mgmt.state.mn.us

Network Devices

Network devices (including routers, switches, some firewalls, some VPNs) will have names of the form:

- *location-customer.r.state.mn.us*

The contents of this domain are excluded from synchronization (not replicated to mn.gov and minnesota.gov as well as being visible only on the inside view).