

# Expert Group Meeting on The Use of Arabic Script in Domain Names

Second Global Workshop of the Arabic Script IDN Working Group  
(ASIWG)

Dubai, U.A.E. May 28-29, 2008

Sponsored by TRA, UN ESCWA, PIR, Afiliias

## **Attendees:**

Abdulaziz Al-Zoman (.SA)  
Alexa Raad (PIR)  
Alireza Saleh (IR NIC)  
Ayman El-Sherbiny (UN)  
Baher Esmat (ICANN)  
Basher Al-Abdulahadi (Kuwaitnet)  
Dawit Bekele (ISOC Africa)  
John Klensin  
Ibaa Ouichek (Syria)  
Manal Ismail (TRA Egypt)  
Mohammed Al-Khamis (TRA UAE)  
Mohammed Al-Zarooni (TRA UAE)  
Raed Al-Fayez (.SA)  
Ram Mohan (Afiliias)  
Sarmad Hussain (Pakistan)

## **SESSION I**

### **Round-Table: Review of Progress & Pending issues**

ASIWG commenced this session with a recap of the ASIWG-I meeting in Dubai held on Mar 30-31, 2008, the ICANN Dubai Regional meeting held on Apr 1-2, 2008, and finally the APTLD meeting held in Kuala Lumpur on May 21-23, 2008. ASIWG members represented the Working Group at each of these meetings.

The Outcomes Report from the ASIWG-I meeting was discussed at the meeting. A copy of this report has been posted to the ASIWG mailing list and will be posted to the ASIWG Wiki site.

Brief discussion ensued on the 4-level model that the WG presented at the conclusion of ASIWG-I. The WG decided that the exact number of levels was less useful than the approach we are taking – i.e., focus on the Protocol level issues first, then on the Script, Registry and Application levels in turn, addressing as many global issues on each level as feasible.

Brief discussion ensued on the role of APTLD, and its proposed sponsorship of the ASIWG. Members present at the APTLD Kuala Lumpur (KL) meeting informed the ASIWG that APTLD sponsorship was publicly announced at the APTLD KL meeting.

ASIWG now hosts its own website, its own Wiki and a publicly archived mailing list. Members suggested more traffic and issues be discussed on the lists, and that documents should be listed on the website.

.SA Registry demonstrated a new Arabic script comparison tool that should be useful in making variant and confusable character decisions.

ASIWG welcomes input from Malaysia regarding the Jawi language which implements Arabic script.

### **Review of PVALID, DISALLOWED characters from Arabic script table**

The ASIWG reviewed the list of PVALID and DISALLOWED characters from the Arabic script code page in Unicode.

Each decision made at ASIWG-I regarding placing characters in PVALID or DISALLOWED category for IDNA2008 was reviewed, in addition to discussion on characters that did not make it into the ASIWG-I meeting.

### **Numerals**

The ASIWG decided that in the case of the three sets of Arabic Numerals, to restrict the 3 Arabic sets of numerals from mixing with each other at the protocol level.

Either this is an Arabic script problem - within the same language. General principle that is recommended be solved for numerals generally.

Modify BIDI on the protocol side. If Arabic, then numeral homogeneity is required.

Note: This does not restrict ASCII numerals from mixing with any of the set of Arabic numerals.

### **Session I Actions:**

Action	Description	Date Due	Owner
1	Add link to Arabic script comparison tool on ASIWG Wiki	TBD	Raed Al-Fayez
2	Add link to Afilias Thunderbird & E-Mail interoperability links	TBD	Ram Mohan
3	Post ASIWG-I Outcomes report to ASIWG Wiki	TBD	Ram Mohan
4	Create list of recommended Arabic script characters that are PVALID and DISALLOWED	June 4	Abdulaziz Al-Zoman

5	Create DIFF list and send to Sarmad	June 4	Abdulaziz Al-Zoman
6	QA recommended list and post to the ASIWG-Coord List, solicit comments	Before June 9	Sarmad Hussain
7	Post recommended list to the ASIWG main list, solicit comments	June 9	Sarmad Hussain
8	Submit final protocol list to IETF	June 23	Sarmad Hussain
9	Provide confirmation regarding Arabic numerals design at protocol level to ASIWG	June 15	John Klensin

## SESSION II ZWNJ & Space: Confusing Cases

Dr. Al-Zoman made a presentation on ZWNJ that lists the issues as ASIWG members see it regarding ZWNJ. Presentation to be posted to Wiki.

ASIWG agreed that dealing with <SPACE> in Arabic script is more of an application layer issue, to be resolved later and potentially by a different group.

- 1) ASIWG suggested the implementation of a rule in Unicode for ZWNJ - "ZWNJ should only be inserted between two characters that can join."
- 2) ASIWG believes that it needs to implement a prototype that will demonstrate the behavior of characters, based on the rule proposed in (1) above.
- 3) The group achieved consensus in agreeing that ZWNJ is required for Arabic script.
- 4) Once tasks 1-3 are complete, ASIWG intends to send a recommendation to the IETF and have ASIWG -- language be added into the protocol documents which say #3 above, with potentially incorporation of #1 and #2 above.

ASIWG agreed that an informal liaison is needed from ASIWG to the Unicode group to ensure that the Arabic code page is appropriately handled in the future.

### **Session II Actions:**

Action	Description	Date Due	Owner
1	Creation of prototype to model ZWNJ behavior with Arabic script	TBD, but before June 23	Alireza Saleh
2	Add language regarding (3) above to the IETF protocol input	June 23	Sarmad Hussain
3	Create ASIWG liaison to Unicode group	TBD	ASIWG-Coord team

## SESSION III Non-Spacing Marks: Confusing Cases

Preliminary recommendation: Characters <0610-0614> should be disallowed at the protocol level. Pakistan and Indian representatives will check with their respective national language groups that use Arabic script.

Preliminary recommendation: Characters <064B-0659> should be removed at Arabic script level (i.e., PVALID at protocol level, but removed at the unified Arabic script table).

**Session III Actions:**

Action	Description	Date Due	Owner
1	Confirm moving <0610-0614> to DISALLOWED at protocol level	June 15	Sarmad Hussain (Pakistan)
2	Confirm moving <0610-0614> to DISALLOWED at protocol level	June 15	Ram Mohan (India)

**SESSION IV**

**Combining MADDA and HAMZA, and other combining marks**

1. Subtending marks, already disallowed no need to discuss
2. Honorifics, (SAD) could be placed in different locations above the word 'mohammed' as illustrated in graphic examples when 'seen' pronounce 'SAD' we sometimes put a SAD above .. again an opportunity for phishing .. same for '3aleeh alsalam' and 'rahmat allah 3aleih' .. no standard for positioning .. also code point 0614 behaves the same (used by poets in urdu) ..
3. We agreed to be disallowed, no need for discussion
4. Points, we need it to be disallowed at least on higher levels, tashkeel or diacritics needed to pronounce correctly .. heavily debated by linguistics .. again no standard way for tashkeel and its placing .. same words are pronounced differently in diff parts .. good playground for phishing .. some of this tashkeel is v imp such as shaddah (double letter) but for the sake of simplicity for domain names we should agree on leaving it out of the table
5. ASIWG to create complete list to determine which characters ought to be normalized
6. ASIWG to perform a gap analysis to determine what is not yet normalized by Unicode, and make a proposal to Unicode to normalize what is left out
7. ASIWG needs to create a recommendation aimed at all registries and application developers that intend to implement a language that uses the Arabic script, which forms part of usage guidelines.
8. Other combining marks, examples small v above words produces new code points .. non-spacing marks are variants for the base letters they combine with. It was suggested that NFCK produces the right Unicode for that in normalization. A suggestion was made that these other combining marks should be put in different categories.

#5 to be presented prior to next ASIWG meeting

Proposals & recommendations dependent upon task #5 and presentation at next ASIWG meeting.

## Removal of Harakat from Script level

Vigorous discussion occurred on the topic of removal of Harakat (0653-065E) from the Script level of the Arabic script table.

### Reasons for not removing Harakat @ Script level:

- 1) Removing Harakat truncates the language. Implement our language better in IDNs.
- 2) Preserves user choice.
- 3) Can be well solved using Variant response @ registry level

### Reasons for removing Harakat at the script level:

- 1) Security and Phishing issues -- no different from KAF and YEH, and can be solved by variants
- 2) Usability issues -- allows options to the registrants (let owner choose the option, can teach domain owners how to deal with Harakat in their subdomains also)
- 3) Infrequent practical use in the language -- this is unimportant, domain names are not based on meaningfulness

For example, in Dr. Al-Zoman's previous presentation example of 2 words having same spelling but different tashkeel hence having different meaning (جبان) and examples of different tashkeel of (جمعية). There are a lot of combinations and user will not be sure which one to type. This is a huge door for phishing so disallowing them not to be part of the registration will solve a great deal of the problem (same as lower case and upper case compromise). We also sacrificed a great number of words by giving up a number of words by giving up diacritics.

### Discussion:

Harakat is by itself not a letter. Never used in real life. If we allow Harakat, end user will register without Harakat, and MAY use with it.

### PRESERVE USER CHOICE vs. CREATE USER CONFUSION

- 1) If registrant registers with Harakat, causes lots of confusion, creates complexity. This only gives the illusion of giving choice.

If Harakat is bundled, so difficult to process the query for DNS if the domain can be registered or not. Will cause huge # of variants - need to minimize # of variants, it actually reduces user choice.

Users have not asked for this - there is no market or user demand.

Domain names do not solve for different pronunciations with the same spelling.

### IMPLEMENT LANGUAGE BETTER vs. TRUNCATE LANGUAGE

- 2) We are truncating the language. Enabling Harakat does not allow all the words in the language to be used.

The solution is not easy to implement.

#### IMPLEMENT LANGUAGE vs. FREQUENT USE

3) YAH and KAF are essential letters. Harakat is optional. Harakat are not variants. Frequency is an issue - the language communities do propose that unused letters/characters must be dropped.

Linguists in Arabic language already have agreed that Harakat may be removed to aid usability.

#### FORCING USERS, INFRINGING USER RIGHTS

4) Must only be given to the same registrant. Given the person more domain names than they applied for - and costs more for the registry

Different combinations give different meaningful strings. Forcing the registrant to get names they never wanted.

#### EXPENSIVE FOR THE REGISTRANT, BLOCKS OTHER REGISTRANTS

5) The base solution results in blocking other registrants.

#### REGISTRY PERFORMANCE DUE TO VARIANTS

6) Number of variants quickly grows to millions. Cost is prohibitive.

#### APPLICATION LAYER SOLUTION:

Let this problem happen at the application layer - application before sending to DNS it will remove the Harakat - it will help the small %age of users who use Harakat

No reason to bring it to the application layer - the problem should be solved at the lower layer.

#### Why it should be left in the Script level:

Implementation is an issue anyway

Not our job to police users, leave them free choice

#### Why it should be left out of the Script level:

o May not recompose before resolving

o Even if someone doesnt request without diacritics, causes way more complexity

o There is no extra value to the end user. End user is not the registrant.

The cctld registry for Vietnam has interesting problem with their language.. Latin with a lot of decorations and diacritics.. Here diacritics are not optional.. They accept registrations with diacritics, strip them off to the base chars and comparison happens with the base chars for later registrations.

We already currently have this problem of someone taking someone else's domain .. also it may help in sunrise as both حبان has same base chars .. so it has to be on a first come

first serve .. we can make a min Arabic script table and make a toll to compare with only this set of chars ..

.SA said that they felt so many things could be done at the registry level so adding the tashkeel too will make it very expensive solution for the end user. People will not use the tashkeel the way we designed it. From a language point of view we had to sacrifice to accommodate for the technology. It's not easy to write it, guess it, etc. Google ignores diacritics. This was countered by saying that searching in a Word document does consider harakat.

A question was asked as to how many customers were expect would insist to have domain names with diacritics.

Sarmad said that his group looked all the words that were ambiguous without harakat and it's 5% of the language .. 95% of words are unambiguous .. so if we do not include harakat for urdu we're allowing 95% of the language.

John Klensin reminded the group that one has to be able to search on base string and then be able to use vowel markers. He said that he has worked with keyboards that are fully equipped with diacritics and would like to re-enforce that if you can't deal with these you will be better off on the computer.

Manal said that adding Harakat does not add more users. Characters formed with the Harakat would be given to the same registrants for more money and probably more confusion of end users.

### **Suggested Use of a Two Phase Approach**

Suggestions were made as follows:

- 1) Harakat are an essential part of representing Arabic script based languages. They are optionally used in the language. They currently pose a significant security issue. First phase, implement IDNs without Harakat, and ask application providers & protocol folks to look at problems. Once concrete solutions that assure safety exist and community requirements exist, then registries can allow Harakat and allow sunrise to occur.
- 2) We do not have an agreed upon solution. We will continue to study the solution.
- 3) We will try to find a solution that evaluates various factors. Until then, Harakat will not be supported at the script level, and once solutions are found, they will be supported at the script level.
- 4) The main power of Harakat is to differentiate meaning based on the same spelling. Until such a solution is resolved, then Harakat remains out of the script table.
- 5) A critical difference in approach is to define whether one registrant gets the values or more than one can.

### **MEETING OUTCOME:**

**ASIWG AGREES TO THIS STATEMENT REG. HARAKAT:**

Harakat are part of Arabic script based languages. They are used to differentiate meanings between words with the same letters.

As they currently pose security and operational issues, ASIWG recommends implementing IDNs without Harakat. Once concrete solutions that assure security, implementation, usability and stability exist, ASIWG will recommend appropriate guidelines.

**Session IV Actions:**

Action	Description	Date Due	Owner
1	Create complete list to determine which characters ought to be normalized	TBD	Abdulaziz Al-Zoman, Sarmad Hussain, Alireza Saleh
2	Perform a gap analysis to determine what is not yet normalized by Unicode, and make a proposal to Unicode to normalize what is left out	TBD	Sarmad Hussain, Raed Al-Fayez
3	Create a recommendation aimed at all registries and application developers that intend to implement a language that uses the Arabic script, which forms part of usage guidelines.	TBD	Subgroup of ASIWG
4	Publish ASIWG Statement on use of Harakat	TBD	ASIWG

**SESSION V**

**Registration Process for languages implementing Arabic Script**

Raed Al-Fayez made a presentation on this topic, which contained a proposal for how to address several tricky issues with the registration process. This presentation will be placed on the Wiki.

Registry challenges:

- Security issues - address @ language level first
- Not all Arabic script based languages are ready

Goals:

- Standardized policies and proceduress document in RFC like or BCP documents
- Extendable to allow adding new languages
- Simple & transparent to registrant & navigator
- Usable for both cc & gTLDs

An IDN deployment Ready Language should have:

Language table

Variant Table

- Exact Variant Table (EVT) - confusingly similar
- Typo Variant Table (TVT) - typo or style match

Registry Script-Based tables:

Language table for each supported language

Build combined EVT from EVT's of the supported languages

Build combined TVT from TVT's of the supported languages

Registry-Registrant Interface:

Registration process

Activation process

Lookup process

Comments:

- Adding a 3rd language may cause new troubles, especially in terms of interaction with EVT of a pre-existing language.
- Don't merge both variant tables & language tables.
- Variant tables are combined to protect the name space to reduce phishing. Combining variants will allow other users from other communities to access the same web site.
- This effort is within the objective of ASIWG. Seems to be a scalable model.
- Interesting proposal. Consider making part of the RFC process.
- May be a model for other languages/scripts also.
- Each language should have a single language table. Submit to IETF RFC process
- Some registries have used language table to represent community languages rather than pure languages - need to find a way to persuade and coopt them to go to a one-language one-table formula
- If two languages propose different variants - what is the process for resolving the difference between what is "base" and what is "variant"
- Need to devise mechanism for stability of the variant table - cannot be a dynamic, simple "or" process
- Language table - need a process for standardization, need a process owner
- Removing languages not easy
- If involved in standardization process, need clear issue resolution process
- Will mixed scripts be allowed using this process?

### **Session V Actions:**

Action	Description	Date Due	Owner
1	Publish registration proposal to Wiki	June 15	Raed Al-Fayez
2	Consider making the proposal part of IETF RFC process	July 10	Ayman Al-Sherbiny, Raed Al-Fayez, others
3	Publish "one language-one table" paper	July 25	Ayman Al-Sherbiny, Raed

			Al-Fayez, Sarmad Hussain, Ram Mohan, others
4	Create paper on this topic of registration	August 15	Raed Al-Fayez

## SESSION VI Policy issues related to variants

Variants were defined at the script level:

*Characters that are identical to each other in any of the four positions in the Arabic script.*

Language level variants may exist as well (i.e., variants that exist within a language).

ASIWG's recommended policy best practice is that Variants should registered/reserved to the same registrant.

Variants were defined at the registry level:

*Two strings that appear to be confusingly similar to each other in more than one language implementing the same script.*

### **Other registries implementing Arabic (VeriSign implementation)**

What is the group's response to the discussion on the list regarding security flaws with regard to VeriSign's implementation of Arabic?

ASIWG preferred to find ways to get Verisign to help us solve the issues.

Baher agreed to go back to ICANN and highlight the problem and discuss next steps, based on list discussion.

Baher will report back to ASIWG at the June Paris meeting.

### **Session VI Actions:**

Action	Description	Date Due	Owner
1	Publish ASIWG agreed definition of variants to the list	June 18	Ram Mohan
2	Publish ASIWG recommended policy best practice on variant registration	July 10	ASIWG
3	Highlight Arabic script/language implementation issues in .COM based on list discussions	June 10	Baher Esmat
4	Report back to ASIWG on ICANN actions/thoughts on .COM Arabic language problems in implementation	June 22	Baher Esmat

## SESSION VII Planning for ICANN Paris, IETF Dublin

### ICANN PARIS PLANS

#### Presentations:

- Modify Ram's presentation, update from Al-Zoman's slide
- Put goals and mission on presentation
- Show progress
- Discuss next issues

#### Multiple layers

- Could merge logical layers or physical layers
- Stick with 4 layers until we change
- Give the 4 layer model to John Klensin to use in his tutorial

#### What else do we need to do for Paris:

- Scope defined - put it up on the slides
- Outreach into other language communities that are related - get one or two more active members on board
- Jawi language for Malaysia in Paris

ACTION: All presentations to be sent to Ayman

### IETF DUBLIN

Focus will be on finishing EAI & wrapping up IDNA2008. No ASIWG actions.

#### **Session VII Actions:**

Action	Description	Date Due	Owner
1	Update ASIWG-I presentation, including slides from Al-Zoman, etc	June 18	Ram Mohan
2	Provide 4-layer model to John Klensin for incorporation in his tutorial	June 18	Ram Mohan
3	Work on Agenda for Paris meeting	June 15	Ayman El-Sherbiny, Ram Mohan, Alexa Raad
4	Send presentations to Ayman, for publication on UN-ESCWA site	June 15	All presenters at ASIWG-2

## SESSION VIII Schedule, Scope, Funding

ASIWG will meet next in a formal face-to-face meeting at the conclusion of ICANN Cairo, for 3 days - Nov 8-10, 2008.

An online moderator per topic is suggested to ensure each track stays focused and we make future progress.

Conference calls will be scheduled as needed prior to the next face-to-face meeting.

July 16 - 3-5pm Dubai time

Aug 20 - 3-5pm Dubai time

Oct 8 - 3-5pm Dubai time

Alexa will send out calendar invitations.

### **Scope of ASIWG:**

Need community centric representation for Arabic script by Unicode was raised. The question was asked whether we see ourselves as an IDN group or an Arabic script group, and do we see our scope of activities ending with IDN, or extending beyond IDNs?

Consensus quickly emerged that our group is focused on Arabic script for IDNs, and at this point not focused on taking on new tasks such as Unicode representation, etc.

### **Funding:**

Organizations That Can Fund:

1. UN (for members etc from within region)
2. ccTLDs (if meetings held in their regions)
3. PIR & Afilias
4. Other gTLDs
5. ICANN (as long there are no strings attached)

3 categories of funding:

- Funding experts unable to come without funding
- Meeting expenses (room, facilities, transcription, etc)
- Professional services
- Funding individuals from countries that otherwise may be unable to be funded

- APTLD would be able to provide a Secretariat service - no limitation
- \$40,000-\$60,000 per meeting is the estimated cost.
- We need to budget for drafting, editing and publication of the guidelines
- Finding funding agencies, especially if a non-profit work is feasible
- UN ESCWA can fund under the aegis of an ADNS project - can ask for more money

### **Session VIII Actions:**

Action	Description	Date Due	Owner
1	Publish calendar invites for Nov ASIWG-3 meeting and conference calls	June 18	Alexa Raad
2	Encapsulate scope of ASIWG in documents and presentations	June 18	Ram Mohan

3	Request Secretariat services from APTLD	June 21	Ayman El-Sherbiny, Ram Mohan, Alexa Raad
4	Ask Sarmad to write a proposal for funding, which includes the background and to expand the domain name project from the language level to the script level.	June 22	Ayman El-Sherbiny
5	Terms of Reference (ESCWA) for guidelines over what we can do and who to do it	June 25	Ayman El-Sherbiny, Ram Mohan, Alexa Raad, Manal Ismail, Others
6	Agreement between PIR, Afilias, ESCWA for sponsorship	June 25	Ayman El-Sherbiny, Ram Mohan, Alexa Raad
7	Proposal from Sarmad to ESCWA	July 16	Sarmad Hussain
8	Invite appropriate Unicode technical staff specialized in Arabic Code page for ASIWG-3 Meeting	July 30	Ayman El-Sherbiny

**Other Notes:**

**Unicode & ISO TC46:**

Unicode has been receptive to adding properties, less receptive to changing them. Each of the other activities requires a different kind of focus. Eg: ISO TC46 (to modify ISO3166) - better off approaching through member bodies

**Creation of Variant Tables:**

Variants -- let each language come with a proposal and then can be discussed face to face

**Arabic Language Implementation in Other Registries:**

Raise Verisign/Godaddy issue in the ICANN meeting presentation, but only informally.

**Document Review:**

Review IDNA2008 document regarding BIDI

## Appendix A: Cumulative list of all actions

### **Session I Actions:**

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	normalize what is left out		
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